An implementation evaluation of procedure videos to support nurses undertaking infrequent clinical procedures in acute cardiology

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Statement of Originality

This is to certify that to the best of my knowledge; the content of this thesis is my own work. This thesis has not been submitted for any degree or other purposes.

I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged.

Signed: Jacqueline Colgan On: 08/2/2023

Authorship Attribution Statements

Associate Professor Thomas Buckley, Dr Sarah Kourouche and Professor Geoffrey Tofler formed the higher degree supervisory team. One published manuscript forms part of the higher degree award of Master of Philosophy undertaken by Jacqueline Colgan. The following information outlines the published and submitted manuscript embedded in this thesis and authorship attribution statements indicating the contributions of the thesis author.

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The thesis author designed this review with all the co-authors and analysed and interpreted the data, wrote the drafts and led the preparation and submission of the manuscript for publication.

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This thesis was edited by Elite Editing. Editorial intervention was restricted to Standards D and E of the Australian Standards for Editing Practice.

Supervisor Confirmation

As supervisors for the candidature upon which this thesis is based, we can confirm that the authorship attribution statements above are correct.

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Date: 21.11.2023

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Abstract

Background

Rare procedures in cardiology are challenging; they are often time-critical, lifesaving and carried out with limited resources. Procedures such as pericardiocentesis are infrequent, and nurses may go several years without assisting with the procedure. Currently, most healthcare organisations support their health professionals during rare procedures with manuals containing standard operating procedures (SOPs). However, when faced with an urgent procedure not recently encountered, healthcare professionals will access whatever information is available, which is increasingly online videos. Search engines like Google are often used by hospital nursing staff seeking clinical information, with seven per cent of Google's daily searches being health related.

Scoping review of the research literature

A comprehensive review of the existing literature on the use of video for procedure support by health care was conducted using the Joanna Briggs Institute scoping review methodology. The purpose of the review was to identify and map the literature types encompassing the use of video by healthcare workers in acute healthcare settings. This review revealed limited evidence regarding the impact of video on improving skill performance and knowledge in nurses undertaking clinical procedures, and not studies from cardiology. The initial findings from reviewed studies to date were encouraging - video can support clinicians in performing procedures, potentially benefiting health professionals and patients.

Aims

The main purpose of this thesis is to understand the acceptability and use of locally tailored procedure videos. The research aims were to:

- Determine the barriers and facilitators to implementing locally tailored clinical procedure videos at two hospitals in NSW, Australia

- Design a plan to implement clinical procedure videos using behaviour change theories
- Use website data, analytics, and user feedback surveys to understand the usage and acceptability of the videos during the implementation period.

Methods

The thesis research study was a pre-post-implementation evaluation of seven locally tailored nursing clinical procedure videos as an adjunct to traditional written procedures: Cardiac pacing (n = 3), Non-invasive ventilation (NIV) (n = 2) and Pericardiocentesis (n = 2). The process and results were guided by a four-step process involving behaviour change theory and frameworks. The study team used survey information to direct the choice of the most appropriate components of an implementation intervention. The first step involved identifying the problem: how to implement video procedures. In Step 2, the study team assessed the problem using the theoretical domains framework to identify barriers and facilitators to implementation. Step 3 was used to determine which intervention functions (behaviour change techniques and modes of delivery) would overcome the modifiable barriers and facilitators. Finally, in step 4, the study team developed and conducted an evaluation plan. This thesis describes the three phases of the study: (1) pre-implementation, including assessment of barriers and facilitators, (2) development of the implementation plan and (3) the post-implementation evaluation.

Phase 1-Pre-Implementation

A survey of 248 nursing staff across two hospitals was conducted to identify and determine the barriers and facilitators to implementing locally tailored clinical procedure videos (Steps 1 and 2). The four barriers identified were (1) lack of computers in the clinical areas, (2) lack of regular exposure to procedures, (3) remembering to access procedures, and (4) time pressures and workload.

The nine facilitators identified were participant beliefs that (1) clinical procedures improve standards, (2) clinical procedures reduce risk, (3) clinical procedures enhance access to information, (4) video procedures will improve patient care, (5) video procedures improve access to information, (6) video procedures will increase access to information, (7) video improves clinical skill performance,

(8) clinical procedures increase knowledge, and (9) video procedures will improve the healthcare process. Before implementation, the mean score for perceived state anxiety related to rare or new procedures was 41.4 (*SD* = 9.3), with scores over 40 indicating significant anxiety levels. Exploration of the relationship between participants' state anxiety scores revealed younger age (r = -0.134 p = 0.017) and lower years in the role (r = -0.121; p <0.031) were associated with higher anxiety scores.

Phase 2-Implementation Plan

The identified barriers and facilitators to clinical procedure videos from Phase 1 were assessed, and findings were used to develop an implementation plan (Step 3). The implementation plan included multimodal strategies and resources, including face-to-face education sessions, clinical champions, corporate branding, and environmental restructuring strategies, such as new MyHealthLearning video procedure modules and custom mousepads.

Phase 3-Post-Implementation evaluation

Website data, analytics, and user feedback surveys were used to evaluate the usage and acceptability of the videos during the six month implementation period (Step 4). On the hospital intranet total video views were 598; the most viewed video was temporary pacing-preparation (n = 152). In addition, 107 nurses viewed the videos on the MyHealthLearning system; the most viewed modules were NIV and Pacing at 36 times each. In the immediate post-viewing survey (n = 256), more than two-thirds (NIV-69% (n =57), Pacing 75% (n = 67) and Pericardiocentesis 80% (n = 66) thought the video content was 'just right' in complexity. Coding data was analysed to obtain procedures performed during the implementation period: NIV (n = 170), pericardiocentesis (n = 7) and temporary cardiac pacing (n = 5).

Six months post implementation a survey of 133 nursing staff across two hospitals was used to obtain feedback from those who had viewed the procedure videos. On average, participants had viewed 4.5 videos each out of the 7 videos, with Cardiac Pacing and NIV videos being the most viewed. Over 90% (n = 120) of participants strongly agreed/ agreed that viewing a video helped their clinical reasoning. Participants preferred videos to be an adjunct and not replace written procedures (75%, n = 91). There were 19 suggestions for future video topics, half of which were emergent procedures.

Perceived anxiety related to rare procedures did not significantly change from pre- to post-implementation.

Conclusion

The research presented in this thesis has contributed to a better understanding of the use and acceptability of procedure videos in acute healthcare settings. The study shows that the rigorous methods and frameworks used to implement videos have resulted in high uptake. The findings from this study have several practical implications that can help inform future design, methods, and implementation of video interventions. A scoping review revealed that publications related to videos have increased by almost 50% in the past 2 years, indicating a growing interest in this method of clinical support. The study findings suggests that videos are acceptable, valued and a useful complement to written procedures. In conclusion, this thesis adds to the emerging body of research demonstrating that videos have the potential to support healthcare professionals during infrequent procedures.

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List of Abbreviations

APEASE	Affordability, practicability, effectiveness and cost-effectiveness, acceptability, side-effects or safety and equity
BiPAP	Bi-level positive airway pressure
BCT	Behaviour change technique
BCW	Behaviour change wheel
CCLHD	Central Coast Local Health District
CNC	Clinical Nurse Consultant
CNE	Clinical Nurse Educator
CNS	Clinical Nurse Specialist
COM-B	Capability, opportunity, motivation and behaviour
COVID-19	Coronavirus disease
CVC	Central venous catheter
ED	Emergency department
EN	Enrolled Nurse
ETI	Endotracheal intubation
HETI	Health and Education Training Institutes
HOS	Haematology–oncology service
HREC	Human Research Ethics Committee
JITT	Just-in-time training
LNR	Low or negligible risk
MHL	MyHealthLearning
NIV	Non-invasive ventilation
NM	Nurse Manager
NSW	New South Wales

NUM	Nursing Unit Manager
PDF	Portable document format
P&P	Policy and procedure
PICC	Peripherally inserted central catheter
PPG	Policy, procedures, guidelines
QR	Quick response
RCT	Randomised controlled trial
REDcap	Research Electronic Data Capture
RN	Registered Nurse
RSI	Rapid sequence intubation
SD	Standard Deviation
STAI	State–trait anxiety inventory
TDF	Theoretical domains framework
TVPW	Temporary venous pacing wire
US	United States
VAC	Vacuum-assisted closure

Scholarships and Awards

Central Coast Local Health District Caring for the Coast Awards 2021-Finalist:

Category 4: Excellence in Research.

Chapter 1: Introduction

The main purpose of this thesis is to understand the acceptability and use of procedure videos to support acute care nurses. This chapter presents the study's background and initiation, after which it discusses the current gaps in knowledge in this field. Finally, this chapter outlines the thesis's aims, significance and thesis author's background, as well as the thesis's outputs and overview.

1.1 Historical Background

The internet is commonly considered to have been created on 1 January 1983, and 22 years later, in 2005, the video-sharing site YouTube™ was founded (Pires et al., 2022). By 2019, 88% of Australians owned a smartphone, and by 2020 the number of internet-connected devices in Australian homes had increased by 390% from 2010 levels (Oviedo-Trespalacios et al., 2019). Online videos are a popular way to gain practical knowledge and skills, such as, learning new languages or practical skills (Ainsworth et al., 2023), and are often viewed on personal mobile devices (Kunst, 2023).

Despite this increasing trend of personal technology use, Australian hospitals have been slower to adopt digital technologies. For example, it was not until October 2015 that the New South Wales Ministry of Health granted open internet access to its health professional staff, after a three-month trial (Ministry of Health, 2015). Further, nurses' use of certain technologies is not always accepted; for example, their use of smartphones has been described as 'unprofessional and risky' (Fiorinelli et al., 2021, p. 9), and inappropriate, in the case of the thesis author's workplace.

In the field of undergraduate health professional education, videos are considered effective for instruction and clinical skills training (Forbes et al., 2016; Srinivasa et al., 2020).

Using technologies such as video to enhance clinical skill acquisition and support procedures is an emerging field of knowledge. Clinical equipment vendors are increasingly directing hospital staff for education or training towards using apps or videos. Examples include the humidifier with integrated flow generator Airvo™ 2 app (Fisher & Paykell Healthcare Ltd, 2014), continuous ambulatory peritoneal dialysis videos (Fresenius Medical Care Singapore Pte Ltd, 2018), pacemaker instructional videos on the Medtronic Academy website (https://www.medtronicacademy.com/en-xg/home) and intra-aortic balloon pump e-Learning modules (Getinge Educational Institute, 2023). This trend indicates a change in traditional training models, and the end-user clinicians' acceptance of video for procedure education.

1.2 Clinical Procedure Support

1.2.1 Policy, Procedure and Guideline Manuals

Nursing policies and procedure guidelines have been described as 'lingering tradition' and 'bureaucratic template' documents (Bail et al., 2009). Procedure guidelines are intended to help nurses provide safe, effective healthcare, with the unintended consequence of lengthy documents at times. This is not always helpful if health professionals need to read and process the information instantly for emergent procedures. Healthcare organisations create and store these procedure documents in electronic manuals on a hospital's intranet. However, health professionals can only access these procedures on health facility computers—either through mobile computers on wheels or desktop computers.

In the acute cardiology nursing field, several emergent clinical procedures do not occur frequently, therefore exposing large numbers of health professionals to these procedures for training is challenging; for example, an average of 30 pericardiocentesis procedures have been reported per annum across four locations in a single tertiary referral hospital (Ramachandran et al., 2022). In the thesis author's workplace, annual pericardiocentesis procedure numbers would be fewer than in this example and could occur in any of six locations across two hospitals. With a headcount of approximately 500 nurses in those six locations, training and exposure to procedures is difficult, and competes with other education and training priorities.

1.2.2 Evidence: Practice Gap

When health professionals face rare and emergent procedures, they will seek any resources to help them manage the procedure, often via Google (Alving et al., 2018). They do this despite having extensive access to clinical information databases, which they consider too difficult to navigate (Alving et al., 2018; Lee et al., 2019). Of Google's daily searches, 7% are health related (Murphy, 2019), although the public creates many searches, some may be from healthcare workers researching for their online professional education. Google searches include video recommendations but the quality of healthcare information available on YouTube™ is highly variable (Abdulghani et al., 2019; Camm et al., 2018; Camm et al., 2013; Duman, 2020; Kılınc et al., 2018; Madathil et al., 2015). Of particular concern to employers or supervisors is that online videos may be user-generated content that may not be best practice, or consider local procedures and circumstances.

1.2.3 Position of the Thesis Author and Pre-Candidature Video Development

The thesis author was motivated to explore evidence-based practices for video procedures after registered nurses at the Gosford Hospital Coronary Care Unit requested nursing procedure videos. This request came after one nurse observed medical officers watching online videos prior to performing an indwelling catheter insertion procedure. Upon further investigation, it was discovered that the medical staff had viewed a procedural video on YouTube™ as part of a randomised control trial on difficult indwelling catheter insertion (Yuminaga et al., 2017).

Nursing staff requested videos to help them manage infrequent emergent procedures, that often occurred outside of ‘business hours’ when support resources are sparse. Specific topics requested were non-invasive ventilation (rare for individuals) and temporary cardiac pacing and pericardiocentesis (rare for the cardiology service). To add to the pressure staff experienced, the procedures were often urgent due to patient deterioration. Time and clinical urgency pressures meant reading long written procedures was not always feasible, thus the request for videos.

When reflecting on this the thesis author noted an increasing recognition of the importance of health literacy and visual resources for patient education materials (Pinto et al., 2013; Tongpeth et al., 2018; Wonggom et al., 2019). However, for reasons such as a lack of time, necessity, expertise or equipment, there was not the same momentum for creating video resources for health professionals for procedure support at the point of care.

The thesis author created a volunteer project team, as part of a video development scoping exercise. The final team consisted of four Coronary Care Unit Registered Nurses, Cardiac Clinical Nurse Educator and Respiratory Clinical Nurse Consultant. This team was supported by the district Digital Learning Consultant. One of the team’s first tasks was to search for and appraise online clinical procedure videos on YouTube™. Despite an extensive search of online videos for our topics, the team could not locate any suitable resources. The team's specific concerns were that the videos did not show or detail the role of the assisting nurse or discuss the required clinical monitoring. In addition, some featured equipment or medications that were unavailable in Australia. The project team wanted to develop videos for certain emergency cardiology procedures, highlighting the nursing role, such as:

1. inserting temporary pacing wires in fluoroscopy units for life-threatening bradycardia
2. performing emergency pericardiocentesis to drain fluid build-up around the heart, which constrains it from beating effectively.
3. setting up non-invasive ventilation (NIV) for acute cardiogenic pulmonary oedema.

1.2.4 Video Development and Study Conception

The lack of guidance for developing clinical procedure videos prompted the development team to adapt the New South Wales (NSW) Health and Education Training Institutes (HETI) 'Scoping Roadmap' for eLearning (see Figure 1.1). The video development team follow the clinical skills and practice activities pathway (see red highlighted areas on Figure 1.1). The team determined there was both a knowledge and skill issue for low frequency procedures. Procedure knowledge was stored in the current job aides (written procedures), but nurses wanted visual resources such as videos. To develop videos, the team members, including the thesis author, attended an eight-hour workshop on 'scoping and storyboarding' for video development on 30th April 2018.

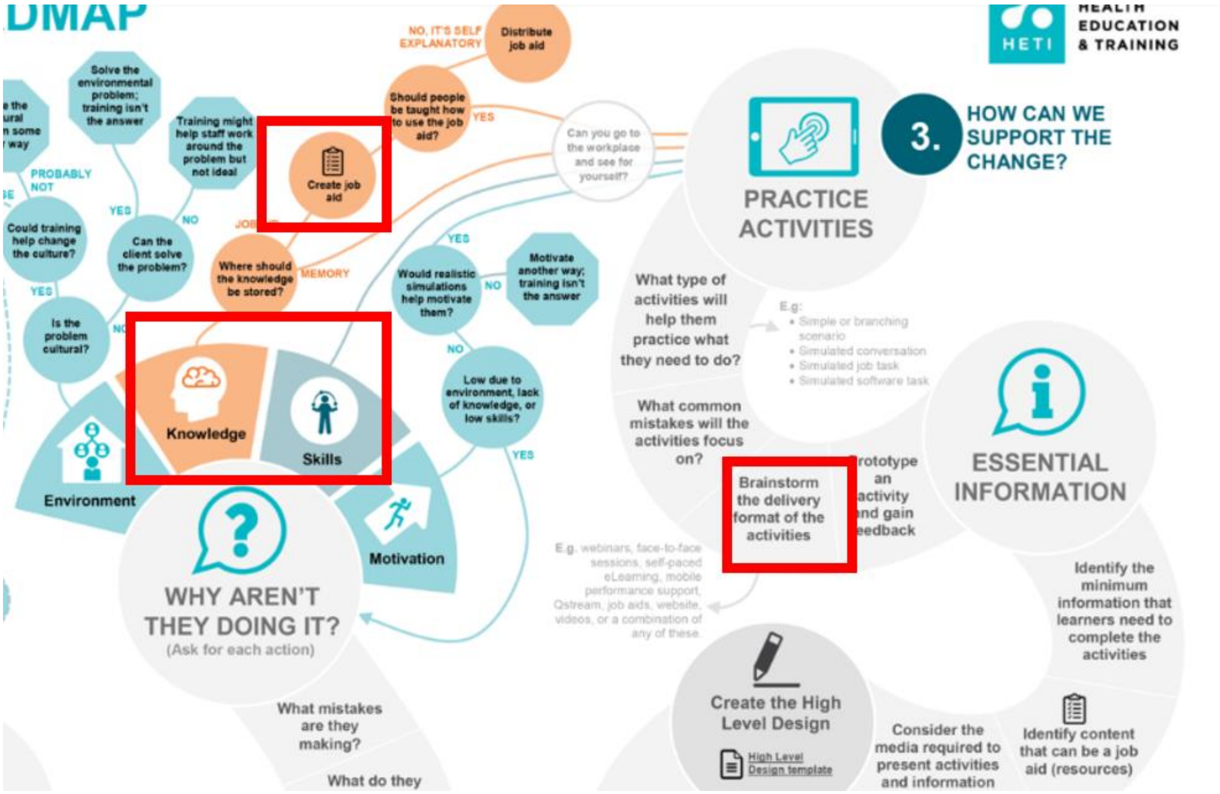

Figure 1.1 HETI Scoping Roadmap Skills Excerpt (relevant sections highlighted in red)

Over the following 17 months, the team created seven (7) videos using the following process:

- Creating key messages for videos based on expert opinion and current written procedure guides
- Turning key messages into video voiceover scripts
- Circulating video scripts to key stakeholders for feedback
- Final scripts approved by Nurse Managers and Director of Cardiology
- Creating shot lists from the video scripts to ensure all parts of the procedure necessary were filmed
- Creating equipment lists from the shot lists to ensure all necessary clinical equipment was available at the filming location
- Liaising with managers to roster staff time for filming
- Ordering clinical equipment for filming

- Creating an expression of interest seeking hospital volunteers to play patient roles
- Booking suitable filming clinical locations
- Filming took place over three full days, with additional filming done later as needed for integration into edited videos
- All participants (actors) in the videos gave their permission to be filmed
- The digital learning consultant completed video editing.

Final edited videos were circulated to key stakeholders such as Infection Control, Nurse Managers, and the Director of Cardiology for final approval. The videos were completed by late 2019, with closed captions added. Final videos related to the processes of temporary cardiac pacing (*n* = 3), NIV (*n* = 2) and pericardiocentesis (*n* = 2) (see Appendix 8.1). The developed videos received positive feedback and support from reviewers, and the development team. The thesis author realised that the videos would need to be rigorously implemented and evaluated to demonstrate their acceptability to clinical nursing staff and validate their use by organisations.

1.2.5 Thesis Aim

The main purpose of this thesis is to understand the acceptability and use of locally tailored procedure videos. The research aims were to:

- Determine the barriers and facilitators to implementing locally tailored clinical procedure videos at two hospitals in NSW, Australia
- Design a plan to implement clinical procedure videos using behaviour change theories

- Use website data, analytics, and user feedback surveys to understand the usage and acceptability of the videos during the implementation period.

1.2.6 Significance and Definitions

The study reported in this thesis adds to the emerging evidence on the use of video for procedure support by healthcare professionals. The study demonstrates a practical application of behaviour change theories in an acute healthcare setting to identify barriers and facilitators to implementation to inform a comprehensive implementation plan. As there is little research from nurses or in the field of cardiology on the use of video for procedure support, this research has the potential to increase awareness of the outcomes of this method of clinical support.

For the purpose of this study:

- A written clinical procedure guideline is a set of approved steps for a specific act or sequence of acts (Central Coast Local Health District, 2020), which is available as a Portable Document Format (PDF) on the policy and procedure SharePoint service of a hospital's intranet.
- A video procedure is a video simulation of the written clinical procedure guideline that imparts key messages for procedure safety and clarifies staff roles.

1.2.7 Thesis Outputs

This thesis derived the following journal publication output and additional conference presentation outputs:

Colgan, J., Kourouche, S., Tofler, G., & Buckley, T. (2022). Use of videos by health care professionals for procedure support in acute cardiac care: A scoping review. *Heart, Lung, and Circulation*, *32*(2), 143–155. https://doi.org/10.1016/j.hlc.2022.10.004

Colgan, J., Miles, K., Kourouche, S., Tofler, G., & Buckley, T. (2020, February 10). *eHealth education: Implementation of locally tailored clinical procedure videos* [Oral presentation]. #DigitalHealthWeek21 Online Conference.

Colgan, J., Miles, K., Kourouche, S., Tofler, G., & Buckley, T. (2021, May 6–7). *Identifying barriers and facilitators to implementation of locally tailored clinical procedure videos* [Oral presentation]. 5th Australian Nursing and Midwifery Conference, Newcastle, New South Wales, Australia.

Colgan, J., Miles, K., Kourouche, S., Tofler, G., & Buckley, T. (2021, May 12). *Identifying barriers and facilitators to implementation of locally tailored clinical procedure videos* [Speaker presentation]. International Nurses Day, Gosford Hospital, Gosford, New South Wales, Australia.

Colgan, J., Miles, K., Kourouche, S., Tofler, G., & Buckley, T. (2021, October 20). *Preliminary evaluation of clinical procedure videos implementation* [Speaker presentation]. Central Coast Local Health District Procedure Committee, Gosford Hospital, Gosford, New South Wales, Australia.

Colgan, J., Kourouche, S., Tofler, G., & Buckley, T. (2022, July 20). *Implementation of locally tailored cardiac clinical procedure videos to support clinicians undertaking rare cardiology procedures* [Moderated poster presentation]. Faculty of Medicine and Health Higher Degree Research Conference, University of Sydney, Sydney, New South Wales, Australia.

Colgan, J., Kourouche, S., Tofler, G., & Buckley, T. (2022, August 11–14). *Implementation of locally tailored cardiac clinical procedure videos to support clinicians undertaking rare cardiology procedures* [Poster presentation]. Cardiac Society of Australia and New Zealand Annual Scientific Meeting, Gold Coast, Queensland, Australia.

Colgan, J., Miles, K., Kourouche, S., Tofler, G., & Buckley, T. (2022, December 1). *Evaluation of locally tailored clinical procedure videos* [Oral presentation]. Central Coast Local Health District Research Showcase, Gosford Hospital, Gosford, New South Wales, Australia.

Colgan, J., Kourouche, S., Tofler, G., & Buckley, T. (2023, March 31–April 1). *Implementation of locally tailored cardiac clinical procedure videos to support clinicians undertaking rare cardiology procedures* [Poster presentation]. Australasian Cardiovascular Nursing College Conference, Sydney, New South Wales, Australia.

Colgan, J., Miles, K., Kourouche, S., Tofler, G., & Buckley, T. (2023, May 4–5). *Use of videos by health care professionals for procedure support: A scoping review* [Moderated poster presentation]. 5th Australian Nursing and Midwifery Conference, Newcastle, New South Wales, Australia.

Colgan, J., Miles, K., Kourouche, S., Tofler, G., & Buckley, T. (2023, May 10). *Evaluation of locally tailored clinical procedure videos* [Oral presentation]. Central Coast Local Health District Board Operational Research Committee, Gosford Hospital, Gosford, New South Wales, Australia.

Colgan, J., Miles, K., Kourouche, S., Tofler, G., & Buckley, T. (2023, June 24). *Procedure videos to support rare clinical procedures in acute cardiac nursing, an implementation evaluation* [Moderated poster presentation]. Association of Cardiovascular Nursing & Allied Professions Congress, Edinburgh, Scotland.

Colgan, J., Miles, K., Kourouche, S., Tofler, G., & Buckley, T. (2023, July 31). *Procedure videos to support rare clinical procedures in acute cardiac nursing, an implementation evaluation* [Oral presentation]. Central Coast Local Health District Nursing and Midwifery Research Advisory Group, Gosford, Australia.

1.3 Funding

1.3.1 Pre-Candidature: Video Development Scholarship

The video development team applied for funding for the ‘Transforming Clinical Education in the Digital Age: Creating Clinical Procedure Bytes’ project. The team was consequently awarded a Nursing and Midwifery Office Innovation Scholarship in 2018/2019, on 17 July 2018.This scholarship allowed the team to collaborate with coronary care unit nurses who were rostered on duty for specific project work. These nurses were then able to participate in planning, scriptwriting and filming. Final video development was completed in late 2019 (Appendix 8.1).

1.3.2 Central Coast Local Health District Research Grants

Following video completion, the thesis author on behalf of the study team applied for newly created research grants in the local health district to fund the implementation evaluation. In 2019, the project received a Caring for the Coast: Caring for Our Future grant, and the thesis author received an Emerging Researcher grant (Appendix 8.2).

1.4 Summary and Thesis Outline

This introductory chapter describes the importance of effective, evidence-based support resources for clinical practice, as well as highlights the evidence–practice gap. It also discusses how implementation science can be used to reduce the evidence–practice gap and improve the implementation of best healthcare practices. Finally, the chapter outlines this thesis's research aims.

The remaining chapters in this thesis are structured according to an implementation process that is guided by behaviour change methodologies. Chapter 2 reviews existing literature and includes a peer-reviewed manuscript. It then provides an updated literature review for the period following the manuscripts publication. This chapter also summarises the research literature pertaining to healthcare professionals' use of videos for procedure support, as well as the implications of this thesis's research question and aim.

Chapter 3 presents this thesis's research methodology, which includes the paradigm, research design and theoretical perspectives that were employed. It also describes the determinant and implementation frameworks that guided specific research components, such as the behaviour change wheel (Michie et al., 2011) and theoretical domains framework (Cane et al., 2012). Pragmatism is explored as the underlying philosophy of the study, and a brief overview of the research phases is provided, which includes the (a) pre-implementation phase, (b) assessment phase regarding the barriers to, facilitators of and development of an implementation plan, and (c) post-implementation phase. The detailed methods for each phase are also described in their respective chapters.

Chapter 4 presents the methods and results of a survey that investigated health professional staff at two hospital sites to identify the barriers to, and facilitators of implementing video procedures.

Chapter 5 describes the survey results and development of implementation strategies, while Chapter 6 outlines the results obtained from evaluating the post-implementation phase.

Chapter 7 outlines this thesis's key findings, study outputs, strengths, and limitations, after which it discusses final recommendations for practice, implications for future research and the research dissemination and impact of video procedures.

Finally, Chapter 8 expresses this thesis’s conclusions, strengths, and limitations, as well as posits recommendations for future research.

Chapter 2: Scoping Review

2.1 Introduction

This chapter first presents a scoping review of the research literature (Colgan et al., 2023). Following this, the chapter presents an updated review of subsequent literature published. The chapter concludes with the research literature key findings and implications.

2.2 Publication

The literature review was conducted to inform the development and evaluation of procedure videos to support nurses in acute cardiology care. At the time of commencing the study presented in this thesis the evidence for video use in healthcare largely focussed on undergraduate (Coyne et al., 2018; Duncan et al., 2013), quality appraisals of online videos (Abdulghani et al., 2019; Abedin et al., 2015; Abukaraky et al., 2018; Ache & Wallace, 2008; Addar et al., 2017; Adorisio et al., 2015; Ajumobi et al., 2016; Altan Şallı & Egil, 2020; Babamiri & Nassab, 2010; Backinger et al., 2011) or patient education (Al-Silwadi et al., 2015; Bae & Baxter, 2018; Baker et al., 2017). The following publication reports the available evidence of use of video for procedure support by registered health professionals. The scoping review methods and results synthesising this evidence are described. The manuscript outlines the emerging evidence for use of video for clinical skill and knowledge acquisition or re-acquisition.

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REVIEW

Use of Videos by Health Care Professionals for Procedure Support in Acute Cardiac Care: A Scoping Review

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Background Cardiology procedures are often life-saving and time-critical, but some are so infrequent that health care staff may have rarely encountered them in practice or need to refresh their skills rapidly. Videos demonstrating procedures have the potential to assist health care professionals and support safe patient care. This scoping review explores the research literature involving the use of video by health care professionals in hospitals.

Aim To identify what is known from research regarding the use of video to support clinical procedures in hospitals or health care facilities.

Method The Joanna Briggs Institute Scoping review methodology guided our systematic search of peer-reviewed evidence related to video use to support procedures in a hospital or health care facility. Data sources included the electronic databases: ProQuest, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Medline, Excerpta Medica dataBASE (EMBASE), Scopus, and PubMed.

Findings Seventeen (17) studies that met the inclusion criteria were included in the review, all published between 2012 and 2022. Since 2005, YouTube has become the dominant platform for publishing or sourcing videos related to clinical procedures. Studies to date can be summarised under five themes: 1) video content and purpose, 2) target audience, 3) video hosting site—internal websites versus YouTube, 4) curated versus original 'homegrown' video content, and 5) video development process.

Discussion/Conclusion Research on the development and utility of videos to support clinical procedures is emerging, with the ability to host videos on platforms such as YouTube becoming more accessible in recent years. All videos were designed to enhance health care professionals' existing knowledge and skills within their scope of practice. The available literature suggests that video can be a valuable clinical resource for both simple and skilled procedures. Video resources can help clinicians perform or assist with rare procedures, providing 'just in time' patient safety prompts and information.

Keywords Clinical procedure • Clinical support • Video

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Introduction

Rare procedures in cardiology are challenging; they are often time-critical, lifesaving and carried out with limited resources [1]. In a recent Australian study, one such procedure, pericardiocentesis, has been reported at an average of 30 per annum across four locations in a single tertiary referral hospital [2]. Rare procedures such as pericardiocentesis may be infrequent for individual medical staff, but at such low prevalence, nurses, due to their larger workforce, may go several years without assisting with this procedure [2].

Health care organisations support their staff during rare procedures with manuals containing standard operating procedures (SOPs) [3,4]. Organisations create these written documents to improve employee adherence to evidence-based practices, legislative requirements, and professional standards [5]. However, written procedures can become long documents, reducing their usefulness in urgent clinical scenarios [6].

When faced with an urgent procedure not recently encountered, health care professionals will access whatever information is available, which is increasingly online videos [7–13]. This is likely as video has already been recognised as effective in undergraduate health care instruction and clinical skills training in the classroom or simulation environment [14,15]. A study of 506 American physicians identified that they spent up to 3 hours per week watching online videos, nearly half of those demonstrations of medical procedures [16,17]. Further, a study from Scotland reported that using a 3-minute YouTube video to provide a clinical practice update to a heart failure team was feasible and effective [18]. Despite the ubiquity of YouTube videos, little is known about their adoption in hospitals within procedure manuals, or video use by health care professionals of instructional or clinical support videos in the workplace.

This scoping review aimed to identify and describe evidence regarding the use of video to support clinical procedures in a hospital or health care facility. The review was conducted to inform the development and evaluation of procedure videos to support nurses in an acute cardiology care environment. For this review, a clinical procedure video is defined as a digital recording of an image or set of images [19] that depict clinical procedures or processes to support patient care in a hospital or health care facility.

The specific review question was: "*What is known from peer-reviewed research publications about video use by health care professionals to support practice or procedures in a hospital or health care facility?*"

Method

A scoping review was conducted using the Joanna Briggs Institute Scoping review methodology [20] to identify and map the literature types encompassing the use of video by health care professionals in acute health care settings. A scoping review methodology allows a broad review and knowledge synthesis of the available literature [21]. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed and reported against the PRISMA Extension for Scoping Reviews (PRISMA-ScR) Checklist and Explanation (Supplementary File 1) [22].

Studies were included if they reported using videos in human studies for procedures, supported by health care professionals in the clinical setting. Studies were excluded if they involved animals, reported video use in undergraduate or classroom education, or reported video use for patient education. Studies reporting outcomes of video implementation with mixed professional groups were included in the review, and outcomes related to individual professional groups were identified where possible.

Search Strategy

A systematic search of the following databases was conducted in March 2022 to source original research publications: ProQuest, CINAHL, Medline, Excerpta Medica dataBASE (EMBASE), Scopus, and PubMed. Boolean operators were used with a combination of the keywords. Formal grey literature repositories were not searched as they were not expected to produce results with enough evaluation detail. The search terms used included combinations of the following terms: clinical procedure*, mental rehearsal, clinical support, video*, Vimeo, just in time, video recording, and YouTube. A hand search was also conducted on all reference lists and first/last author publication lists. Reference lists of retrieved articles and the corresponding author publications were hand searched for potentially relevant articles. No language or time limits were applied.

Screening and Eligibility

Title and abstract screening were completed in the web-based software platform Covidence (www.covidence.com). Articles from the search were collated, and duplicates removed. Primary screening of titles and abstracts was performed by the first author (JC) to exclude non-relevant manuscripts based on inclusion and exclusion criteria. Full-text articles were then retrieved and reviewed for relevance to the review aim. Nine (9) conference papers were retrieved and reviewed but excluded due to incomplete data for the data extraction matrix table. All four authors assessed, appraised, and agreed upon full-text papers. The data extracted by the first author (JC) was added to Pollack et al.'s [23] recommended matrix table to identify the evidence from each study (Table 1). A summary of the search is available in Figure 1.

Charting, Collating, and Summarising Studies

As Bradbury Jones et al. (2021) recommended, a patterning table was developed to assess the prominence of themes in the included literature (Supplementary File 2). The patterning chart was then used to evaluate each study, using the Patterns, Advances, Gaps Evidence for Practice and Research recommendations (PAGER) framework [24]. This framework is

Table 1. **(continued).**

Author	Context	Aim	Methodology & Sample	Outcomes & Key Findings
Kandler et al. (2016) [36]	Zurich, Switzerland.	To study if an exemplar video would result in greater adherence to an RSI standard protocol.	Pre and post study of 345 HCW staff (57% nurses, 43% medical practitioner) observations of the effect of an educational video on anaesthetic team RSI practice. 425 (202 pre and 223 post) anaesthesia procedures were observed.	480 views within the study period exceeded staff numbers by 39%. The odds for the failure of adherence to safety-critical tasks after the video was introduced were reduced, with the odds ratio of 0.34 (95% CI 0.27–0.42, p<0.001). Video reduced non-adherence rates in 3 categories - clinical performance, medication, and omission errors.
Wang et al. (2016) [32]	California, USA.	To examine the effect of viewing a JITT video on residents' skill at applying a volar splint.	Randomised control trial comparing the pre/post effect of a 3-minute video on a skill. 30 Paediatric residents completed a questionnaire and were taught and assessed the skill. Post: residents repeated the questionnaire, the intervention group watched the video, and both groups were reassessed.	Over 90% of participants had no experience with splinting. Despite this, over 60% obtained 100% on the initial assessment. During a reassessment, the JITT group had higher scores, which was statistically significant (2.86 vs 4.73; 95% CI: 1.00–3.00). The JITT video group took longer to complete the procedure but had statistically improved splint success.
Walsh et al. (2017) [28]	Washington, USA.	To describe the development of an EM 52 procedure video-based curricula.	Survey 36 EM residents who viewed videos and participated in the program 2 years after curriculum introduction.	75% RR and 85% found videos easily accessible and helpful. 80% found the role of the instructor helpful in skill mastery. Exposure to the video curricula led to increased competence and confidence.
Yuminaga et al. (2017) [38]	New South Wales, Australia.	To provide an evaluation of the Seldinger technique for IDC insertion by NUT doctors and video media.	A prospective, multicentre observational study involving 115 patients and 57 doctors. This technique was either via bedside teaching by the urology registrar or video media.	93% of cases had successful IDC placement by a NUT doctor. 38% of the study cases were out of working hours, and using the video led to an 88% reduction in hospital transfers. No complications of IDC insertion by NUT doctors were reported following the use of video.

Table 1. (continued).

Author	Context	Aim	Methodology & Sample	Outcomes & Key Findings
Phillips et al. (2017) [27]	Massachusetts. USA.	To describe a follow-up study using a previously developed video from Phillips et al. (2016) involving four institutions.	The video was emailed to 45 radiology residents PGY 2,3,4,5, and 6 in four institutions in this follow-up study. The residents were then asked to complete an anonymous breast imaging knowledge survey.	Over 80% of respondents felt that the video helped their understanding of procedure planning or technique. 60% thought it aided patient safety, and 69% felt increased confidence. Resident feedback has led to suggestions for other videos.
Poon et al. (2017) [30]	Ohio, USA.	This pilot study aimed to describe the otology/neurotology videos and obtain residents' feedback on the videos.	15 Residents (PGY 2–5) were recruited to view at least three surgical videos and complete a questionnaire about the video's usefulness, effect on self-efficacy, and feedback suggestions.	88% of residents watched an average of 3.8 videos. The videos were rated highly useful compared with existing resources such as textbooks. (8.0 ± 0.3 vs 5.0/10; $p=0.002$). The rating of the videos on self-efficacy scores averaged $7.2 \pm 0.3/10$ across all groups. Residents fed back suggestions for refining the video, such as adding extra clinical information and using subtitles.
Jyot, A et al. (2018) [29]	Minnesota. The USA.	To describe how learners used an educational website as an adjunct to the surgical curriculum.	A retrospective review of surgical website 6 months post introduction used by 257 HCWs. Website access data was analysed (Piwik, Matthieu Aubry, New Zealand) visits, page views, actions, bounce rate, and duration of usage.	257 users accessed the website in 18 months, 33% general surgical residents and 67% other staff. The most popular time of the day was 8 to 9 PM with 6,358 views (13%), and Thursday was the most popular day with 17,907 views (37%).
Wolfensberger et al. (2019) [37]	Zurich, Switzerland.	To evaluate the educational impact and user satisfaction of an edutainment video.	Randomised control trial of 363 HCWs comparing three arms (1:1:1) viewing an edutainment video, reading an SOP, or a no-intervention group on knowledge of infection control practices. Participants were assessed at three time points: randomisation, one month and three months post.	The 3 groups consisted of approx. 65% nurses, 25% physicians and 10% other health care professionals. The video group had higher knowledge scores across all 3-time points. TP 1 and TP3, the video group had higher scores than SOP and the no-intervention group (TP1-85.4% vs 81.3% vs 79.6% $p<0.001$ and 0.001; TP3 86.3% vs 83% vs 82.7% $p=0.036$ and 0.048). The video group was most likely to recommend that other HCWs watch the video and had fewer dropouts.

Table 1 Data extraction table [23].

Author	Context	Aim	Methodology & Sample	Outcomes & Key Findings
Davis et al. (2012) [33]	Florida, USA.	To evaluate chest tube insertion performance after viewing a 3-minute mobile learning module.	Observational intervention vs control study. 128 participants (44 residents, 42 medical students, 42 Army personnel). Pre-questionnaire. The intervention group viewed a learning module on Apple iPod Touch then assessed placing a chest tube on a task simulator against a skill checklist.	Across all groups, the intervention participants scored better on the skills checklist vs control (11.09 ± 3.09 versus 7.17 ± 3.56, $p<0.001$, Cohen's D=1.16). Participants who had placed fewer than 10 chest tubes (9.7 ± 3 vs 6.6 ± 3.9, $p<0.001$) performed significantly better with the video.
Rowse et al. (2014) [25]	Minnesota, USA.	To assess the effect of a video on residents' FNA skills.	Observational study of 32 residents-PGY-2,3,4. Evaluated performing the FNA procedure 1 week after viewing a video on a skills checklist to a maximum score of 24. The results were compared against residents who did not have access to the video.	21 residents had access to the video. Scores were higher (mean=15.8, range: 10–24 [SD not reported]) than residents who had no access to the video (range: 4–18, mean=11.4 [SD not reported]). Half the residents who had access to the video did not view it and scored lower.
Liu et al. (2014) [31]	California, USA.	To examine the effect of viewing a 70-second video on how to apply a topical anaesthetic cream to a mannequin for a procedure.	Pre/post-test study. 30 RNs who completed a questionnaire and performed a skill pre and post-watching a 70-second video on YouTube. Inaccurate skill application was considered anything less than 100% measured by a template.	Significant change in comfort post-video (27% vs 23%, $p<0.01$) and coverage area (25% vs 82% $p<0.01$). RNs who were inaccurate prior were more likely to be accurate after watching the video (18% vs71% $p<0.01$). 7% of nurses watched the video twice. All RNs felt that having more JITT videos for nursing procedures and tasks would be helpful.
Phillips et al. (2016) [26]	Massachusetts, USA.	To study the effect of a stereotactic core breast biopsy procedure video to standardise and improve residency teaching.	Observational pre/post-test study of 30 residents PGY-2,3,4,5. Pre: knowledge test and an instructional video. The "closed book" test had 42 video and non-video content (20 control) questions. Post: After 1.5 weeks and without prior notice, residents sat the same test again.	Video increased the score of the video-content questions compared with 0% on the control questions (30.7% vs 0% $p<0.001$). 90% of residents believed that the video was helpful and just right in the level of difficulty and length.

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Table 1. (continued).

Author	Context	Aim	Methodology & Sample	Outcomes & Key Findings
Posner et al. (2020) [40]	Ottawa, Canada.	To create video resources for staff in the COVID-19 pandemic.	A descriptive study on videos for patient care processes in pandemic PPE. This study reported total YouTube views.	In 72 days, over 12,000 views of 19 clinical videos and nearly 10,000 views of 4 patient-centred videos.
Beam et al. (2020) [35]	Omaha, USA.	This study compared 2 N95 respirator training methods.	Randomised control trial with 62 HCWs on N95 donning and doffing pre and 3 months post: 1. viewing a video on N95 donning and doffing alone versus 2. viewing a video on N95 donning and doffing plus viewing and rating a video of own performance donning and doffing N95 (reflective practice).	48 HCW in the final analysis. Both groups' scores deteriorated over time, but the RP group was still significantly higher at the follow-up than they were at the pre-test [paired t (23)=6.12, p<0.001].
Bonz et al. (2021) [13]	Connecticut, USA	To compare the efficacy of a locally developed video of emergent SBT insertion compared to usual preparation.	Randomised control trial of 32 EM residents comparing JITT procedure by any media (control group) or the JITT locally made a video (intervention group) before SBT insertion on a task trainer.	Local video was associated with reaching a passing score (12.5% vs 62.5%: OR=11.7, 95% CI=9.9–13.5). The local video group was favoured when adjusting for PGY, with a significant difference in final checklist scores between the two groups (mean difference=12.8, 95% confidence interval [CI]=7.6–18.0).
Patel et al. (2021) [39]	Kent, UK.	To assess the effectiveness of using a lecture and a clinical skills video on how to manage nasal fractures.	Pre -the post-test study of 12 ENT trainees completed a questionnaire and were evaluated on confidence at three intervals: 1. baseline 2. post a lecture 3. post-viewing an instructional video	After both the lecture and video intervention, there was a statistically significant improvement in performing nasal fracture manipulation independently (1.25±1.96 vs 6.83±1.33 vs 8.58±0.79 p<0.01) Baseline vs Video Effect Size 1.41.
Herstein et al. (2022) [34]	Nebraska, USA.	This study compared 2 N95 respirator training methods.	Randomised control trial of 62 HCW on N95 donning and doffing pre and post: 1. viewing a video on N95 donning and doffing alone versus 2. viewing a video on N95 donning and doffing viewing plus viewing and rating a video of own performance donning and doffing N95.	Scores were significantly higher on the post-test for the reflective practice intervention (3.4 to 4.9 vs 3.9 to 8.2 p<0.05). Years of experience and frequency of N95 respirator use did not predict pre or post-scores.

Abbreviations: CI, confidence interval; EM, emergency medicine; ENT, ear nose and throat; FNA, fine-needle aspiration; HCW, health care worker; IDC, indwelling catheter; JIT, just in time; JITT, just in time training; NUT, non-urology trained; PGY, postgraduate year; PPE, personal protective equipment; RCT, randomised controlled trial; RR, response rate; RSI, rapid sequence induction; TP, time point; SBT, Sengstaken-Blakemore tube; SOP, standard operating procedure.

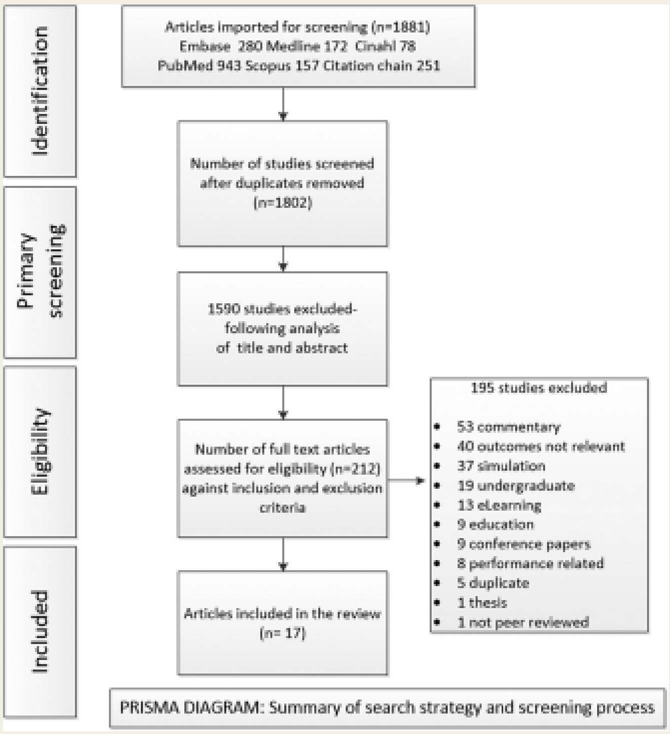

Figure 1 PRISMA diagram depicting the systematic method followed to identify and screen articles.

recommended to report scoping review findings, identify research gaps and plan for future projects (Table 2).

Findings

Scoping Review

The results of the systematic search and screening are outlined in the PRISMA diagram (Figure 1). With 17 publications meeting the inclusion criteria for this review (Table 1), of which 70% were from the United States of America (n=12) [13,25–35], 12% were from Switzerland (n=2), [36,37], and single studies from Australia [38], United Kingdom [39] and Canada [40].

Sixteen (16) studies were initiated by medical practitioner-led teams [13,25–34,36–40], with one study from a nurse-led team [35]. Ten (10) studies evaluated videos exclusively targeting medical practitioners [13,25–27,29,30,32,33,38,39], seven focussed broadly on health care professional teams [28,33–37,40] and one study focussed exclusively on nurses as participants [31]. Of the studies reporting on health care professionals, they included infection prevention and control [34,35,37,40], anaesthetic procedures [36] emergency medicine [28] and chest drain insertion [33]. Twelve (12) studies provided their videos as links or supplementary materials, and these were viewed by the first author [25–30,34–38,40].

All studies were published between 2012 and 2022, with 60% in the latter 5 years. Twelve (12) manuscripts reported descriptive studies on video development, user feedback and implementation [25–31,33,36,38–40]. Five (5) reported randomised controlled trials (RCTs) measuring video's effectiveness on clinical skills [13,32,34,35] and knowledge [37].

Key Themes and Patterns

Analysis of the papers identified five themes: 1) video content and purpose, 2) target audience, 3) hosting site—internal websites versus YouTube, 4) curated versus original 'home-grown' video content, and 5) video development process (Supplementary File 2). The practice and research implications of the synthesis of these studies are presented in Table 2.

Video Content and Purpose

Rare procedures

Investigators began video creation to address concerns about reduced experience or skill development opportunities. In 10

Table 2 **PAGER Framework: Practice and research implications [24].**

	Pattern	Advances	Gaps	Evidence for Practice	Research Recommendations
1	Video content and purpose	Emerging evidence of the acceptability and effectiveness of video as a clinical skill instructional tool. Video use can assist staff in rare procedures and give them a clinical advantage. Video is helpful for socially distanced instruction.	Need for a framework to determine video's place in the workplace learning structure. Lack of research on the outcomes of video use in patient care.	Support to develop clinical skills and rare procedure video libraries. Video procedures are an alternative resource when face-to-face instruction is not possible. Video can raise the capabilities of both experienced staff and those in training.	Developing a framework or taxonomy for instructional video development and use. Developing research to examine health professionals' critical thinking and patient safety using video procedures.
2	Target audience	Video use spreads beyond its intended target audience - suggesting it is acceptable to health care staff.	Limited research from nursing and allied health professionals.	Developing collaboration – between hospitals and health disciplines to reduce costs and increase access to procedure videos.	Expanding research on the longer-term results of video use. Research to identify opportunities for video to support nursing, allied health professions and other health care professionals.
3	Curated vs original 'homegrown' video content	Health care professional-led video development is feasible.	Limited evidence on key features of clinical procedure videos.	Institutions can use existing research processes to create robust development and review methods for shared video resources.	Setting standards for health professionals' video.
4	Video development	76% of investigators created their videos.	Limited reporting about steps in developing videos and patient consent processes. Need more evidence on factors that should influence video length.	Improving staff capabilities in video development. Collaboration to increase access to content experts. Organisational endorsement processes for video development should be developed based on alignment with best practices and peer review.	Developing research into point-of-care health care videos, e.g., determining the optimal features.
5	Hosting site - internal websites vs YouTube	Health care organisations are supporting video development and use. Health care organisations support open internet access to approved websites.	Hosting health care videos on YouTube may create privacy concerns, which health care staff will need guidance to navigate.	The use of YouTube increases the reach of video compared to internal websites. YouTube allows sharing of health care videos across organisations. Organisational endorsement processes for video hosting need to be developed based on alignment with best practices and peer review.	Research to investigate barriers and facilitators to video use. Development of privacy and consent guidance surrounding clinical procedure videos hosted on public platforms.

studies (58%), investigators created or collated videos to support health care professionals with procedures considered 'rare' or infrequent [13,25–28,32,33,35,38,40]. The 'rareness' of exposure was due to assorted reasons such as rapid practice changes [34,35,40], specialty training [28,38], frequency of rotations [26,27], scarcity [13,33], and working hours restrictions [25]. Video offered investigators the chance to demonstrate rare procedures safely and was considered an adjunct to clinical experience [26].

Agreed model of local practice

To a certain extent, in all studies, videos were intended to act as a visual representation of an agreed local model of practice. Some investigators detailed the review methods to ensure their self-developed videos were not ambiguous, e.g. a Delphi process [36], expert panel review [13] or used video filming as a real-time test for SOPs, modifying as needed [40]. Studies used video to create a 'shared mental model' of a procedure for their department [36] or just in time learning before undertaking both simple techniques such as the correct application of local anaesthetic cream [31] or skilled procedures, for example, insertion of chest drains or a Sengstaken-Blakemore tube (SBT) [32,33].

Video was used in a study conducted in 2020 to address the new challenge of training staff in locally agreed patient management processes in the coronavirus disease 2019 (COVID-19) pandemic [40]. The investigators used video to support the rapid upskilling of inexperienced staff, as social distancing requirements led to constraints on teaching class sizes and locations. The authors stated that one of their aims was to share learnings with health care colleagues locally, and globally for various COVID-19 patient scenarios, and they published their videos on YouTube [40].

Target Audience and Video Content

Ten (10) studies created videos exclusively for medical practitioners [13,25–27,29,30,32,33,38,39], though the videos were often viewed by other health care professionals [29] or the public if posted to YouTube [37,38,40]. Eight (8) studies were aimed to support medical residents in United States hospital-based vocational training programs [13,25–28,30,32,33], such as emergency medicine [13,28,31–33], surgery [25,29,30], and radiology [26,27]. The videos developed for residents included fine needle aspiration (FNA) procedures [25], stereotactic breast biopsy procedures [26,27], emergency medicine procedures [13,28,32], otolaryngology [30], and general surgery procedures [29]. Additional reasons researchers gave for using video included offering residents asynchronous learning opportunities before and after clinical experiences [29], standardised education [26,27] and emerging evidence supporting the educational benefits of video [13,30]. A study from the United Kingdom in 2021 designed for ear, nose and throat postgraduate trainees consisted of a video on managing nasal fractures as a virtual clinical teaching method during the COVID-19 pandemic [39].

Rare procedures crossed over to the residency programs' videos, with investigators using video to support residents preparing for potential time-critical 'eye, limb, and life-saving' procedures required for their training but rare in practice [13,28,33]. One study from Australia evaluated a video targeting experienced medical practitioners undertaking a rarely performed skilled procedure—difficult IDC insertion [38] (Available:https://www.youtube.com/channel/UCOXawC480ITy99LI81nROyw/videos).

The studies of other health care professionals used video as a means to support best practices. Seven (7) research studies reported using videos to help health care team members other than solely medical practitioners [28,34–37,40]. A single study was aimed at nurses on the application of local anaesthetic cream [31]. The video topics ranged from team-based procedures such as emergencies [28], anaesthetic techniques [36] to infection control practices [34,35,37,40]. Two (2) studies arose from the same institution [36,37] but used video for two different purposes. In a study examining the effect of a video on the performance of an anaesthetic procedure, over half of the study participants were nurse anaesthetists—certified or students [36].

The studies on infection control included participants other than medical staff [34,35,37,40]. A study from Switzerland reports that three-quarters of study participants were nurses, nursing assistants, midwives, or allied health staff—registered as other professions, e.g., radiographers and therapists [37]. A study from the USA, reported in two papers, investigated two different video uses for health care professionals (nursing, environmental services, respiratory therapy, radiology, and patient-care technicians) to aid the correct application of N95 respirator masks [34,35].

Curated Versus Original 'Homegrown' Video Content

Investigators commonly created their videos; in 12 studies, the investigators reported making their clinical skills videos [13,25–27,29–33,36–38,40]. In contrast, three studies [28,34,35] searched online for publicly available clinical skill videos deemed high quality by investigator review processes. An emergency medicine study required 52 videos, the curated list was published on the department's intranet site, and for some procedures, one or two alternate videos uniform resource locator (URLs) were published [28]. Final selections came from academic institutions in the USA, YouTube, *New England Journal of Medicine*, Centre for Disease Control, or other online resources.

Original videos were either procedure re-enactments or live procedure recordings. Videos were filmed according to steps documented in SOPs [13,26,27,33,36,38,40], a skill assessment tool [25], a performance checklist [13] or prospectively chosen live surgical operations [29,30]. One (1) study reported creating surgical videos with overlaid imaging to aid understanding [30]. Four (4) studies described their video development processes to ensure practices depicted were standardised and unambiguous [13,30,33,36].

Two (2) study teams collaborated with professional media companies. The oldest study, conducted in 2012, related to chest tube insertion [33]. The authors created the content, including a script and images, which were converted into multimedia presentations with a professional voiceover and amination [33]. The module was designed to be viewed on an iPod Touch, a portable media player, and intended to be considered just before a procedure. The other study, conducted in 2016, related to infectious disease control. They created an 'edutainment' video, defined as a mix of education and entertainment [37]. Using humour as a central emotional feature to enhance learning, the video was a 'mash-up' video of flight safety and infection control instructions featuring hospital staff as cabin crew [37] (Available: https://youtu.be/a8J3goPQSyw).

Video Development Process

Details of video development were provided in four studies. However, even the professionally developed video required investigator input for screenplay [33,37] and acting [37]. Poon et al. [30] estimated that video creation took between 10–12 hours, with most of the time spent on editing, for between 5 to 10 minutes of content. Posner et al. [40] used a 360-degree 4K digital camera, and Poon et al. [30] used a Stryker 1,488 high-definition camera head/box, an endoscopic camera system that can produce still and video images in the surgical field during procedures [41], Wang et al. [32] used FLIP MINO HD camcorder and FLIPVIDEO software (Pure Digital, San Francisco, CA, USA), and Phillips et al. [26] used an iPad application (Explain Everything, Ridgefield, CT, USA and Wroclaw, Poland).

Whether created or curated, there was considerable variation in the overall length of videos tested, ranging from 42 seconds [28] to 21 minutes [26,27]. When grouped in topic areas, rare procedure videos ranged from 60 seconds to 21 minutes [13,25–28,31,33,38], and live or re-enacted procedures (an agreed model of local practice) ranged from 4 to 18 minutes [29,30,32,36,39] and infection control practices ranged from 2 to 16 minutes [34,35,37,40]. One (1) study reported positive feedback from participants on using a timestamp feature, allowing viewers to jump to the desired segment [30].

Hosting Site—Internal Websites Versus YouTube

Studies that reported hosting sites for videos (during the study period) included either internal restricted websites [26,29,36,37], a local network drive [30] or YouTube [28,31,32,38,40]. Communication methods to disseminate the videos were not always reported in studies. Studies used email with varied success rates, for one study conducted in 2014, a senior faculty investigator emailed the video YouTube link to residents with 50% viewing success [25]. Two (2) studies by the same team [26,27] got more than 75% of residents participating in their studies viewing their video via a download link.

The videos from Posner et al. [40] were initially hosted on a Virtual Reality platform, (WondaVR, Paris, France) but were later posted on the author's YouTube channel (Available at: https://www.youtube.com/user/gdposner/featured). The authors state this was to promote the use and access of the videos [40]. The Mayo Clinic investigators reported that videos were the most popular content among their surgical website content [29]. Website analytics demonstrate that only a third of the users were residents despite the website being specifically created for them. The remaining users were staff consultants, medical students, researchers, and allied-heath staff [29].

Outcomes From Studies to Date

All videos were intended to enhance clinical skills and knowledge, but not all studies reported these outcomes. Three (3) studies examined the effect of video on knowledge assessed on investigator-developed questionnaires [26,27], including one RCT [37]. In the RCT, the group exposed to a video on infection control reported higher knowledge scores at 1- and 3-month post-intervention [37]. In the other two studies, video exposure was associated with higher knowledge scores, and this was only in content related to video [26,27].

Of the studies assessing skill development, this was measured against a skills checklist or assessment [13,31–36]. Investigator developed tools were used in two single studies reporting increased self-reported confidence [39] and self-assessed capability following exposure to the skill video [30]. Eight (8) studies (47%) measured individual skill performance and reported improvements following exposure to their video intervention by medical practitioners [13,25,32,33,42], nurses [31] and mixed groups of health care professionals [34,35]. Three (3) of these studies were RCTs [13,32], with one study reported in two papers [34,35]. Kandler [36] reported statistically significant improvements in skill performance of a team procedure against a checklist. Within skill performance, two studies address videos to support skilled procedures—insertion of a Sengstaken-Blakemore tube and application of a volar splint. Both demonstrate statistically significant improvement in skills following the video intervention [13,32].

Beam et al. [35] and later Herstein [34] introduced a novel use of video comparing two methods of use—watching an exemplar skill video only or, in addition, watching and critiquing a recording of the participant's own skill performance (reflective practice). A checklist was then used to self-assess skill performance which was higher in the reflective practice group than video alone [34,35].

Three (3) studies assessed the effect of video on skill performance over time. All studies demonstrated higher retention of the skill—N95 application at 3 months, [35] and anaesthetist procedures at 5.9 months [36]. The RCT using video for splinting reported improved skill performance up to 12 months post-intervention [32].

Discussion

In this scoping review, 17 research studies reported on the use of videos to support clinical procedures in a hospital or health care facility. Results suggest this is an evolving area of practice and research, as all studies are from the last decade, and nearly a third are from the previous 2 years. Five (5) themes emerged from our review: 1) video content and purpose, 2) target audience, 3) video hosting site—internal websites versus YouTube, 4) curated versus original 'home-grown' video content, and 5) video development process.

A central theme from this scoping review is that it appears acceptable and feasible for health organisations or their staff to create or curate video playlists. There are practical and financial implications of video development, such as seen in the study of emergency care procedures requiring up to 52 video procedures that make curation a sensible option [28]. Video production involves content experts, who may not be available at every hospital for every sub-specialty [28].

Since 2005, YouTube has become the dominant publishing and viewing platform to publish or source videos, used by more recent studies [38,40]. When considering videos featured in this review posted on YouTube, the viewing numbers suggest the reach was well beyond the intended audience. Video viewing figures need to be interpreted with caution—as the number of views may denote popularity, not necessarily quality [43]. Several authors cite concerns about the quality of publicly available videos with specific examples in clinical skills, injection techniques, and cardiopulmonary resuscitation [8,43–50].

Using video to support health care professionals may enhance critical aspects of clinical skill performance—knowledge, skill, capability, and confidence. Our findings indicate that videos were designed and successfully used to increase procedural skill levels, and not necessarily as a cheat-sheet or step-by-step guide. When video was used in a study from Australia to address difficult indwelling urinary catheter (IDC) insertion, estimated to occur up to three times a week [51], this improved skill performance and reduced hospital transfers [38]. While video increased skill levels among staff with limited experience [13,25–27,31–33], it also increased existing skills [13,33–35,37,38,40] and enhanced procedure standards [36].

In this review, the research can best be understood using two concepts: *video for clinical skill acquisition or reacquisition* [13,25,28–36,38] or *video for clinical education/instruction or re-education/instruction* [26,27,37,39,40]. It can be challenging to separate the two concepts, and some studies reviewed were a mixture of both [26,27,29,30,33,36,38,39]. All videos were included as they were developed to support health care professionals in the hospital or health care setting. It is unclear if the study videos were designed to be their first learning and what theory or skill acquisition participants had undertaken before the video.

Developers must consider the video focus and target audience to guide development and decide if it should be purely procedural (how) or be integrated with extra educational information (how plus why) [52]. Surgical video guidelines may offer some guidance for video development [53]. Our review did not find evidence of the optimum video length, but this likely depends on the video's content and purpose.

The findings from the review suggest that video may be a valuable addition to an organisation's clinician support resources. It is worth noting the relative recency of studies, indicating there could be rapid growth in this field of practice. This is an area for further research, examining the best types of videos—instructional step-by-step videos or longer videos with integrated explanations tailored to the video's purpose. In addition, researchers need to explore whether video users' knowledge and skill increase translate to sustained improvements in clinician performance.

The review was conducted to inform the development and evaluation of procedure videos to support nurses in acute cardiology care. Findings indicate no published literature on video use in the cardiology context. Therefore, this represents an opportunity for the cardiology community to create clinical skill resources.

Limitations

While our review focusses on the research literature, it is possible that videos are being used in clinical practice and not reported. This review has attempted to write about video use in a hospital or health care facility, excluding educational or classroom use of video. It has been challenging to separate those concepts in some studies, and studies were included if classroom use of video supported postgraduate health care staff in their workplaces. The strength of our review is that we used clearly defined inclusion and exclusion criteria and methodology, including the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews [22], to ensure consistency in reviewer agreement, data extraction, and synthesis.

Conclusion

Although there is limited evidence regarding the impact of video on improving skill performance and knowledge, the initial findings from studies to date are encouraging. Video resources to support health care staff appear accepted and valued. Video can support clinicians in performing procedures, potentially benefiting both staff and patients. Research is required on the acceptability, utility, and effect of video from both a patient and staff perspective.

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Ethical Statement

Ethics approval was not required for this review of the literature.

Conflict of Interest

None declared.

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Appendices

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.hlc.2022.10.004

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2.3 Update to the Scoping Review: March 2022 – August 2023

The published scoping review of the research literature focused on health professionals' use of videos in hospitals or healthcare facilities (Colgan et al., 2023). As previously noted, the review was conducted to inform the development and evaluation of procedure videos that support nurses in acute cardiology care. This review concluded that the development and use of videos to support clinical procedures was a growing field of research, particularly given the increasing ability to view and host videos on platforms such as YouTube™. All videos reported in the studies chosen for review were designed to enhance healthcare professionals' knowledge and skills within their scope of practice. However, the published literature review identified only one study by a nurse lead author (Beam et al., 2020) and no published literature focused on video use in the cardiology context.

To update this published scoping review, a systematic search of the following databases was conducted in August 2023 to source original research publications: ProQuest, CINAHL, Medline, Excerpta Medica dataBASE (EMBASE), Scopus and PubMed. Boolean operators were used with a combination of the keywords. Formal grey literature repositories were not searched because they were not expected to produce results that contained peer reviewed findings or be presented with sufficient evaluation detail.

The search terms that were used included combinations of the following terms: clinical procedure*, mental rehearsal, clinical support, video*, Vimeo, just in time, video recording, and YouTube™. A manual search was also performed on all reference lists and first and last author publication lists. The reference lists of retrieved articles and the corresponding author publications were manually searched for potentially relevant articles. No language or time limits were applied to this search.

The specific review question was: "*What is known from peer-reviewed research publications about video use by health care professionals to support practice or procedures in a hospital or healthcare facility*?"

As reported in the original scoping review of this thesis, research that focuses on the development and use of videos to support clinical procedures continues to emerge.

2.4 Screening and Eligibility

Title and abstract screening were completed on the web-based software platform Covidence (www.covidence.com). Articles from the search were collated, and any duplicates were removed. In alignment with inclusion and exclusion criteria, a primary screening of the titles and abstracts was performed to exclude any non-relevant manuscripts. Full-text articles were then retrieved and reviewed for relevance to the review's aim. Eight conference papers were retrieved and reviewed but were then excluded because of incomplete data presented. The thesis author assessed and appraised the eight full-text papers that were included in this updated review, which the thesis supervisors confirmed. The data extracted were added to the matrix table to identify the evidence from each study (see Table 2.1). A summary of the search is depicted in Figure 2.1.

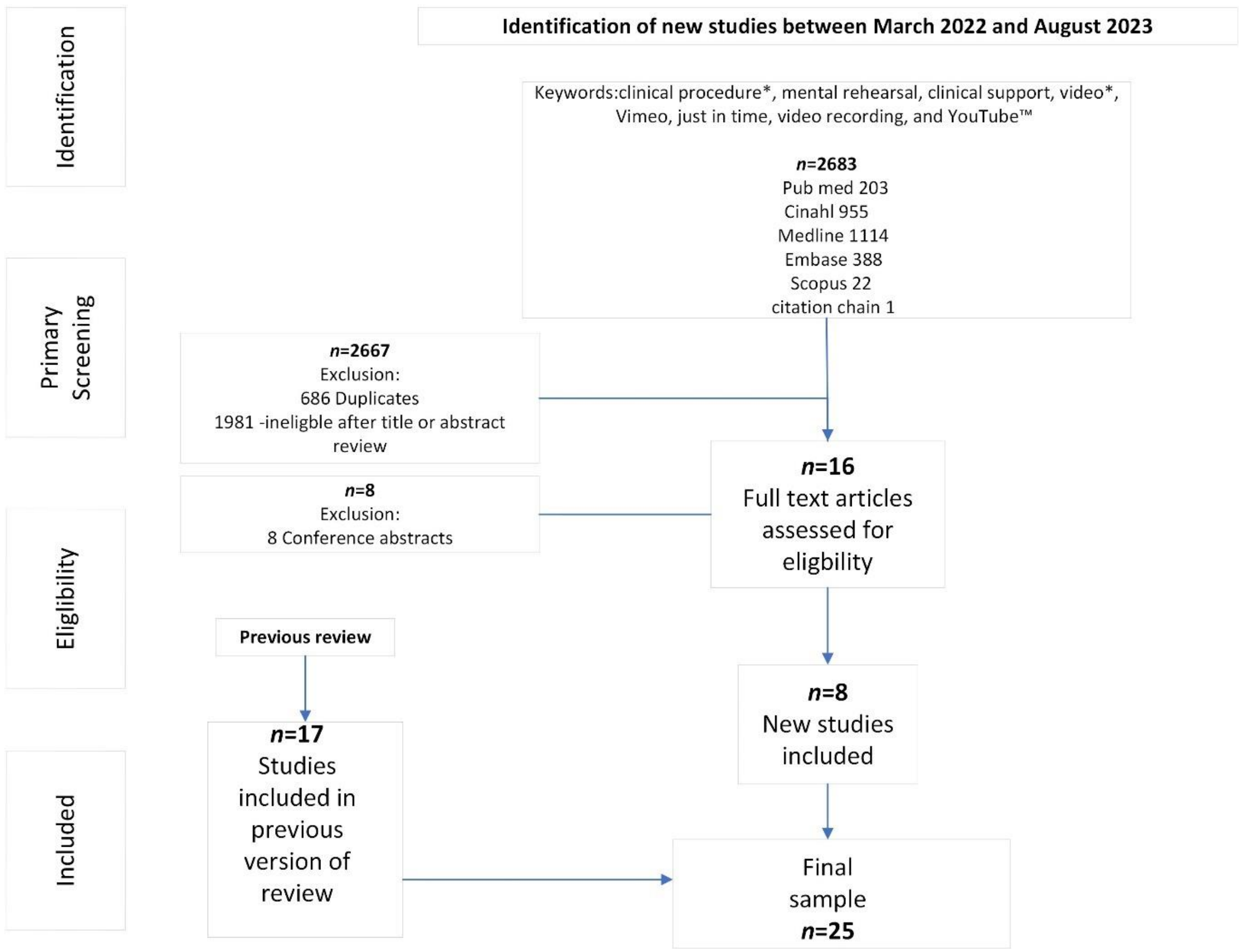


Figure 2.1 Summary of updated literature search and selection between March 2022 and August 2023

Table 2.1 Summary of findings from updated literature search (March 2022 – August 2023)

Author	Context	Aim	Methodology and Sample	Outcomes and Key Findings
Misra et al. (2021)	Department of Otolaryngology Head and Neck Surgery Omaha, US	To develop and evaluate a JIT video training for obtaining a nasopharyngeal swab specimen for COVID-19 analysis	A pre-post study of health professionals (49% nurses, 15% lab technicians, 7% MO, 6% paramedic, 17% other) who attended an online skill session via Facebook Live.	• A total of 453 people attended the online session, and the video reached 4,505 views as of 9 September 2020. • Of the survey respondents, 83.3% (*n* = 250) reported that the educational video and hands-on simulation (97.0%; *n* = 291) were 'extremely helpful'. 86.2% agreed/strongly agreed that this training increased their overall comfort with the skill, and 96.5% of respondents agreed/strongly agreed that the training delivery method (Facebook Live) was appropriate.
Choi et al. (2022)	Department of Plastic and Reconstructive Surgery, Seoul, Republic of Korea	To compare video or text preparation methods about the quality of microsurgery skills	• Randomised controlled trial before performing a skill assessment on a skill trainer, residents (*n* = 22, PGY 1–4) were randomly assigned to a preparation method: 1. Textbook or 2. FSG or 3. DVG. • 30 minutes later, residents were recorded performing the skill. Investigators (blinded) scored the performance of recorded videos against the OSATS tool. • The modified DISCERN checklist and GQS were used to assess the video quality in the free search group.	• Video (FSG and DVG) performed better than the TG. Although procedure time was significantly longer in the DVG ($p = 0.006$), the DVG performance was more effective than TG performance in all assessments (OSATS: $p = 0.012$; operative errors: $p = 0.002$; leakage: $p = 0.010$). • FSG demonstrated more operative errors ($p = 0.004$) and leakage ($p = 0.007$) compared to DVG, but it had a higher OSATS ($p = 0.008$) and fewer operative errors ($p =.002$) than TG. The post-intervention confidence rates were significantly higher in FSG and DVG compared with TG ($p = 0.002$ and $p = 0.001$, respectively). • Two reviewers assessed FSG videos as slightly lower in modified DISCERN and GQS compared with DVG videos (ICC = 0.928; 95% CI = 0.682–0.984 for modified DISCERN; ICC = 0.933; 95% CI = 0.562–0.986 for GQS).
Fennessy et al. (2022)	Department of Emergency Medicine, Tennessee, US	To create locally tailored JIT training guides, including locally developed or curated videos on 54 EM procedures	Three-stage project, involving: 1. a needs assessment 12-question survey focused on JIT resource use 2. the development of the procedure guides 3. 5 months post-implementation, a 14-question survey on knowledge and confidence with the training guides.	• Regarding a needs assessment, most survey respondents reported using online videos (86.8%, 46/53) and educational websites (79.2%, 42/53). Residents used videos more than faculty as JIT resources (100% [20/20] vs 79% [26/33] $p < 0.05$). The absence of a video library was more of a preparation barrier for residents than for faculty (85% [17/20] vs 48% [16/33], $p < 0.01$). In the previous 12 months, 58.5% (31/53) did not perform a core EM procedure because of a lack of comfort. • Regarding post-implementation, 58.3% (14/24) respondents indicated that they sometimes needed a refresher before performing a procedure. Most respondents used the guides to improve their general procedural knowledge (83.3%, 20/24) and to teach ED procedures (75%, 18/24). Further, 95.8%, (23/24) found the procedure guides very helpful.

Author	Context	Aim	Methodology and Sample	Outcomes and Key Findings
Goldman et al. (2022)	Departments of Paediatrics and Emergency Medicine Philadelphia, US	To describe how learners used a locally developed procedure cart for 5 ACGME core paediatric procedures	A descriptive study on self-reported cart and curated videos use with a post-use survey about perceptions of the cart's educational influence. Electronic medical records were analysed to log the number of procedures pre-post intervention.	• In the trial period, 21 cart encounters were logged. The cart was used by more than half of residents (55% [13/24]) for 32 learning activities (8 videos watched and 24 procedures practiced). All users agreed/strongly agreed that the cart encouraged them to practice and improved their confidence in independent practice. Laceration repairs (54% [13/24]) and lumbar punctures (33% [8/24]) were the most common procedures practiced.
Han et al. (2022)	Paediatric intensive care units. California, US	To communicate COVID-19 intubation and CPR interdisciplinary simulation and video guidelines	A pre-post descriptive study on simulation and videos, which included: 1. intubation 2. pulseless electrical activity.	• Simulation participants (*n* = 168) felt less anxious (6 vs 5 [IQR 3-6] *p* < 0.001) and more prepared to safely perform intubation (4 vs 6 [IQR 3-6] *p* < 0.001) and CPR (4 vs 6 [IQR 3-6] *p* < 0.001). Participants were also more confident about donning and doffing PPE (4 vs 6 [IQR 3-6] *p* < 0.001). • The video was viewed 176 times within the first month of being published and 356 times by June 2021. At the 8 months post-video viewing survey, 80% of video viewers reported continued confidence in safe intubation. Further, 46% of respondents reported viewing the video before their shift, and 26% shared the videos with colleagues.
Kuhlman et al. (2022)	Haematology–Oncology teaching service, South Carolina, US	To describe how learners perceived a JITT screencast series versus a standard educational curriculum focusing on learner knowledge in haematology–oncology	Randomised controlled trial that compares curriculum by two methods, with participant feedback via end-of-rotation survey. The methods included: 1. locally tailored screencasts with weekly notifications that contained instructions about accessing the screencasts website (intervention) 2. standard curriculum lectures and small-group teaching sessions (1–2 h/day, Mon–Fri control).	• Of the participants, 64% vs 21% were either 'comfortable' or 'very comfortable' overall with their clinical management (estimated difference of 43% [95% CI: 21–66%]). • No difference in medical knowledge was observed between groups (78% vs 81%, *p*= 0.77), including during pandemic restrictions (76% vs 79%, *p* 0.56). • The preferred viewing speed for the screencasts was 1.5×.
Gizicki et al. (2023)	Four level 3/4 neonatal intensive care units, Montreal, Canada	To assess whether simulation-based just-in-time training (JITT, 30s video and simulation) is superior to video training only (5-minute video) in neonatal ETI skills	• Non-blinded randomised controlled trial. Simulation-based JITT that involved viewing a 30-second video of live recordings of ETIs being performed with the C-MAC VL®. • Video training that involved viewing a 5-minute video created by the research team. The residents were then supervised while attempting ETI on a live patient (max. 3 attempts).	• Of the studied residents, 65 performed 139 ETI. The overall success rate was similar for both groups (67% vs 70%, *p* = 0.71). The first attempt success rate was higher for the simulation JITT group (54% vs 41%, *p* = 0.035), and the mean duration of attempts was shorter (35 [*SD*, 9] vs 62 [*SD*, 9] seconds, *p* = 0.048). More mucosal trauma events were in the simulation JITT group (*p* = 0.02), and residents in both groups reported similar confidence levels in terms of performing ETI.

Author	Context	Aim	Methodology and Sample	Outcomes and Key Findings
McKay et al. (2023)	Paediatric emergency medicine, Massachusetts, US	To assess how JIT video affects the skill performance of PIV insertion and BMV 3–6 months after initial training of 72 paediatric residents	• A randomised educational interventional trial of JIT training (brief video and coached practice, totalling < 5 min) for either PIV placement or BMV immediately before performing the procedure on a skill trainer. Investigators (blinded) scored performance on recorded videos using skills checklists. • Pre-post-intervention knowledge was assessed using multiple-choice and short-answer items, and confidence was reported using Likert scale multiple-choice and short-answer items.	• JIT training was associated with improved procedural performance for PIV (median 87% vs 70%, $p < 0.001$) and BMV (mean 83% vs 57%, $p < 0.001$). The results remained significant after using regression models to adjust for differences in prior clinical experience. JIT training for BMV was associated with a shorter median time to deliver successful BMVs by more than 20 seconds (49 vs 72, $p < 0.05$).

Note: ACGME = Accreditation Council for Graduate Medical Education; BMV = bag–mask ventilation; CI = confidence interval; Coronavirus disease (COVID-19); CPR = cardiopulmonary resuscitation; DVG = designated video group; ED = emergency department; EM = emergency medicine; ETI = endotracheal intubation; FSG = free searching group; GQS = global quality scale; IQR = interquartile range; JIT = just in time; JITT = just-in-time training; OSATS = objective structured assessment of technical skill; PGY = postgraduate year; PIV = peripheral intravenous catheter; PPE = personal protective equipment; *SD* = standard deviation; US = United States.

2.5 Findings

2.5.1 Updated Scoping Review of the Literature: March 2021 – August 2023

This study's systematic search and screening results are outlined in the PRISMA diagram (see Figure 2.1). Eight publications met the inclusion criteria for this review (see Table 2.1), of which six were from the United States (US; (Fennessy et al., 2022; Goldman et al., 2022; Han et al., 2022; Kuhlman et al., 2022; McKay et al., 2023; Misra et al., 2021), one from Korea (Choi et al., 2022) and another was from Canada (Gizicki et al., 2023).

This scoping review of the research literature revealed eight studies following the published review that reported on healthcare professionals' use of video. The publications reported descriptive studies that focused on video development, user feedback and implementation processes. Four publications reported randomised controlled trials (RCTs) that measured video's effectiveness in terms of improving clinical skills (Choi et al., 2022; Gizicki et al., 2023; Goldman et al., 2022; McKay et al., 2023). Three studies reported on how videos affected capability (Fennessy et al., 2022; McKay et al., 2023; Misra et al., 2021), and two focused on how videos affected knowledge (Han et al., 2022; Kuhlman et al., 2022).

2.5.2 Key Themes and Patterns

The peer-reviewed research studies identified findings consistent to the five themes derived from the original scoping review, which included (a) video content and purpose, (b) target audience, (c) hosting site—internal websites versus YouTube™, (d) curated versus original 'home-grown' video content, and (e) video development process (see Table 2.2).

2.5.3 Video Content and Purpose

Rare Procedures. Investigators produced videos to create ‘low stakes’ opportunities for obtaining clinical experience or required skill development (Fennessy et al., 2022; Gizicki et al., 2023; Goldman et al., 2022; McKay et al., 2023). Two studies relate to Coronavirus disease (COVID-19) pandemic practice changes, (Han et al., 2022; Misra et al., 2021). One was hosted live on Facebook. The recorded video remained available on Facebook on nasopharyngeal swab specimen collection. It was viewed 4,505 times nearly five months after the article was published (Misra et al., 2021).

Agreed Model of Local Practice. All videos reported in studies reviewed were created to visually represent an agreed-upon local model of practice for skilled procedures. Although the review methods for the self-developed videos were not detailed, the haematology–oncology study had a specialty fellow develop the video screencasts and a resident focus group process to review the content (Kuhlman et al., 2022).

2.5.4 Target Audience and Video Content

Six studies focused only on medical residents in hospital-based vocational training programs four in the US (Fennessy et al., 2022; Goldman et al., 2022; Kuhlman et al., 2022; McKay et al., 2023), and single studies in Korea (Choi et al., 2022) and Canada (Gizicki et al., 2023). Only two studies centred on other healthcare professionals and involved the communication of COVID-19 clinical practice procedures (Han et al., 2022; Misra et al., 2021).

2.5.5 Hosting Site

Of the studies that provided details about the video-hosting site, two studies used videos on YouTube™ (Choi et al., 2022; Fennessy et al., 2022)), one study hosted its recorded webinar on Facebook Live (Misra et al., 2021) and another study used a cloud-based website (Kuhlman et al., 2022).

2.5.6 Curated Versus Original 'Home-Grown' Video Content

Three studies curated video resources from available sources (Choi et al., 2022; Goldman et al., 2022; McKay et al., 2023), and one study used a mix of developed and curated videos (Fennessy et al., 2022). Original videos were either procedure simulation (Fennessy et al., 2022; Han et al., 2022) or live procedure recordings (Choi et al., 2022; Gizicki et al., 2023).

2.5.7 Video Development Process

Three studies provided details regarding their video development methods or end products. One recorded a live webinar with the aid of a professional company (Misra et al., 2021). Another study created neonatal endotracheal intubation (ETI) videos with parental consent and combined them with narration, images, real-life equipment, mannequin simulation and C-MAC VL imaging (Gizicki et al., 2023).

Finally, one study in the haematology–oncology service (HOS) used a mixed-measures approach to produce a comprehensive list of relevant, rotation-specific topics, which was then refined by a focus group of three faculty members and 10 residents. The final six topics were made into screencasts that focused on crucial issues that were unique to the HOS. A second focus group that included medical residents was then used to confirm feasibility and finalise content, identifying preferred 20 minute screencast length, and 1.5× playback speed (Kuhlman et al., 2022).

2.5.8 Updated Scoping Review of the Literature: Study Outcomes

Two descriptive studies reported the number of views that they received for their COVID-19 video guidelines (Han et al., 2022; Misra et al., 2021), and both reported obtaining higher viewing figures after publication on open platforms. One study used Facebook Live to record a video of the nasopharyngeal swab skill technique, which obtained a tenfold increase in views within five months (Misra et al., 2021). The study that used video to demonstrate simulations of COVID-19 intubation and cardiopulmonary resuscitation reported that their viewing numbers doubled by the time that their article had been submitted for publication (Han et al., 2022).

Of the studies that assessed skill performance, two RCTs used video to demonstrate and afterwards assess the skill performance of blinded investigators (Choi et al., 2022; McKay et al., 2023). Choi et al. (2022) compared two video groups (free choice vs designated videos) to a textbook group to assess how video affected a microsurgery anastomosis skill. Both video groups demonstrated a higher level of skill performance than the textbook group; however, the designated video group took longer and had fewer errors (Choi et al., 2022). An additional study demonstrated no difference in neonatal ETI skill when comparing preparation by video alone or preparation by video and simulation (Gizicki et al., 2023). Simulation and video both improved the first attempt success rate, as well as decreased the number and duration of ETI attempts, though they were also associated with an increased rate of mucosal trauma; (Gizicki et al., 2023).

Of the studies that assessed knowledge, participants from the study involving haematology–oncology screencasts or standard teaching reported an improved medical oncology knowledge, which enhanced their care for cancer patients (Kuhlman et al., 2022). No difference was noted between groups, even after they transitioned to a socially distanced program during the COVID-19 pandemic (Kuhlman et al., 2022).

Two studies added objects to their practice environment, in one study a customised procedure cart with curated videos (Goldman et al., 2022) and another a set of five procedure guides with embedded video links (Fennessy et al., 2022). In the study by Goldman et al. (2022) a procedure cart was used 21 times in the five-month study period, predominately by interns (n = 14) instead of residents (n = 7). All users agreed that the cart encouraged to practice. In total, eight videos were viewed, and 24 procedures were practiced. These most frequent were laceration repairs (4 video views vs 13 simulated practices) and lumbar punctures (3 video views vs 8 simulated practices Goldman et al., 2022).

In the study by Fennessy et al. (2022) procedure guides with embedded video links had a standardised format and were used by more than two thirds of participants when they needed a refresher before they performed a procedure during the study period (Fennessy et al., 2022). The procedure guides were used to improve general procedure knowledge and to teach procedures (Fennessy et al., 2022).

Two studies reported feedback on video features. One study compared the quality of curated and free-choice videos and identified that curated videos scored slightly higher scores. However, the relatively limited range of microsurgery videos and tendency of residents to choose from the first 10 search results meant that the chosen videos were from field experts and there was some overlap with curated videos (Choi et al., 2022). The feedback also indicated that locally tailored video screencasts were enjoyable; the preferred video playback speed was 1.5x; and that the preferred length was 20 minutes (Kuhlman et al., 2022).

Table 2.2 Updated patterning chart of findings from the updated literature search and published scoping review.

Authors	Video content and purpose		Target audience		Curated versus original ‘home-grown’ video content		Video development		Hosting site		
	Rare procedure	Agreed model of local practice	Medical practitioners	Nurses and Allied Health professionals	Curated	Original	Investigator	Professional company	Intranet	YouTube™	Other
Davis et al. (2012)	✓	✓	✓	✓		✓		✓			iPod
Rowse et al. (2014)	✓	✓	✓			✓	✓		✓		
Liu et al. (2014)		✓		✓		✓	✓			✓	
Phillips et al. (2016)	✓	✓	✓			✓	✓		✓		
Kandler et al. (2016)		✓	✓	✓		✓	✓		✓		
Wang et al. (2016)		✓	✓			✓	✓		?	?	
Yuminaga et al. (2017)	✓	✓	✓			✓	✓		?		
Phillips et al. (2017)		✓	✓			✓	✓		?	?	
Walsh et al. (2017)	✓	✓	✓	✓	✓		N/A	N/A	✓	✓	
Poon et al. (2017)	✓	✓	✓			✓	✓			✓	
Jyot et al. (2018)		✓	✓			✓	✓		✓		
Wolfensberger et al. (2019)		✓	✓	✓		✓		✓	✓	?	
Posner et al. (2020)	✓	✓	✓	✓		✓	✓			✓	
Beam et al. (2020)	✓			✓	✓		N/A	N/A			CDC website
Bonz et al. (2021)	✓		✓	✓		✓	✓		?	?	

Authors	Video content and purpose		Target audience		Curated versus original 'home-grown' video content		Video development		Hosting site		
	Rare procedure	Agreed model of local practice	Medical practitioners	Nurses and Allied Health professionals	Curated	Original	Investigator	Professional company	Intranet	YouTube™	Other
Patel et al. (2021)		✓	✓	✓		✓	✓		?	?	
Misra et al. (2021)	✓	✓	✓	✓		✓		✓			Facebook
Herstein et al. (2022)	✓			✓	✓		N/A	N/A			CDC website
Choi et al. (2022)		✓	✓		✓		N/A	N/A		✓	
Fennessy et al. (2022)		✓	✓		✓	✓	✓			✓	
Goldman et al. (2022)	✓	✓	✓		✓		N/A	N/A	?	?	?
Han et al. (2022)		✓	✓	✓		✓	?	?	?	?	?
Kuhlman et al. (2022)		✓	✓			✓	✓				Cloud-based website
Gizicki et al. (2023)	✓	✓	✓			✓	✓		?	?	?
McKay et al. (2023)		✓	✓		✓		N/A	N/A	?	?	?

Note: CDC= Centers for Disease Control and Prevention; N/A = not applicable; ? = not reported, therefore unknown.

2.6 Discussion of Findings from the Updated Scoping Review

The purpose of the scoping review was to explore existing research literature that focused on how video is used to support clinical procedures in a hospital or health care facility. In this thesis's updated scoping review, 25 research studies were included. The results indicate that video use in this context is an evolving area of practice and research, with a 47% increased number of studies focusing on this topic in the 18 months after the previous review (see Figure 2.2).

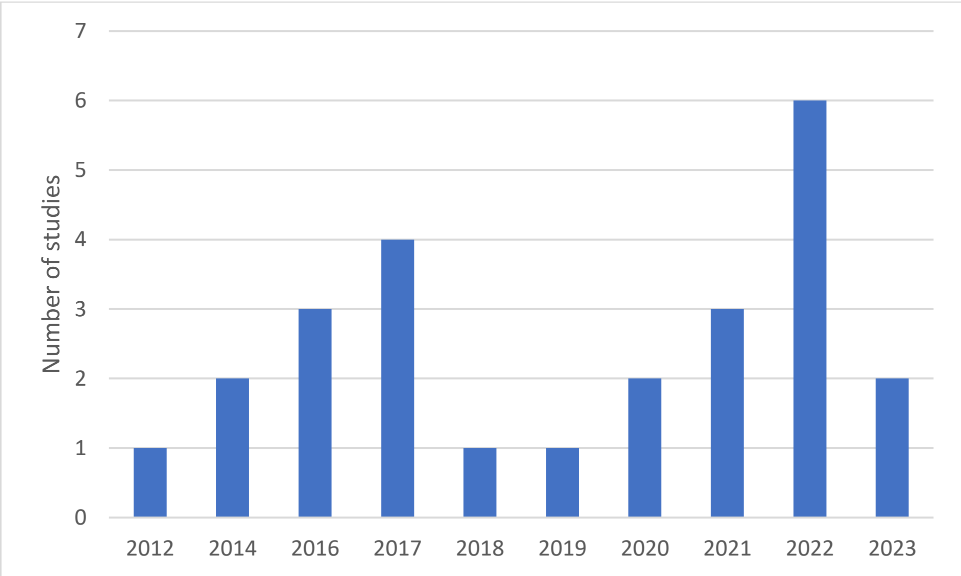


Figure 2.2 Peer-reviewed studies by publication year

One central theme from this updated scoping review is that health organisations creating or curating video playlists is acceptable and feasible. In this review, 72% of videos were original creations, of which two-thirds were made by study investigators. The authors and target audience were predominately medical practitioners. The videos in the updated scoping that aimed at broader health professional audiences, including the only study authored by a nurse (Beam et al., 2020), mostly focused on infection control. Of note, one study was aimed exclusively for nurses, although it's first author is not a nurse (Liu et al., 2014).

The scoping review revealed that videos are being used successfully to enhance both initial (Bonz et al., 2021; Choi et al., 2022; Davis et al., 2012; Gizicki et al., 2023; McKay et al., 2023; Rowse et al., 2014; Wang et al., 2016) and refreshing of clinical skills acquisition, see Figure 2.3 (Beam et al., 2020; Herstein et al., 2022; Liu et al., 2014; Yuminaga et al., 2017). Overall, videos have helped improve self-reported knowledge (Kuhlman et al., 2022; Misra et al., 2021), as well as tested knowledge (Wolfensberger et al., 2019). Two studies demonstrated knowledge only increased in video content questions (Phillips et al., 2016; Phillips et al., 2017).

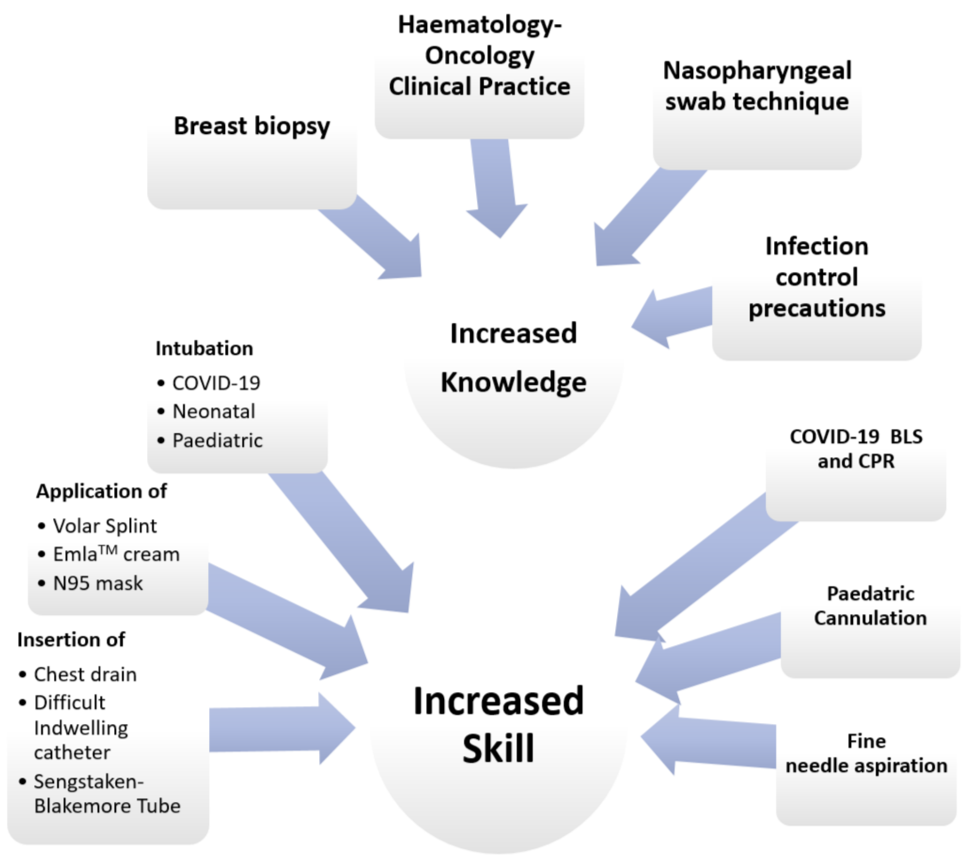


Figure 2.3 Outcomes of healthcare professionals' use of video for procedure support

The literature highlights that video use is considered acceptable (Fennessy et al., 2022; Goldman et al., 2022; Han et al., 2022; Jyot et al., 2018; Misra et al., 2021; Poon et al., 2017; Walsh et al., 2017); that it is used (Goldman et al., 2022; Jyot et al., 2018; Misra et al., 2021; Posner et al., 2020); and that it helps improve protocol adherence (Kandler et al., 2016). Introducing video procedures has also yielded unanticipated system-level outcomes, such as a reduced number of hospital transfers (Yuminaga et al., 2017).

Creating videos may not always be possible, but curating publicly available videos is a feasible alternative. Multiple studies have demonstrated the inaccuracy of online healthcare related videos (Gorgy et al., 2022; Mayer et al., 2023; Savran et al., 2023), nurses (Aras et al., 2023; Azer et al., 2022; Ferhatoglu & Kudsioglu, 2020; Özsaban et al., 2021), including those aimed at patients (Abedin et al., 2015; Ache & Wallace, 2008; Adorisio et al., 2015; Ajumobi et al., 2016; Al-Silwadi et al., 2015; Aydin & Akyol, 2020; Azer et al., 2018). In the scoping review, the absence of a video library was cited as a barrier to preparing procedures (Fennessy et al., 2022).

One study allowed its control group members to freely choose their preparation method before they underwent a skill assessment; 85% of the group used online videos (Bonz et al., 2021), similar to 86.8% of respondents in a survey about emergency medicine who used online videos to prepare (Fennessy et al., 2022). Another study tested the skills of participants after they viewed either curated or free-choice videos. Despite being in the YouTube™ top 10 search results, the free-choice videos were rated lower quality than the curated videos in terms of video quality scoring tools (Choi et al., 2022).

2.7 Chapter Summary and Implications

This chapter presents a comprehensive review of the 25 research papers that focus on video use for procedure support in healthcare. The results reveal that video has been used successfully to develop clinical skills and knowledge. Specifically, videos have been used for rare procedures and to demonstrate local practice, and medical practitioners have undertaken most of the research. The aim of this thesis is to implement and evaluate a set of videos for infrequent cardiac procedures. To accomplish this, a three-phase study design was used to address the research aims, which involved:

- determining the barriers to and facilitators of implementing locally tailored clinical procedure videos at two hospitals in NSW, Australia
- designing a plan to implement clinical procedure videos using behaviour change theories
- using website data, analytics and user feedback surveys to understand the use and acceptability of the videos during the implementation period.

Chapter 3: Methodology and Study Design

3.1 Introduction

This chapter describes the methods and theoretical frameworks that were used in the research and how they address the thesis's aim of understanding the acceptability and use of locally tailored clinical procedure videos. The chapter first explains the research design, after which the ensuing sections explain why the philosophy of pragmatism was used to guide this study. Next, the chapter describes how implementation science was used for the overall process of addressing the research question. Data collection, analysis and the study setting are introduced. Finally, an overview of the frameworks that supported this study is provided, including the Theoretical Domains Framework or TDF (Cane et al., 2012), the Behaviour Change Wheel or BCW (Michie et al., 2014) and Clinical Reasoning Cycle (Levett-Jones et al., 2009).

3.2 Research Aim

The main purpose of this thesis is to understand the acceptability and use of locally tailored procedure videos. The research aims were to:

- Determine the barriers and facilitators to implementing locally tailored clinical procedure videos at two hospitals in NSW, Australia.
- Design a plan to implement clinical procedure videos using behaviour change theories.
- Use website data, analytics, and user feedback surveys to understand the usage and acceptability of the videos during the implementation period.

3.3 Research Design

The intention of the research was to understand the acceptability and use of newly developed locally tailored procedure videos. This study incorporated a pre-post design nested within implementation science theories and frameworks—which play a vital role in adopting new processes or technologies (Boehm et al., 2020).

3.3.1 Pre-Post Design

A pre-post survey design was used to describe the perceptions, beliefs and attitudes of nursing staff in relation to procedure support resources before and after the video procedures were implemented (see Figure 3.1). Information from the pre-implementation survey was assessed to prospectively create an implementation plan to address identified barriers and facilitators. Pre-post design was beneficial in this context because the study could report its results and aim to identify issues within the organisation (Siedlecki, 2020).

This study's pre-post design aimed to identify how participants regarded the video procedures to gain a deeper understanding of their experiences. The philosophy of pragmatism guided this study's research design because it allows multiple tools of inquiry to be used to obtain different perspectives, which can subsequently be used to address the research question (Biesta & Burbules, 2003).

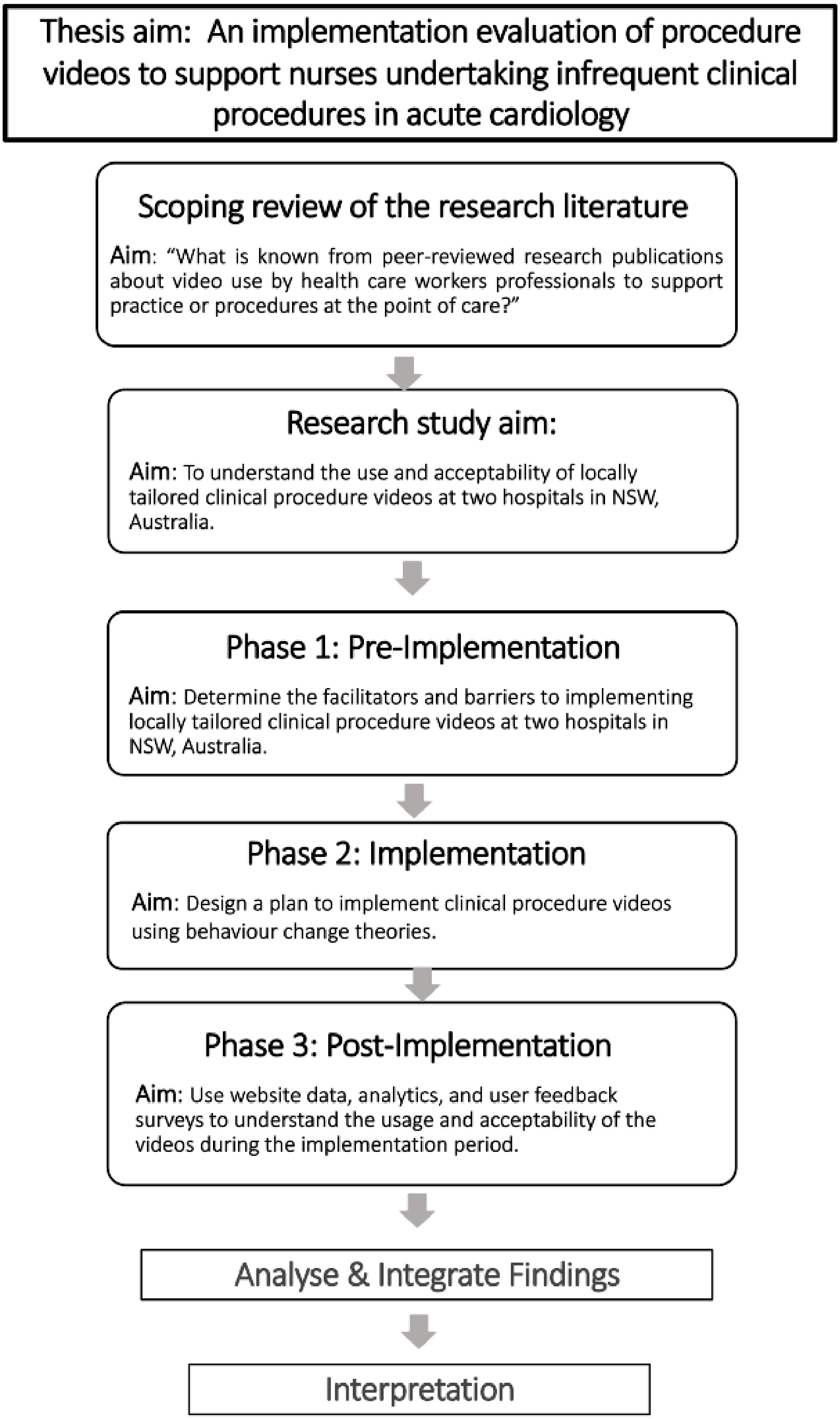


Figure 3.1 Flowchart of the thesis within the overall research project

3.3.2 Pragmatism

This thesis is grounded in pragmatism theory and clinical nursing practice. Pragmatism theorises that knowledge claims are fallible and revisable, and that they are the results of actions, situations and consequences in life (Younas, 2020). The philosophy of pragmatism in the nursing field has been described as a commonsense fit, given that pragmatism is one of the most effective methods for investigating real-world problems (McCready, 2010). The benefit of this philosophy is that pragmatism can bridge the gap between nursing theory and practice (Dolan et al., 2022). First introduced in 1870, the philosophy of pragmatism is mostly attributed as being created by the philosopher William James, who believed that it was a means of determining truth and usefulness (McCready, 2010).

The present study aims to understand how videos can support nurses who are required to help with urgent but infrequent procedures. Pragmatic methodology is an effective fit because it seeks to understand in a practical sense and create improvements. This aim aligns well with nursing as a practical profession (Dolan et al., 2022).

This study also uses the philosophical principles of fallibilism and meliorism. Fallibilism stipulates that no fact can be absolutely proven, but that one can try to determine what is known (Dolan et al., 2022; McCready, 2010). Meliorism stipulates that enquiry may lead to improvements, but it also acknowledges the uncertainty of the outcome (Dolan et al., 2022). This study aimed to establish what was known about the practical experience of using procedure supports such as written or video procedure guidelines for the purpose of improving clinical practice, while also acknowledging that the outcome is uncertain (Dolan et al., 2022). Truth, plurality, fallibilism, subjectivity and meliorism are the core concepts of pragmatism (Dolan et al., 2022)—and they are helpful in nursing research in terms of engaging in practice-based enquiry or knowledge translation (Younas, 2020).

3.3.3 Implementation Science

One aspect of this thesis is the pre-post evaluation of a new intervention (i.e., video procedures), which was performed using implementation science principles. Implementation science provides theoretical approaches and rigorous and systematic methods that promote the uptake of research findings into routine clinical practice (French et al., 2012). Implementation requires an understanding of human behaviour, and the study reported in this thesis uses the TDF to understand the barriers to and facilitation of the implementation (Atkins et al., 2017). Once the barriers to and facilitation of implementation are identified, and assessed behaviour change interventions can then address these factors to improve the chances of successful implementation.

3.4 Theoretical Frameworks

3.4.1 Theoretical Domains Framework

This study used the TDF, which was first developed in 2005; this framework synthesises 33 behaviour and behaviour change theories that are clustered into 14 domains (Cane et al., 2012; Figure 3.2).

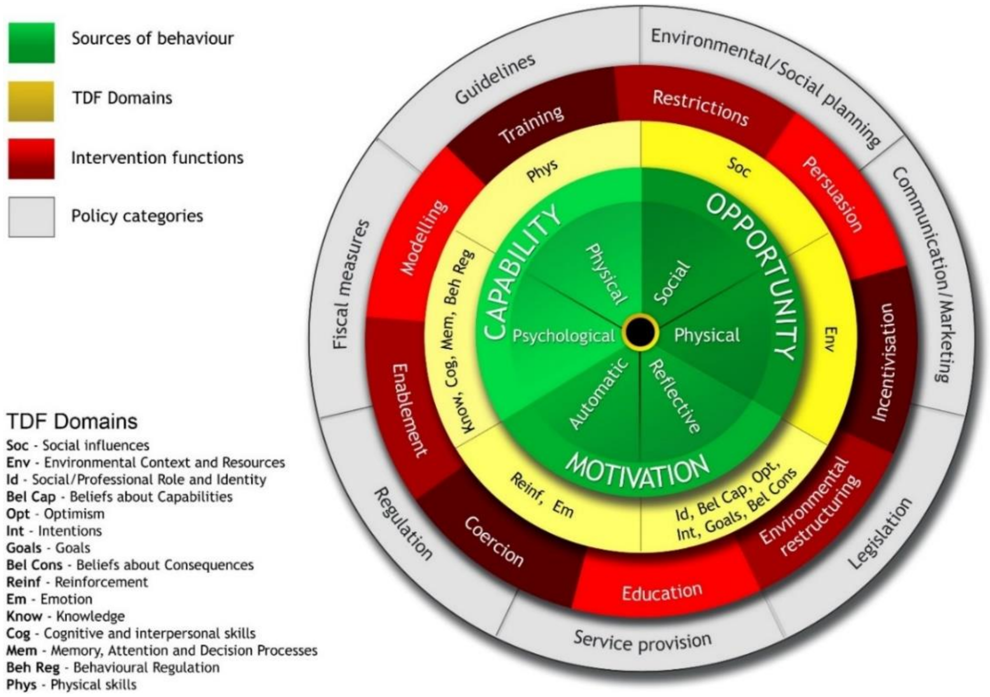


Figure 3.2 Behaviour Change Wheel Source: Michie et al. (2014).

The TDF is a synthesis of 33 behavioural change theories relevant to implementation, presented as a framework of 14 domains for the assessment of implementation and behavioural problems (Table 3.1). The TDF has been applied successfully in various healthcare settings and for many clinical behaviours to assess the determinants of behaviour change (Atkins et al., 2017). In this study the TDF was used to assessment the determinants to behaviour change with the introduction of video procedures in the clinical units (see Chapter 4).

Table 3.1 The TDF domains and their definitions (Cane et al., 2012)

TDF Domain	Definition
Knowledge	Awareness of the existence of something
Skills	Ability or proficiency acquired through practice
Social/professional role identity	Behaviours and personal qualities of an individual in a social or work setting
Memory, attention and decision processes	Ability to retain information, focus and choose between alternatives
Beliefs about capabilities	Acceptance of the truth, reality or validity about one's ability
Beliefs about consequences	Acceptance of the truth, reality or validity about outcomes of a behaviour in a given situation
Optimism	Confidence that desired goals will be attained
Intentions	Conscious decision to perform a behaviour or a resolve to act in a certain way
Goals	Outcomes or end states that an individual wants to achieve
Reinforcement	Action of strengthening or encouraging someone
Emotion	Complex reaction pattern by which the individuals attempts to deal with a personally significant matter or event
Environmental context and resources	Circumstance or environment that discourages or encourages the development of skills and abilities
Social influences	Interpersonal processes that can cause individuals to change their thoughts, feelings, behaviours

3.4.2 Behaviour Change Wheel

The BCW was developed from a basis of 19 frameworks of behaviour change (Michie et al., 2011). The present study combined the BCW and TDF to identify the target behaviour; to understand the barriers to and facilitators of the desired behaviour. With this understanding it was then possible to design behaviour change techniques to facilitate implementation of video procedures (BCTs; Atkins et al., 2017).

The BCW is a framework for designing behaviour change interventions (see Figure 3.2). Its hub comprises a model of three core drivers for behaviour change, the COM-B: capability, opportunity and motivation (Atkins et al., 2017). At its middle are nine intervention functions, BCTs and delivery modes (see Figure 3.2). BCTs apply to what is planned and the mode of delivery relates to how this will be achieved. Finally the outer layer identifies seven policy categories that can support successful implementation and the delivery of these intervention functions (French et al., 2012).

The BCW reasons that people must have the capability, opportunity and motivation to change their behaviour. It provides a systematic method for identifying relevant intervention functions and policy categories according to what is understood about the target behaviour. This study specifically used the BCW to design interventions that aimed to change behaviour and inform the video procedure implementation plan (see Chapter 5).

3.4.3 Clinical Reasoning Cycle

This thesis study also employed the clinical reasoning cycle to structure questions in the six months post-implementation survey (see Figure 3.3). The cycle is a systematic tool for nursing decision-making (Levett-Jones et al., 2009). It was selected for this study to assess how video procedures affected nurses' self-reported abilities to collect cues, process information, understand a patient's problem or situation, plan and implement interventions, evaluate outcomes and reflect on and learn from the process (see Figure 3.3).

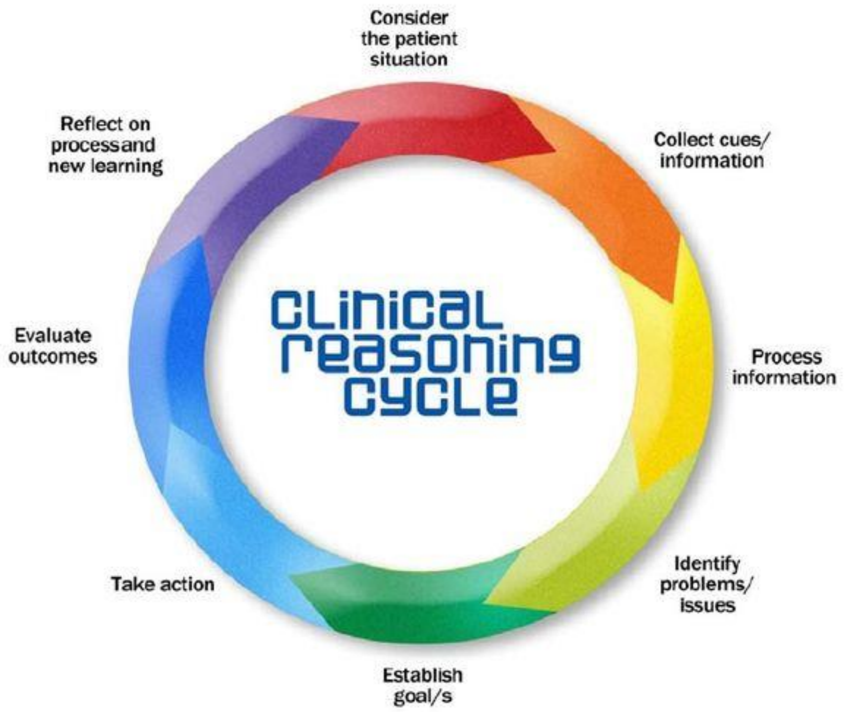


Figure 3.3 The Clinical Reasoning Cycle. Source: Levett-Jones et al. (2010)

3.5 Research Methods

The present research incorporated a multi-phase and method approach (see Figure 3.1). This subsection briefly overviews the methods related to each research stage in the relevant chapters: the pre-implementation survey phase (see Chapter 4), implementation plan development phase (see Chapter 5) and post-implementation results phase (see Chapter 6). The study phases and their associated methods are described below, as are their data collection, management and analysis.

This thesis aims to understand the acceptability and use of locally tailored clinical procedure videos. The videos related to temporary cardiac pacing (n = 3 videos), NIV (n = 2 videos) and pericardiocentesis (n = 2 videos). To determine the use and acceptability of these videos, the study's collected information in three phases. Pre-implementation findings were assessed to prospectively develop an implementation plan. The implementation plan was delivered. In the post-implementation phase surveys collected video viewers feedback immediately post viewing. In addition, video use data, intranet web page displays, and procedure numbers were collected. Finally, a six-month post-implementation survey was circulated.

3.5.1 Research Governance Application and Ethical Considerations

A low or negligible risk (LNR) application was submitted on 15 January 2020, which was subsequently authorised on 22 April 2020 by the Central Coast Local Health District (CCLHD) Acting Research Manager as a Human Research Ethics Committee (HREC) Exempt LNR Research application (LNR: 0120-007C; see Appendix 8.3). The LNR application included a research protocol, participant information sheet, the survey tool, flyers and email communications. Because of the phased approach to implementation, an amendment to the original LNR was submitted in September 2020 following an analysis of the pre-implementation survey results (see Appendix 8.3.1).

The surveys were conducted anonymously, so the participants could not withdraw their consent once the surveys were completed. The thesis author is a senior nursing staff member at the local health district who led the team that created the procedure videos. Anonymous surveys were chosen to ensure the trustworthiness of the survey data and to remove or overcome potential bias. This type of survey also allowed participants to provide honest feedback without being concerned about professional relationships or links to the video project. Participants received a participant information sheet that included contacts for the research team, in case they had any concerns during the study.

3.5.2 Subjects

The study participants comprised nursing staff who were likely to care for patients requiring the chosen procedures, approximately 500 nurses. Current nurse employees at CCLHD's two acute hospitals with patient contact for therapeutic reasons were eligible to participate in the surveys. Administration and ancillary staff were excluded because accessing clinical procedures for patient care is outside the scope of their role.

3.5.3 Setting

The CCLHD provides public health services to the communities of the Central Coast Council over an area located between Sydney and the Hunter Valley, which serves a population of 358,826 people (Central Coast Council, 2022 ; see Figure 3.4). In this regional local health district, two acute hospitals provide Level 5 critical care services, which includes emergency medicine, interventional cardiology via networked services and intensive care (New South Wales Ministry of Health, 2021).

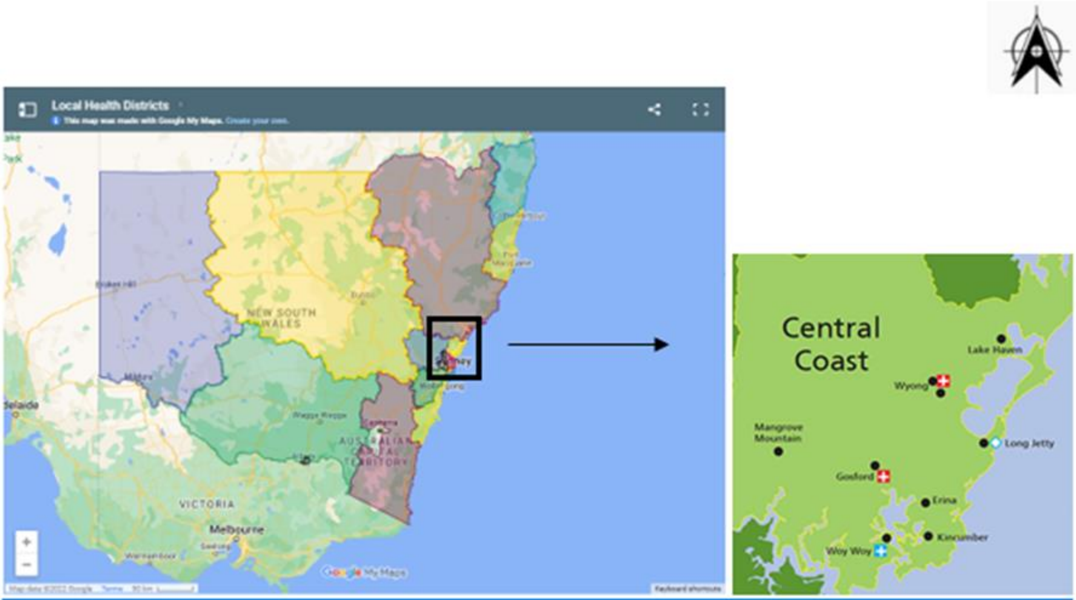


Figure 3.4 Central Coast Local Health District. Source: adapted from Central Coast Local Health District (2017)

3.5.4 Data Collection Process

3.5.4.1 Survey hosting

All study surveys were hosted on the Research Electronic Data Capture (REDcap) University of Sydney web application.

3.5.4.2 Pre-Post surveys

The survey invitations were distributed electronically via email to nursing staff in two hospitals. The nursing unit managers at both hospitals were also asked to send invitation emails that contained a participant information statement and survey link to employees through their staff email lists and closed Facebook staff message groups. One reminder email was then sent during the data collection phase one month after the initial invitation email. All surveys were completed anonymously, in which the survey commencement was regarded as consent.

3.5.4.3 Video Viewer Feedback Survey

During the implementation period, user feedback surveys collected immediate post-viewing user feedback. The viewer feedback surveys were accessed via the specific viewing platform, either Intranet or MyHealthLearning (MHL). Surveys on the intranet could be accessed using a QR code that was embedded at the end of the video procedure. This was linked to the University of Sydney REDcap web application. MHL user feedback surveys were accessed using a link at the end of the video procedure eLearning module. These surveys were hosted on the MHL eLearning platform (see Chapter 6).

3.5.4.4 Video and MyHealthLearning Viewing Data

Video procedure viewing statistics were collected automatically through the host platforms. The viewing data could be accessed through an application to the relevant CCLHD system administrators: Intranet (Information, Communication and Technology) and MHL (Learner Management System; see Chapter 6). Further, intranet page displays and video viewing numbers from the video-hosting platform were collected to obtain objective data about using video procedures during the study period.

3.5.4.5 Procedure Data

The CCLHD Casemix application was used by the thesis author to retrospectively collect procedure numbers for the video procedure topics. Specific procedure codes used were pericardiocentesis: 38359-00, insertion of a temporary transvenous electrode into ventricle: 38256-01, management of non-invasive ventilatory support <= 24 hours, > 24 and < 96 hours, >= 96 hours: 92209-01, 92209-02 and 92209-00 (excluding paediatrics).

3.5.5 Data Management

3.5.5.1 Quantitative Data Analysis

This study collected non-identifiable quantitative data, which were analysed using SPSS IBM v. 29. To examine the relationships between the variables of anxiety score, gender, age and experience in the role, an independent t-test was performed pre and post-implementation. The comparison of pre and post-implementation was made using descriptive statistics, a chi-square test and the independent samples t-test.

3.5.5.2 Qualitative Data Analysis

Qualitative data were analysed using inductive content analysis (Graneheim & Lundman, 2004), because this analysis is commonly used for text-based data (e.g., surveys) and for studies such as the present one, in which there are few studies related to the topic (Vears & Gillam, 2022). Inductive content analysis is constructed inductively from a close reading of a text, after which categories are developed according to the content of the actual dataset rather than theory-based conclusions.

The survey questions, with free text comments, were grouped according to their locations in the survey sections. In the first step, the transcribed narrative text was read repeatedly to obtain a general sense of the overall meaning, and notes were written about the text while it was read. These responses were then analysed using NVivo software (release 1.7.1; QSR International, 2020), and participant responses were allocated to categories according to similar meanings. The thesis author performed these steps in discussion with the academic supervisor team.

In the final step, similar codes were grouped into subcategories. This step was discussed between the thesis author and supervisory team. For examples of the analytical process involved, see Tables 6.3–6.8. The categories are presented in the results section, and all quotations from participants use a participant number and role designation within brackets to maintain their confidentiality. The quantitative and qualitative results from the survey were subsequently integrated.

3.5.5.3 Integration and Mapping

The survey's quantitative and qualitative results were integrated and mapped to each TDF domain. The facilitators and barriers were evaluated using the BCW, which was employed to extract specific intervention functions, policies, behaviour change techniques (BCTs) and implementation strategies. Each phase was then assessed against the 'affordability, practicability, effectiveness and cost-effectiveness, acceptability, side-effects or safety and equity' (APEASE) criteria (Michie et al., 2014).

3.6 Chapter Summary

This chapter presents the research methods used to implement and evaluate the procedure videos of the study. The research phases are described, highlighting how the methodology of behaviour change informed each phase. Additionally, the chapter ensures the trustworthiness of the research by defining the study sites, ethical considerations, and data management methods. For more details, refer to Chapter 4, which deals with the pre-implementation survey, Chapter 5, which covers the development of the implementation plan, and Chapter 6, which discusses the post-implementation results.

Chapter 4: Phase 1—Pre-Implementation

4.1 Introduction

This chapter outlines the first phase of the current study—the pre-implementation phase (see Figure 4.1). The aim of this phase was to use survey findings to plan the implementation of clinical video procedures.

This chapter specifies the study design, data collection methods and results of the pre-implementation survey, in which the methods also include the data analysis procedures. Chapter 4 then presents the strategies that were used to integrate this study's quantitative and qualitative findings, as well as the results obtained from the pre-implementation survey. The results include the participants' demographic information and descriptive statistics regarding anxiety towards, knowledge of, attitudes to and beliefs about clinical procedures. The results from the pre-implementation survey were used to develop an implementation plan and are then presented in Chapter 5.

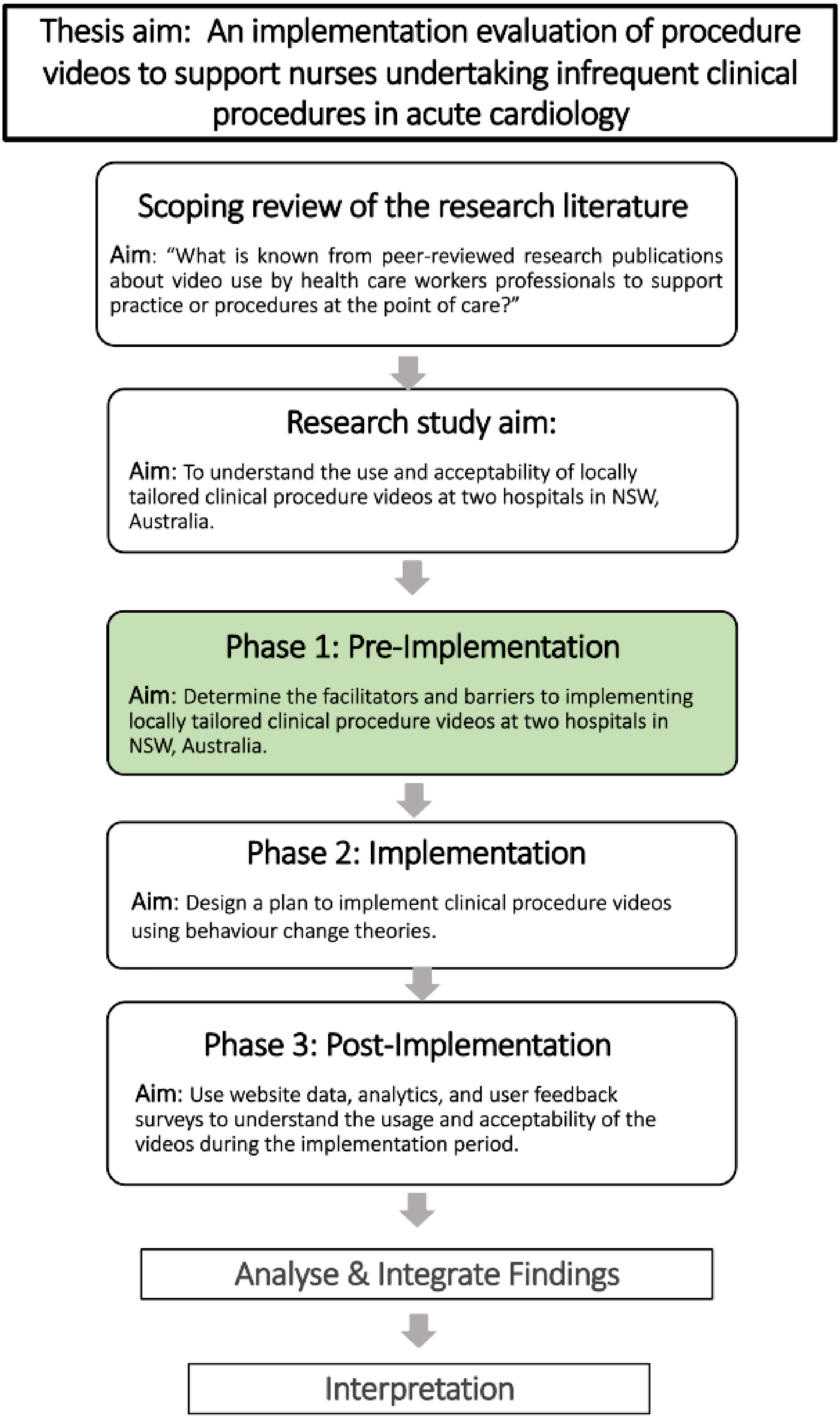


Figure 4.1 Study Research Design (Chapter 4 Phase in Green)

4.2 Research Aims

The main purpose of this thesis is to understand the acceptability and use of locally tailored procedure videos. The research aim of this phase is to:

- Determine the barriers and facilitators to implementing locally tailored clinical procedure videos at two hospitals in NSW, Australia.

4.3 Methods

A survey including both quantitative and qualitative data (open ended questions) developed to obtain feedback from nursing staff who frequently used these clinical procedures. Information was gathered to identify the facilitators of and barriers to implementing locally tailored clinical procedure videos, as well as to inform this study's implementation plan.

4.4 Survey Instrument

The survey instrument was a 27-item tool (see Appendix 8.4) that was adapted from a pre-implementation survey used in NSW to develop a blunt chest injury protocol (Kourouche et al., 2019). The survey used in this phase of the thesis study was also developed on the domains of the Theoretical Domains Framework (TDF), (Atkins et al., 2017). The survey questions were designed and mapped according to the TDF domains (Cane et al., 2012; see Figure 3.2) in relation to implementing video procedures, which ensured that behaviour change theories underpinned the questions. The TDF is a valuable and reliable framework for understanding behaviour in the context of clinical practice (Cane et al., 2012).

The survey included quantitative and qualitative questions and was divided into four sections. Beyond the initial demographic section, the survey contained questions mapped to TDF domains. The quantitative questions used Likert scales to allow participants to choose from two extreme options on either side of a central neutral response (Chyung et al., 2018). The qualitative questions were open ended to allow more in-depth responses from participants.

4.5 Section One: Participant Demographics and Characteristics

The first section of the survey contained questions that related to demographic information (i.e., gender identity, age, clinical experience, background data such as years of work and specialty employment area). These data were collected to characterise the participants and to allow comparisons to be made regarding the relationships between experience, age, gender and anxiety in relation to clinical procedures.

4.6 Section Two: Knowledge and Skills

Section two questions were mapped to the TDF domains of (a) knowledge, (b) skill, and (c) behavioural regulation. Questions were designed to obtain information about the participants’ use and knowledge of current procedure support—that is, written procedure guidelines. These questions were designed to understand the use of written procedure guidelines for nurses in urgent clinical scenarios, as well as their self-reported use patterns. Participants were asked to rank the importance of procedure qualities and the most common reasons for using written procedures. Participants were then asked to state in a free text comment what they believed was the ‘right’ number of pages for written procedure guidelines.

4.7 Section Three: Barriers and Facilitators

Section three was designed to elicit information about the facilitators of and barriers to using clinical procedures in practice. The questions in this section were mapped to the TDF domains of (a) knowledge, (b) behavioural regulation, (c) environmental context and resources, (d) belief about capability and (e) emotion.

To address the TDF domain of emotion, participants were asked to use Spielberger’s state-anxiety inventory (STAI) anxiety-state scale to rank their anxiety levels before a new procedure. (Spielberger, 1995). The STAI is the most commonly used measure of anxiety, and research indicates that it has a high level of reliability and validity (Kabacoff et al., 1997). In this research phase, the STAI was measured as a baseline to be used as a comparison to the post-implementation survey.

4.8 Section Four: Video Clinical Procedures

This section was designed to elicit information about the facilitators of and barriers to video clinical procedures in practice. In addition to previously used TDF domains, section four questions also mapped to the remaining TDF domains: a) memory, b) goals, c) social influences, d) social/professional role and identity, e) optimism, f) intentions, g) beliefs about consequences and h) reinforcement. Participants were asked whether they had searched online for information about clinical procedures, and they were allowed to provide the sources in free text comments. The participants were also asked to use a five-point Likert scale to rate their beliefs about how video procedures affected their clinical practice (i.e., workload, patient care, working environment).

Participants were also asked to state what they thought was the maximum time that a video procedure should comprise (in minutes). Next, participants were asked to indicate their preference for video procedure storage locations out of three feasible options: the intranet, MHL, or personal mobile devices. Participants could offer an alternative suggestion, through free text comments. The information gained from this section was used to determine the best storage location for video procedures.

Finally, participants were asked to state their preferred format for clinical procedures - written only, written and video, or video only. Participants could select ‘other’ and add a free text comment with their suggestions.

4.9 Ethics and Research

A Low & Negligible Risk (LNR) research application was approved on April 22, 2020, including a research protocol, a participant information sheet, a pre-implementation survey tool, memo communications, flyers, and a video procedure mousepad design (LNR: 0120-007C). The study investigators did not anticipate any harm or discomfort to the participants, aside from the 15-minute completion time. Participants completed the surveys anonymously, and the downloadable participant information sheet provided contact information for the research team (see Appendix 8.5) and flyers (see Appendix 8.6).

A video procedure mousepad was created to promote the project (see Appendix 8.7). Participants received a link to a downloadable participant information sheet, which included contacts for the research team in case the participants wanted to address any concerns during the study (see Appendix 8.8).

Once the pre-implementation data were analysed and the implementation evaluation was determined, the research team submitted an amendment to the authorised LNR, which was subsequently authorised on 3 September 2020 (see Appendix 8.3.1).

4.10 Pre-Implementation Phase Timeline

Following the study's video development, the subsequent review and authorisation processes were completed by December 2019. The pre-implementation phase, survey instrument and governance application process were finalised in the period from January to March 2020.

4.11 Participants

The study participants comprised nursing staff who worked in clinical areas that could use the new video procedures. This involved nursing staff from up to eight clinical departments or units from two acute hospitals in the local health district, which included registered nurses and enrolled nurses who worked permanently or as casual nurses in the local health district. As the procedure videos involved emergent and rare procedures, the target areas were emergency, intensive care and cardiology departments.

The participants in those clinical areas could provide information about the barriers to and facilitators of using clinical procedure support. Participants could also provide information about their experiences with new procedures.

4.12 Study Process

The study development team member's pilot tested the survey on various electronic devices before the survey was disseminated. Nursing staff (n = 6) who participated in the development of the video procedures acted as champions to promote the survey; however, no incentives were offered for survey completion.

Once the project was authorised by the Research Governance office, the survey was distributed electronically via REDcap to nursing staff in two hospitals. The nursing managers of relevant units at both hospitals were asked to distribute via their staff email lists. One reminder email was also sent during the data collection phase one month after the initial invitation email was sent.

Survey links were also posted on closed Facebook staff message groups to send invitation emails that contained a participant information statement and a survey link to employees. All surveys were completed anonymously, in which commencing the survey was regarded as consent. An anonymous survey was chosen to ensure the trustworthiness of the survey data and remove or overcome potential bias. This kind of survey allowed participants to provide honest feedback without being concerned about professional relationships or links to the video project (Conneeley, 2002).

4.13 Data Management

Study data were collected and managed using REDcap, hosted by the University of Sydney. REDCap is a secure, web-based software platform that supports data capture for research studies (Harris et al., 2009). The survey was completed online, and the REDcap server prompted participants when they had not completed questions, which limited missing data or data errors.

The amalgamated anonymous data were then exported from REDcap for analysis and was stored in a password-protected and limited-access University of Sydney drive. Data in this drive will be retained for at least five years before being disposed of appropriately under the NHMRC (2018b) Australian Code for the Responsible Conduct of Research (Universities Australia, 2018).

4.14 Data Analysis

The quantitative data were analysed using SPSS IBM v. 29, and preliminary analyses including for normality and missing data. The responses were presented with a mean standard deviation (*SD*) or median interquartile range (IQR), depending on data distributions or proportion data as appropriate.

The qualitative data were analysed using inductive content analysis (Graneheim & Lundman, 2004). These data were captured from 11 free text survey questions with free text comments. First, responses were grouped according to their location in the survey sections. In the first step, the transcribed narrative text in the answers was read repeatedly to obtain a general sense of the overall meaning, and notes were taken regarding the text while it was read. The responses were then analysed using NVivo (Release 1.6.1), and they were allocated according to categories with similar meanings. The thesis author performed these steps while being in discussion with the academic supervisor team.

In the final step, similar codes were grouped into subcategories. This step was discussed between the thesis author and academic supervisor team. For examples of the analytical process, see Tables 4.2–4.7. The categories are presented in the results section, and all quotations from participants contain a participant number and role designation within brackets to maintain their confidentiality. The quantitative and qualitative results from the survey were then integrated and analysed and mapped to each TDF domain. Finally, each domain was assessed for barriers or facilitators according to the survey results presented in Chapter 5.

4.14.1 Data Integration and Assessment and Identification of Barriers and Facilitators

In the process of examining the results from the pre-implementation survey and mapping them to the TDF domains, the items were considered facilitators if they were positively worded and selected by at least 70% of respondents as response. Conversely, items were considered barriers if they were negatively worded and chosen by 70% of respondents.

For the qualitative data, an inductive content analysis of responses identified categories that were assessed as potential barriers to or facilitators of the implementation. If clarification was needed regarding whether an item was a facilitator or barrier, then a consensus was sought from the supervisory team (TB, SK). Any items that crossed multiple domains were resolved by discussing them with the research team and considering them in the local context. The research team determined the final barriers and facilitators, which are presented in Tables 4.7–4.8. Worksheets from the BCW were used to aid this process (Michie et al., 2014). Finally, the barriers and facilitators linked to the TDF, and capability-opportunity-motivation-behaviour (COM-B) model are identified in this chapter and further explored in Chapter 5.

4.15 Survey Results

4.15.1 Section One: Participant Characteristics

In total, 279 staff members responded to the survey request. Any responses that did not progress beyond the demographic section were removed from analysis, which included surveys that were incomplete beyond Question 5 (see Appendix 8.4, page 2), and question 1 in Section Two Knowledge and Skill (page 3)*: Please rate your agreement with the following statement: I value written clinical procedures*. One additional partially completed survey was removed because it was completed by a non-clinical staff member, so it was thus ineligible. After removing any incomplete surveys, a total of 248 surveys were considered for the final analysis. This response rate of 49.8% is consistent with the expected response rate for online surveys in nursing research, which is generally between 35% and 50% of the targeted sample population (L'Ecuyer et al., 2023).

Participant characteristics are presented in Table 4.1. The final participant sample comprised more females (83.9%, *n* = 208) than males (15.7%, *n* =39), with a mean age of 40.9 years (ranging from 20 to 71 years old). Most participants worked at the two acute hospitals—Gosford Hospital (67.6%, *n* = 167) and Wyong Hospital (30.4%, *n* = 75)—and more than half of the participants were registered nurses (64.1%, *n* =159), with only 3.6% (*n* = 9) of participants being enrolled nurses. Close to half of the participants reported working in cardiology (48.4%, *n* =119), while 22.8% (*n* =58) worked in emergency and 15% (*n* = 37) in intensive care. Of the 13.8% of participants who reported working in other areas, 3.2% (*n* = 8) worked in renal and 2.4% (*n* = 6) in both the areas of medicine and neurology. Additionally, the mean time spent in the current role was 7 (ranging from 0.3 to 30 years).

Table 4.1 Participant characteristics (N = 248)

Characteristic	Value
Age in years mean (*SD*)	40.9 (10.7)
Gender	*N* (%)
Female	208 (83.9)
Male	39 (15.7)
Did not state gender	1 (0.4)
Site	
Gosford	167 (67.6)
Wyong	75 (30.4)
Long Jetty	1 (0.4)
Woy Woy	4 (1.6)
Role	
Registered nurse	159 (64.1)
Clinical nurse specialist	25 (10.1)
Clinical nurse educator	15 (6.0)
Nurse unit manager	10 (4.0)
Enrolled nurse	9 (3.6)
Clinical nurse consultant	9 (3.6)
Nurse manager	6 (2.4)
Nurse practitioner	3 (1.2)
Nurse educator	1 (0.4)
Did not state	11 (4.6)
Role	
Time in years mean (SD)	7.01 (6.4)
Time in role (years) median (IQR)	5 (1.8-10)
Specialty	
Cardiology	119 (48.4)
Emergency	58 (22.8)
Intensive care	37 (15)
Other	34 (13.8)
Renal	8 (3.2)
Medicine	6 (2.4)
Neurology	6 (2.4)
Med/Surgical ward	3 (1.2)
Casual nursing pool	3 (1.2)
Respiratory	2 (0.8)
Community	2 (0.8)
Mental health	1 (0.4)
Nursing directorate	1 (0.4)
Did not state	2 (0.8)

Note: *N* = number of survey responses.

4.15.2 Section Two: Knowledge and Skills

4.15.2.1 Importance of Clinical Procedures

Most study participants reported that they value written clinical procedure documents, with over 95% (*n* = 232) agreeing or agreeing strongly with the statement ‘I value written clinical procedures.’ The survey asked participants about their use of written clinical procedures, of which over 75% (77%, *n* = 191) indicated that they accessed written clinical procedures at least once a week or more (see Figure 4.2).

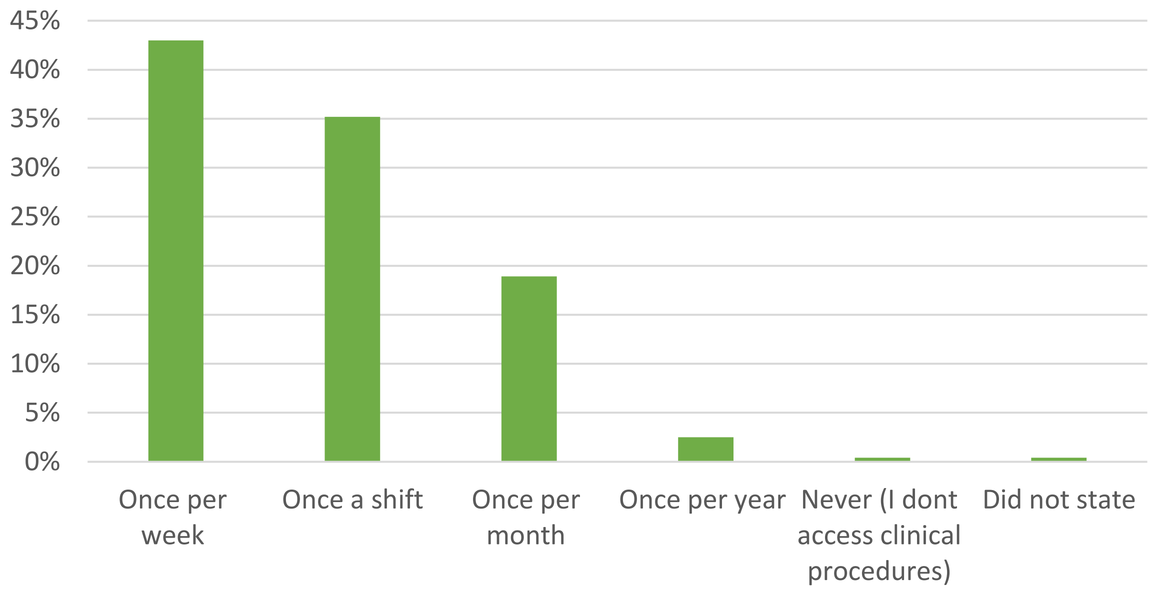


Figure 4.2 Participant Likert Responses to Statement: ‘I access LHD intranet clinical procedures approximately (select one)’

Participants were asked to rate their confidence in terms of finding and using procedures on a five-point Likert scale that ranged from 1 *strongly disagree* to 2 *disagree*, 3 *neither disagree nor agree*, 4 *agree* and 5 *strongly agree*. Most respondents agreed or strongly agreed that they were confident in terms of understanding written clinical procedures

(93.6%, *n* = 205), locating procedures on the intranet (91.8%, *n* = 201) and applying clinical procedures in their practice (91.4%, *n* = 200).

4.15.3 Reasons for Using Clinical Procedures

Participants were asked to choose from a list of seven options regarding why they accessed written clinical procedures. The most reported reasons were to refresh and to gain knowledge or obtain best practice advice. Regarding recommendations for participants to access procedure documents, educators (13.7%, *n* = 34) and colleagues (12.1%, *n* = 30) more often made these recommendations than managers (4%, *n* = 10). Six (2.4%) participants selected the option ‘other’ and described their reasons in an open-ended comment. The six responses’ reasons for accessing clinical procedures included developing education sessions, searching for specific clinical trial interventions, performing mandatory training, investigating clinical incidents, checking for updates, and searching for information while reviewing or writing new procedures see Figure 4.3.

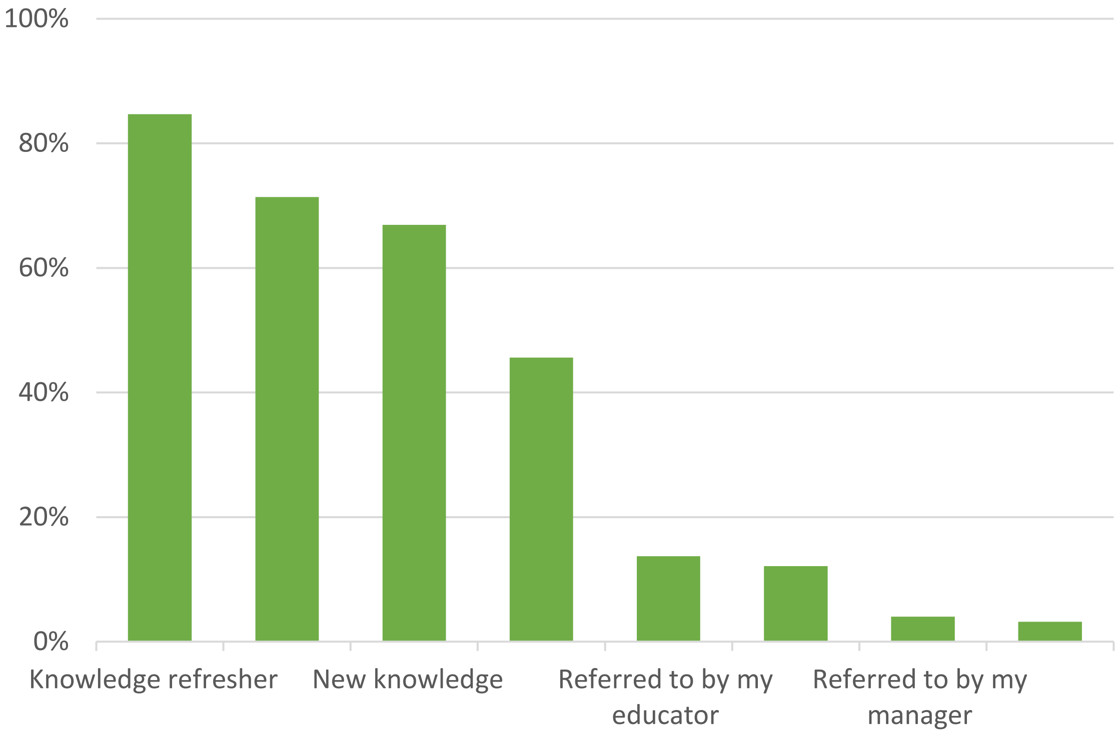


Figure 4.3 Participant Responses to Statement: ‘Please select the reasons you are most likely to search the intranet about clinical procedures ’

4.15.4 Features of Written Clinical Procedures

Participants were also asked to rate the importance of certain features of written clinical procedures on a scale ranging from *highest importance* (4) to *lowest importance* (1). Being easy to follow and understand was identified as the most important feature for a clinical procedure (75%, n = 183), followed by being practical and useful (74%, n = 159). Procedure length was not rated as being highly important (see Figure 4.4).

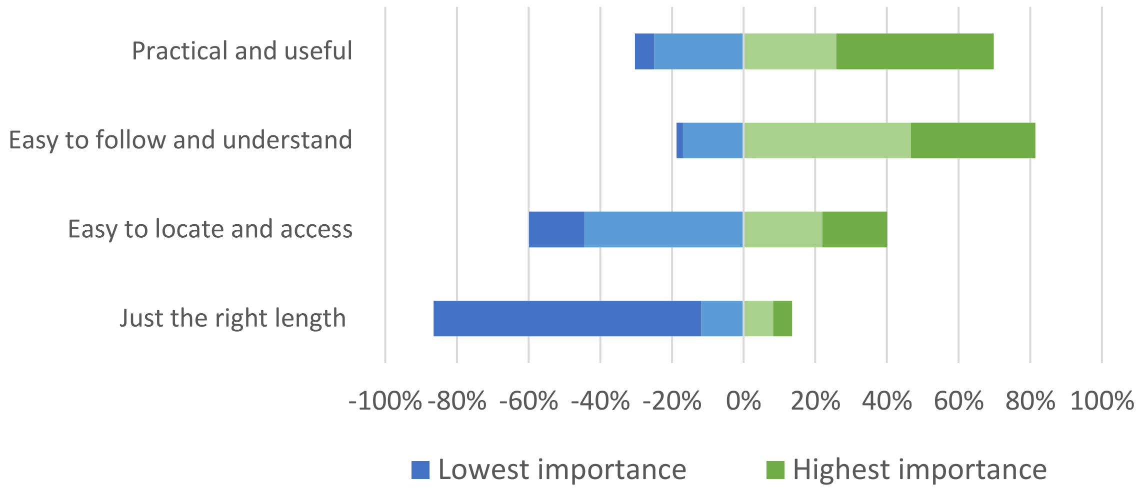


Figure 4.4 Participant Responses to Statement: 'Please rate in the order of importance the following qualities from the lowest (1) to highest (4) in relation to current written clinical procedures'

4.15.5 Procedure Length

Participants were asked to state the number of pages that they thought was 'the right length of pages for a written clinical procedure', for which 74.2% (*n* = 184) suggested between one and four pages (see Figure. 4.5). After discussion within the study team, two outlier responses of '100 pages' were removed from the responses because these were considered to be error entries.

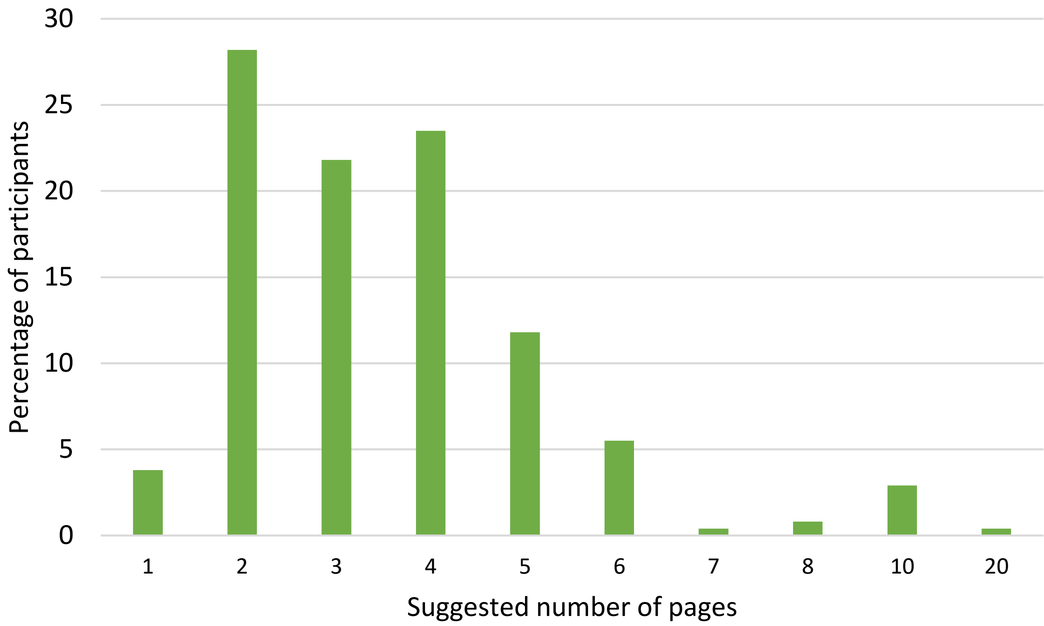


Figure 4.5 Participant Responses to Open-Ended Question: 'What do you believe is the right number of pages for a written clinical procedure'

4.15.6 Qualitative Data: Written Procedure Guidelines

At the end of Section One, participants were asked to specify any other important aspects about current written clinical procedures. Ninety-three participants (37.5%) provided responses in an open-ended question, from which four major categories were identified using inductive content analysis (see Figure 4.6). See Table 4.2 for a sample process of category generation.

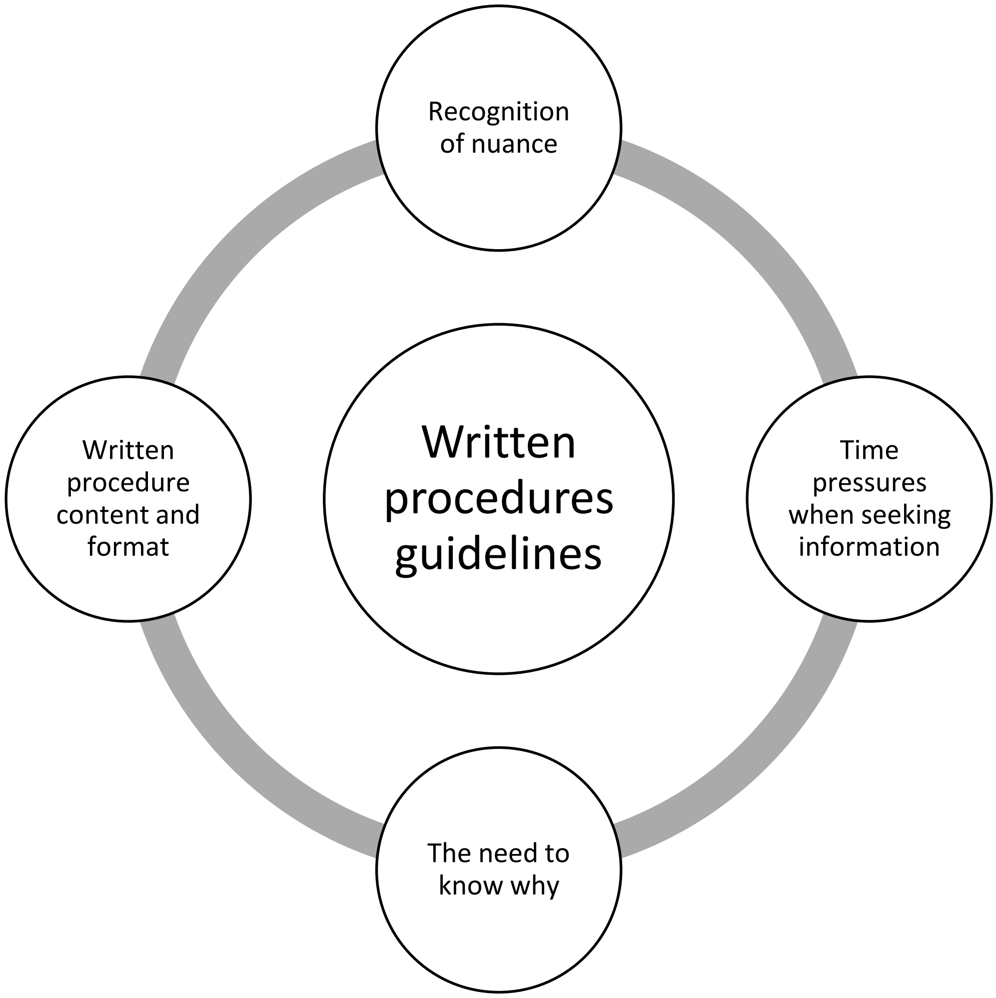


Figure 4.6 Inductive Content Analysis Categories of Participant Comments: Features of Written Procedure Guidelines

Table 4.2 Category generation for statement: 'Please specify any other aspects that are important to you about the current written clinical procedure guidelines'

Categories	Subcategories	Quotations from participants *(edited for typographical errors)*
Written procedure guidelines content and format	Intranet and document navigation	• Also, that the procedures are easily searchable using Key Words. (Participant 78, RN) • Bold headings and subheadings. Clear numbered steps. (Participant 267, RN) • Contents. Often for CVC (central venous catheter) management as an example; I may go straight to 'Removal' and therefore skip many steps in the process. Being able to locate the relevant information within the procedures document is important. (Participant 42, CNS) • Correct steps of procedures; clear and concise. (Participant 144, RN) • Ease of access and search function. (Participant 221, RN) • Ease of access; easy to follow. (Participant 258, EN) • Easy to find. (Participant 139, RN) • Easy to find when using word search. (Participant 177, RN) • Easy to follow and find. (Participant 153, RN) • Hard to locate. (Participant 194, RN) • Some clinical procedures have been updated or reviewed; however, the most recent procedure can be difficult to locate easily. Outdated and revised procedures should be archived. (Participant 146, RN)
	Document structure	• Easy to follow with step-by-step instructions if relevant. (Participant 151, RN) • Easy to follow ... Step by step. (Participant 63, CNE) • Easy to find actual procedure pages in document, e.g., pages 1–2, then further information re: aim, or other information, then the last 2–3 pages detailed procedure. (Participant 224, RN) • Flip charts are very easy to follow, with each step on a new page. (Participant 197, NUM) • Highlight the important points in red letters. (Participant 142, NUM) • Clear, concise instructions. (Participant 255, RN) • Cohesion and applicability to task. (Participant 221, RN) • Easy to follow. (Participant 258, EN)
	Content	• As above, easily followed is important to me. (Participant 64, RN) • Clear and easy to understand. Include all finer details and be specific. (Participant 233, RN) • Clear and precise information. (Participant 230, CNS) • Clear, pertinent information. (Participant 152, CNS) • Concise, easy-to-follow method. (Participant 155, CNS) • Consistency; no grey areas. (Participant 100, CNS) • Instructional, to the point; it needs to be clear and concise. (Participant 216, CNS) • No repetition or educational information. (Participant 25, RN) • Troubleshooting. (Participant 56, RN)
	Images in procedures	• Coloured illustrations if assembling equipment. (Participant 25, CNE) • Diagrams are often useful. (Participant 80, RN) • Diagrams, up to date, links to videos, hospital specific. (Participant 208, RN) • Diagrams/illustrations are helpful for visual learners. (Participant 128, RN) • Images, especially for equipment that is unfamiliar. (Participant 26, RN) • Images/pictures are very useful, i.e., PICC (peripherally inserted central catheter) line set-up/UWSD underwater sealed drains) set-up. (Participant 41, RN)

Categories	Subcategories	Quotations from participants *(edited for typographical errors)*
		• Photographs and pictures. (Participant 115, RN) • Photos are great. (Participant 255, RN) • Photos or drawings of product/s used help. (Participant 112, RN) • Pictures. (Participant 205, RN) • Pictures help. (Participant 13, RN) • Pictures, if necessary, to explain practical aspects. (Participant 210, CNS) • Pictures to show the practical aspects of the procedure. (Participant 134, CNS) • Pictures/diagrams. (Participant 72, CNS) • Pictures/photos of a process are important as they convey information in a precise, concise and informative way. (Participant 160, CNS) • Visual cues. (Participant 121, NP) • With procedures, I love visual cues or a flowchart. (Participant 215, CNE)
	One-stop shop	• All information should be contained within the procedure. When referred to multiple other procedures within the one procedure, it takes up too much time to find the relevant information. (Participant 54, RN) • Scope of practice information and competency requirements related to procedure. (Participant 79, NM) • Defining scope of practice. (Participant 79, CNE) • Ideally, interlinked aspects of care in one procedure rather than multiple. (Participant 7, CNC) • One procedure/policy/SOP (standard operating procedure) or guideline in one location, so I'm not wasting time searching various locations. (Participant 151, RN) • What accreditation/competency is required to be completed and possibly link or information as to what that involves. (Participant 190, NUM)
	Currency and validity	• Accurate/relevant references. (Participant 34, RN) • Currency must be clear and concise; no confusing diagrams or tables. (Participant 271, RN) • Current procedural information—updated regularly. (Participant 228, RN) • Just need to be able to read best practices for nursing practice in relation to what procedure you are attempting. (Participant 33, RN) • MUST BE REVIEWED in a timely fashion, i.e., NGT (nasogastric tube) insertion 5-yearly review, as not much changes RSI (rapid sequence intubation) SOP—at least annual or as required. (Participant 70, RN) • Reference to all other policies relating to the selected topic. Dates of publication. (Participant 71, EN) • References. (Participant 210, CNS) • Relevant best practice. (Participant 153, RN) • Relevant to current equipment available in hospital. Updated to changes in best practice, especially medications. (Participant 97, CNS) • Relevant to Gosford Hospital. (Participant 45, NM) • Some clinical procedures have been updated or reviewed; however, the most recent procedure can be difficult to locate easily. Outdated and revised procedures should be archived. (Participant 146, RN) • They should be kept current with new trends and be evidence based. (Participant 78, RN) • Where or how the evidence was obtained and links for further information, e.g., product info if required. (Participant 190, NUM)
	Procedure length	• As many pages as required to perform procedure safely based on evidence. (Participant 70, RN) • Dependent on procedure; a complex procedure, such as insertion of TVPW (temporary venous pacing wire), is going to need a lot more pages. (Participant 95, RN) • Depends on the procedure. Some are simple enough to fit in two pages; some need many more. (Participant 108, CNE) • Depends on the procedure. Some procedures are more in depth and lengthier than others. (Participant 203, CNS)

Categories	Subcategories	Quotations from participants *(edited for typographical errors)*
		• Depends on the task/procedure that is being written about, regarding the 'right number of pages'. (Participant 117, RN) • Number of pages depend on complexity of procedure; number of pages is directly reflective of how long the procedure might take. (Participant 128, RN) • The length is not as important as clarity on different parts; so if the procedure is long, I can easily locate the exact part I'm looking for quickly. Otherwise, I want them to be clear and relevant to practice—and to include pictures to more easily demonstrate what has been written. (Participant 60, CNE) • The length is not so important, but it must be easily understood and relevant. The length depends on the task/procedure, but it is important to not be too time consuming to read. (Participant 162, CNC) • The length is relatively unimportant, do long as it covers the procedure adequately. (Participant 29, RN) • The previous question is irrelevant. The length of the policy is determined by the complexity of the procedure. (Participant 74, RN) • There are certain procedures that require a longer clinical procedure based on the various elements required. (Participant 14, CNC) • There is no 'right' number of pages; it depends purely on the complexity of the clinical procedure. I would be happy with a –page procedure if it needed clarity. (Participant 214, RN) • Complex procedures require lots of steps/pages. Rarely used procedures may require some educational content (in appendices). For large procedures with sections, having a linked contents page takes you to correct section. (Participant 192, NUM) • It will be better if information is provided in a short and organised manner that helps the reader pick up information easily, rather than sit down and read whole pages and forget what you read. (Participant 180, NUM) • It depends on what it is on, as some will need to be longer and come condensed. So long as it's easy to follow, length isn't a problem. (Participant 122, CNE) • Length of document will depend on complexity of procedure. (Participant 85, unstated role)
	Health literacy for nurses	• All acronyms should be written in full, or acronym is in brackets following expanded text. All drafts should be reviewed by different nursing classifications to ensure understanding of the document. (Participant 213, CNS) • Appropriate language/literacy level. (Participant 89, CNE) • Can we have an index at the end with clinical terms and their explanation. (Participant 243, RN) • Clear language in a step-by-step format. (Participant 4, CNS) • Easily understandable. (Participant 140, RN) • Language used shouldn't be too clinical. If clinical, can we put an index—explaining the term. (Participant 241, RN) • Put an index at the back, explaining the clinical terms used. (Participant 242, RN) • They should not be based on the assumption that the reader already has a high level of skill or knowledge about the procedure. (Participant 239, CNS) • Wording is succinct and simplified; no long-winded sentences. (Participant 156, RN)
Written procedure guidelines rationale	The need to know why	• A clear explanation of what is the indication and clinical reasoning behind the procedure is essential. Sometimes, nurses can easily blindly perform a procedure that was ordered by a doctor without a sound understanding of the procedure and why it is needed. This makes them fall back onto Google search, which can easily give false or not up-to-date information. (Participant 53, RN) • Background of procedures; troubleshooting. (Participant 56, RN) • Clear expectations. (Participant 50, NUM) • Rationale. (Participant 212, CNS) • Rationale why—e.g., the ECG competency states to lay the person down, which you can assume is comfortable for patient and easy for operator rather than it alters the ECG reading. (Participant 62, RN) • Rationales for certain steps. (Participant 88, RN) • Recent revision and up to date in terms of 1–2 years. Logical sequence. (Participant 56, CNS)
Written procedure	Recognition of nuance	• As many pages as required to perform procedure safely based on evidence; must be reviewed in a timely fashion—i.e., NGT insertion 5-yearly review, as not much changes RSI SOP—at least annual or as required. (Participant 70, RN)

Categories	Subcategories	Quotations from participants *(edited for typographical errors)*
guidelines (mixed)		• Dependent on procedure; a complex procedure such as insertion of TVPW is going to need a lot more pages. (Participant 96, unstated role) • Dependent on procedure. Some require much more detail than others. (Participant 90, NUM) • Depends on complexity of procedure. (Participant 54, RN) • Depends on the procedure. Some are simple enough to fit in two pages; some need many more. (Participant 208, CNE) • Depends on the procedure. Some procedures are more in depth and lengthier than others. (Participant 203, CNS) • Depends on the task/procedure that is being written about, regarding the 'right number of pages'. (Participant 117, RN) • It depends on what it is on, as some will need to be longer and come condensed. So long as it's easy to follow, length isn't a problem. (Participant 122, CNE) • The length is not as important as clarity on different parts; so if the procedure is long, I can easily locate the exact part I'm looking for quickly. Otherwise, I want them to be clear and relevant to practice—and include pictures to more easily demonstrate what has been written. (Participant 60, CNE) • The length is not so important; but it must be easily understood and relevant. The length depends on the task/procedure, but it is important to not be too time consuming to read. (Participant 162, CNC) • The length is relatively unimportant, so long as it covers the procedure adequately. (Participant 29, RN) • The previous question is irrelevant. The length of the policy is determined by the complexity of the procedure. (Participant 74, RN) • There are certain procedures that require a longer clinical procedure based on the various elements required. (Participant 14, CNC) • There is no 'right' number of pages; it depends purely on the complexity of the clinical procedure. I would be happy with a 5-page procedure if it needed clarity. (Participant 214, RN)
Written procedure guidelines access	Time pressures when seeking information	• One procedure/policy/SOP or guideline in one location, so I'm not wasting time searching various locations. Easy to follow with step-by-step instructions, if relevant. (Participant 151, RN) • Our working environment is very busy; we need information very fast, and there's no time to be wasted on searching for information on pages before we get the right answer. (Participant 191, RN) • Pressure to adequately locate, read and interpret information; to perform given task at a high standard for overall patient safety and clinical standards are met. (Participant 176, RN)
Other		• Well done. (Participant 109, RN) • N/A. (Participant 247, RN) • N/A. (Participant 211, CNS) • Nil. (Participant 179, RN)

Note: CNC =clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; CVC =central venous catheter; ECG = electrocardiograph; EN =enrolled nurse; N/A = not applicable; NGT = nasogastric tube; NM = nurse manager; NP = nurse practitioner; NUM = nursing unit manager; PICC = peripherally inserted central catheter; RN = registered nurse; RSI =rapid sequence intubation; SOP = standard operating procedure; TVPW = temporary venous pacing wire; UWSD = underwater sealed drain.

4.15.7 Section Three: Barriers and Facilitators

4.15.7.1 Staff Experience of Using Written Clinical Procedures in the Workplace

Participants were asked about their experience with clinical procedures. Over 65% (*n* = 143) of respondents agreed (always, very often) that it was easy to remember where new clinical procedures could be accessed. However, less than 17% (n = 36) reported difficulty remembering clinical procedures (always, very often) (see Figure 4.7).

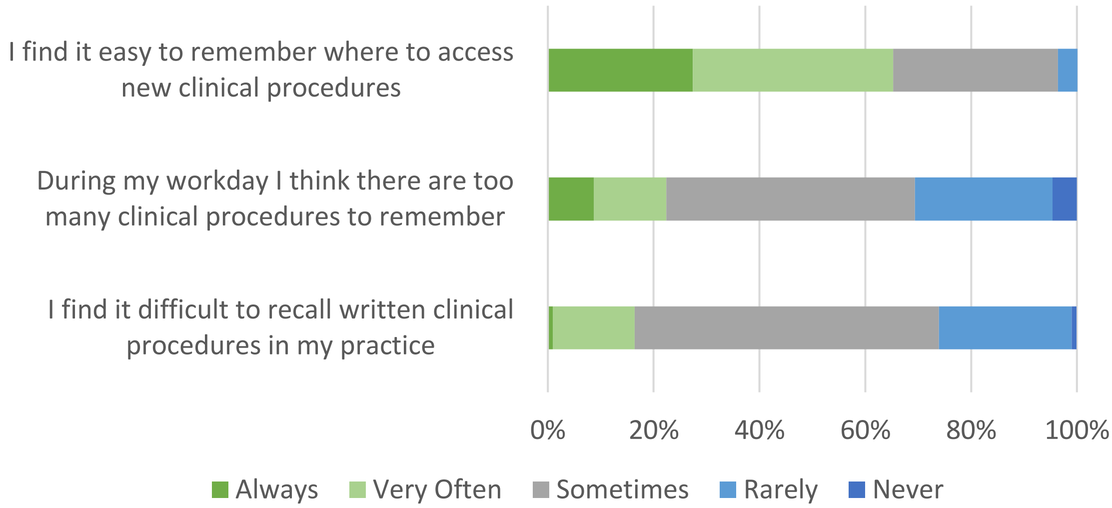


Figure 4.7 Participant Responses to Statement: 'Select your response in relation to your experience with clinical procedures'.

4.15.7.2 Environmental Factors

Participants were also asked about the importance of environmental factors in terms of helping them remember clinical procedures. The most important factor was access to computers in the clinical area (98.1%, n =210) scored 'very important'/'important'), see Figure 4.8.

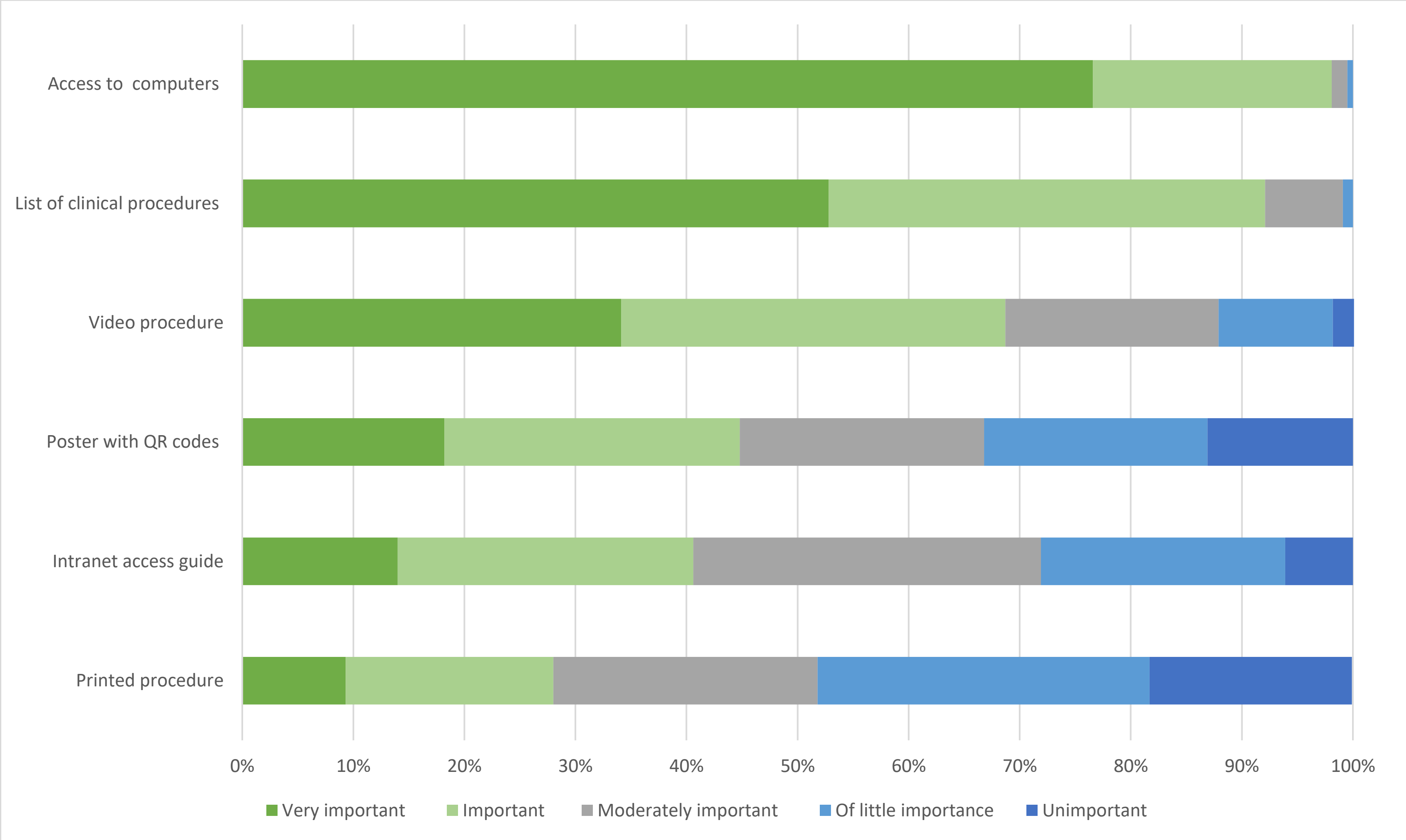


Figure 4.8 Participant Responses to Question: 'How important are the following environmental factors in helping you to remember clinical procedures?'

4.15.7.3 Educational Factors

Participants were then asked to rank the importance of six educational support factors that improved their use of clinical procedures. The ranking was made using a Likert scale that ranged from 1) *unimportant* to 2) *little importance*, 3) *moderately important*, 4) *important* and 5) *very important*. Participants could also select a free text option and comment about their 'educational supports' for procedures. Receiving help from a senior nurse was the most critical educational support in relation to undertaking a new clinical procedure (94.3%, n = 200), followed by in-service education (85.2%, n = 181) and video procedures (63%, n = 156). Overall, education-based interventions such as online learning or short courses were more considered more important than posters or printed copies of procedures (see Figure 4.9).

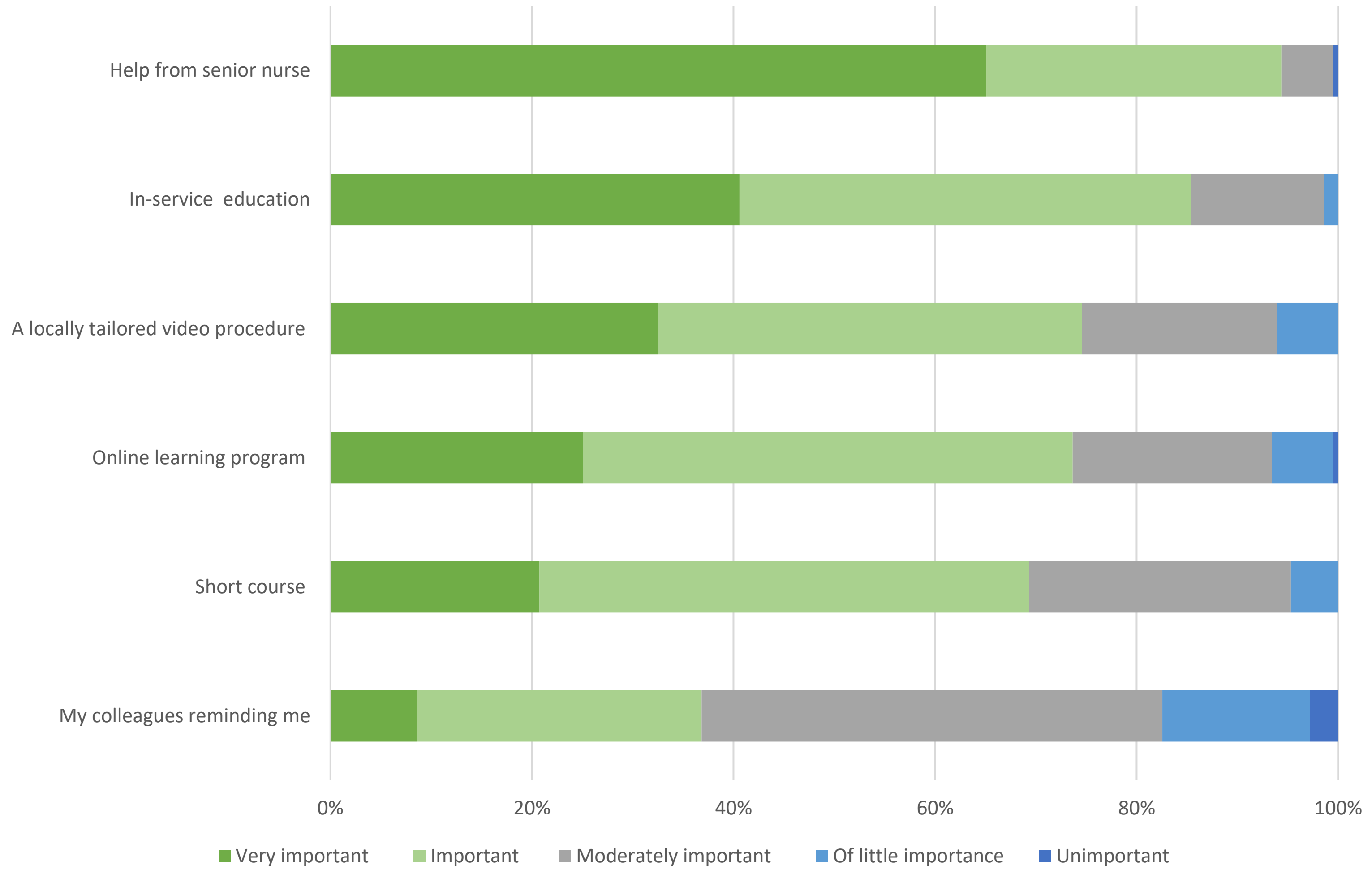


Figure 4.9 Participant Responses to Question: ‘How important are the following educational supports in using/doing a new clinical procedure (select your response on the scale for each intervention)?’

4.15.7.4 Important Factors for Using Clinical Procedures

Participants were asked to rate the importance of factors that improved their use of clinical procedures. Over 80% of participants thought it was very important / important to use procedures because they felt it would make a difference in the patient outcome (85%, n = 210) and in their awareness of risk (82.7%, n = 205). Facilitators such as reminders, audits or feedback were less important when using/performing new procedures (see Figure 4.10).

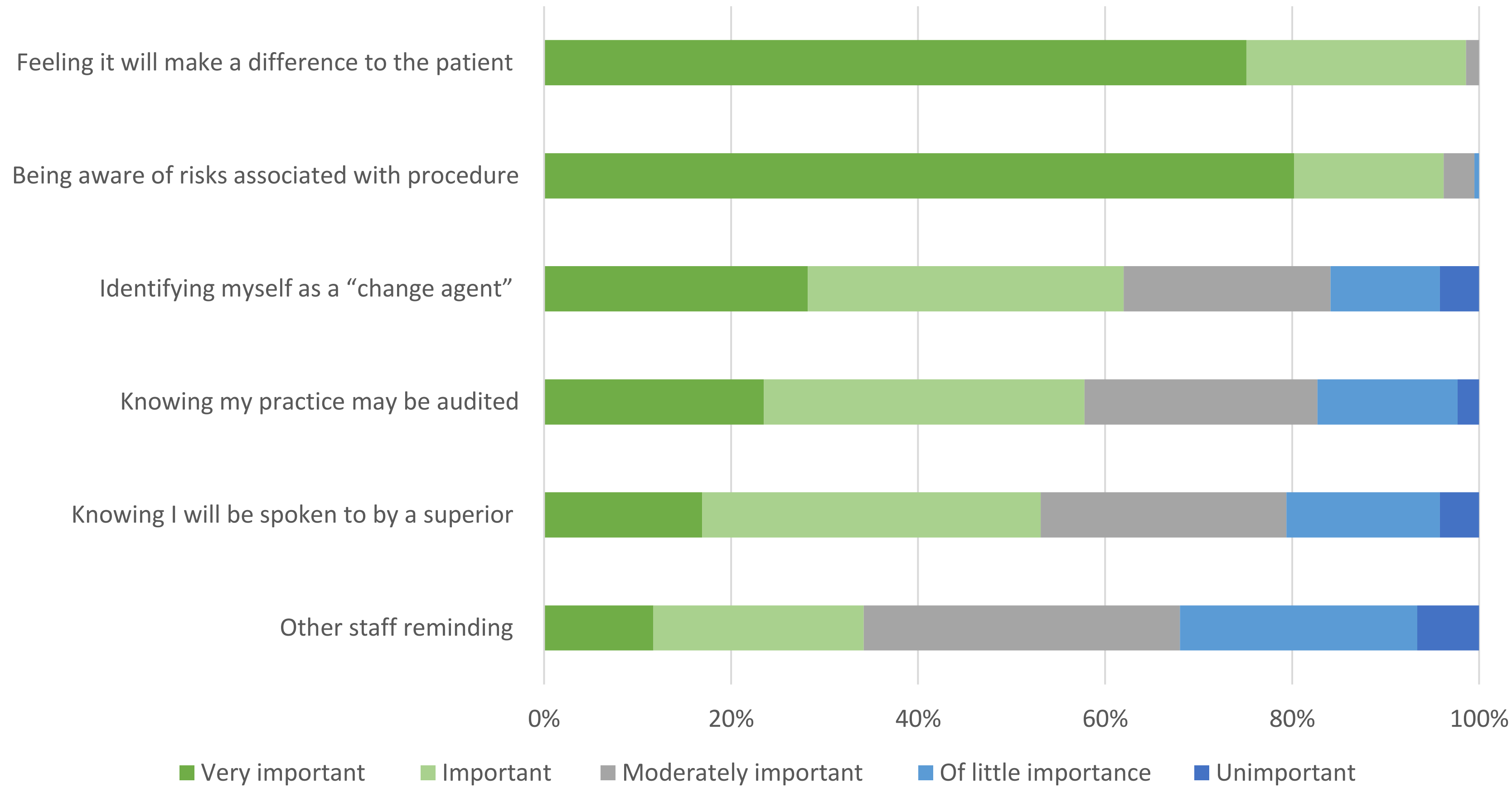


Figure 4.10 Participant Responses to Statement: 'Please rate how important (or not important) the following factors are in improving your use of clinical procedures (defined as a set of approved steps for a particular act or sequence of acts)'

4.15.7.5 Qualitative Data: Barriers and Facilitators

In this section, participants were asked to comment about their use of clinical procedures. Of the participants, 85 (34.4%) provided descriptions in the comments sections for the following questions: ‘How important are the following environmental factors in helping you to remember clinical procedures?’; ‘Please rate how important (or not important) the following factors are in improving your use of clinical procedures’; ‘How important are the following educational supports in using/doing a new clinical procedures?’; and ‘Please tell us any other educational supports you use when using a new clinical procedure’. Inductive content analysis identified 10 experience categories related to using clinical procedures (see Figure 4.11). See Table 4.3 for the category generation.

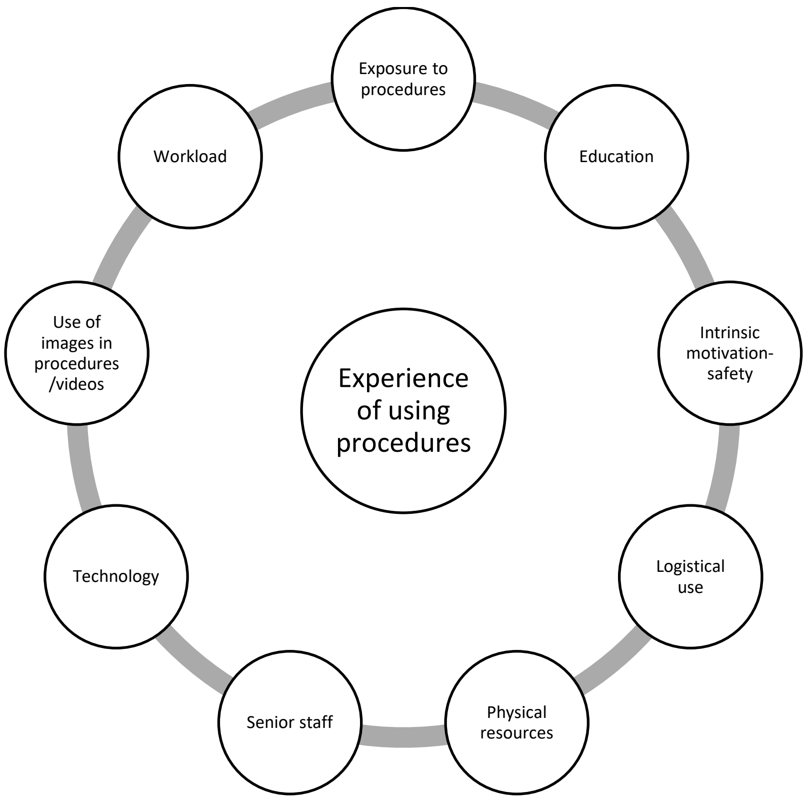


Figure 4.11 Inductive Content Analysis Categories from Participant Comments About Their Experiences Using Clinical Procedures

Table 4.3 Category generation for survey questions about health professional's experiences using clinical procedures

Categories	Quotations from participants *(edited for typographical errors)*
Exposure to procedures	• A procedure that you perform more regularly becomes easier to remember than one that you perform infrequently. (Participant 134, CNS) • Constant practice. (Participant 56, RN) • Depending on how complex the procedure is, and how often it is done. A nurse experienced in the procedure does not need prompts; others not experienced need the resources available to ensure procedures are understood and completed safely and correctly. (Participant 96, unstated role) • Frequency of performing the procedures. (Participant 79, NM) • Frequency of utilisation. The more I do it, the easier it is to be familiar with a clinical procedure. (Participant 146, RN) • I only remember things that I do regularly. Practicing other clinical procedures would help. (Participant 13, RN) • If they are used often, they are easier to remember. (Participant 213, CNS) • Lack of clinical exposure to some procedures inhibits my ability to confidently act. (Participant 146, RN) • Performing a procedure as a simulation or talking through it with peers. Frequent use of procedure in clinical practice. (Participant 156, CNS) • Practice using the equipment needed for the procedure. (Participant 65, RN) • Practice. (Participant 152, CNS) • Regular clinical use of procedure. (Participant 230, CNS) • Regular education and review of the clinical procedures. (Participant 190, NUM) • Regularly attending the procedures; I find that I am always looking for refreshers. (Participant 233, CNS) • Repeated practice. (Participant 26, CNS) • Repetition of practice. Being advised of changes; I feel is important. (Participant 258, CNS) • Repetition of procedures. Unlikely to have to research common procedures unless I need to confirm a particular step in an uncommon procedure. I appreciate pictures/videos in furthering my practice skills and knowledge. (Participant 71, EN) • Repetition of procedures. (Participant 203, CNS) • Repetition. (Participant 73, RN) • Repetition. (Participant 258, EN) • Repetitive use helps. Not being time critical. Visual procedures absorbed better then following written instructions. (Participant 215, CNE) • Seeing practical demonstrations. (Participant 239, CNS) • When there is something that we don't encounter on a regular basis; e.g., temp pacing wire or external pacing; it would be nice if we had regular refreshing of procedure by anyone who is confident in the procedure. (Participant 64, RN)

Categories	Quotations from participants *(edited for typographical errors)*
Education courses	• External learning days. (Participant 258, EN) • ‘Hands-on’ and timely support from either senior clinician or CNE. (Participant 79, NM) • Hands-on workshop. (Participant 26, CNS) • It is a new piece of equipment; the company reps provide in-service and educational support. (Participant 198, CNS) • Simulation practice if the procedure is complicated and infrequently performed. (Participant 97, CNE) • Understanding why changes are made to current practice is important. (Participant 89, CNE)
Intrinsic motivation—safety	• Clinical procedures improve my practice and ensure clinical safety for my patients. I highly regard their value. (Participant 144, RN) • Knowing you could make a mistake if you don’t have or know the procedure. (Participant 49, RN) • Most important is safe practice. It is presumed that written procedure guidelines are best practice. (Participant 29, RN) • Performing the clinical procedure correctly to facilitate a better outcome for the patient is the most important part of performing the procedure correctly—not if I am going to be audited or spoken to. (Participant 274, RN)
Logistical use	• An easier method to search for procedures on the intranet. (Participant 89, CNE) • Don’t have time to spare at work to do short video courses when I need them. I would rather that access to procedures be easy, quick and user friendly to get on intranet rather than having to search and be led to useless, irrelevant info. (Participant 146, RN) • I find it difficult to find procedures on the intranet, especially when they are from another specialty. QR codes would be amazing. (Participant 147, CNS) • It is important to have one location for all clinical procedures. If the procedure is of the type that clinicians would benefit from a video description, then this could be an option. QR codes etc. or having multiple ways to access clinical procedure descriptions risks complicating obtaining important information. (Participant 42, RN) • Remembering what title a procedure is listed under; e.g., underwater seal drains, I think, is listed under ‘I’ for intercostal catheters. Maybe a procedure may need to be listed more than once under different headings when it involves extra equipment. (Participant 97, CNE) • Some procedures are written but are not relevant or up to date or obtainable in certain situations. For the patient’s wellbeing and safety, sometimes procedures have to be modified. (Participant 96, unstated role)
Physical resources	• Cheat sheets would be beneficial. (Participant 65, RN) • Education board, meetings, etc.; in-services, emails, reading new information. (Participant 191, RN) • Education boards/posters/info sheets. (Participant 192, NUM) • Folders on the ward with the procedure labelled, with policy and procedure inside. (Participant 197, NUM) • Good to have unit-specific intranet page with appropriate procedures. Additionally, a link on Powerchart for procedures for appropriate tasks. (Participant 208, RN)

Categories	Quotations from participants *(edited for typographical errors)*
	• Hardcopy of common procedures in a folder kept on the ward, specific to the ward. Email communication for updated clinical videos and written procedure guidelines. (Participant 268, RN) • Having a copy on the ward and having enough computers to access them quickly; seeing the procedure done visually helps, too. (Participant 49, RN) • Internet search or liaising with other health facility procedures. (Participant 156, CNS) • List of clinical procedures in specific specialities; for example, cardiology tab, then list of cardiac drug policies. (Participant 177, RN) • One-page flyer with illustrations stored on equipment. (Participant 97, CNE) • Posters; flip cards. (Participant 137, RN) • Procedures that are relevant to my clinical area, located on our unit intranet page with links to procedure. (Participant 192, NUM) • Simply, practical procedures. (Participant 271, RN) • Visual prompts; clear, shortly worded steps. (Participant 144, RN)
Senior staff	• Ability to source expertise from other areas if required; e.g., CNE/CNC. (Participant 190, NUM) • Discussion with CNE. (Participant 128, NUM) • Educators. (Participant 73, RN) • Educators. (Participant 87, RN) • Expert demonstration and support on the clinical floor. (Participant 60, CNE) • Having a senior nurse to supervise and guide the procedure initially, then having access to a written guide for reminding is important. (Participant 42, RN) • Having an expert train local 'champions'. (Participant 89, CNE) • Watching multiple senior members perform clinical procedures. (Participant 177, RN)
Technology	• Don't know what QR code is!! (Participant 80, RN) • Given the poor Wi-Fi access in Gosford Hospital, and that personally I think mobiles should not be encouraged to be used on clinical floor (infection vectors and inappropriateness of using personal device in front of patients), so I don't value having access through QR code; better availability and use of COWs or other hospital devices is more important to me. (Participant 60, CNE) • In regard to the QR codes and mobile devices: I'm not sure how this works and have never accessed information like this before, so I am unsure if this would be valuable. (Participant 98, RN) • Mobile devices would be too small to read most policies. (Participant 64, RN) • Not allowed to carry a mobile on the floor, so why a QR code? (Participant 85, unstated role) • Video is not always ideal for clinical procedures, as it requires listening, watching and reading in a busy environment. I feel a video would be very valuable when you are first learning a procedure. However, I don't think it will be suitable for refreshers, as I

Categories	Quotations from participants *(edited for typographical errors)*
	usually can quickly skim the procedure to find the information that is relevant. However, being able to access it on mobile devices would be extremely convenient when needing to find information quickly, i.e., during rapid responses. (Participant 273, RN)
Use of images in procedures/videos	• Coloured illustrations if assembling equipment. (Participant 97, CNE) • Depending on the procedure, I like acronyms. (Participant 137, RN) • Having a multimodal approach will facilitate learning for those with differing learning styles. My personal learning style is written, but I do find that an online component that can be watched and rewatched is useful. (Participant 78, RN) • I prefer to have hands-on learning, a video showing how to do/set up for a procedure. (Participant 224, RN) • Several different teaching or education resources are important to embed learning, compliance and change. (Participant 215, RN) • Sometimes YouTube™ or speaking about procedure with other experienced nurses. (Participant 96, unstated role) • Use YouTube™ videos to familiarise some procedures that I cannot understand through reading. For example: ALS videos. (Participant 142, CNS) • Using multimodal methods of delivery: written, pictorial and possibly audio–visual. (Participant 78, RN) • Video resources would be great, especially if it was a new procedure or the first time doing it; but written procedure guidelines would be my go-to if I was in a hurry (I don't always have time to watch a video). Written procedure guidelines are the most useful if I need to refresh knowledge. (Participant 98, RN) • Videos and visual prompts. (Participant 144, RN) • WebMD®, Ausmed, YouTube™, my online learning, textbooks, ACN (Australian College of Nursing), resources, talking among staff, etc. (Participant 198, CNS) • When learning one procedure for the first time with little experience, a novice would find video/demonstrational learning more beneficial than someone learning an updated or newly completed procedure for a task known to the reader. (Participant 202, unstated role)
Workload	• Time set aside to revise procedures. (Participant 228, CNS) • Time to do them is not incorporated to plans, so whatever the education, it has to be only as needed; not all PPG (policy, procedures, guidelines), tailored to key points and brief time to read procedures, watch videos, receive education—they are not always easy during patient care. (Participant 7, CNC).

Note: ALS = advanced life support; CNC =clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; COW = computers on wheels; EN =enrolled nurse; NM = nurse manager; NUM = nursing unit manager; PPG = policy, procedure guideline; QR = quick response; RN = registered nurse.

4.15.7.6 Perceived State Anxiety When Undertaking a New Procedure

In the final question of Section Three, the participants (n = 211) were asked to use the STAI trait scoring tool to rate the anxiety they felt before undertaking a new procedure. The scale ranges from 20 to 80, with scores above 40 indicating clinically significant anxiety levels (Spielberger, 1995). The mean score for anxiety was 41.43 (SD = 9.307). Younger age and a lower number of years spent in the current role were significantly correlated with higher levels of anxiety (r = –0.134, p = .037; r = 0.532, p = .000). Further, women reported significantly higher levels of anxiety than men (43.05 [SD 7.61911] vs 37.2 [SD 8.82529], p = 0.008).

The participants were then asked to describe how they felt when they undertook a new procedure, of which 73 (29.4%) provided descriptions of their feelings in an open-ended question. From these 73 responses, eight categories were identified regarding participants' feelings about performing new procedures (see Figure 4.12). See Table 4.4 for full set of participant responses.

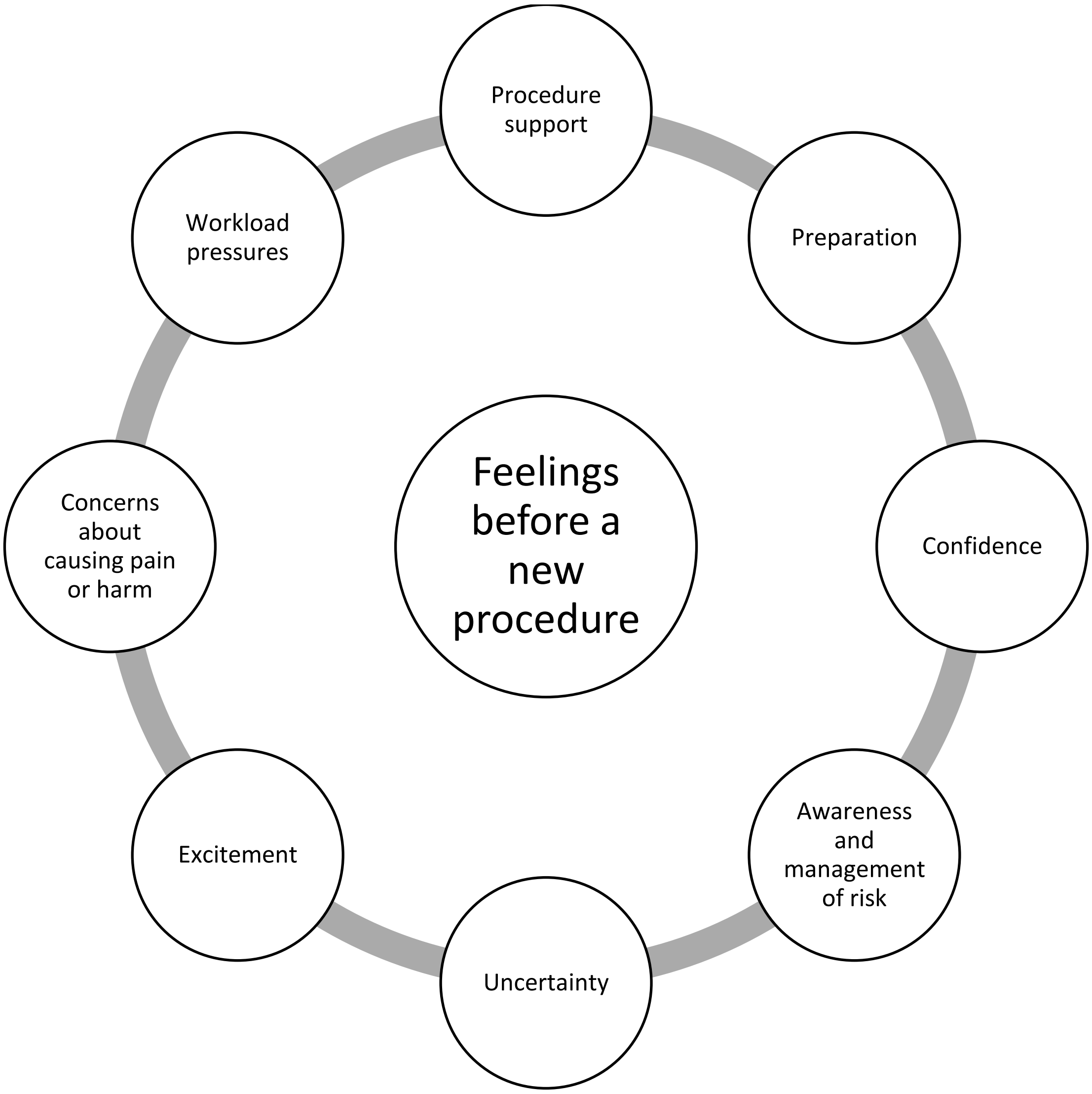


Figure 4.12. Inductive Content Analysis Categories of Participant Feelings When Performing New Clinical Procedures

Table 4.4 Category generation for participant survey question: 'When undertaking a new procedure, usually (select all options that apply). What do you think makes you feel this way? Please add your comments here'

Categories	Quotations from participants (*edited for typographical errors*)
Procedure support	• Attempting a new complicated clinical procedure is very different to attempting a new simple procedure. Having prior knowledge and time to practice is important. (Participant 211, CNS) • Completing a new procedure task may make me feel a bit worried/tense and nervous, depending on the task. The support of peers, policy and procedure, guidelines and the environment can reduce those feelings. The fear of making an error or incorrect decision that may impact a patient is the reason you sometimes may fear this way. (Participant 104, NUM) • Depending on the situation, and if it is a new procedure, I like to have educators available. (Participant 137, RN) • Generally, I feel good learning a new procedure with senior support and/or after reading the policy/competency. I don't tend to get flustered unless the procedure is during an emergency. (Participant 273, RN) • Given that education and support is provided, and when undertaking a new procedure, I feel confident that I can successfully perform the procedure. (Participant 37, NUM) • I think it is always normal to feel worried about doing something new; but with support from procedures, learning and staff, you will feel better. (Participant 216, RN) • Knowledge gained from available resources, most especially support from senior colleagues and educators. (Participant 71, EN) • Self-expectations aren't high as a novice to that procedure, and it can take time and experience to develop knowledge and skills. Resources are available to prepare for new procedures to ensure safety. (Participant 156, CNS) • The stress of a new procedure is always hard—but I feel a lot better if I have the information to back up the procedure, not just someone telling me. (Participant 49, RN) • Unsure when undertaking a procedure that you haven't done before, calm when you have seen procedure done and know what to do. (Participant 247, RN) • When attempting a new procedure, there is a level of fear of doing it wrong and how that may impact patients; occasionally, I feel excited to learn something new, but that is usually only if it is an extension of a skill that I am already comfortable with. (Participant 141, RN) • Years of experience and support of another clinician who is experienced in the new procedure. (Participant 152, RN)
Preparation	• A new procedure always gives anxiety and fear if you are not well supported by senior staff or educators. But I am confident to learn new procedures and improve my skills. It always needs training and to be clear about policies before doing it. I always prefer to watch educational videos/procedure videos before doing any procedures. (Participant 142, CNS)

Categories	Quotations from participants (*edited for typographical errors*)
	• As a clinician, I believe the first time you complete any new procedure is somewhat daunting, despite the knowledge, support and research done prior. I believe the more you complete a procedure, the more confident you become in completing the procedure. (Participant 197, NUM) • So long as the procedure has been preceded by satisfactory education, then apart from a little first-time apprehension, there should be less nervousness. (Participant 158, NUM) • If I feel I am not prepared or I have not been given notice of this upcoming procedure, I would prefer to have supervision from experienced staff member. (Participant 228, CNS) • Preparation is key. (Participant 149, CNS) • Time for preparation and good instructions help improve confidence in undertaking new procedures. (Participant 78, RN) • When proceeding with a new procedure, I ensure I am confident to carry out the procedure. I have read the guide, and if I’m not confident, I’ll go to a senior and ask for an explanation and supervision or help. If I’m still not confident or I'm not confident with the explanation, I’ll get an educator. So, when I carry out the procedure, I'm confident but still a little nervous, etc. (Participant 151, RN)
Confidence	• Because I am focused on the job at hand. (Participant 185, RN) • Comfortable in my knowledge. (Participant 222, RN) • Confidence in own skills and knowledge and access to resources, whether that people or educational resources. (Participant 79, NUM) • I feel comfortable because I would have hoped to have read the new procedure, attended any education offered and asked for support if needed. (Participant 198, CNS) • I feel moderately confident and at ease because I will have ensured that I know what to do before I commence the procedure. (Participant 37, RN) • I have confidence in my own knowledge, or lack of, and in seeking to rectify the lack. I am also confident in my abilities and high level of nursing skill, so the more negative feelings relate to having not done the procedure before or in a long time and worrying that I do not do the best by the patient. (Participant 203, CNS) • I think there is always apprehension in doing something new. However, I do not undertake anything without having done what I feel is due diligence in terms of looking up P&P (policy and procedure), accessing education, etc. (Participant 18, CNC) • Knowing that I practice within guidelines and am confident to access and use these to guide my practice reassures me that I am capable even when performing new procedures. (Participant 60, CNE)

Categories	Quotations from participants (*edited for typographical errors*)
	• My own clinical experience and education and being aware that change and learning often improve patient outcomes. (Participant 97, CNE) • My years of experience; I am confident to know when to stop a procedure. I research the risk/complication prior to performing the new procedure. (Participant 212, CNS) • Self-confidence in my ability to understand the task, and if unsure, then ability to ask seniors. (Participant 221, RN) • Working within my scope. (Participant 193, RN) • Years of experience and overcoming fears of applying new procedures/tasks. (Participant 87, RN) • Years of experience and support from another clinician who is experienced in the new procedure. (Participant 119, NM) • Years of experience ensure a feeling of confidence, calmness; relaxed. (Participant 152, CNS)
Awareness/management of risk	• Always slightly nervous before any new procedure, as I would like to make sure that I have done everything correctly and that it was in the best interest of the patient. (Participant 266, CNE) • Completing a new procedure task may make me feel a bit worried/tense and nervous, depending on the task. The support of peers, policy and procedure, guidelines and the environment can reduce those feelings. The fear of making an error or incorrect decision that may impact a patient is the reason you sometimes may fear this way. (Participant 104, NUM) • Doing a new procedure, despite my time as an RN, I feel very nervous, usually because I don't want to cause my patient pain. Also, most of the higher-level procedures in my area carry high risk. (Participant 111, EN) • Fear of causing harm to your patient through lack of knowledge and skill about a new procedure. (Participant 239, RN) • Feeling nervous and not wanting to do anything wrong. (Participant 251, RN) • I always think of the worst outcome and try to prevent this from happening. I worry I will complete the procedure incorrectly and result in harm to my patient. Being in an unknown situation/attempting a new procedure makes me feel very anxious and uncomfortable; I don't like to feel rushed to ensure I do the task correctly. (Participant 233, RN) • I feel this way because I know I carry a huge responsibility to maintain patient safety and remain within my clinical skills level. (Participant 144, RN) • I have confidence in my own knowledge, or lack of, and in seeking to rectify the lack. I am also confident in my abilities and high level of nursing skill, so the more negative feelings relate to having not done the procedure before or in a long time, and time and worrying that I do not do the best by the patient. (Participant 203, CNS) • It is good to be carefully cautious. A little bit of nervousness keeps us from making mistakes. (Participant 89, CNE) • New procedure could mean higher chance of error. (Participant 56, RN) • New situations with no previous experience in a particular clinical procedure. (Participant 116, RN) • New skill, not seen it or practiced it enough, is scary to do on a real patient. (Participant 55, RN)

Categories	Quotations from participants (*edited for typographical errors*)
	• The complexity of the procedure. (Participant 54, RN) • Understanding potential problems and wanting the best outcome for the patient. (Participant 268, RN)
Uncertainty	• Depends on the level of support available. If new procedure, I'm nervous and anxious about mistakes, but also keen to learn and develop. (Participant 190, NUM) • Doing any new task can be a little daunting; however, if you have the steps to do it successfully, it is just a matter of working through them. (Participant 111, NUM) • I think it is always normal to feel worried about doing something new; but with support from procedures, learning and staff, you will feel better. (Participant 18, CNE) • It is good to be carefully cautious. A little bit of nervousness keeps us from making mistakes. (Participant 89, CNE) • It's natural to feel a little nervous doing a new procedure on a human being that you could potentially harm. (Participant 271, RN) • Just being aware that it is a procedure I have not done before, so I feel appropriately a little anxious but not rattled or fearful. (Participant 274, RN) • Mixed emotions. Appreciative learning something new and being able to learn and grow and hopefully educate other colleagues. At the same time nervous, as you have little knowledge in the skill and could make an error without realising it. Hence why it's important to have a senior watch and challenge you with questions without judgement. (Participant 177, RN) • Nerves at times if new, but always supported. (Participant 171, RN) • Obviously, people who are unsure sometimes display anxiety of the unknown. I am not sure if all the emotions mentioned are applicable to procedures ... joyful, pleasant? (Participant 25, CNC) • Performing new procedures can be overwhelming, but with the right support, guidance, tools and communication, it can also be rewarding. (Participant 215, CNE) • Uncertainty putting new skills into practice. (Participant 154, RN) • Undertaking something new. Also, realising that a new procedure is a new learning opportunity, and I am not expected to know everything regarding the procedure. (Participant 88, RN) • Unsure when undertaking a procedure that you haven't done before; calm when you have seen the procedure done and know what to do. (Participant 247, RN) • When undertaking a new procedure, there is always an element of uncertainty until I am familiar with the procedure. (Participant 134, CNS)

Categories	Quotations from participants (*edited for typographical errors*)
Excitement	• Doing new procedures in the lab is exciting and extends our skills, though education needs to be given prior. (Participant 236, RN) • Excited to learn a new skill, but trying not to make a mistake. (Participant 26, RN) • I love learning new procedures and feel pleasant if something new. (Participant 275, CNE) • Love trying new procedures; I wish my scope of practice would allow more education and ability. (Participant 258, EN) • When attempting a new procedure, there is a level of fear of doing it wrong and how that may impact patients; occasionally, I feel excited to learn something new, but that is usually only if it is an extension of a skill that I am already comfortable with. (Participant 141, RN)
Concerns about causing pain/harm	• Doing a new procedure, despite my time as an RN, I feel very nervous, usually because I don't want to cause my patient pain. (Participant 64, RN) • Fear of causing harm to your patient through a lack of knowledge and skill about a new procedure. (Participant 239, RN) • Feeling nervous and not wanting to do anything wrong. (Participant 251, RN) • I am nervous trying new things, and it is concerning if it not done right the first time, as it can make the patient anxious. (Participant 73, RN) • It's natural to feel a little nervous doing a new procedure on a human being that you could potentially harm. (Participant 271, RN) • Not wanting to do any harm; if being watched and assessed, feel more nervous. I have a tendency to shake, making some procedures difficult. (Participant 96, unstated role) • Pressure to do the new procedure correctly so the patient is benefited, not harmed. (Participant 8, CNS) • Wanting to do my best for the patient but not having the skills with new procedures. (Participant 192, NUM) • When attempting new procedure, there is a level of fear of doing it wrong and how that may impact patients; occasionally, I feel excited to learn something new, but that is usually only if it is an extension of a skill that I am already comfortable with. (Participant 134, NUM)
Workload pressures	• If able to access proper clinical procedure guidelines, then I don't feel anxious. But when I am not able look through the guidelines (to refresh knowledge,) due to a lack of time/not enough staffing etc., I feel nervous. (Participant 16, RN) • Well, when I'm working, my first priority are the patients, and when you need to attend an educational procedure or in-service, then you are taken away from your patients; there may be a fall, rapid response, with change in condition; we don't always have the staff to monitor all patients, so this in itself causes anxiety to the nurse during assessments. It's not the assessments, it's the timing, because as a registered nurse, you are educating, supervising, dealing with the visitors,

Categories	Quotations from participants (*edited for typographical errors*)
	answering phone inquiries, communicating with other staff and doctors, chasing up tests, etc., so the workload can be overwhelming; computers going down continually, etc. (Participant 191, RN) • Workload and stress. Too much pressure from all angles some days. (Participant 175, RN)
Other	• ?? (Participant 232, RN) • Environmental. (Participant 176, RN) • I feel there are too many 'I feels' in this question. (Participant 42, RN) • This is too broad and emotive—it depends on the procedure, risk and role. (Participant 2, CNC) • Unrelated, irrelevant to workplace. (Participant 146, RN)

Note: CNC =clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; EN =enrolled nurse; NM = nurse manager; NUM = nursing unit manager; P & P = policy and procedure; =; RN = registered nurse.

4.15.8 Section Four: Video Procedures

4.15.8.1 Workplace Environment

Participants were asked to rate their agreement on a four-point Likert scale 1 *very much so,* 2 *moderately so*, 3 *somewhat* to 4 *not at all* regarding the statement, 'I would value clinical procedure videos'. Over 85% of participants responded that they would 'very much so'/ 'moderately so' value procedure videos (88.2%, *n* = 186/211).

Participants were then asked to rate their preferences for clinical procedure format by choosing from the options of video procedure, written procedure guidelines, both video and written procedure guidelines, and free text for comments. When asked for their preferences regarding institutional procedure formats, 209 participants responded. The overall preference was for both video and written procedure guidelines (80.4%, *n* = 168), followed by video procedure (12.4%, *n* = 26) and written procedure guidelines (7.2%, *n* = 15).

Participants were also asked to rate their agreement on a four-point Likert scale 1 *not at all*, 2 *somewhat*, 3 *moderately so*, 4 *very much so* regarding statements that described the consequences of video procedures. Of the participants, 91.8% (*n* = 192/209) agreed/strongly agreed that if video procedures were available, then they would enhance the participants' understanding of the procedure. Participants believed that the video would increase their recall of procedure steps (85.6%, *n* = 178), as well as their understanding of their role in the procedure (81.8%, *n* = 171). Participants agreed/strongly agreed that video procedures were also more likely to be used if they were available (81.1%, *n* = 171).

Over 80% of participants agreed/strongly agreed that video procedures would increase their clinical skills, if the videos were available (81.3%, *n* = 170). Participants were also asked whether a video procedure was more valuable than a written one, for which 63.1% agreed (*n* = 132, moderately so, very much so), see Figure. 4.13).

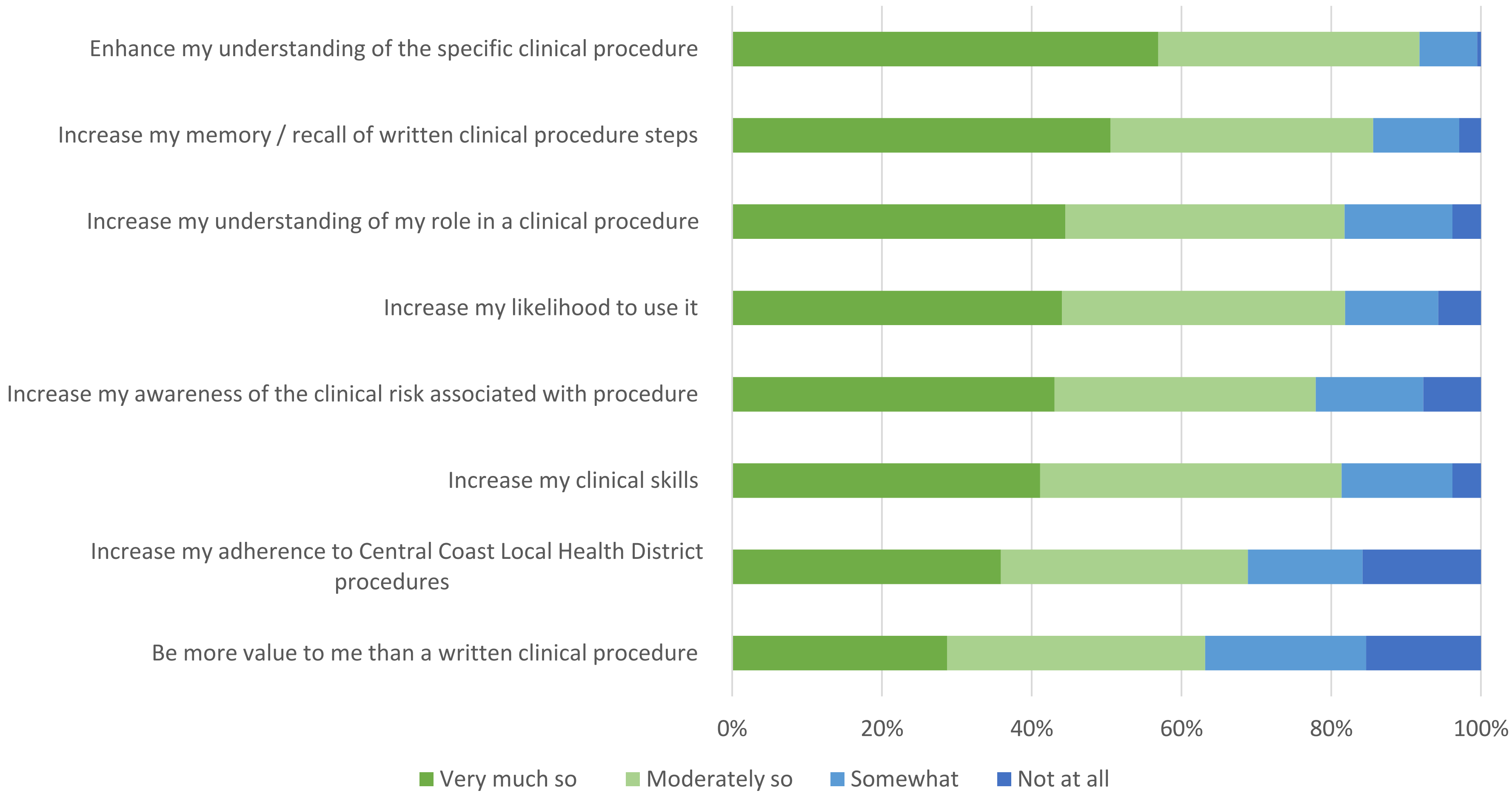


Figure 4.13. Participant responses to statement: 'If clinical procedure videos were available in CCLHD, it would … '

4.15.8.2 Patient Care

Participants were then asked to rate their agreement regarding how video procedures affect patient care. Most participants agreed/agreed strongly that if video procedures were available, then they would improve patient outcomes (88.6%, $n = 186$), make access to information easier (86.6%, $n = 182$) and improve the healthcare process (84.8%, $n = 178$), see Figure. 4.14.

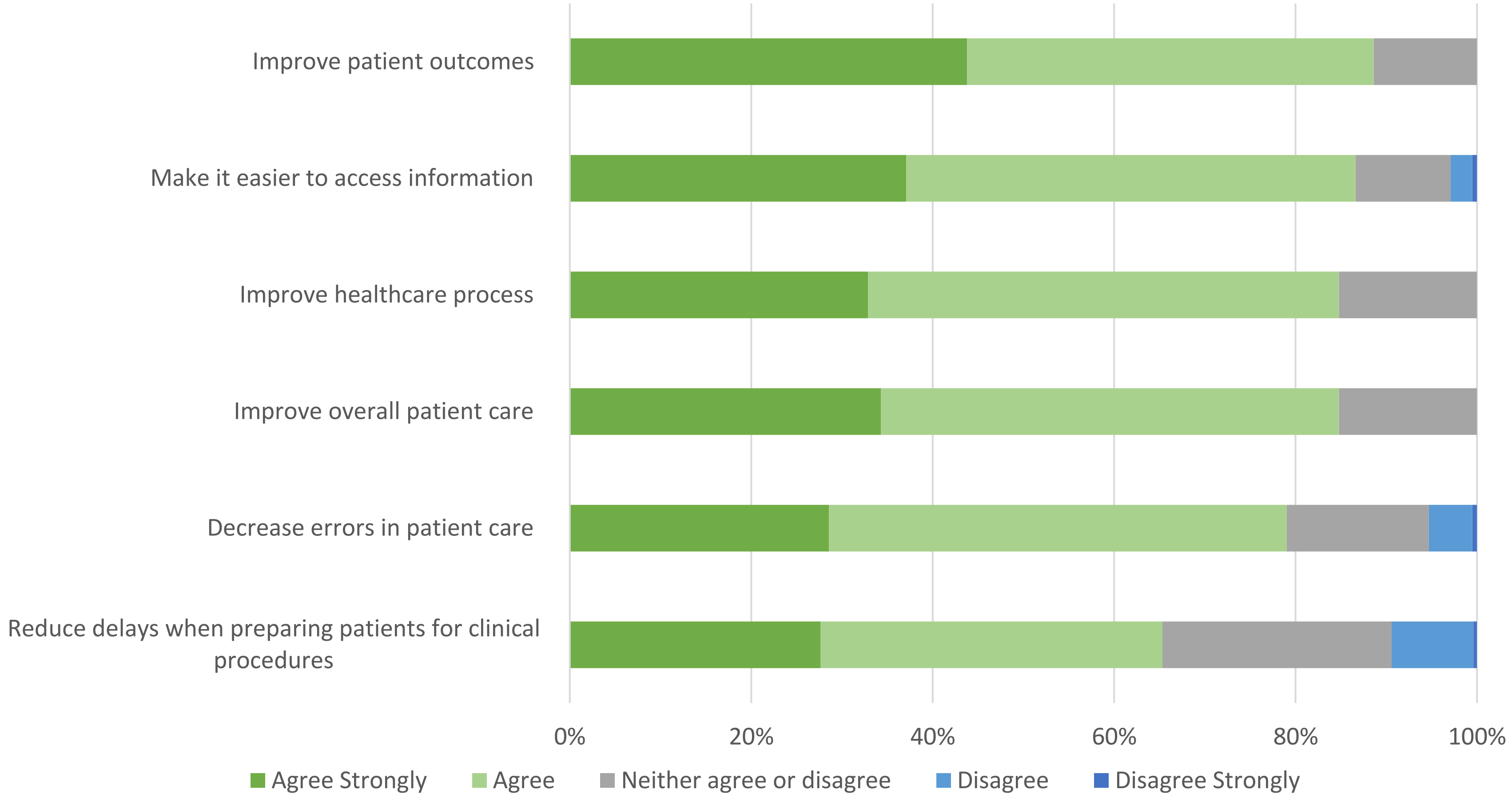


Figure 4.14 Participant responses to question: 'If clinical procedure video becomes accessible in your health service, do you think it will (select your response on the scale for each option)?'

4.15.8.3 Procedure Storage and Access

Participants were asked to rate their preferences for video procedures by selecting from three potentially feasible storage locations: hospital intranet, MHL or downloading onto personal mobile devices. The intranet was the most popular location (80.6%, *n* = 200), followed by MHL (57.3%, *n* = 142) and downloading onto personal mobile devices (43.5%, *n* = 108 see Figure 4.15).

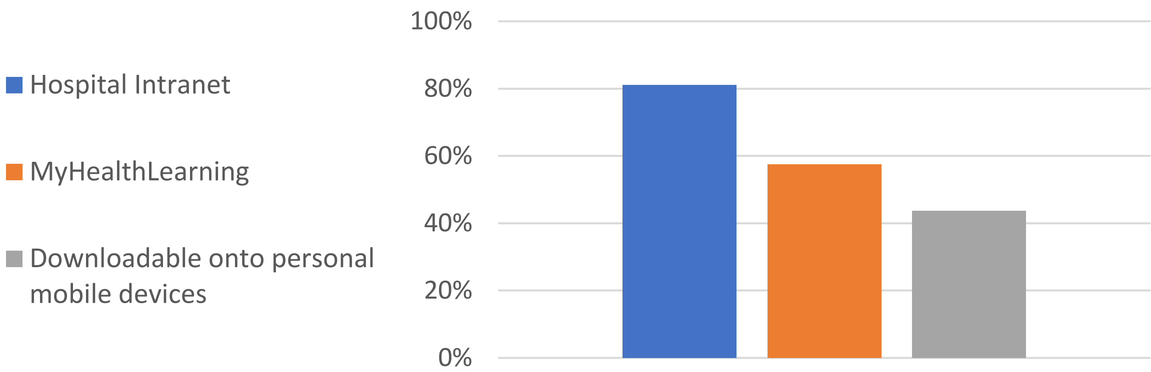


Figure 4.15 Participant responses to question: 'Where do you think video procedures should be made available (you can choose all options that apply)?'

Participants were also asked to comment about their preferences for institutional clinical procedures, of which 19 (7.6%) participants provided descriptions of locations in an open-ended question. Five categories were identified from these 17 valid responses regarding procedure storage and access (see Figure 4.16). See Table 4.5 for the full set of participant responses.

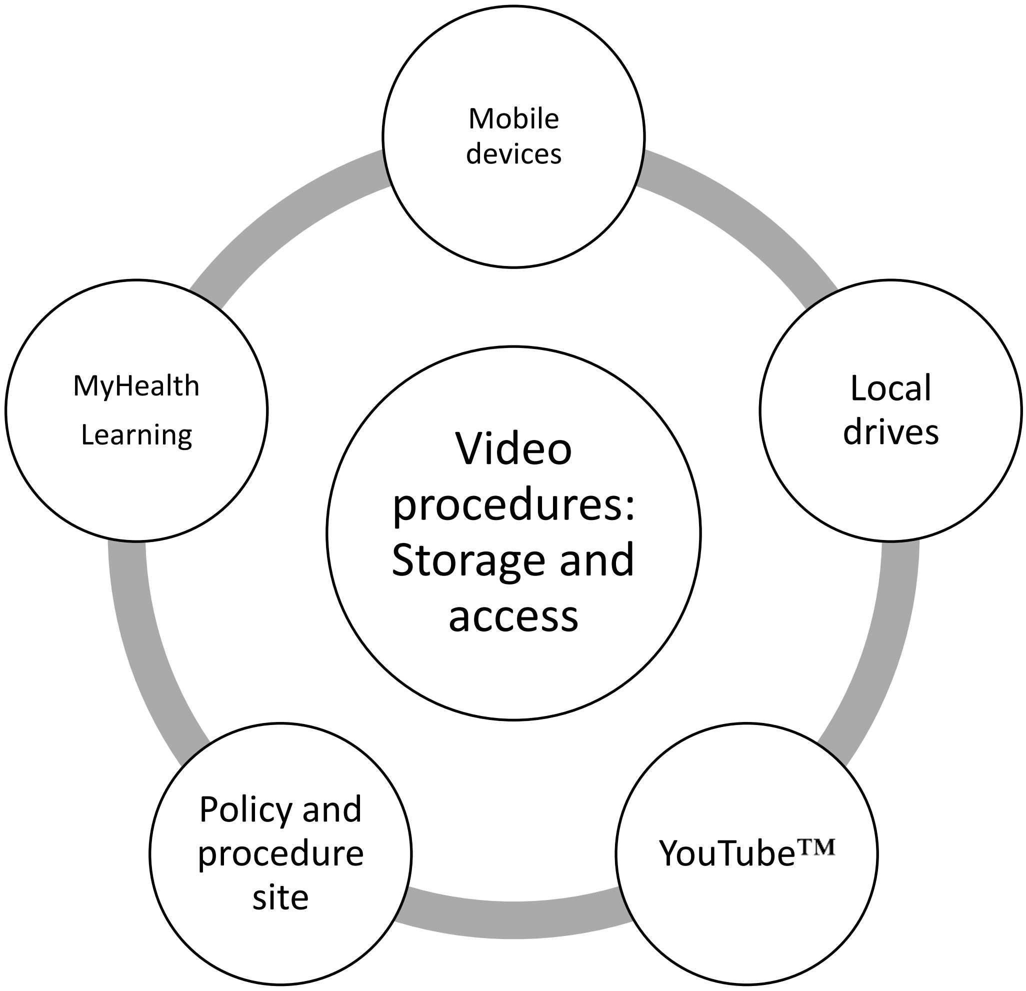


Figure 4.16 Inductive content analysis categories for participant comments about video procedures

Table 4.5 Category generation for free text responses to question: 'Where do you think video procedures should be made available? If you choose "other", please tell us any other locations you think video procedures should be'

Categories	Subcategories	Quotations from participants (*edited for typographical errors*)
Storage and access	Mobile devices	• A link you can access from home. (Participant 181, RN) • Dedicated, secure internet page ... can be accessed from home and mobile ... existing in ED (emergency department), happy to share. (Participant 63, CNE) • Designated learning tablets; virtual reality software. (Participant 215, CNE) • Mobile—for review/education at home, not for use in the clinical area, though for non-hospital clinicians; this would be very useful for the community etc. (Participant 60, CNE) • Mobile devices with the learner and generation of 2020; I think we need to be flexible and more open with how procedures can be accessed and where. (Participant 18, CNC) • Should be able to access from the external site, so staff and students can learn away from work if they wish to access but not necessarily download or provide automatic update link when things change if the need to download to personal device to avoid review of outdated process. (Participant 190, NUM)
	Local drives	• Our local department intranet site. (Participant 29, RN) • Saved into a desktop file. (Participant 233, RN) • Ward desktop computers, COWs (computers on wheels). (Participant 62, RN) • Ward drive or critical care drive. (Participant 26, RN)
	YouTube™	• YouTube™. (Participant 83, EN) • YouTube™. (Participant 89, CNE) • YouTube™. (Participant 144, RN) • YouTube™ should be able to share these with other hospitals and share ideas. (Participant 208, RN)
	Policy and procedure site	• If there is a section in policy and procedures for videos, I think they'd best be accessed there. Avoid putting it on HETI (Health Education Training Institute) at all costs; I feel it will not get used to its potential. (Participant 273, RN) • Embedded in the written procedure guidelines. Therefore, these will be used alongside the written procedure guidelines and not instead. This will also limit the different locations that information may be found on the same procedure. (Participant 42, RN)
	MyHealthLearning	• Avoid putting it on HETI at all costs. I feel it will not get utilised to its potential. (Participant 273, RN) • What I like about MHL (MyHealthLearning) is that it can be looked up at home, which is not possible on the intranet site. I would welcome more ready use on personal devices. (Participant 18, CNC)
	Other	• The intranet search function is not very good, so it can be difficult to find policies if you don't know the exact name or keyword to search; perhaps an icon with better grouping and search function would help. (Participant 271, RN) • N/A. (Participant 247, RN) • N/A. (Participant 211, RN)

Note: CNC =clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; COW= computers on wheels; ED = emergency department; EN =enrolled nurse; HETI = Health Education Training Institute; MHL = MyHealthLearning; N/A = not applicable; NM = nurse manager; NUM = nursing unit manager; RN = registered nurse.

4.15.8.4 Video Length

In a free text question, participants (*n* = 209) were asked to provide their opinions about the maximum time duration of a video procedure. The median time suggested was seven minutes (IQR 5–10 minutes), and more than 75% (*n* = 161) of participants thought that a procedure video should be less than 10 minutes.

4.15.8.5 Workload

Participants were also asked on a Likert scale to rate what they thought the consequences of video procedures could be in terms of their workload. Nearly half of participants (48.3%, *n* = 101/210) disagreed strongly/disagreed with the statement that video procedures would increase workload. Only 9.5% (*n* = 20 /210) of participants thought that video procedures would increase workload, with 32% (*n* = 67) agreeing /agreeing strongly that video procedures would have no effect on workload (see Figure 4.17).

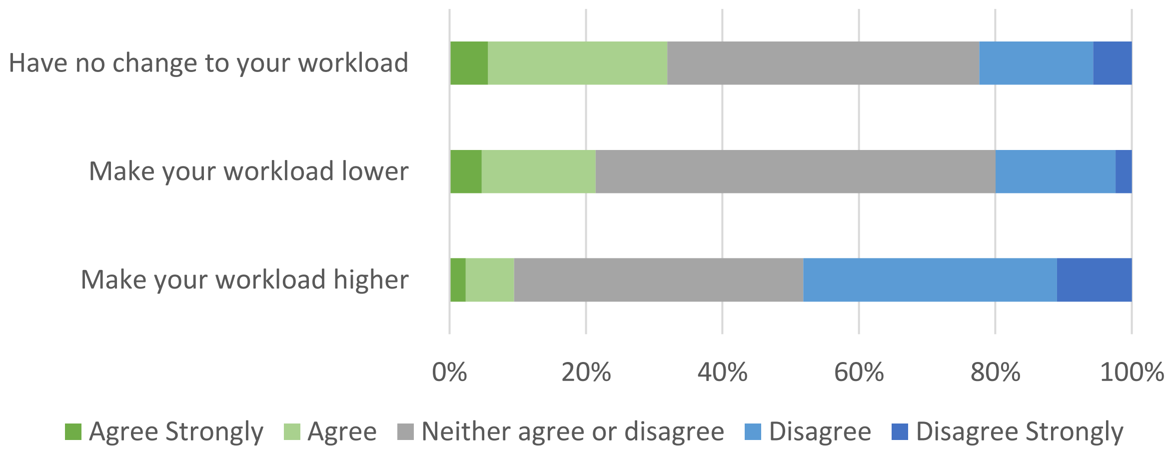


Figure 4.17 Participant responses to statement: 'If video procedures are accessible in your health service, it will … '

4.15.8.6 Consequences of Video Procedures

Participants were asked to rate their agreement on statements regarding the consequences of video procedures. Over 80% of participants (82.3%, *n* = 173/209) agreed/agreed strongly that managers would accept the act of health professionals viewing video procedures, while nearly half of participants disagreed/strongly disagreed that it would increase complaints (44%, *n* = 92/210), see Figure 4.18.

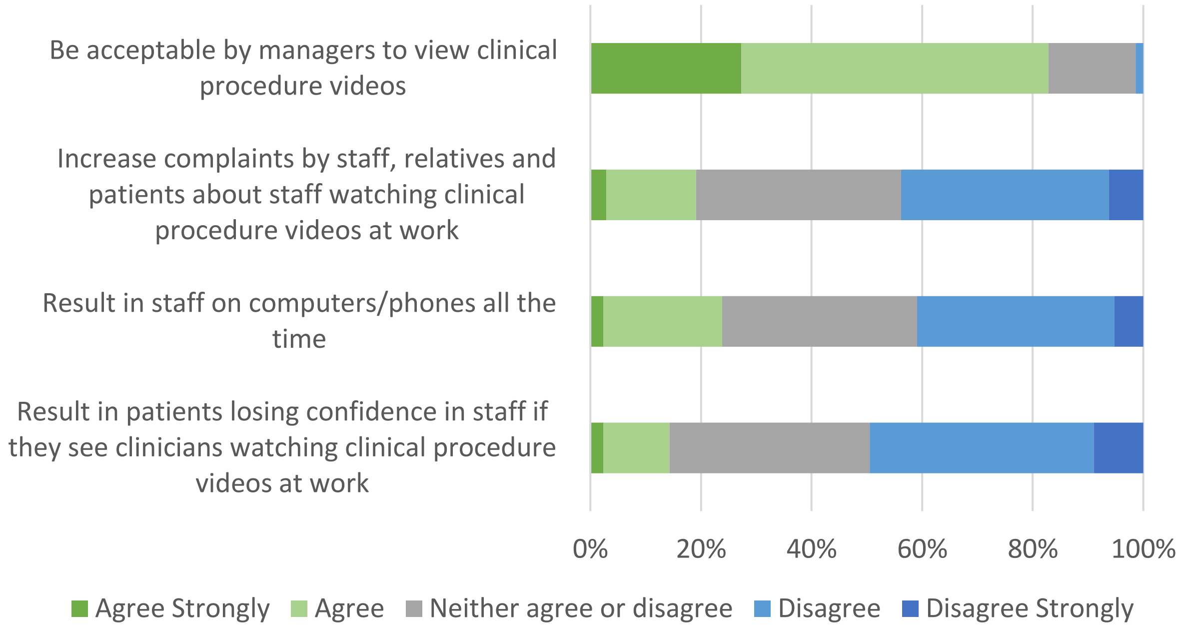


Figure 4.18 Participant responses to statement: ‘If video procedures are accessible in your health service, it will … ’

4.15.8.7 Qualitative Data: Video Procedures

In this section, participants were also asked to provide free text comments regarding the following Likert scale question sets: ‘If video procedures are accessible in your health service, it will …’ (13 questions); and ‘If clinical procedure videos were available in Central

Coast Local Health District, it would …' (8 questions). These question sets were designed to map onto the TDF domains of (a) behavioural regulation, (b) environmental context and resources, (c) knowledge, (d) skills, (e) optimism, and (f) belief about consequences. Participants were also asked to comment on the following question: 'Please add any additional comments below about your preferences for clinical procedure support'. Of the participants, 84 (40%) provided comments for these questions, and from these 84 responses, seven categories were identified regarding consequences of video clinical procedures (see Figure 4.19). For full participant comments, see Table 4.6.

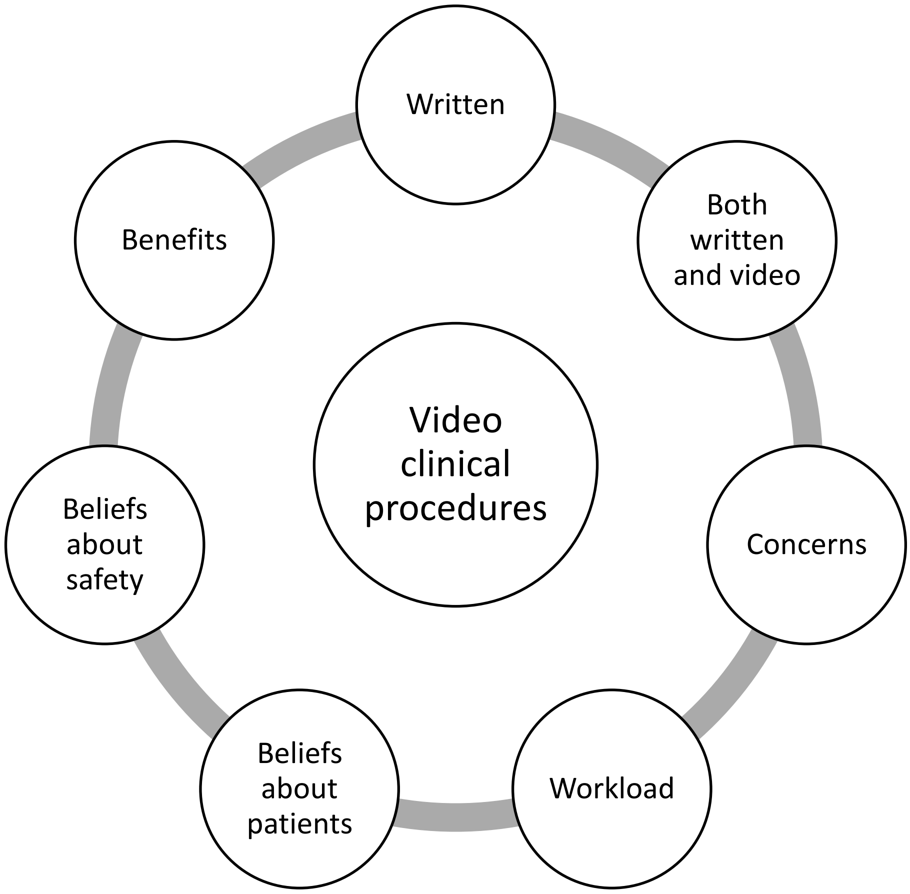


Figure 4.19 Inductive content analysis categories for participant comments about video procedures

Table 4.6 Category generation for participant comments on survey questions regarding video clinical procedure preferences

Categories	Quotations from participants *(edited for typographical errors)*
Written	• Written info will always be a valid source and would be needed should a failure in technology occur (power or internet outage). Video could be made available in different languages also to ensure understanding. (Participant 211, CNS) • Written procedure guidelines are my preference because these may be accessed in a more versatile way. Having time and space to sit in a particular spot and watch a video in a ward environment can be difficult. Some persons may prefer to take written procedure guidelines to the bedside and use this as a prompt with a second person, which may not be done with video. Video recalls the clinician to watch the video, retain all the information then perform the procedure. If video is to be used, I believe it should be used alongside written material, embedded into the written procedure guidelines and therefore in the same location. (Participant 42, RN)
Both written and video	• Both written and video clinical procedures are necessary because if you need to watch the whole video to remember just one step in a process of 20, for example, that will lead to frustration. I think, initially, when learning needs are high, video is a better way of retaining/understanding information; but as confidence grows, referring to a written procedure guidelines that can be 'skimmed' for points is more time valuable. (Participant 214, RN) • I am a visual learner who enjoys both written and visual learning with CNE's to support our understanding of what we are learning. (Participant 144, RN) • I believe videos to be an important adjunct; but they should not replace written procedure guidelines. They SHOW the 'how to' rather than someone interpreting a procedure incorrectly; e.g., draping the patient correctly for a TVPW (temporary venous pacing wire), or how to pass equipment to a scrubbed person. (Participant 192, NUM) • I feel you would still need written procedure guidelines to follow, as when doing the procedure, you cannot stop and start video; but you can glance at the procedure. (Participant 96, unstated role) • I think video would be a good adjunct to written procedure guidelines. (Participant 119, NM) • I think a video complements written procedure guidelines, and both need to be available. (Participant 60, CNE) • I think I would prefer written, but video would be a good additional support. In an emergency, it would be quicker to read than to watch a video. (Participant 26, CNS) • I think they could both be very important, as some people like me are visual learners. Also, by doing both, you're more likely to remember it. And if it's a brand-new procedure, then seeing it done first decreases my anxiety by a lot. (Participant 49, RN) • I think to have a video is great; however, in times of down time, with no internet access, having paper would be very helpful to read back on and have on hand. (Participant 221, RN) • I would always need written procedure guidelines. I like the idea of cementing education with a video, but I do not think all procedures need a video or that we could replace a procedure with a video entirely. (Participant 18, CNC) • Individuals learn differently; both written and visual tools are of equal value. (Participant 35, NUM) • Multi-resources required for multi-learner needs. (Participant 215, CNE)

Categories	Quotations from participants *(edited for typographical errors)*
	• They do say that after 5 minutes, you tend to lose your audience concentration. (Participant 275, CNE) • Video and written; can see in practice and have something written to refer to. (Participant 210, CNS) • Video can't cover the governance or the information of a written procedure guidelines—rather, it focuses on key points and tasks, so written is still required. (Participant 7, CNC) • Written and video caters to everyone. (Participant 27, RN)
Concerns	• Both written and clinical procedures are necessary because if you need to watch the whole video to remember just one step in a process of 20, for example, that will lead to frustration. I think, initially, when learning needs are high, video is a better way of retaining/understand information; but as confidence grows, then referring to a written procedure guidelines that can be 'skimmed' for points is more time valuable. (Participant 214, RN) • Easy access during intranet search please!!!!!! (Participant 146, RN) • I believe written would be accepted better if patients and visitors saw us. Sometimes in ED (emergency department), it is difficult to hear videos. (Participant 90, RN) • For the last few reasons on patient perception, I agree that this is a reason to not encourage use of mobiles on the clinical floor and instead have better availability of other devices for use. Patients and other staff cannot distinguish between staff using personal mobiles for work or personal use during clinical time, and it looks unprofessional for people to be constantly on their phones (my personal view and pet hate, anyway 😝). (Participant 60, CNE) • I feel you would still need written procedure guidelines to follow, as when doing the procedure, you cannot stop and start video; but you can glance at the procedure. (Participant 96, unstated role) • If I were a patient and I saw staff watching a video of a procedure prior to doing it on me, I would assume they didn't know how to do it and would not be confident in their ability. (Participant 64, RN) • I found written documents vary words, and I take a while to find the steps I need to do the task. (Participant 73, RN) • I think to have a video is great; however, in times of down time, with no internet access, having paper would be very helpful to read back on and have on hand. (Participant 221, RN) • I would always need written procedure guidelines. I like the idea of cementing education with a video, but I do not think all procedures need a video or that we could replace a procedure with a video entirely. (Participant 18, CNC) • Length of video will depend on procedure. (Participant 85, unstated role) • The five-minute maximum length of video time above was if it was on the ward. I would prefer longer if it was out of ward time. (Participant 158, RN) • The intranet search function is not very good, so it can be difficult to find policies if you don't know the exact name or key word to search; perhaps an icon with better grouping and search function would help. (Participant 271, RN)

Categories	Quotations from participants *(edited for typographical errors)*
	• Video can't cover the governance or the information of a written procedure guidelines; rather, it focuses on key points and tasks, so written is still required. (Participant 7, CNC) • Videos require detail, which can sometimes be lost if the camera is far away. Doesn't always cover the pre and post-care, only the procedure itself. What happens next and must be done is just as important. Harder to keep videos up to date with practice change and product change. (Participant 62, RN) • When using written procedure guidelines, you are able to refer back to it when performing a procedure. With a video, you are unable to do this. (Participant 87, RN) • Written info will always be a valid source and would be needed should a failure in technology occur (power or internet outage). Video could be made available in different languages also to ensure understanding. (Participant 211, CNS) • Written procedure guidelines are my preference, as these may be accessed in a more versatile way. Having time and space to sit in a particular spot and watch a video in a ward environment can be difficult. Some persons may prefer to take a written procedure guidelines to the bed side and to use this as a prompt with a second person, which may not be done with video. Video requires the clinician to watch the video, retain all the information then perform procedure. If video is to be used, I believe it should be used alongside written material, embedded into the written procedure guidelines and therefore in the same location. (Participant 42, RN)
Workload	• I think there is a difference between Facebook and accessing workplace videos. Fellow staff and patients, in my opinion, would not have any issue with this if the staff member was cognisant of the fact that direct patient care is our priority always, and they are in communication with the patient and team. 'Hi Mary, if you don't need me, I am going to be doing some education on my phone. Please call me if you need anything; I am right outside your bedspace', is all that it would take. Most staff can see the difference between a social media addicts and diligent staff doing education. (Participant 18, CNC) • It might be alright if staff look at the relevant videos before preparing for the procedure. Staff should also be mindful of the overall workload of the ward before watching videos. (Participant 16, RN) • The clinicians would need to find time to watch the videos. The current workload would not allow the time on most days. (Participant 54, RN) • Video training ideally would be done during non-clinical time. (Participant 80, RN) • Staff will not be on devices all the time; it will only be on occasion. (Participant 274, RN)
Beliefs about patients	• Being able to access videos on our mobiles will be helpful in upskilling the staff. We may receive some complaints about being on our phones, so patients will need to be informed. I don't necessarily believe that watching videos will be quicker than reading a policy; but it will be a valuable tool as an addition. (Participant 273, RN) • I feel patients will be at ease knowing that the staff looking after them are doing everything to ensure they know what they are doing when giving care. (Participant 123, unstated role) • I feel that staff should be using such resources, but, where possible, preferably away from the patient and their family. (Participant 122, CNE)

Categories	Quotations from participants *(edited for typographical errors)*
	• If my nurse was watching how to do something before practicing on me, my confidence level as a patient would probably be low; but with an explanation from my nurse, my opinion could change. All depends on the nurse. (Participant 151, RN) • May cause decrease in confidence if patients see nurses watching videos; they may need to be watched discretely … not at the bedside. (Participant 26, CNS) • Patient and families may benefit by also being able to access/view procedures, enabling them to hold staff accountable for their actions. (Participant 144, RN) • Should be able to have a quiet space to watch a video; therefore, no distractions and not looking unprofessional in front of patients or relatives. (Participant 210, CNS) • Staff already spend a great deal of time on the computer; it is a resource that we already use to access procedures. It all comes down to good communication with patients and relatives about why you are on the computer. (Participant 198, CNS)
Beliefs about safety	• Clinical procedure videos should be watched in the nurse's station. Prepare from the nurse's station and treatment room. (Participant 142, CNS) • I think there is a place for videos of low-frequency procedures. (Participant 25, CNC) • Most of our workforce is professional and would use the tools appropriately and not at the bedside when attempting a first-time procedure. Managers would need to oversee and address concerns raised. (Participant 35, NUM) • Watching a procedure does not make you competent, and it also relies on recall of the content. I would think it would not be acceptable to watch at a patient bedside prior to procedure. I think it should be an adjunct and not a replacement to a paper procedure. Procedures do get peer reviewed by many people prior to publishing. (Participant 162, CNC)
Benefits	• Being a nurse relies on us being on the computer as it is; so if we are going to be on the computer, it may as well be to benefit our practice. Being able to see videos will be very beneficial to visual learners like myself. (Participant 28, RN) • Being able to access videos on our mobiles will be helpful in upskilling the staff. We may receive some complaints about being on our phones, so patients will need to be informed. I don't necessarily believe watching videos will be quicker then reading a policy; but it will be a valuable tool as an addition. (Participant 273, RN) • I believe clinical videos would improve patient care and be valuable in times when more experienced staff are not available. They would give the staff the opportunity to familiarise themselves and revise procedures. (Participant 228, CNS) • I feel videos are a great idea and are much better than reading so many pages for one procedure. They will hold our attention for longer, and I feel I would look up a video before I would read a procedure policy. (Participant 236, RN) • Many times, when teaching staff and then revisiting those staff members with doing procedures, many have forgotten steps or try to fumble through. Having them watch the procedure via video is a fantastic tool to remind them about how to do the procedure. (Participant 266, CNE)

Categories	Quotations from participants *(edited for typographical errors)*
	• Patient and families may benefit by also being able to access/view procedures, enabling them to hold staff accountable for their actions. (Participant 144, RN) • The learning environment is always changing; some staff learn by visual means and need to see a procedure being performed compared to reading off a paper. I feel the video presentations would instil more confidence into staff performing the procedure for the first time. (Participant 212, CNS) • Most nursing work is on computers anyway. The complaints are there—they will not go away. People see nurses on computers and think they are not working—this won't change. However, I think having videos available will greatly help nurses help themselves and encourage nurses to do the procedure—maybe with a support person, instead of making the support person do it first. I feel there would be more learning and more empowerment for the nurses. (Participant 203, CNS) • We are already always on computers, so no change, and I feel it would improve patient confidence, so staff are able to check that they are up to date on current best practices. (Participant 221, RN) • Will be an adjunct to other ways of learning for staff. (Participant 190, NUM) • Will cater to different learning styles but also help when you can't read/comprehend anymore on night shift and are half asleep. (Participant 271, RN)
Other	• N/A. (Participant 247, RN) • N/A. (Participant 73, RN) • Answering these questions is speculating. (Participant 185, CNE) • More time out of ward for education and training would be nice. (Participant 80, RN) • Multiple in-services. (Participant 177, RN) • N/A. (Participant 211, CNS) • N/A. (Participant 247, RN) • Nil extra comments. (Participant 258, EN) • They do say that after five minutes, you tend to lose your audience concentration. (Participant 275, CNE) • This is going make little difference to adherence to CCLHD procedures, as we strive to comply in any case. (Participant 29, RN)

Note: CNC =clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; ED = emergency department; EN =enrolled nurse; NUM = nursing unit manager; RN = registered nurse; TVPW = temporary venous pacing wire.

4.15.8.8 Participants' Clinical Procedure Information Sources

Participants were asked for their responses to the question: 'Have you ever searched for procedure information related to your work?' Nearly 70% (*n* =143/206) of respondents agreed that they searched online for videos that contained procedure information. Of this percentage, 95% (*n* =136/143) listed in a free text question the information sources that they used when they searched for procedure information. After NVivo (release 1.6.1) was used for analysis, the frequency of participant responses was coded according to categories. Two major information categories were derived: internal to the local health district and external sources.

Within these two categories were nine external and five internal sources for procedure information searches. External sources included YouTube™, Google, unnamed external websites, the internet, health peak bodies, books, social media sites, vendor websites and private education providers. Internal sources included the intranet and local procedure site, senior staff, Clinical Access Information Portal (CIAP) and UpToDate, MyHealthLearning and Clinical Nurse Educators.

The most popular source was internal—the intranet (*n* = 80)—followed by YouTube™ (*n* = 70). However, the third most common was Google (*n* = 40), which was rated more frequently than health peak-body websites, such as American College of Cardiology and Stroke Foundation (*n* = 22) and asking senior staff (*n* = 16), Figure 4.20.

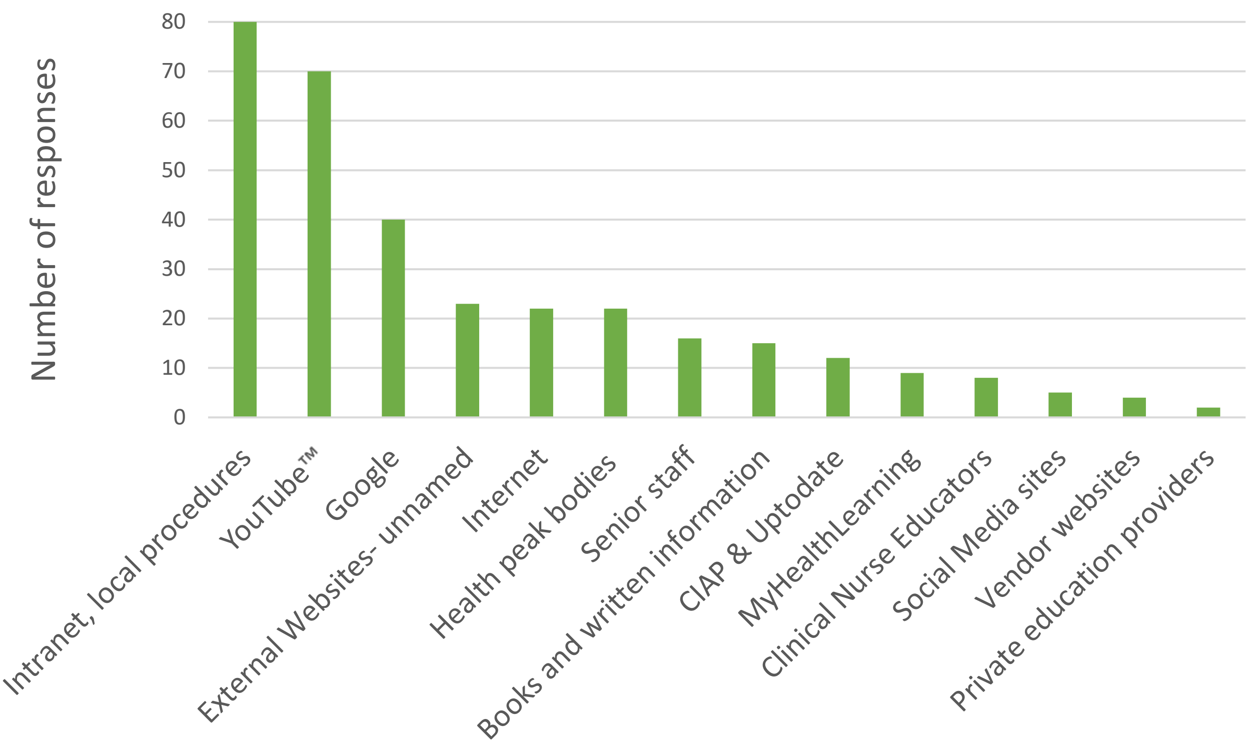


Figure 4.20 Respondent's sources of procedure information searches

In addition to listing information sources, participants were asked to comment on an opened-ended question about information sources. Of the participants, seven (4.8%) added comments to elaborate about their information sources, as indicated below:

- *I have searched the intranet previously. I have also searched on YouTube™ for videos because they are more easily accessible. (Participant 28, RN)*
- *When recruiting to renal service, I advise all applicants with no renal experience who call regarding the position to visit YouTube™ for videos on haemodialysis. Therapy Rep companies that sell products often have valuable video resources. (Participant 35, NUM)*
- *Usually YouTube™; it's hard to find a good resource. (Participant 147, RN)*
- *Intranet, read through policy and highlight all important things, or highlight statements you don't understand to gain further knowledge. (Participant 177, RN)*

- *YouTube™ for pathophysiology, and animated diagrams for visual understanding. (Participant 202, unstated role)*
- *More intranet procedural videos would be beneficial, so they can be accessed and shared at work. (Participant 268, RN)*
- *Policy and procedures, mostly. I learn from watching others and through reading materials. However, videos for emergency procedures are very valuable to watch. (Participant 273, RN).*

4.15.8.9 Key findings from pre-implementation phase

This study phase addressed the research aim of identifying the barriers to and facilitators to implementation of video procedures. The results identified that participants value written clinical procedure guidelines, and that they access them regularly at work. Procedure guidelines are accessed to obtain knowledge – refresher or new knowledge. They are also used for teaching.

Participants value images in written procedure guidelines and simple language. The length of a procedure guideline is not as important as it being easy to understand and follow. Most participants thought written procedure guidelines should be less than 4 pages long. Inductive content analysis of participant qualitative responses revealed this is because participants are often time pressured when seeking information, but they recognised that more complex procedures would require longer procedure guidelines.

The most common source of procedure information was the local health district intranet, and this is where health professionals wanted video procedures located. Of note, over two thirds of participants reported already accessing online videos for clinical procedure support, which indicates the acceptability of this mode of procedure support.

A major finding is the significant levels of anxiety reported before new procedures. The relationship between participants' state anxiety scores and their experience revealed that clinical procedures are associated with anxiety—especially for less-experienced nurses. Participants were asked to describe how they felt when they undertook a new procedure, which including the conflicting emotions of uncertainty and confidence. Participants also reported awareness of procedure risks and concerns about causing harm or pain. Participants valued preparation and support from senior nurses or educators.

The survey results identified four barriers to, and nine facilitators of clinical procedure use which are assessed in section 4.15.8.10.

4.15.8.10 Assessment of Barriers to and Facilitators of Clinical Procedure Use

The final analysis of the pre-implementation survey results identified four barriers to and nine facilitators of procedure video implementation. The quantitative data cut-off points were used as an initial guide for the barriers and facilitators identification process. Two barriers were included below the 70% threshold because of the qualitative results and discussion with the supervisory team.

The barrier to using clinical procedures that was most frequently cited in participant comments was a lack of regular exposure to procedures, but repeated practice was noted as a method to overcome this. An underlying theme in participant comments was workload intensity, and several comments refer to saving time. According to the quantitative data, 98.1% (n = 214) participants rated the importance of computer access in the clinical area as very important/important for accessing procedures. The participants' comments also identified two potential barriers to using clinical procedures—mobile phone use and intranet search functionality—and two participants noted further potential issues, such as viewing procedures on small mobile phone screens and policy bans on using personal phones in clinical areas. In response to a question about the option of providing procedure posters with QR codes two participants commented that they needed to learn what QR codes were. Three participants commented about logistical barriers to using procedures, such as the intranet search function, and they noted concerns about the potential risk of accessing procedures in multiple ways. Finally, two study participants left comments that identified time pressures and workload as barriers to learning procedures (see Table 4.7).

Nine facilitators for using clinical procedures were also identified from participant comments. As mentioned previously, exposure to procedures was the most cited facilitator for procedure use. Other facilitators that were identified included procedure-related education courses. Twelve participants noted the positive benefits of implementing images or multimedia in the procedures, and other physical resources that were identified as facilitators included flip charts and posters. Finally, eight participants commented on the importance of senior staff in facilitating clinical procedure education.

Over 95% (98.6%, n =210/213) of participants agreed that procedure use was facilitated by feeling that it would make a difference to patient care and that it would increase the participants' awareness of the procedure's risks. Finally, three participants commented that patient safety was a reason for procedure use. The facilitators to video clinical procedures that were identified from the quantitative and qualitative results are presented in Table 4.8.

Table 4.7 Barriers to video clinical procedures identified from the quantitative and qualitative results

Barrier	Survey data	Frequency	Responses (n)	Qualitative data *(edited for typographical errors)*
Lack of computers in clinical areas	How important are the following factors in terms of helping you remember written clinical procedures? • Access to intranet computers in the clinical area	98.1%	214	• I think mobiles should not be encouraged to be used on clinical floor (infection vectors and inappropriateness of using personal device in front of patients), so I don't value having access through QR codes; better availability and use of COWs or other hospital devices is more important to me. (Participant 60, CNE)
Lack of regular exposure to procedures	• I find it difficult to recall written clinical procedures in my practice (sometimes, always, very often)	73.9%	219	• I only remember things that I do regularly. Practicing other clinical procedures would help. (Participant 13, RN)
Remembering to access procedures	Select your response in relation to your experience with written clinical procedures: • During my workday, I think there are too many clinical procedures to remember (sometimes, always, very often)	69.4%**	219	• I find it difficult to find procedures on the intranet, especially when they are from another specialty. QR codes would be amazing. (Participant 147, CNS)
Time pressures and workload	If clinical procedure videos become accessible in your health service, do you think they will: • Have no change to your workload (neither agree nor disagree, disagree, disagree strongly)	57.6%**	210	• Time to do them is not incorporated into plans, so whatever the education, it has to be only as needed—not all PPGs, tailored to key points, and brief time to read procedures, watch videos, receive education; it is not always easy during patient care. (Participant 7, CNC) • Well, when I'm working, my first priority are the patients, and when you need to attend an educational procedure or in-service, you are taken away from your patients; there may be a fall, rapid response, with a change in condition; we don't always have the staff to monitor all patients, so this in itself causes anxiety for the nurse during assessments. It's not the assessments, it's the timing; as a registered nurse, you are educating, supervising, dealing with the visitors, answering phone inquiries, communicating with other staff and doctors, chasing up tests, etc., so

Barrier	Survey data	Frequency	Responses (n)	Qualitative data *(edited for typographical errors)*
				the workload can be overwhelming; computers going down continually, etc. (Participant 191, RN) • Workload and stress. Too much pressure from all angles some days. (Participant 175, RN) • One procedure/policy/SOP or guideline in one location, so I'm not wasting time searching various locations. Easy to follow, with step-by-step instructions if relevant. (Participant 151, RN) • Our working environment is very busy; we need information very fast, and there is no time to be wasted on searching for information on pages before we get the right answer. (Participant 191, RN) • Pressure to adequately locate, read and interpret information; to perform the given task at a high standard for overall patient safety, and clinical standards are met. (Participant 176, RN) • All information should be contained within the procedure. When referred to multiple other procedures within the one procedure, it takes up too much time to find the relevant information. (Participant 54, RN)

Note: ** included despite the quantitative result being below the 70% threshold because of qualitative results and author discussion.

Note: CNC =clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; COW = computers on wheels; PPG = policy, procedure guideline; QR = quick response; RN = registered nurse; SOP = standard operating procedure.

Table 4.8 Facilitators of video clinical procedures identified from the quantitative and qualitative results

Facilitator (F)	Survey data	Frequency	Responses (*n*)	Qualitative data *(edited for typographical errors)*
Clinical procedures improve standards	• Feeling that the clinical procedure will make a difference to the patient (very important/important)	98.6%	213	• Performing the clinical procedure correctly to facilitate a better outcome for the patient is the most important part of performing the procedure correctly, not whether I am going to be audited or spoken to. (Participant 274, RN)
Clinical procedures reduce risk	Rate how important the following factors are in terms of improving your use of written clinical procedures: • Being aware of risks associated with not following a clinical procedure (very important/important)	96.3%	213	• I'm excited to learn a new skill but trying not to make a mistake. (Participant 26, RN) • I always think of the worst outcome and try to prevent this from happening. I worry I will complete the procedure incorrectly and result in harm to my patient. Being in an unknown situation/attempting a new procedure makes me feel very anxious and uncomfortable; I don't like to feel rushed to ensure I do the task correctly. (Participant 233, RN) • I know I carry a huge responsibility to maintain patient safety and remain within my clinical skills level. (Participant 144, RN)
Clinical procedures improve access to information	Please rate your agreement with the following statement: 'I value written clinical procedures'	95.1%	247	• Written procedure guidelines are my preference, as these may be accessed in a more versatile way. (Participant 42, RN)
Video procedures will improve patient care	If clinical procedure videos become accessible in your health service, do you think they will: • Improve patient outcomes (agree strongly, agree)?	88.6%	210	• Clinical procedures improve my practice and ensure clinical safety for my patients; I highly regard their value. (Participant 144, RN)

Facilitator (F)	Survey data	Frequency	Responses (*n*)	Qualitative data *(edited for typographical errors)*
Video procedures would be valued	Please rate your agreement with the following statement: ‘I would value clinical procedure videos (moderately so, very much so)’	88.2%	211	• I think there is a place for videos of low-frequency procedures. (Participant 25, CNC)
Video procedures will increase access to information	• Make it easier to access information (agree strongly, agree)	86.6%	210	• Written and video caters to everyone. (Participant 27, RN)
Video improves clinical skill performance	• Increase my memory/recall of written clinical procedure steps (agree, strongly agree)	85.6%	208	• When learning one procedure for the first time with little experience, a novice would find video/demonstrational learning more beneficial. (Participant 202, unstated role)
Clinical procedures increase knowledge	Please select the reasons why you are likely to search the intranet in relation to written clinical procedures: • Knowledge refresher	85.4%	211	• Current procedural information—updated regularly. (Participant 228, RN)
Video procedures will improve the healthcare process	• Improve healthcare process (agree, strongly agree)	84.8%	210	• I think they could both be very important, as some people like me are visual learners. If it’s a brand-new procedure, then seeing it done first decreases my anxiety by a lot. (Participant 49, RN)

Note: CNC =clinical nurse consultant; RN = registered nurse.

4.16 Chapter Summary

This chapter addressed the research aim of identifying barriers and facilitators to implementation of video procedure. The chapter discussed the survey methods, analysis and the findings associated with participant's use of clinical procedure guidelines. The survey based on the TDF was completed by 248 participants from two acute hospitals The results identified that nurses value written clinical procedures, and that they access them regularly at work. For many reasons participants have concerns about patient safety during infrequent or rare procedures. Critically, in our study-participants associated new clinical procedures with anxiety.

Participants reported they would value video procedures and associate them with largely positive consequences. A number of participants reported searching for online information and videos about procedures. Participants provided recommendations on video procedure content and length. Open communication with patients is key to counter the genuine concerns held by participant about negative perceptions of health professionals viewing online videos in the workplace. Finally, this study's survey instrument explored the feedback provided by participants, which identified four barriers to and nine facilitators of clinical procedure use, which subsequently informed the implementation plan presented in Chapter 5.

Chapter 5: Phase 2—Assessment of Barriers and Facilitators and Development of Implementation Plan

5.1 Introduction

This chapter addresses the study's second phase, implementation (see Figure 5.1) to address the research aim of:

- designing a plan to implement clinical procedure videos using behaviour change theories. Specifically, the barriers to and facilitators of implementing clinical procedure videos that were identified in the pre-implementation survey (Chapter 4) were analysed with a four-step process (French et al., 2012).

The barriers and facilitators were assessed to develop theory-informed behaviour change interventions by firstly (a) identifying the problem, (b) using the TDF/BCW to assess the problem, (c) developing possible solutions to overcome the modifiable barriers and facilitators, and (d) developing an evaluation plan to understand how the behaviour change can be measured and understood (French et al., 2012).

These steps included linking the TDF domains and the resulting intervention functions (Cane et al., 2012). The intervention functions helped map effective BCTs using the BCW (Michie et al., 2014). The final section of this chapter presents the resulting implementation plan, results and evaluation of the plan.

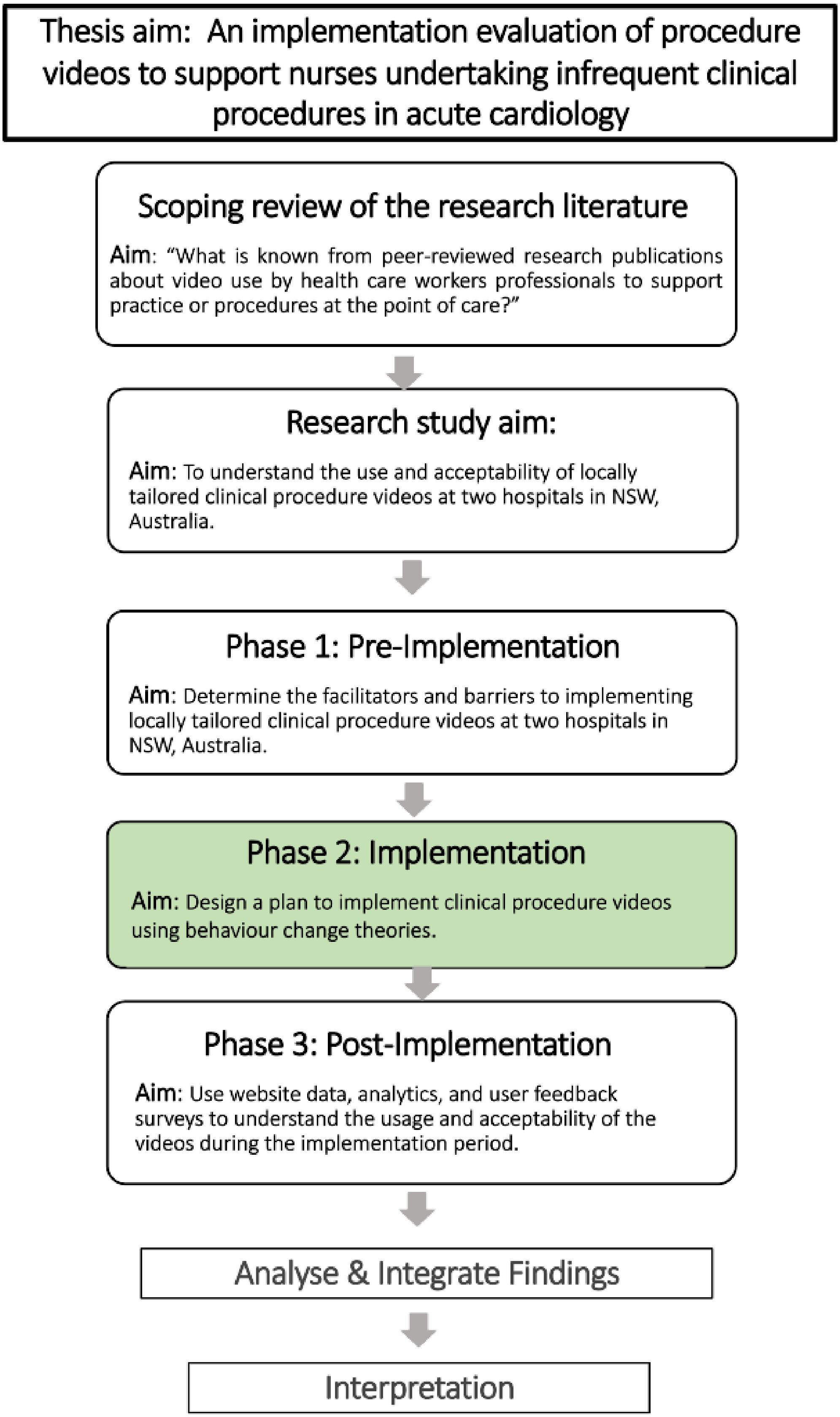


Figure 5.1 Research design phase addressed in this chapter (shaded in green)

5.2 Step 1: Identifying the Problem

In the local health district, the thesis author led a team that created seven locally tailored video procedures for rare or low-frequency procedures, which included temporary cardiac pacing (3 videos), pericardiocentesis (2 videos) and NIV (2 videos). The videos were designed to quickly refresh knowledge before the procedure. One problem noted was the rarity of the procedures. This made it critical to implement videos strategically, including where to host them, whether passwords should be mandatory and to enable health professionals to remember the videos and easily access them during a clinical emergency.

The pre-implementation survey presented in Chapter 4 was designed to understand how and why nurses used clinical procedures, to determine whether the procedures were valued and to establish whether videos are considered acceptable. The survey findings were used to assess the problem and determine what needs to be changed. The results identified the modifiable barriers and facilitators anticipated while trying to implement these video procedures.

5.3 Step 2: Using the Theoretical Domains Framework and Behaviour Change Wheel to Assess the Problem

5.3.1 Identifying What Needs to Change Using the Theoretical Domains Framework

In Chapter 4, an analysis of the pre-implementation survey results identified the barriers to, and facilitators of, implementing procedure videos. First, the TDF was used to categorise the survey questions. This information was then used to identify in which of the 14 TDF domains the barriers and facilitators operated. These domains comprised (a) beliefs about capabilities; (b) beliefs about consequences; (c) emotion; (d) knowledge; (e) memory; (f) attention and decision processes; (g) optimism; (h) environmental context and resources; (i) skills and social/professional roles; and (j) identification. These domains were then analysed to identify intervention options for behaviour change.

5.3.2 Identifying Intervention Options

Using the abovementioned identified TDF domains, the intervention functions were mapped to BCW policy categories. The interventions were founded on five categories (a) education, (b) environmental restructuring, (c) modelling, (d) training, and (e) enablement (see Table 5.1). The COM-B model (Michie et al., 2014) resides at the centre of behaviour change interventions. Therefore, all intervention functions were assessed for effectiveness against the COM-B determinants of behaviour change.

Table 5.1 Identified barriers and facilitators linked to the Theoretical Domains Framework, with recommended Behaviour Change Wheel interventions

Barrier (B)/Facilitator (F)	Theoretical domains in which the barriers and facilitators operate	Recommended intervention function
Lack of computers in clinical areas (B)	• Environmental context and resources	• Education • Environmental restructuring
Lack of regular exposure to procedures (B)	• Knowledge • Skills	• Education • Modelling • Enablement
Remembering to access procedures (B)	• Memory, attention and decision processes	• Training • Modelling • Enablement
Time pressures and workload (B)	• Environmental context and resources	• Training • Modelling • Enablement
Clinical procedures improve standards (F)	• Optimism • Social/professional role and identity • Beliefs about consequences	• Training • Modelling • Enablement
Clinical procedures reduce risk (F)	• Beliefs about consequences • Optimism • Emotion	• Training • Modelling • Enablement
Clinical procedures improve access to information (F)	• Knowledge • Skills • Beliefs about capabilities • Beliefs about consequences	• Training • Modelling • Enablement
Video procedures will improve patient care (F)	• Knowledge • Beliefs about consequences	• Environmental restructuring • Modelling • Enablement
Video procedures improve access to information (F)	• Knowledge • Skills • Beliefs about capabilities • Beliefs about consequences	• Training • Modelling • Enablement
Video procedures will increase access to information (F)	• Knowledge • Skills • Beliefs about capabilities • Beliefs about consequences	• Environmental restructuring • Training • Modelling • Enablement
Video improves clinical skill performance (F)	• Optimism • Social/professional role and identity • Beliefs about consequences	• Training • Modelling • Enablement
Clinical procedures increase knowledge (F)	• Knowledge • Skills • Beliefs about capabilities • Beliefs about consequences	• Training • Modelling • Enablement
Video procedures will improve the healthcare process (F)	• Optimism • Social/professional role and identity • Beliefs about consequences	• Training • Modelling • Enablement

5.4 Step 3: Develop Possible Solutions to Overcome Modifiable Barriers and Facilitators

BCTs were developed within each intervention function (see Table 5.2). Evaluating the appropriateness of existing or proposed interventions in terms of the 'APEASE' criteria: Acceptability, Practicability, Effectiveness, Affordability, Side-effects, and Equity is recommended to consider the BCT's and modes of delivery are appropriate for the context, and most likely to have an impact. Each technique was assessed against the APEASE criteria to identify whether interventions were suitable for implementation (see Appendix 8.9). The research team's expertise, thesis author's local knowledge and feedback from CCLHD key stakeholders were incorporated to determine the final selection of BCTs.

5.4.1 Selecting Behaviour Change Techniques

The BCTs that best addressed the intervention functions were identified according to their evaluation against the APEASE criteria. Eleven BCTs were ultimately identified, and they are associated with the following BCT groupings: (a) shaping knowledge; (b) natural consequences; (d) comparison of behaviour; (e) associations; (f) repetition and substitution; (g) comparison of outcomes; (h) reward and threat; (i) antecedents and (j) self-belief. Once the BCTs were identified, the most appropriate mode of delivery was also selected. See Table 5.2 for the identified barriers and facilitators, intervention functions, 11 BCTs and mode of delivery.

Table 5.2 Steps to choose behaviour change techniques for implementing clinical procedure videos

Using a theoretical framework, which barriers (B) and facilitators (F) should be addressed?	Within which theoretical domains do the barriers and facilitators operate?	Which intervention functions and BCTs could overcome modifiable barriers and enhance facilitators?	Modes of delivery and intervention content
Lack of computers in clinical areas (B)	• Environmental context and resources	Intervention functions: education, environmental restructuring Technique • 4.1 Instruction about how to perform a behaviour • 6.1 Demonstration of the behaviour • 12.1 Restructuring the physical environment • 12.5 Adding objects to the environment	Mode: face-to-face education Content: a live demonstration of procedure access on computers and mobile devices—an overview of video development and endorsement
Lack of regular exposure to procedures (B)	• Knowledge • Skills	Intervention functions: education, modelling, enablement Technique • 4.1 Instruction about how to perform a behaviour • 5.2 Salience of consequences • 6.1 Demonstration of the behaviour • 8.1 Behavioural practice/rehearsal • 9.1 Credible source • 15.1 Verbal persuasion about capability	Mode: eLearning modules available on demand Content: a live demonstration of procedure access on computers and mobile devices; persuasive messaging about the benefits of eLearning module completions being recorded on learning transcripts
Remembering to access procedures (B)	• Memory, attention and decision processes	Intervention functions: training, modelling, enablement Technique • 4.1 Instruction about how to perform a behaviour • 5.2 Salience of consequences • 6.1 Demonstration of the behaviour • 7.1 Prompts/cues • 8.1 Behavioural practice/rehearsal • 8.3 Habit formation • 12.1 Restructuring the physical environment	Mode: video procedure mousepad, newsletters and Facebook group communications Content: corporate branding, research governance approval number on all project communications

Using a theoretical framework, which barriers (B) and facilitators (F) should be addressed?	Within which theoretical domains do the barriers and facilitators operate?	Which intervention functions and BCTs could overcome modifiable barriers and enhance facilitators?	Modes of delivery and intervention content
		• 12.5 Adding objects to the environment	
Time pressures and workload (B)	• Environmental context and resources	Intervention functions: training, modelling, enablement Technique • 4.1 Instruction about how to perform a behaviour • 6.1 Demonstration of the behaviour • 8.3 Habit formation • 9.1 Credible source • 12.1 Restructuring the physical environment • 12.5 Adding objects to the environment	Mode: face-to-face education Content: demonstrate of how video procedures leverage the existing procedure system for access (no password to access); a live demonstration of procedure access on computers and mobile devices
Clinical procedures improve: • standards (F) • access to information (F) • knowledge (F) • clinical procedures reduce risk (F) Video procedures will improve: • patient care (F) • access to information (F) • clinical skill performance (F) • the healthcare process (F)	• Beliefs about capabilities • Beliefs about consequences • Emotion • Knowledge • Optimism • Skills • Social/professional role and identification	Intervention functions: training, modelling, enablement, environmental restructuring Technique • 4.1 Instruction about how to perform a behaviour • 5.2 Salience of consequences • 6.1 Demonstration of the behaviour • 7.1 Prompts/cues • 8.1 Behavioural practice/rehearsal • 8.3 Habit formation • 9.1 Credible source • 10.2 Material reward • 12.1 Restructuring the physical environment • 12.5 Adding objects to the environment	Mode: face-to-face education, newsletters Content: targeted education sessions for clinical nurse educators, and use of change champions; use of corporate branding; video links on the front pages of written procedure guidelines; a live demonstration of procedure access on computers and mobile devices; an overview of video development and endorsement; module completion on eLearning transcripts

Note: Adapted from French et al. (2012).

5.5 Implementation Plan

The identified implementation strategies were then used to develop an implementation plan (see Appendix 8.10). The implementation period was set from 15 October 2020 to 15 March 2021, and the thesis author assumed overall responsibility for the implementation training.

5.5.1 Education and Training

Implementation awareness/education and training sessions were delivered in October and November 2020. Informal 'just in time' education was available on an 'as required' basis from change champions.

Mode of Delivery. The preferred modes of delivery for clinical nurses was a face-to-face group or individual education in their workplace. This enabled live video procedure demonstrations on the local computers. Online meeting presentations were also incorporated to enable education across the local health district. Other delivery modes were not relevant because ward staff likely could not access phones or be exposed to other forms of media while they worked on hospital wards.

In total, 40 sessions were offered in patient care units throughout the two acute hospital sites, and approximately 53% (*n* = 265/500) of nursing staff received formal education from the implementation team.

5.5.2 Communication

5.5.2.1 Mousepads

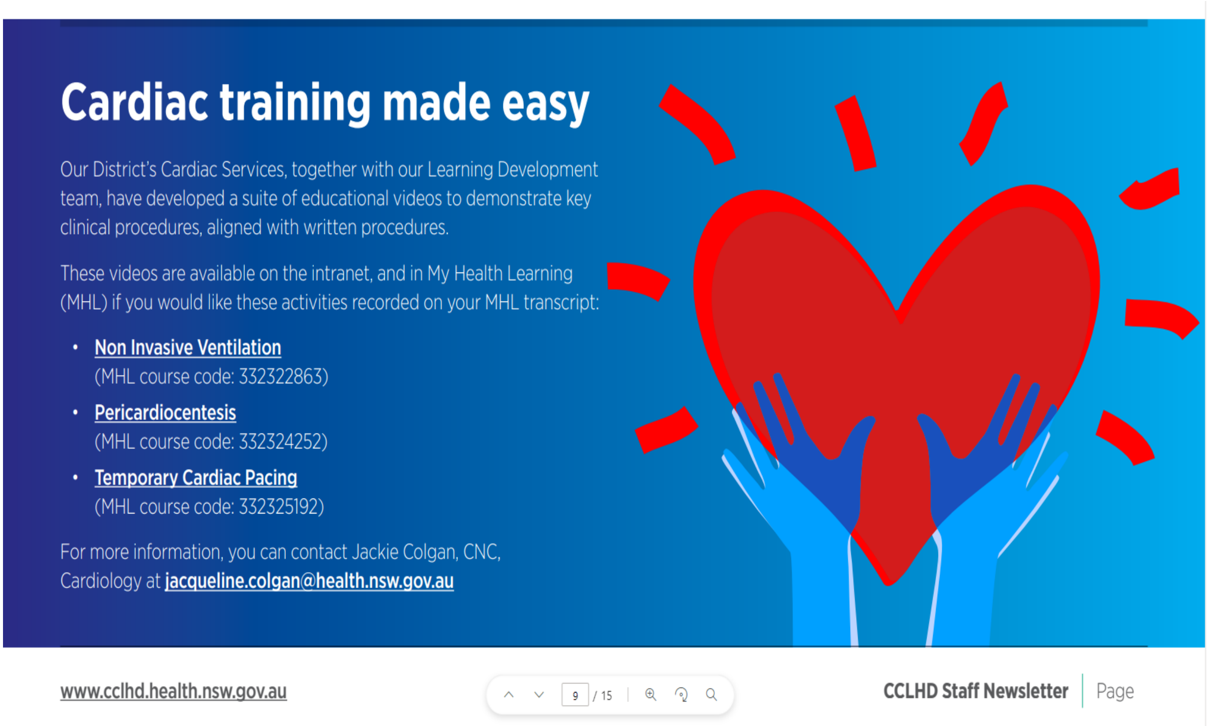
Participants experienced difficulty when they had to recall written clinical procedures; the implementation plan addressed this barrier by creating a custom computer mousepad for the study (see Figure 5.2). The mousepads included images of clinical staff from the videos, as well as information about how the videos could be accessed. The mousepads also displayed local health district branding and the project's research governance approval number to assure health professionals that the videos were authorised resources. The mousepad also included a QR code that linked to the video feedback survey.

Mode of delivery. In total, 100 mousepads were purchased for the project. They were distributed during implementation education sessions and were used on computers in clinical areas. They remained in use during the implementation—and any structurally intact mousepads remain in use as of the writing of this thesis.

Figure 5.2 Mousepad communication aid

5.5.2.2 Newsletters and Information Posts

Information about the study was shared formally via the CCLHD district newsletter (see Figure 5.3) and critical care newsletters (see Figure 5.4). Given the importance of informal communication pathways (e.g., nurses' private Facebook groups), posts were also created for the change champions to share on social media (see Figure 5.5).



Cardiac training made easy

Our District's Cardiac Services, together with our Learning Development team, have developed a suite of educational videos to demonstrate key clinical procedures, aligned with written procedures.

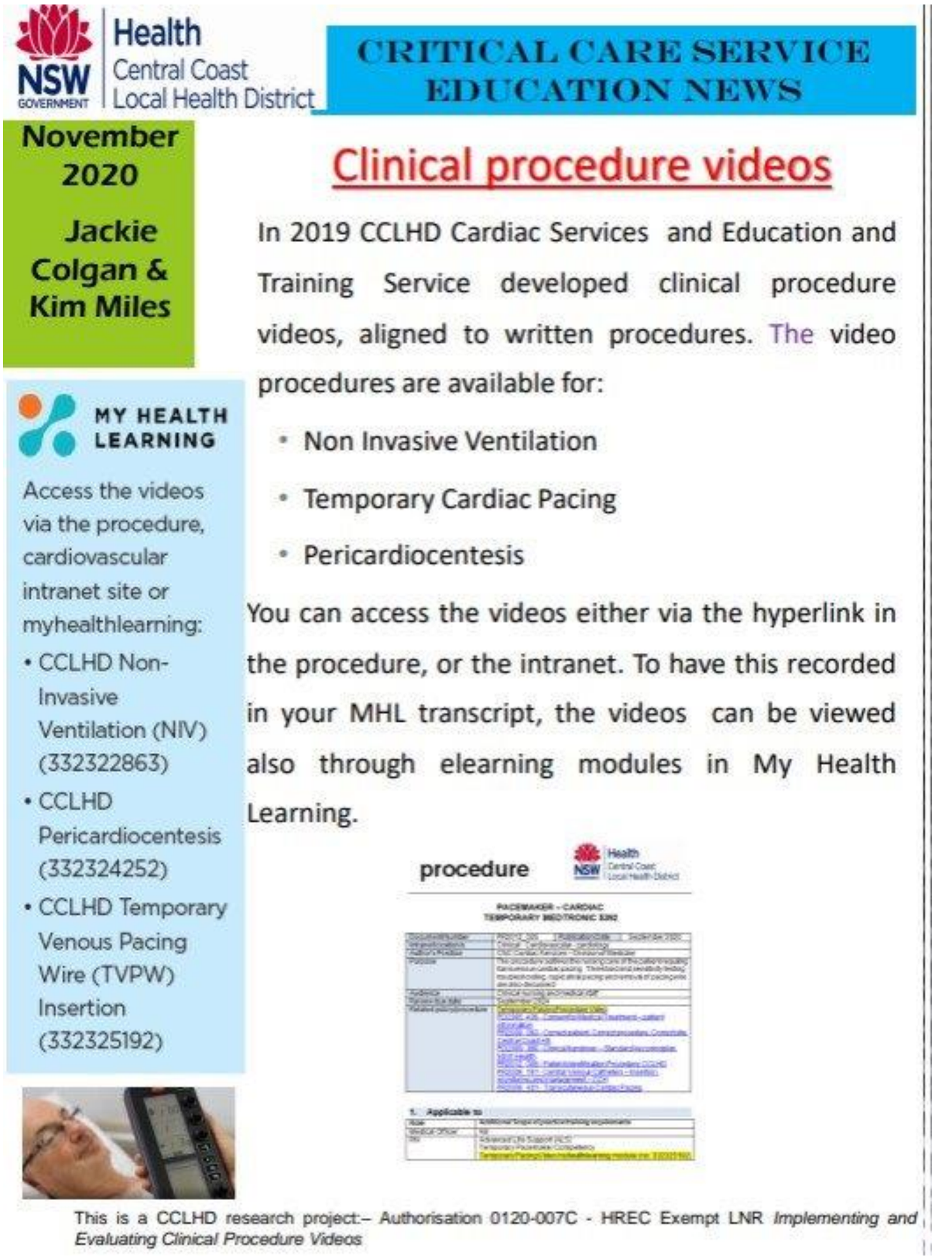
These videos are available on the intranet, and in My Health Learning (MHL) if you would like these activities recorded on your MHL transcript:

- Non Invasive Ventilation
  (MHL course code: 332322863)
- Pericardiocentesis
  (MHL course code: 332324252)
- Temporary Cardiac Pacing
  (MHL course code: 332325192)

For more information, you can contact Jackie Colgan, CNC, Cardiology at jacqueline.colgan@health.nsw.gov.au

www.cclhd.health.nsw.gov.au 9 / 15 CCLHD Staff Newsletter | Page

Figure 5.3 Excerpt of Central Coast Local Health District newsletter, December 2020



Health
Central Coast
Local Health District

CRITICAL CARE SERVICE EDUCATION NEWS

November 2020

Jackie Colgan & Kim Miles

Clinical procedure videos

In 2019 CCLHD Cardiac Services and Education and Training Service developed clinical procedure videos, aligned to written procedures. The video procedures are available for:

- Non Invasive Ventilation
- Temporary Cardiac Pacing
- Pericardiocentesis

You can access the videos either via the hyperlink in the procedure, or the intranet. To have this recorded in your MHL transcript, the videos can be viewed also through elearning modules in My Health Learning.

MY HEALTH LEARNING

Access the videos via the procedure, cardiovascular intranet site or myhealthlearning:

- CCLHD Non-Invasive Ventilation (NIV) (332322863)
- CCLHD Pericardiocentesis (332324252)
- CCLHD Temporary Venous Pacing Wire (TVPW) Insertion (332325192)

procedure

PACEMAKER – CARDIAC TEMPORARY MEDTRONIC 5392

1. Applicable to

This is a CCLHD research project:– Authorisation 0120-007C - HREC Exempt LNR *Implementing and Evaluating Clinical Procedure Videos*

Figure 5.4 Central Coast Local Health District critical care newsletter, November 2020

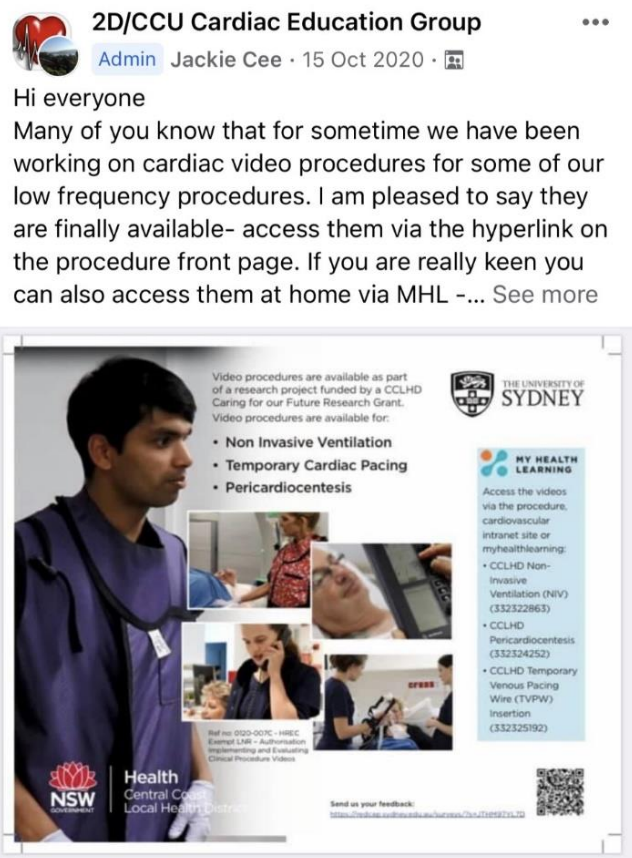


Figure 5.5 Sample Facebook post

Mode of delivery. Newsletters were sent out to over 5000 staff via CCLHD wide distribution lists. They were distributed during implementation education sessions and were used on display in clinical areas for approximately one month. Facebook posts were created in the two cardiology unit groups- receiving 31 views and 20 views each.

5.5.2.3 Enablement and Modelling

The pre-survey revealed that recommendations for participants to access procedure documents originated mostly from educators (14.6%, n = 36) and colleagues (12.1%, n = 30). One facilitator that was identified from the social influence domain was the importance of senior staff and clinical nurse educators being present during clinical procedures—five change champions or clinical champions who were part of the video development project assisted in the video procedure implementation.

Mode of delivery. Targeted education sessions with key clinical leaders were delivered during meetings at both acute hospital sites (with approximately 50 clinical nurse educators). Five clinical champions who were part of the video development took responsibility to raise awareness of the procedure videos when they were on shift, as well as to provide guidance and help answer questions.

5.5.3 Environmental Restructuring

5.5.3.1 Video Procedure eLearning Modules

To address the barrier of a lack of computers in clinical areas, the video procedures were developed into mini MHL eLearning modules. These were made available on the state learning management system and were thus accessible via mobile devices. This step was taken because of significant support that was indicated for video access outside the hospital intranet. For example, 57.3% (n = 142) of participants desired access via the learning management system, and 43.5% (n = 108) preferred videos to be downloadable to mobile devices.

The eLearning modules allowed module completion data to be collected. The modules also offered health professionals a method of accessing the video procedures on personal devices in any location rather than solely on hospital computers. Module completion was an incentive because it was recorded on the individual's learning transcript. Additionally, health professionals could access the learning system while at work or at home (see Figure 5.6).

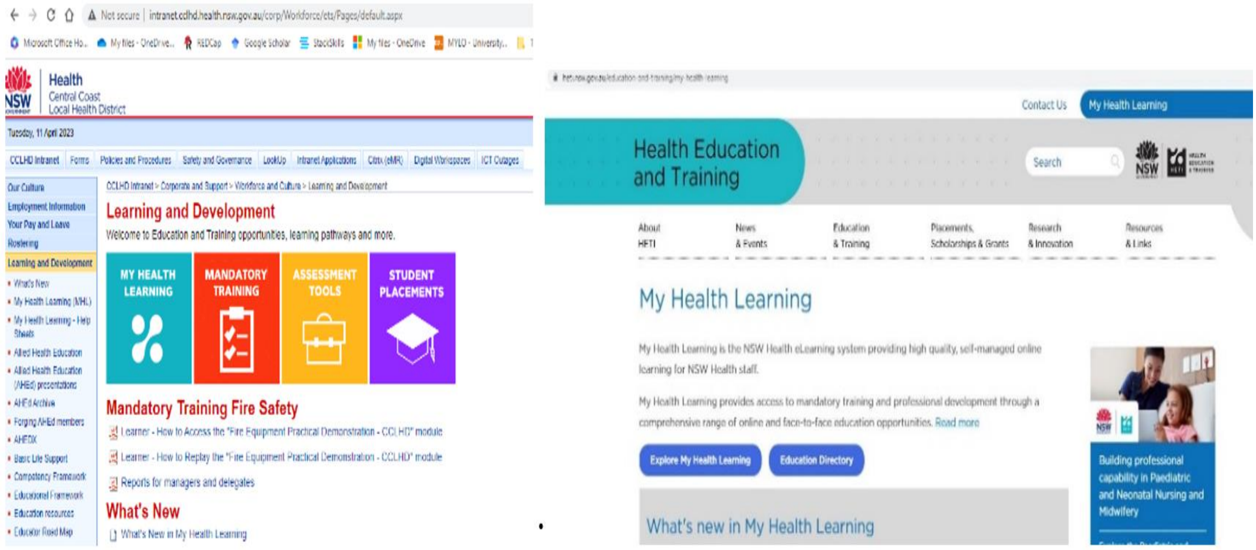


Figure 5.6 MyHealthLearning access points: Central Coast Local Health District intranet (left) and internet page displays

Three modules were available through MHL, with combined videos for each procedure (see Figure 5.7).

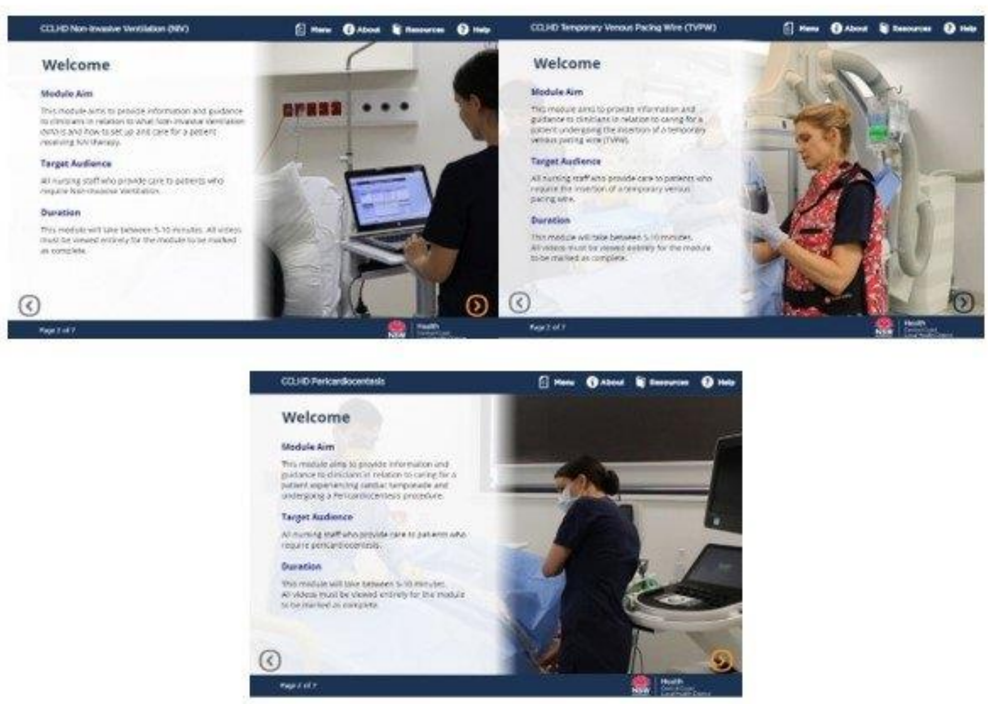


Figure 5.7 MyHealthLearning procedure video modules

5.5.3.2 Habit Formation

In the pre-implementation survey, over three quarters of respondents indicated that they accessed written procedure guidelines at least once a week. Consequently, a hyperlink to the videos was added to the front page of the relevant written document to utilise this habit (see Figure 5.8). Health professionals who click on the procedure video link can directly access the videos without having to enter a password.

The embedded video link (highlighted in yellow) directs health professionals to the cardiovascular intranet site—to a subpage from which all videos for that procedure can be accessed (e.g., see Figure 5.9).

procedure

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PACEMAKER – CARDIAC
TEMPORARY MEDTRONIC 5392

Document Number	PR2012_025	Publication Date	18 November 2021
Intranet location/s	Clinical: Cardiovascular - cardiology		
Author's Position	CNC Cardiac Services		
Purpose	The procedure outlines the nursing care of the patient requiring transvenous cardiac pacing. Threshold and sensitivity testing, troubleshooting, rapid atrial pacing and removal of pacing wire are also discussed.		
Audience	Clinical nursing and medical staff		
Review due date	November 2025		
Related policy/procedure	Temporary Pacing Procedure Video Consent to Medical Treatment PR2009_401- Transcutaneous Cardiac Pacing PD2017_032- Clinical Procedure Safety PO2018_003 Clinical Procedure Safety – CCLHD Policy PR2012_016 - Labeling of Injectable Medicines, Fluids and Lines procedure PR2012_009 - CCLHD Patient Identification PR2015_016 Cardiac Escort and transfer PR2010_292 Transfer of Critically Ill or Ventilated Patients Within One Facility		
National Standard/s	NS5 - Comprehensive Care		

1. Applicable to

Role	Additional Scope of practice/training requirements
Medical Officer	Nil
RN	Advanced Life Support (ALS) Temporary Pacemaker Competency Temporary Pacing Video MHL module (no: 332325192)

Figure 5.8 Temporary pacemaker procedure with embedded links (highlighted) to procedure videos and MyHealthLearning module information

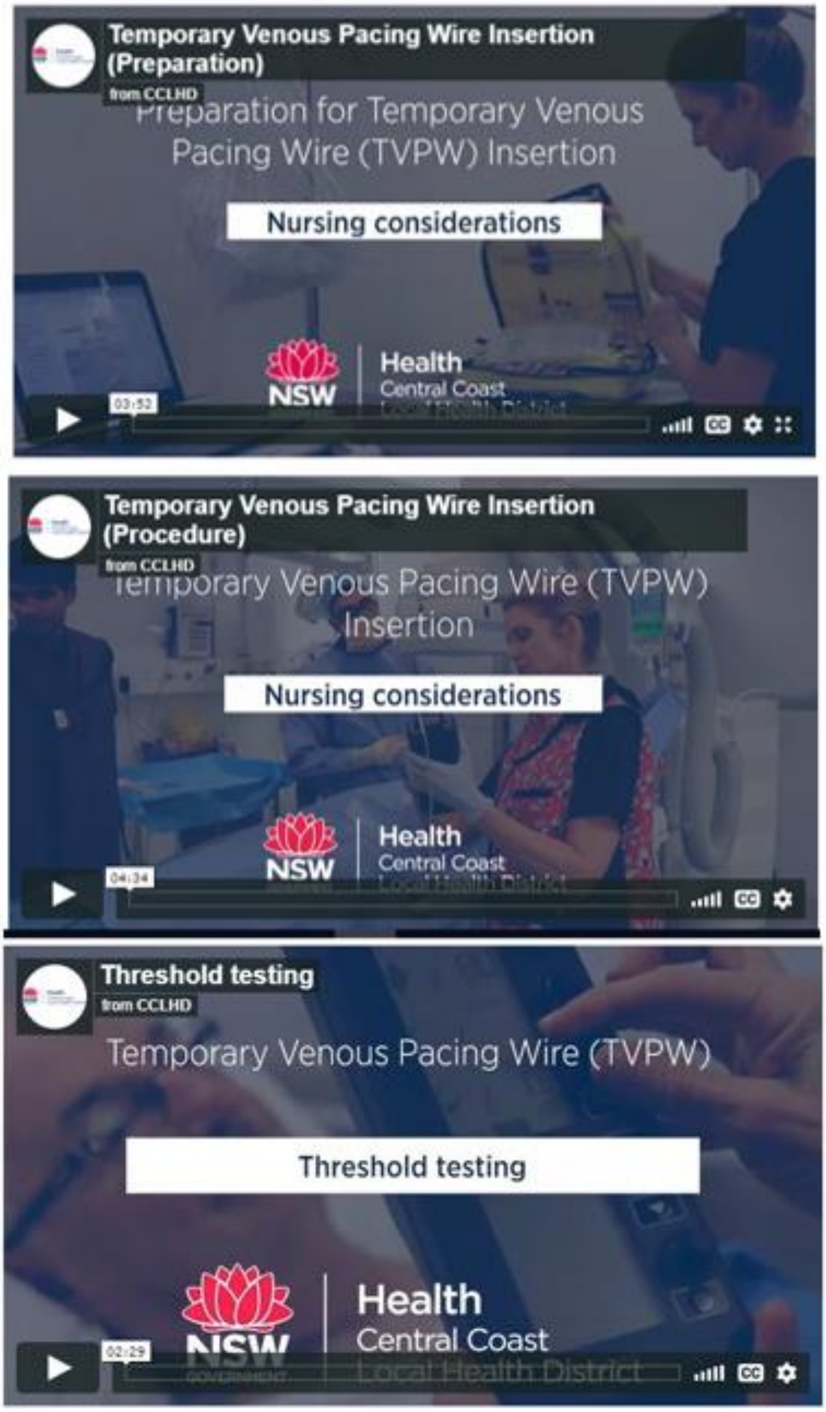

Figure 5.9 Example of corresponding temporary pacing procedure video intranet page display

Modes of Delivery. Information about how to access the new video procedures on the intranet and eLearning modules was included in the education training and on the project mousepad. Once viewed, a QR code and web link for the feedback survey became embedded on the screen above the video, which listed the statement: ‘We need your feedback to improve the quality of our service. Please take a few minutes to fill out our short survey.’

5.5.3.3 Ongoing Promotion Activities

The photo mousepads and clinical champions, educators and thesis author promoted the videos. No additional or ongoing promotion activities for the video procedures were performed during the implementation period because of COVID-19 restrictions.

5.6 Step 4: Develop an Evaluation Plan

During this step, as part of the project evaluation, a plan was developed to understand how clinical procedure videos were used (see Appendix 8.10). All data generated were analysed to measure and understand how nurses used the procedure videos. Table 5.3 briefly outlines the evaluation measures that were assessed after the six-month implementation period ended. The full evaluation plan and results will be discussed in Chapter 6.

Table 5.3 Implementation evaluation measures

Data sources	Method	Timing	Measure
Written procedure guidelines	• Number of page displays,	Pre-implementation and six months post-implementation	• Page displays • Uptake
Video procedures	• Dose—number of views, engagement and duration • Post-viewing evaluation survey (survey tool; see Appendix 8.11)	Six months post-implementation	• Uptake • Content feedback • Experience
MyHealthLearning modules	• Dose—number of views/completions, engagement and duration • Post-viewing evaluation survey (survey tool; see Appendix 8.11)	Six months post-implementation	• Completions/access • User experience • Clinical application
Six-month post-implementation survey	• Email survey (survey tool; see Appendix 8.12)	Six months post-implementation	• Experience • Effect on clinical reasoning • Knowledge • Uptake • Feedback

5.7 Implementation plan key findings

The successful development of the study implementation plan was guided by implementation science using behaviour change theory and frameworks. The resulting implementation plan incorporated multimodal strategies and resources, which included project mousepads, face-to-face education sessions, clinical champions, corporate branding and environmental restructuring strategies (e.g., new MHL video procedure modules).

5.8 Chapter Summary

In this chapter, the methods and results for analysing the facilitators of and barriers to the implementation of video procedures are presented. The process and results for the intervention strategies were presented. The findings have been subsequently used to develop an implementation plan. The survey based on the TDF was completed by 248 participants at two acute hospitals.

This phase's process and results were guided by a four-step process that involved BCTs. The four barriers and nine facilitators that were determined were used to identify five intervention functions and eleven BCTs and implementation strategies that were embedded into an implementation plan. The thesis author prepared the resources for implementation in consultation with the rest of the research team.

Chapter 6: Phase 3—Post-Implementation

6.1 Introduction

This chapter addresses the third phase of the research study—the post-implementation phase (see Figure 6.1). The main purpose of this thesis is to understand the acceptability and use of locally tailored procedure videos.

This chapter addresses the research aim of:

- Using website data, analytics, and user feedback surveys to understand the usage and acceptability of the videos during the implementation period.

This chapter outlines the evaluation of the implementation of locally tailored video procedures, as well as describing the methods, data collection and analysis procedures that were used. This includes a description of the participants' demographic information and descriptive statistics regarding their state anxiety, knowledge, attitudes and beliefs about written and video procedures. Finally, the study's key quantitative and qualitative findings are presented.

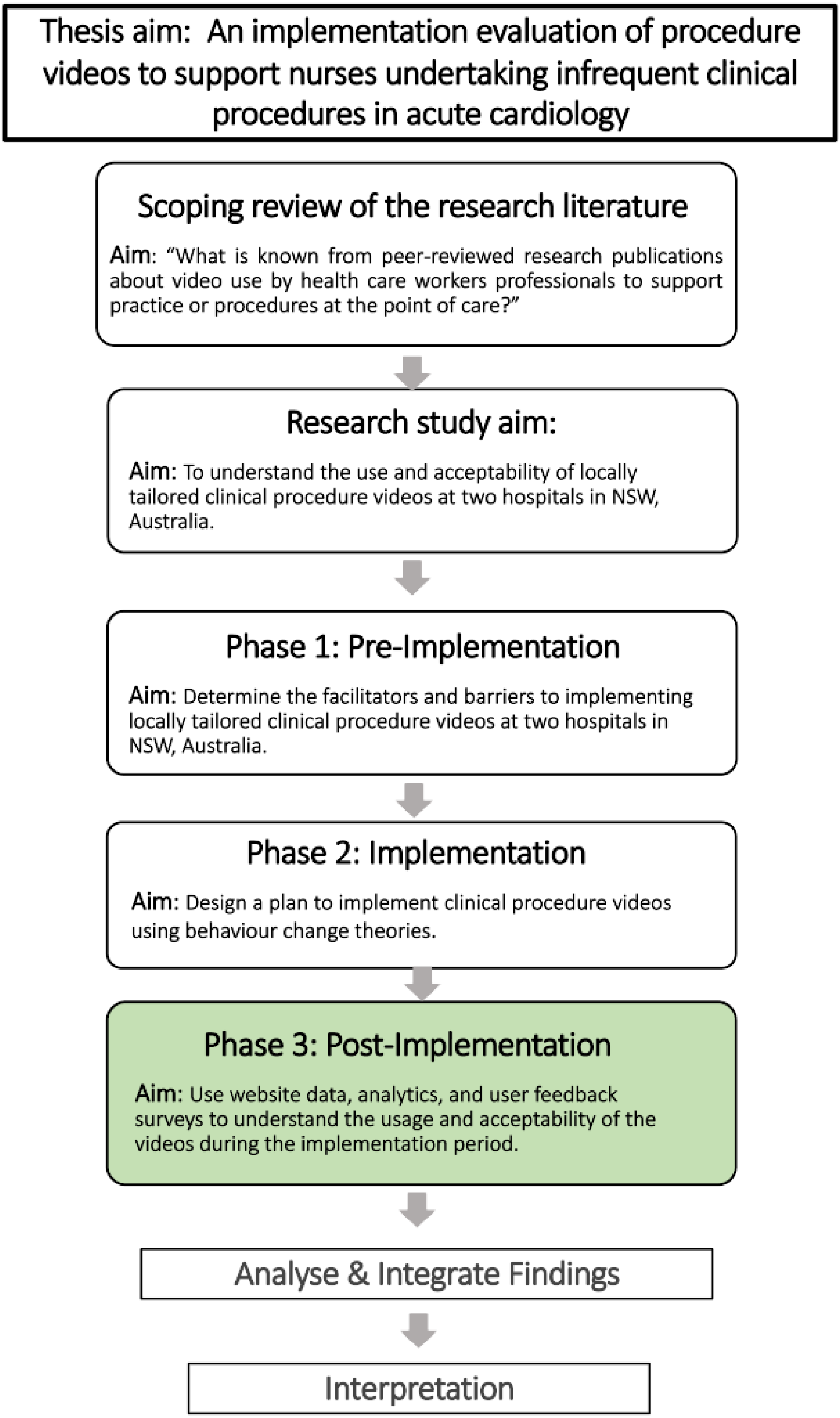

Figure 6.1 Research design phase addressed (shaded in green)

6.2 Research Study Aims

The main purpose of this thesis is to understand the acceptability and use of locally tailored procedure videos.

The research aims were to:

- Determine the barriers and facilitators to implementing locally tailored clinical procedure videos at two hospitals in NSW, Australia.
- Design a plan to implement clinical procedure videos using behaviour change theories.
- Use website data, analytics, and user feedback surveys to understand the usage and acceptability of the videos during the implementation period.

6.3 Methods

This chapter discusses the evaluation of the prospectively developed implementation strategies for video procedures, which were founded on the barriers and facilitators identified in the pre-implementation survey (see Chapter 4). The implementation plan identified several evaluation measures, which have been discussed in Chapter 5. Therefore, in this chapter, the methods and results for each evaluation measure are presented.

6.3.1 Ethics and Research

This project received CCLHD research governance approval through an HREC Exempt LNR Research application (LNR: 0120-007C; see Appendix 8.2).

6.3.2 Post-Implementation Phase Timeline

The implementation period commenced on 15 October 2020 and concluded on 15 March 2021. Subsequently, the post-implementation phase commenced after the conclusion of this period, during which the post-implementation survey was distributed, and the implementation period measures were collected.

6.3.3 Participants

The study participants included nursing staff who worked in clinical areas in which the new video procedures could have been viewed or used to support clinical practice. This study group included nursing staff (registered nurses and enrolled nurses) from up to eight clinical departments or units at two acute hospitals in the local health district who worked permanently or as casual nurses. Because the procedure videos involved emergent and rare procedures, the target areas included emergency, intensive care and cardiology departments.

6.3.4 Implementation Period Methods

6.3.4.1 Video Procedure Use Measures

To determine how videos or eLearning modules were used and to meet the implementation evaluation objective, the study collected cardiovascular page views, written procedure guideline views, individual video use data and MHL completions. This included collecting the individual cardiovascular intranet pages that hosted the videos. The collected information was limited to page views (e.g., video) and written procedure guideline page views that were available through the thesis author, who was the intranet site administrator. Additionally, other measures derived from the video-hosting platform Vimeo data and eLearning module completion were requested from the CCLHD information technology group and MHL system administrators. This information was required for the purpose of obtaining detailed video viewing and eLearning module completion data.

6.3.4.2 Video Procedure Viewer Feedback Survey Instrument

A REDcap video feedback survey was created and founded on an existing survey in MHL (Health Education and Training Institute, 2020; see Appendix 8.11). This survey link was electronically available during the implementation period; it was embedded at the end of each video, on the project mousepads and at the end of each MHL module. Once a video was viewed, a QR code and web link for the feedback survey became embedded on the screen above the video, which listed the statement: ‘We need your feedback to improve the quality of our service. Please take a few minutes to fill out our short survey.’

The survey comprised two Likert scale questions and collected de-identified data. The REDcap survey link for videos viewed via the intranet had an additional question, to identify which video was viewed. The second question asked participants to use a Likert scale to answer questions about video content and its application to their role, in which they ranked their answers from 1 *strongly disagree* to 2 *disagree*, 3 *neither disagree nor agree*, 4 *agree* and 5 *strongly agree*. The final question asked participants to rank video complexity, which ranged from 1 *too basic* to 2 *basic*, 3 *somewhat basic*, 4 *just right*, 5 *somewhat complex*, 6 *complex* and 7 *too complex*. The survey also allowed participants to leave open-ended comments for the questions.

6.3.4.3 Post-Implementation Period

Six Months Post-Implementation Survey Instrument. The pre-implementation survey presented in Chapter 4 was adapted to form the survey for this phase, in which questions were designed to obtain feedback from viewers about the videos. A survey consisting of 25 questions was divided into five sections. The final section asked participants to suggest ideas for future video development (see Appendix 8.12). The survey comprised both quantitative and qualitative questions. The quantitative questions relied on Likert scales**,** which allowed participants to choose from two extreme options on either side of a central neutral response (Chyung et al., 2018). The qualitative portion included open-ended questions that elicited in-depth participant responses (Nayak & Narayan, 2019). Further, the survey questions were designed and mapped according to the TDF domains (Cane et al., 2012; Figure 3. 2) which ensured that behaviour change theories underpinned the survey questions. The TDF is widely accepted as an adequate framework for understanding behaviour in clinical practice settings (Cane et al., 2012).

6.4 Section One: Participant Demographics and Characteristics

The initial part of the post-implementation survey had questions aimed to gather demographic details of the participants such as gender, age, clinical experience, years of work and specialty employment area. The purpose of collecting this information was to characterize the respondents and to enable comparisons to be made between experience, age, gender, and anxiety level related to clinical procedures, including pre and post comparisons.

6.5 Section Two: Knowledge and Skills

Section two questions were mapped to the TDF domains of (a) knowledge, (b) skill, and (c) behavioural regulation. The questions in this section aimed to obtain responses about participants' use of and beliefs about the procedure videos. This information was sought to frame self-reported use patterns and understand how useful these video procedures were for nurses in urgent clinical scenarios. The participants were asked to rank procedure qualities and their most common reasons for using the videos.

At the end of this section in the survey, participants were asked if they had viewed any CCLHD procedure videos. If the participant indicated 'No', then the branching logic would end the survey.

6.6 Section Three: Video Questions

The participants who had viewed any of the CCLHD procedure videos were asked to provide feedback for each video they watched using a Likert scale question. The survey's branching logic removed any questions for videos that participants had not viewed. Participants were asked to indicate their agreement on a Likert scale 1 *strongly disagree* to 2 *disagree,* 3 *neither disagree nor agree*, 4 *agree* and 5 *strongly agree* in relation to how video procedures affected their clinical reasoning (Levett-Jones et al., 2009). To expand on this, they were asked to reveal whether viewing a video helped them consider their patients' situations; collect and process information; identify problems; establish goals; and determine a plan of action. The participants also rated their agreement for the statement regarding whether viewing a video procedure helped them evaluate their own performance and reflect on the procedure.

6.7 Section Four: Barriers and Facilitators

Section three was designed to elicit information about the facilitators of and barriers to using clinical procedures in practice. The questions in this section were mapped to the TDF domains of (a) knowledge, (b) behavioural regulation, (c) environmental context and resources, (d) belief about capability and (e) emotion.

On a five-point Likert scale, participants were asked to rate their beliefs about how video procedures affected their clinical practice in terms of workload, patient care and working environment. To address the TDF domain of emotion participants were asked to rank the anxiety that they felt before a new procedure, which was determined using Spielberger's STAI anxiety–state scale questions (Spielberger, 1995). The STAI is the most commonly used measure of anxiety, and research indicates that it demonstrates high levels of reliability and validity (Kabacoff et al., 1997). The STAI was measured pre-implementation as a baseline to which the post-implementation results could be compared.

6.8 Section Five: Video Clinical Procedures

This section was mapped to the following TDF domains: (a) memory, (b) goals, (c) social influences, (d) social/professional role and identity, (e) optimism, (f) intentions, (g) beliefs about consequences and (h) reinforcement. Participants were asked to rate their confidence using a five-point Likert scale (strongly agree to strongly disagree) regarding the topic of finding and using procedures.

Participants were then asked to use a five-point Likert scale to rate their beliefs about how video procedures affected their clinical practice in terms of workload, patient care and the working environment. Participants were asked to volunteer suggestions for future video topics. Finally, participants were asked to state their preference regarding the format of clinical procedures - written, written and video, or video only. They were also provided the option to select 'other' if they wanted to add a free text comment with their suggestions.

6.9 Study Process

The development team members pilot tested the survey on various electronic devices before it was disseminated. The survey was distributed via REDcap to nursing staff in the two acute CCLHD hospitals. Nursing unit managers from both hospitals were asked to use employee email lists to send invitation emails that contained a participant information statement and survey link to employees. One reminder email was also sent during the data collection phase one month after the initial invitation email was sent. Staff Facebook groups were also used to disseminate survey reminders.

6.9.1 Influence of the COVID-19 Pandemic

The COVID-19 pandemic impacted the project in several ways. Promoting the videos was challenging as the public health restrictions led to all planned in person education events being cancelled. Throughout 2021, the clinical priority was the emerging pandemic threat, so educational objectives were aligned with this. In addition, the thesis author was prevented from entering emergency or intensive care departments in person, due to visitor restrictions.

The Central Coast had a three month lockdown in 2020, a COVID-19 outbreak in northern Sydney seeded to the central coast in December 2020, resulting in an extended lockdown from late June to mid-October 2021(Hanrahan & Blumer, 2021). It was during this period that the six month post implementation survey was distributed, and the response rate was lower than expected in relation to the pre-implementation results. The survey could only be promoted via email, and two reminder emails were sent. As a consequence, the survey remained open for close to five months, and paper surveys were supplied to the emergency and intensive care departments by request.

All surveys were completed anonymously, in which commencing the survey was regarded as providing consent. Paper surveys were entered into REDcap by the thesis author. The survey collected non-identifiable and quantitative data, which were analysed quantitatively using SPSS IBM v. 29, and qualitatively using inductive content analysis (Graneheim & Lundman, 2004).

6.9.2 Data Management

Data was collected and managed using REDcap, a secure web-based platform hosted at the University of Sydney. (Harris et al., 2009). The survey was conducted online, with participants being prompted by the REDcap server to answer any incomplete questions. This helped to limit any missing or erroneous data.

Once completed, the anonymous data was exported from REDcap and stored in a University of Sydney drive that had limited access and was password-protected. The data will be retained for at least five years before being appropriately disposed of, under the NHMRC (2018b) Australian Code for the Responsible Conduct of Research (Universities Australia, 2018).

6.9.3 Data Analysis

Quantitative data were analysed using SPSS IBM v. 29. Preliminary analyses were conducted to ensure no violation of analysis assumptions. Responses were presented with mean (*SD*) or median (IQR), depending on data distribution or proportion data as appropriate.

The qualitative data were analysed using inductive content analysis (Graneheim & Lundman, 2004). The data was gathered from eight survey questions that included free text comments. The responses were categorized based on their location in the survey sections. Firstly, the transcribed narrative text in the answers was read multiple times to get a general understanding of the overall meaning. Notes were taken about the text while it was being read. The responses were then analysed using NVivo (Release 1.7.1; QSR International, 2020), and they were allocated according to categories with similar meanings. The thesis author performed these steps while being in discussion with the academic supervisor team.

In the final step, similar codes were grouped into subcategories. This step was discussed between the thesis author and academic supervisor team. For examples of the analytical process, see Tables 6.3–6.8. The categories are presented in the results section, and all quotations from participants contain a participant number and role designation within brackets to maintain patient confidentiality. The quantitative and qualitative results from the survey were then integrated.

6.9.4 Pre and Post Comparisons

Two questions were comparatively analysed from the pre and post-implementation surveys. For the data analysis, this study employed descriptive statistics, a chi-square test to determine if a difference between observed data and expected data is due to chance, and an independent samples t-test to compare the pre-post means of the independent groups. The analysis was performed using SPSS IBM v. 29, and the significance level of $p = 0.05$ was statistically accepted.

6.9.5 Procedure Numbers During the Implementation Period

The CCLHD Casemix application was used to retrospectively collect procedure numbers. Using administrative data can involve limitations (Ng et al., 2018; Ryan et al., 2021), and the procedure numbers are an estimate (Figure 6.2). It was not possible to obtain precise numbers because certain situations might have been excluded from the data. For instance, patients who received a procedure as part of their emergency department visit, but were later transferred to another facility, would not have had that procedure coded in the

Casemix application. Furthermore, the study was unable to determine the location of the procedures or their level of clinical urgency.

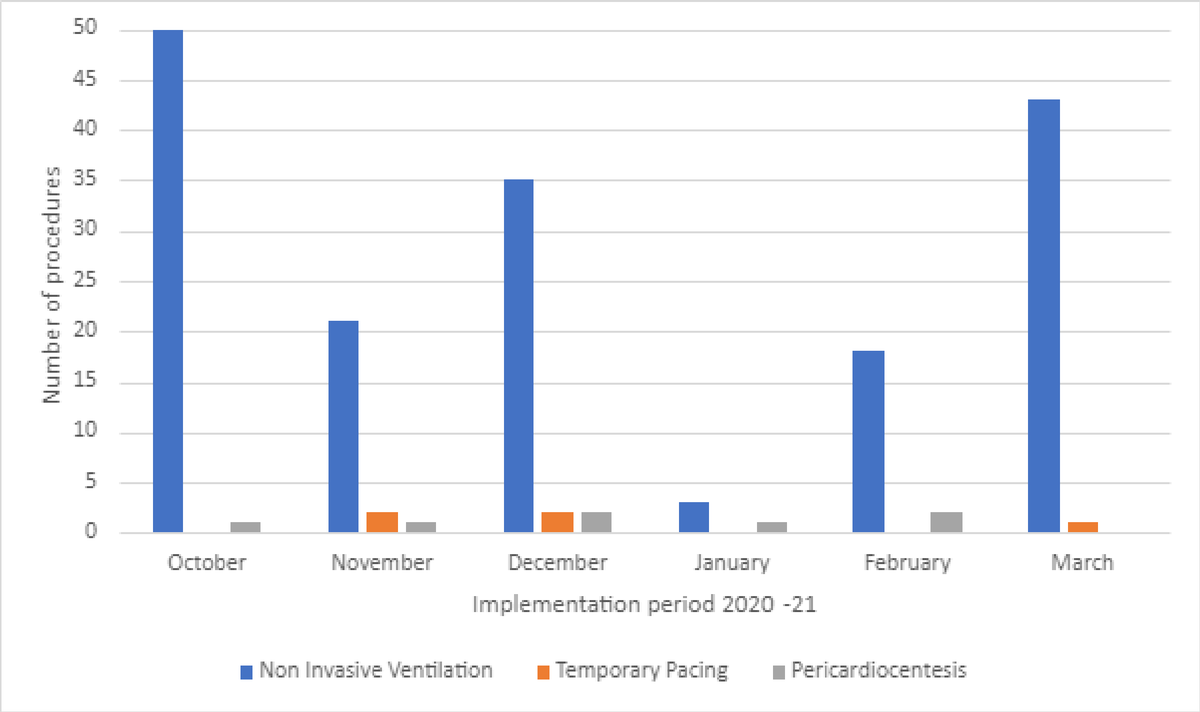

Figure 6.2 Estimated procedure numbers during implementation period

6.10 Implementation Period Results

6.10.1 Procedure Support Access

During the study period procedure support through written procedure guidelines and video procedures was accessed every month.

6.10.1.1 Written Procedure Guidelines Page Displays

The page displays indicated that pacing was the most accessed written procedure guideline, with 136 total page displays accrued during the implementation period. Access numbers peaked at the beginning of implementation for all written procedures, in which the highest monthly page display reached 48 hits for NIV; access then reduced over the implementation period. The page displays per month ranged from 0 to 48 (see Figure. 6.3).

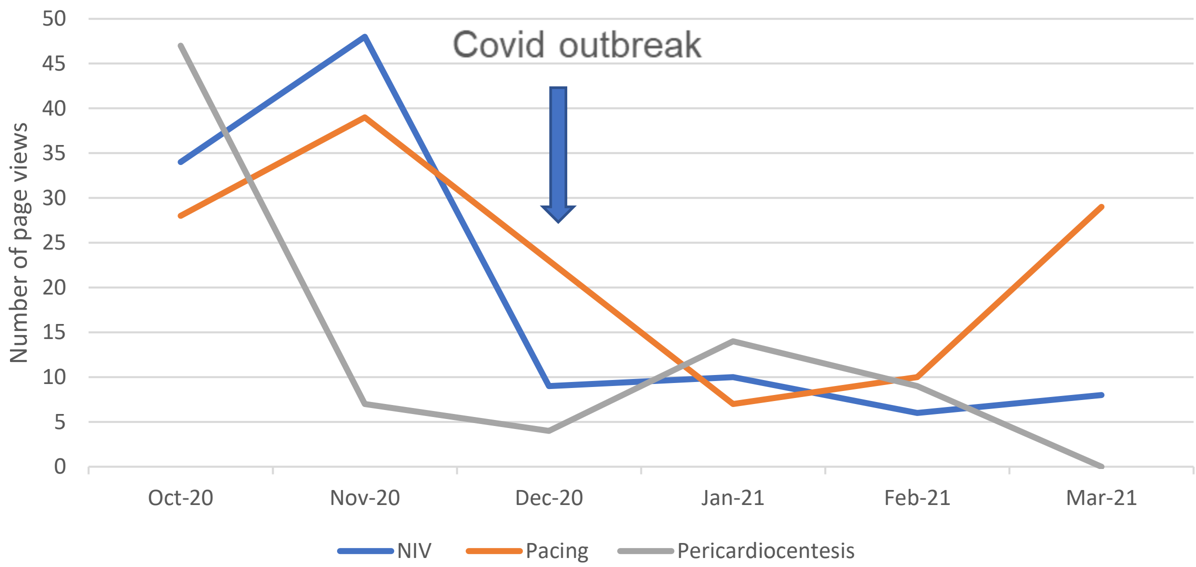

Figure 6.3 Written Procedure Guidelines Intranet page displays during Implementation Period

6.10.1.2 Video Procedure Page Displays

The video procedures were hosted on an intranet page, in which all videos for one topic were available on a single page. For this reason, page display numbers for intranet pages could not indicate which video was viewed. Overall, video intranet pages indicated similar page display numbers to written procedure guidelines pages, which peaked at the beginning of the implementation period in October 2020 and then reduced over time (see Figure 6.4).

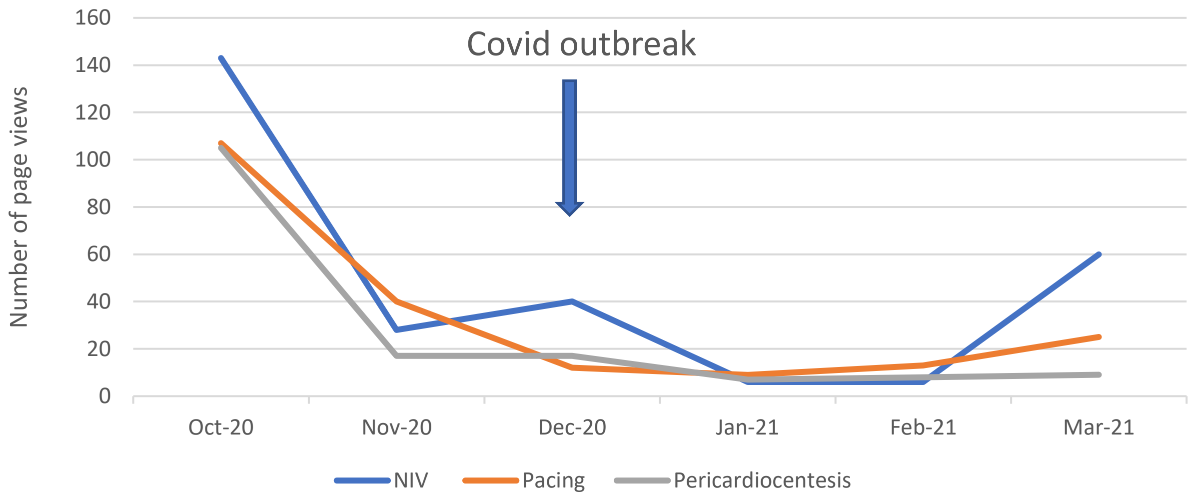

Figure 6.4 Video procedure intranet page displays during implementation period

6.10.1.3 In-Depth: Vimeo Viewing Analytics

Viewing data for individual videos could be accessed via the video-hosting platform provider Vimeo. The number of times that the videos were played during the implementation period are displayed in Figure 6.5. The total number of video views was 598, in which the most viewed video was temporary pacing preparation (n = 152). However, a community outbreak of COVID-19 occurred in December 2020, accounting for an increase in views of the NIV videos, which were used for health professional training in the respiratory ward.

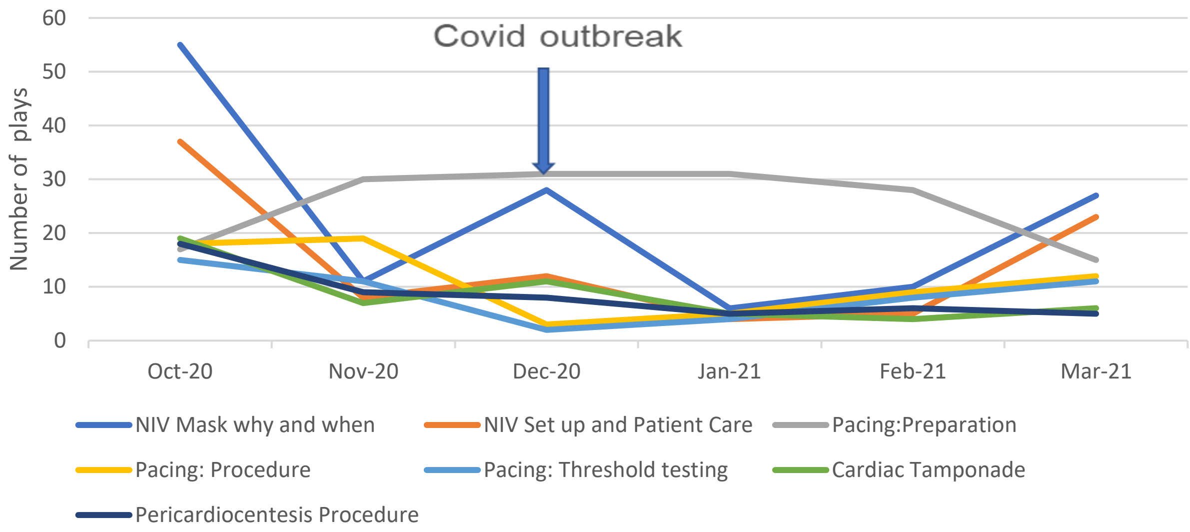

Figure 6.5 Video play numbers during implementation period

Table 6.1 provides a breakdown of the video view data, which indicates that the average amount played was 71% (range of 60% to 78%). The percentage of the total number of video plays was slightly higher for pacing (72% to 78%) and pericardiocentesis (71% to 76%). The view rate (defined as the number of plays divided by the number of loads) for videos was surprisingly low (3% to 5.4%), which could support anecdotal comments made to the thesis author regarding network connectivity issues that nurses experienced when they tried to view the videos on mobile computers.

Table 6.1 Video loads, plays, numbers and percentages watched during implementation period

Video title	NIV: why and when	NIV: set-up and patient care	Pacing: preparation	Pacing: procedure	Pacing: threshold testing	Cardiac tamponade	Pericardiocentesis procedure
Video length (min/secs) total	3.12 mins / 192 secs	6.07 mins / 367 secs	3.52 mins / 232 secs	4.34 mins / 274 secs	2.29 mins / 149 secs	2.04 mins / 124 secs	3.23 mins / 203 secs
Content end	2.45 mins/165 secs 85%	5.40 mins / 340 secs 92%	3.26 mins/206 secs 88%	4.07 mins/247 secs 90%	2.02 mins/122 secs 81%	1.39 mins/99 secs 79%	2.57 mins/177 secs 87%
Loads[a]	505	484	224	221	219	187	183
Plays[b]	137	89	74	61	55	52	51
Finishes[c] n (%)	30 (21%)	14 (16%)	17 (22%)	13 (21%)	12 (21%)	7 (13%)	11 (21.5%)
Mean % of videos watched[d]	64.3% (range 2% to 100%)	61.9% (range 20% to 100%)	67.3% (range 1% to 100%)	76.6% (range 4% to 100%)	72.3% (range 1% to 99%)	78.3% (range 10% to 100%)	75.8% (range 7% to 100%)
Watch rate[e]	3.6%	5.4%	3.0%	3.6%	3.9%	3.5%	3.5%

Note: [a] total number of loads = the number of times the video was 'loaded' on the intranet page in which it was embedded; [b] total number of plays = the number of times a person hits the play button on a video; [c] total number of finishes = the number of times a video was played to completion; [d] mean percentage of video completion = the furthest time point to which a video was played in its timeline during a single session divided by the total length of the video across all sessions; [e] watch rate is defined as the number of plays divided by the number of loads.

6.10.1.4 MyHealthLearning Video Modules Access

During the implementation period, 107 nurses completed the modules—of which the most viewed were NIV and pacing (36 times each; see Figure 6.6).

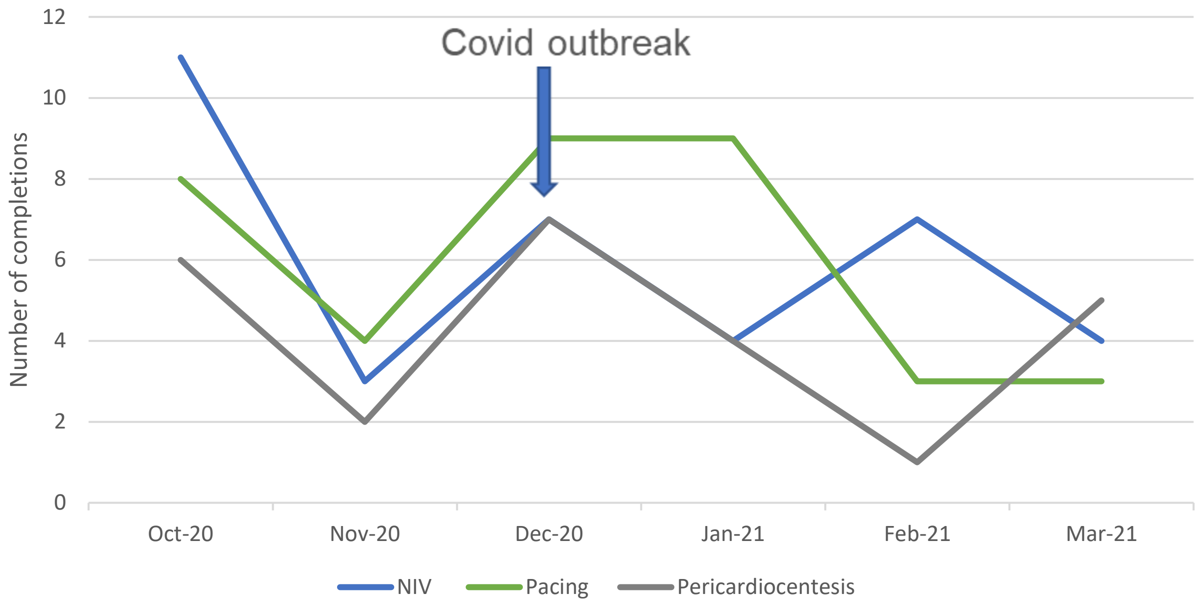

Figure 6.6 Video access via myhealthlearning during implementation period

6.10.2 Video Viewer Feedback Survey

Participants who viewed a video on the intranet or via MHL modules were asked to complete an anonymous feedback survey immediately after viewing. This survey could be accessed using a QR code on the intranet or at the end of the learning module. The survey was available from 15 October 2020 to 1 November 2021, and no participant demographic data were collected. In total, 268 valid survey responses were retrieved, 12 were removed because they did not identify the name of the video that was viewed. When separated by topic, 90 surveys were completed for the topic of temporary cardiac pacing (35.2%), 83 for NIV (32.4%) and 83 for pericardiocentesis (32.4%).

6.10.3 Non-Invasive Ventilation

The 83 participants who viewed the NIV videos during the implementation period completed a post-viewing survey, of which most (95%, *n* = 79) agreed/strongly agreed that the videos helped them learn new skills. The participants displayed a high level of agreement (99%, *n* = 80) with the belief that the videos could make a difference in their job in terms of using what they had learned. All participants agreed/strongly agreed that the video content was relevant to their job (100%, *n* = 83), and that provided thorough coverage of the subject matter (95%, *n* = 79/82), see Figure 6.7.

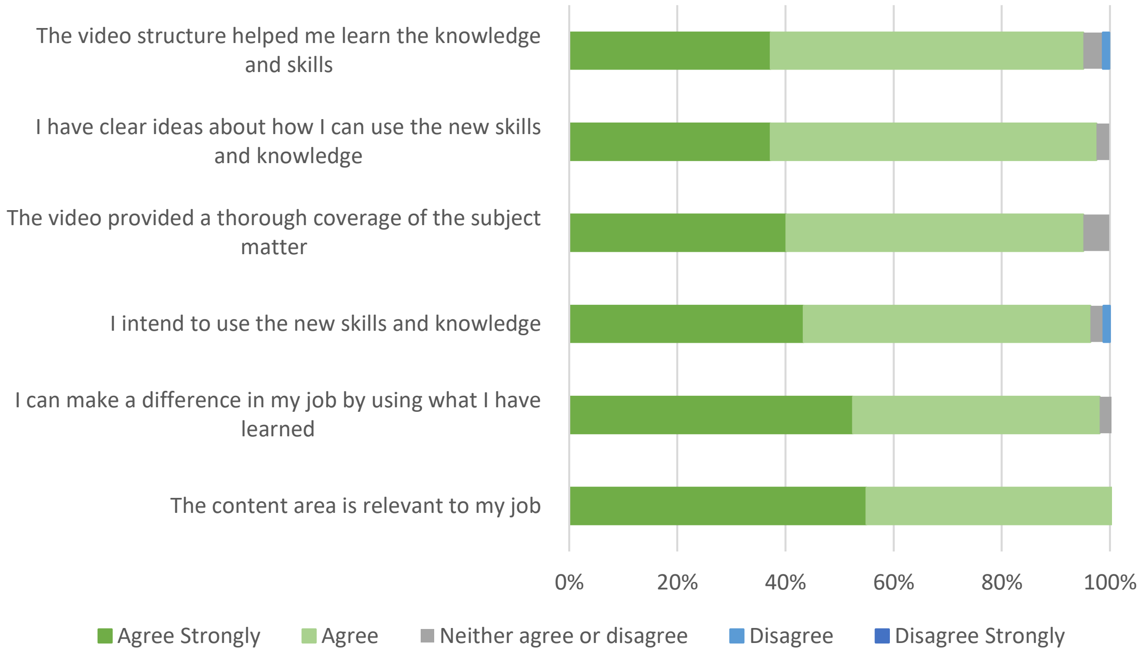

Figure 6.7 Feedback survey Likert responses to statement: 'please indicate your level of agreement with the following statements about the NIV videos'

Six participants (7.2%) provided additional feedback, and they described the reasons for their agreement with the statement in an open-ended comment, as indicated below:

- *Video was extremely helpful in the basics of NIV. (Participant 100)*
- *Good as an introduction. (Participant 140)*
- *The module went really quickly, and the narrator hardly took a breath; it did not allow you to take in the information easily. (Participant 156)*
- *I really enjoy the visual learning. (Participant 161)*
- *The videos were very rushed. (Participant 230)*
- *Great videos: any chance the transitions could speed up? (Participant 235)*

6.10.4 Cardiac Pacing

Of the participants who viewed the cardiac pacing videos during the implementation period, 90 completed a post-viewing survey—and all (100%, n = 90) agreed/strongly agreed that viewing a video helped them learn new knowledge and skills. There were high levels of agreement (94%, n = 85) regarding the participants' intention to use the new knowledge and skills. Importantly, most participants (95%, n = 85) felt that the videos offered them ideas about how to use their new skills and knowledge. The participants agreed/agreed strongly that the video content area was relevant to their job (97%, n = 87), and that it was thorough (98%, n = 88), see Figure 6.8.

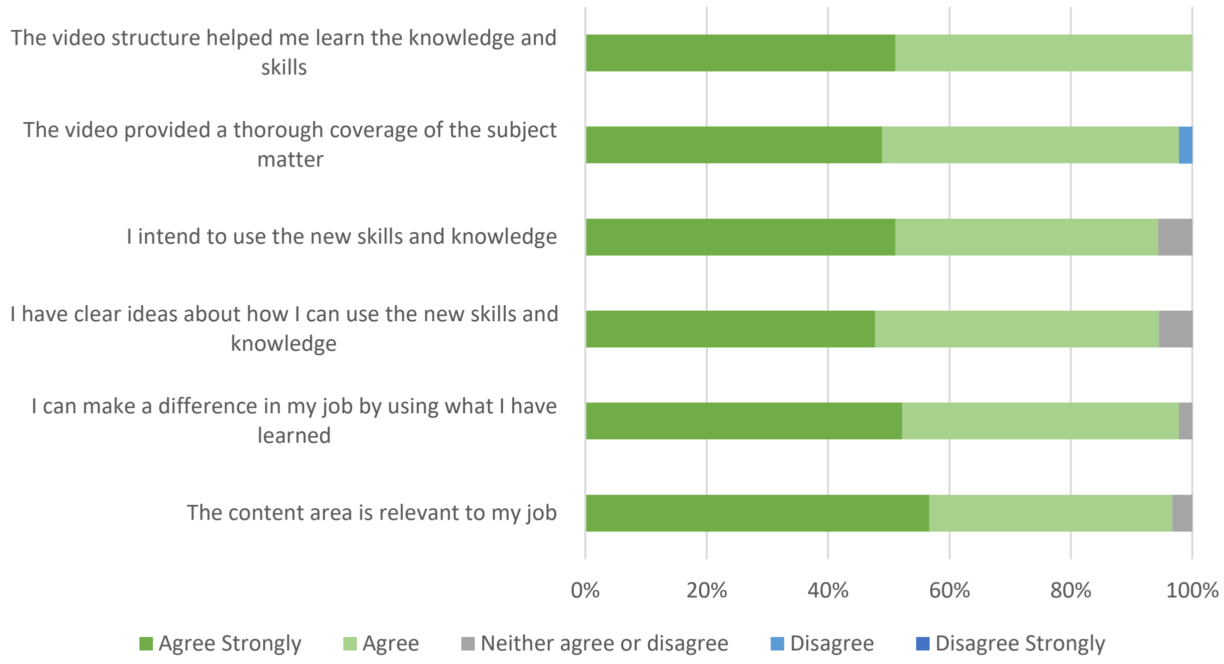

Figure 6.8 Feedback survey Likert responses to statement: 'please indicate your level of agreement with the following statements about cardiac pacing videos'

Only one participant (1.1%) decided to provide additional feedback in an open-ended comment about their reason for agreeing with the statement. They simply stated: '*It was great*' (Participant 258).

6.10.5 Pericardiocentesis

The 83 participants who viewed the pericardiocentesis videos during the implementation period also completed the post-viewing survey, of which most (95%, *n* = 75/79) agreed/agreed strongly that the videos helped them learn new knowledge and skills, and that they intended to use this new knowledge and skills (92%, *n* = 75/82). Additionally, most agreed that the videos offered them ideas about how to use their new skills and knowledge (95.1%, *n* = 76/83). The participants also agreed/agreed strongly that the video content area was relevant to their job (95%, n = 79/83), and that it was thorough (93%, n = 77/83), see Figure 6.9.

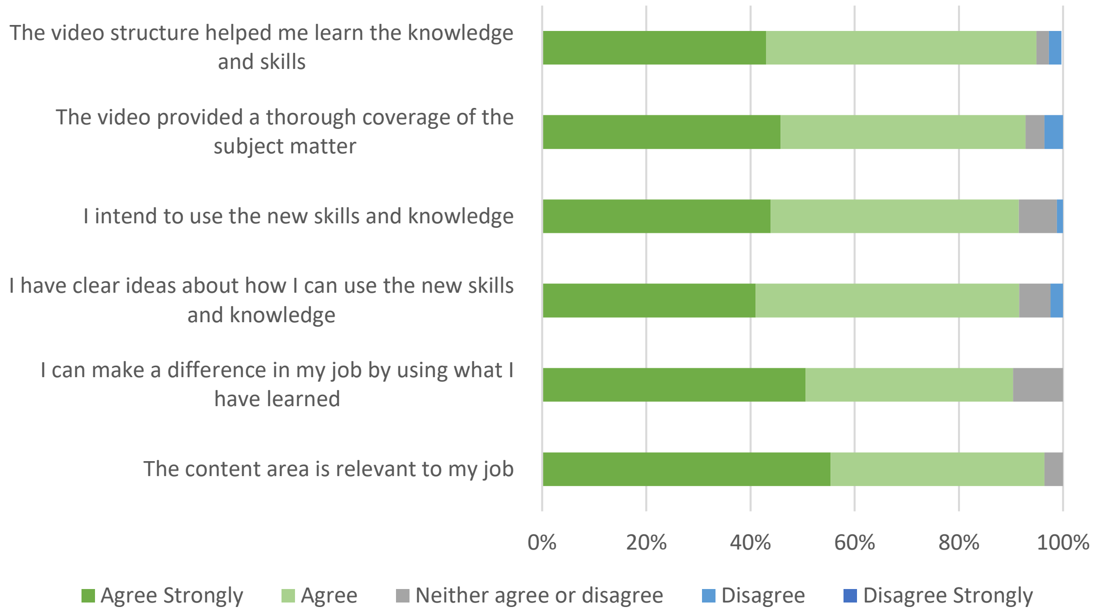

Figure 6.9 Feedback survey Likert responses to statement: 'please indicate your level of agreement with the following statements about the pericardiocentesis videos'

Two participants (2.4%) decided to provide additional feedback in open-ended comments to describe their reasons for agreeing with the statement, which are noted below:

- *Could have showed to document post-procedure. (Participant 171)*
- *These videos were informative and engaging. (Participant 246)*

6.10.6 Video Complexity

The participants were also asked to rate the complexity of the video content. In total, 256 participants responded, of which more than two-thirds thought that the video content was 'just right in complexity' for NIV (69%, n = 57/83), cardiac pacing (74%, n = 67/90) and pericardiocentesis (79%, n = 66/83), Figure 6.10.

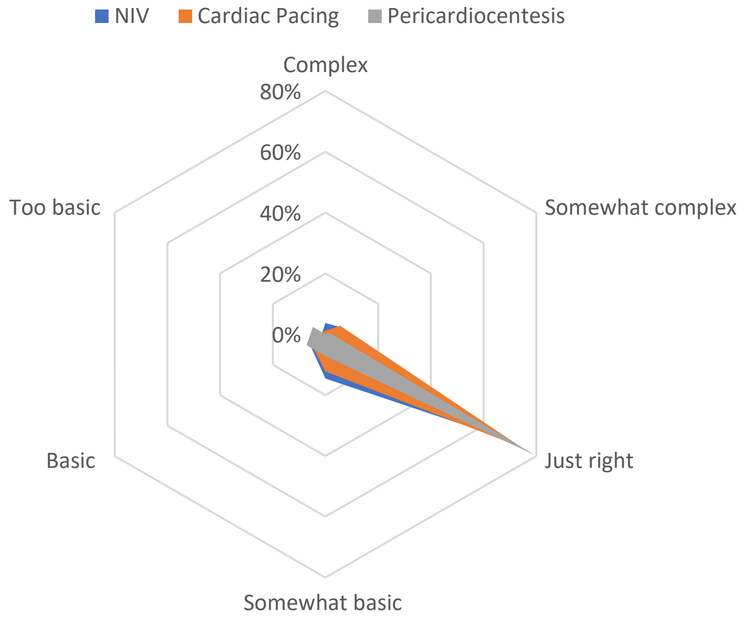

Figure 6.10 Feedback survey Likert responses to statement: 'the video content was …'

6.11 Post-Implementation Survey Results

6.11.1 Section One: Participant Characteristics

This study originally collected 185 survey entries, which included 16 paper responses. Table 6.2 outlines the participants' characteristics.

This sample comprised more females (85.6%, *n* = 113) than males (14.4%, *n* = 19), with a mean age of 40.75 years (ranging from 20 to 71 years old). Most participants worked at the two acute hospitals—Gosford Hospital (64.7%, *n* = 86) and Wyong Hospital (33.8%, *n* = 45)—and were registered nurses (67.7%, *n* = 90), with 3.8% (*n* = 5) of the sample comprising enrolled nurses. Nearly half of the participants worked in cardiology (48.9%, *n* = 65), of which emergency nurses accounted for 27.1% (*n* = 36) and intensive care 12.8% (*n* = 17) of the sample. Further, 11.3% (*n* = 15) of participants indicated that they worked in other areas, such as respiratory, renal and neurology areas. The mean time spent in the current role was 7.44 years (ranging from 0.5 to 31 years).

Table 6.2 Participant characteristics

Characteristic	Value
Age in years, mean (*SD*)	40.75 (10.13)
Gender	
Female	113 (85.6)
Male	19 (14.4)
Did not state gender	1 (0.8)
Site	
Gosford	86 (64.7)
Wyong	45 (33.8)
Did not state	2 (1.5)
Role	
Registered nurse	90 (67.7)
Clinical nurse specialist	14 (10.6)
Clinical nurse educator	13 (9.8)
Nurse unit manager	1 (0.8)
Enrolled nurse	5 (3.8)
Clinical nurse consultant	5 (3.8)
Nurse manager	2 (1.6)
Student nurse	2 (1.6)
Did not state	1 (0.8)
Role	
Time in years, mean (SD)	7.4 (6.22)
Time in role (years), median (IQR)	6 (2.5-10)
Specialty	
Cardiology	65 (48.9)
Emergency	36 (27.1)
Intensive care	17 (12.8)
Other	15 (11.3)
Medicine	3 (2.4)
Casual nursing pool	1 (0.8)
Respiratory	8 (6)
Clinical placement	1 (0.8)
Trauma	1 (0.8)
Community	1 (0.8)

Note: *N* = number of survey responses.

6.11.2 Importance of Clinical Procedures

Most study participants confirmed that they valued video clinical procedures, with 96% (*n* = 123/128) agreeing or agreeing strongly with the statement, ‘I value video clinical procedures’ (see Figure 6.11).

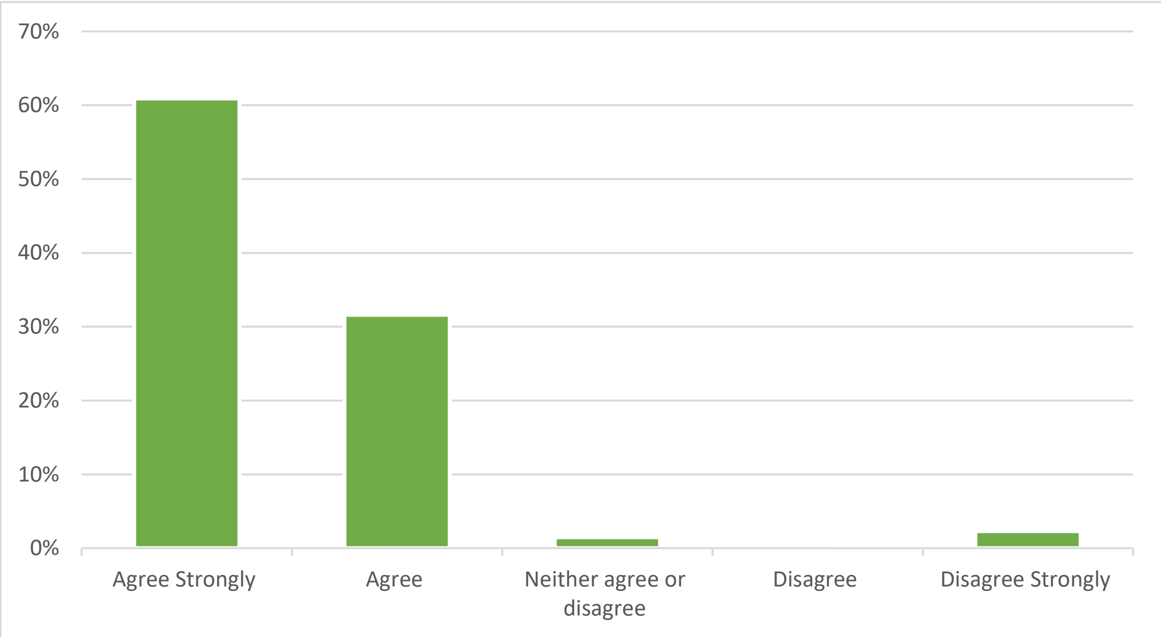

Figure 6.11 Participant responses to Likert scale statement: ‘please rate your agreement with the following statement: I value video clinical procedures’

6.11.3 Section Two: Knowledge and Skills

6.11.3.1 Reasons for Using Clinical Procedures

Participants were questioned about their reasons for searching the intranet about clinical procedures; most indicated that their searches were to address patient care (72%, *n* = 96), to refresh or gain knowledge (70%, *n* = 93) or to obtain best practice advice (49.6%, *n* = 66). However, in terms of recommendations to access procedure documents, participants received recommendations more often from educators (31%, n = 42) than from colleagues (0.14%, n = 19) or managers (0.6%, n = 9), see Figure 6.12.

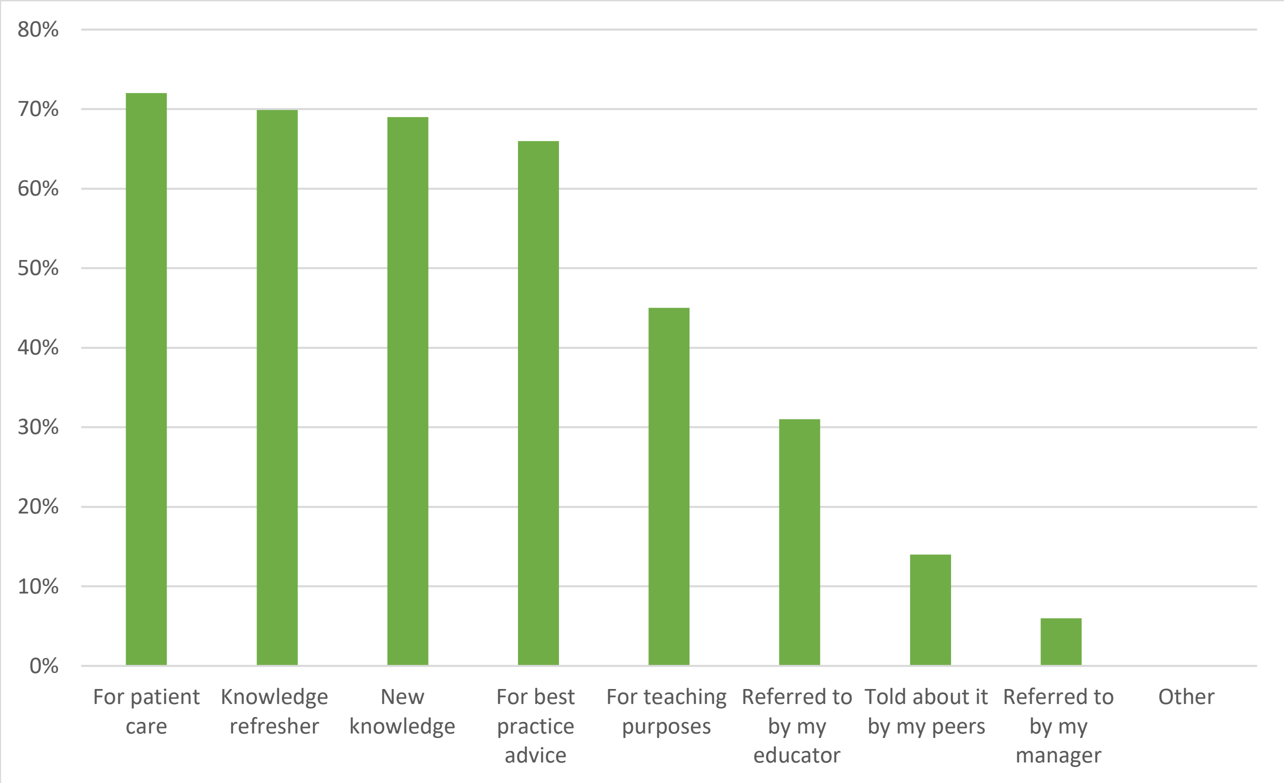

Figure 6.12 Participant responses to statement: 'please select the reasons why you are most likely to search the intranet in relation to clinical procedures (you may select more than one)'

Participants were also asked to specify any details in additional comments regarding their reasons for using clinical procedures, but only one participant provided a comment (1/133, n = 0.8%). The participant merely noted, '*All of the above'* (Participant 60, RN).

At this point in the survey participants were asked a question of whether they had viewed the study videos. Eleven (9%) participants who started the survey but who had not viewed any videos and exited the survey at that point (end of Section Two). Participants who had not viewed the videos were older (mean age 43.7 years vs 40.4 years) and had been in their current role longer (mean time 10.4 years vs 7.1 years). Of note, despite not viewing the study videos this group still valued video procedures (90.1%, n = 11 vs 96.75, n = 122).

6.11.4 Section Three: Questions About the Videos

6.11.4.1 Video Procedure Viewer Feedback

In the final analysis of video viewers, 122 surveys were ultimately included. Participants were asked to rate their agreement with clinical reasoning cycle statements regarding the procedure videos. The ranking involved a Likert scale that ranged from 1 *strongly disagree* to 2 *disagree*, 3 *neither disagree nor agree,* 4 *agree* and 5 *agree strongly*. The participants were then asked to indicate the level of their agreement with clinical reasoning cycle statements about each video that they had viewed.

Participants were also asked to provide feedback about the videos they had viewed, in which 91.8% (n = 112) of the respondents had viewed at least one of the clinical procedure videos (average of 4.5 videos). The most viewed videos were those pertaining to the pericardiocentesis procedure (70%, n = 86) and NIV procedure regarding set-up and patient care (69.6%, n = 85).

6.11.4.2 Non-Invasive Ventilation Videos

This study included two NIV videos. Video 1 was titled, ‘NIV: Why and When to Use It’, and it was reviewed by 83 participants. Over 95% (n = 79) of participants agreed/agreed strongly that viewing the video helped them with all elements of the clinical reasoning cycle (see Figure 6.13).

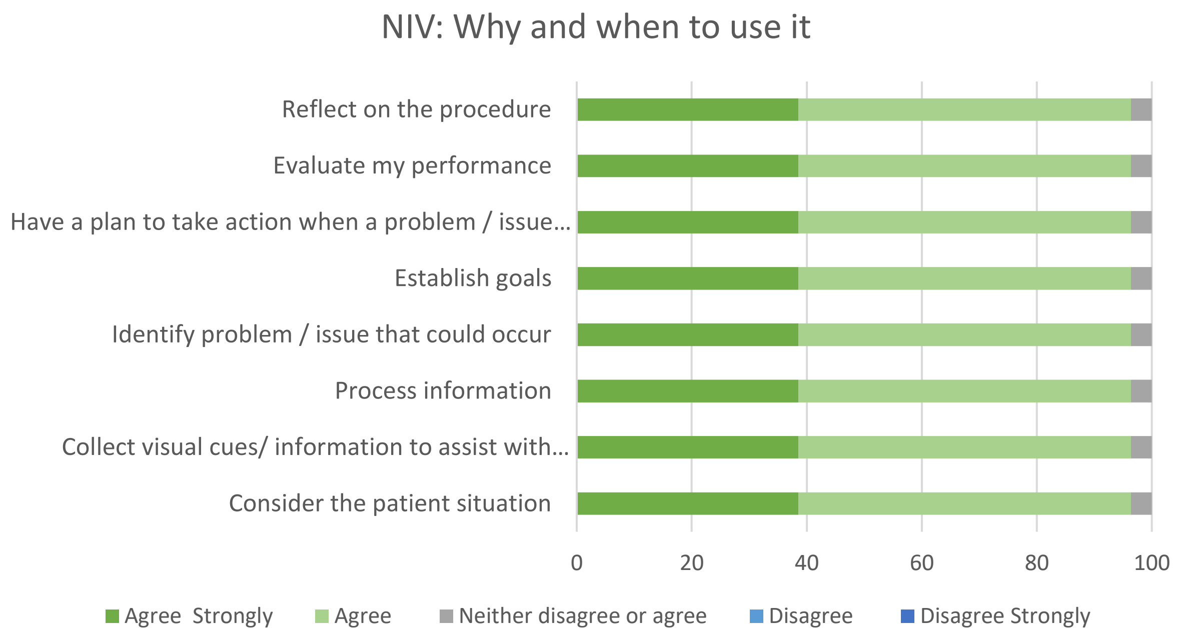

Figure 6.13 Participant responses to Likert scale statement: 'viewing a video assisted me to.'

Video 2 was titled, 'NIV Set-Up and Patient Care', and it was reviewed by 85 participants. Similar to video 1, over 97% (*n* = 83) of participants agreed/agreed strongly that watching the video helped them with all elements of the clinical reasoning cycle (see Figure 6.14).

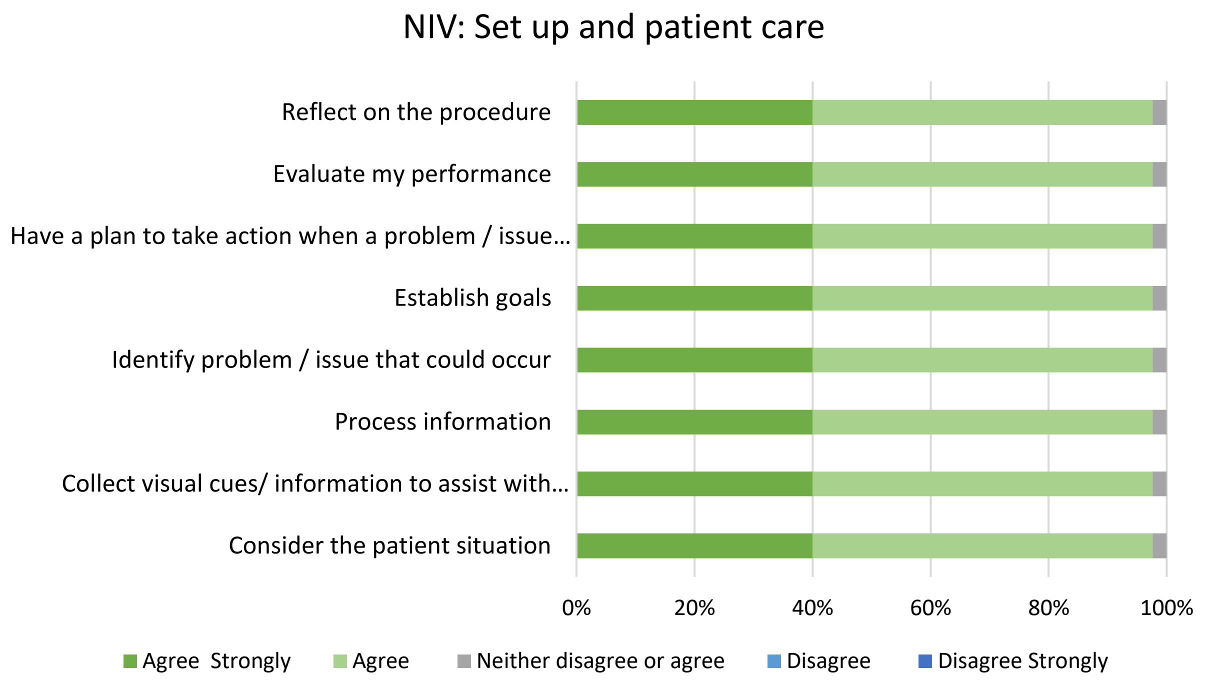

Figure 6.14 Participant responses to Likert scale statement: 'viewing a video assisted me to.'

Participants were then asked to specify any other comments regarding NIV video procedures—and 27 responses were received. Of the respondents, 24 (19.6%) provided additional feedback in open-ended comments. After an inductive content analysis was performed on the responses, three major categories were identified regarding the NIV video procedures. See Table 6.3 for the process of category generation.

Table 6.3 Theme generation for survey statement: 'Please add here comments you want to make about the NIV videos'

Categories	Quotations from participants *(edited for typographical errors)*
General feedback	• Easy-to-understand explanation of procedure; I think it would be most beneficial to staff with no/minimal experience with NIV. (Participant 12, CNS) • Extremely helpful when orientating junior staff into resus. (Participant 60, RN) • Good as an educational video—with courses on NIV. (Participant 172, RN) • Good that extra information relating to COVID-19 precautions was available. (Participant 50, CNS) • Good visual on settings. (Participant 51, CNS) • Great refresher. (Participant 112, RN) • Great resource! (Participant 183, RN) • I think the videos are great for novice learners or those who do not use the equipment or set-up often. I consider myself experienced in this area, but it was a great reminder for the basic principles. (Participant 8, CNC) • Knowledge gained was to check for an exhalation port. (Participant 50, CNS) • NIV package was well done; I felt I got more out of this video than reading on paper. I am a visual learner. (Participant 168, RN) • Quite simple, but all included. (Participant 180, RN) • Reassurance that best practice is endorsed at an LHD level is what is being accessed rather than a random YouTube™ clip. (Participant 114, CNS) • The combination of how NIV improves gas exchange and visual demonstration of device application assisted in providing a better understanding of what to do regarding procedure. (Participant 165, EN) • These videos were short and to the point—they made it very easy to watch in a profession that is time poor. (Participant 6, CNE) • Very good and informative. (Participant 41, RN) • Very informative; excellent resource for clinicians, template and potential for application for other clinical procedures. (Participant 144, NM) • Very useful information about set-up and correct administration. (Participant 2, RN) • Video made well—it is easy to understand. Highly recommended that all procedures should be taught by video support. (Participant 54, RN) • Videos have added another perspective to education and staff awareness. Staff all learn differently; this allows staff to visualise. (Participant 37, CNE)

Categories	Quotations from participants *(edited for typographical errors)*
	• Visual learning is so effective and easy to remember; also, the ease of access is great and to refer to when needed. (Participant 20, CNE) • Well presented. (Participant 105, EN)
Suggestions	• Make view of set-up/settings and parameters more visible; add what settings we need to set. (Participant 176, CNE) • Would be helpful to add how to give inhalers via adaptor for NIV circuit. (Participant 12, CNS)
Rare procedure	• Excellent refresher for staff when they need to use NIV, and it has been a while between patients. (Participant 6, CNE) • Great introduction to a new procedure. Allowed me to get basic insight into the procedure prior to having to BIPAP (NIV) a patient for the first time. (Participant 163, RN) • Great refresher for staff who are new to Resus or those who haven't used the BIPAP machine for a while. (Participant 177, CNE) • Great videos, easy to follow. Great for a refresher or as a resource to support education for those new to NIV. (Participant 55, CNE) • I think the videos are great for novice learners or those who do not use the equipment or set-up often. I consider myself experienced in this area, but it was a great reminder of the basic principles. (Participant 8, CNC)
Other	• I don't use NIV in my area. (Participant 31, RN) • We currently don't use NIV at Wyong; this was for interest's sake. (Participant 109, RN)

Note: BIPAP = bilevel positive airway pressure; CNC = clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; EN = enrolled nurse; LHD = local health district; NIV = non-invasive ventilation; NM = nurse manager; RN = registered nurse.

6.11.4.3 Temporary Cardiac Pacing Videos

This study included three temporary pacing videos. Video 1 was titled, ‘Pacing Preparation’, and it was viewed by 78 participants. Over 98% (*n* = 77) of participants agreed/agreed strongly that viewing the video helped them with all elements of the clinical reasoning cycle (see Figure 6.15).

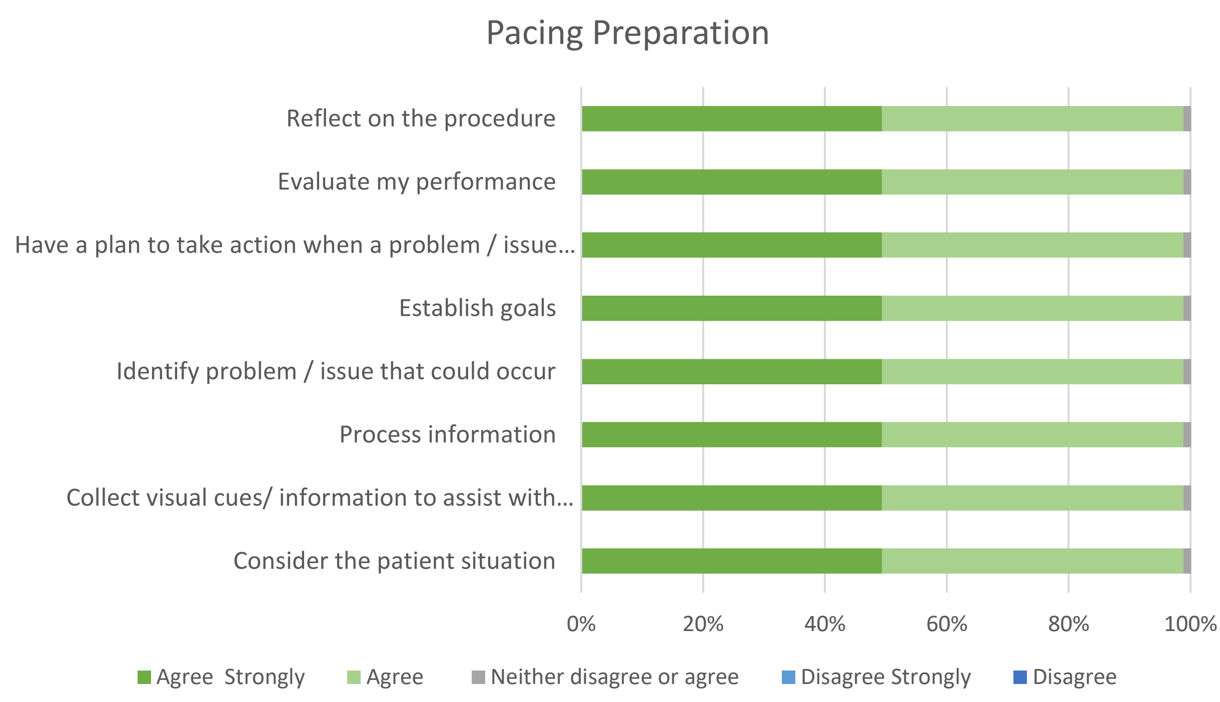

Figure 6.15 Participant responses to Likert scale statement: ‘viewing a video assisted me to.

Cardiac pacing video 2 was titled, ‘Pacing Procedure’, and it was viewed by 78 participants. Over 98% (*n* = 77) of participants agreed/agreed strongly that viewing the video helped them with all elements of the clinical reasoning cycle (see Figure 6.16).

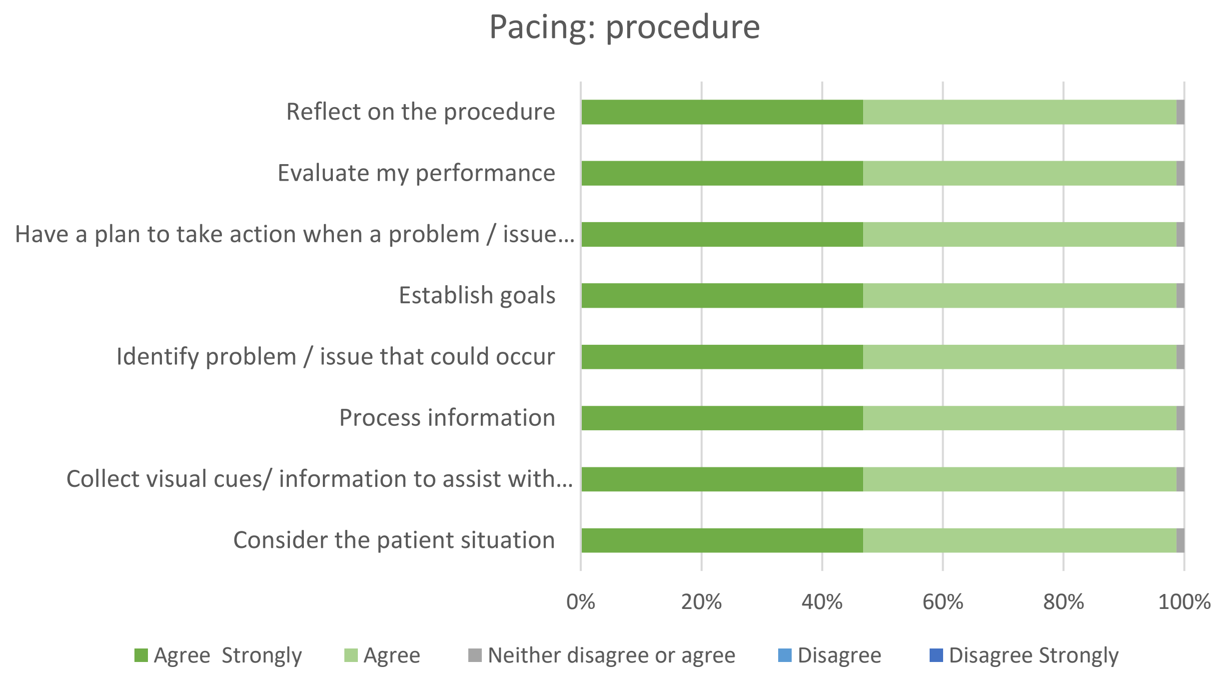

Figure 6.16 Participant responses to Likert scale statement: 'viewing a video assisted me to '

Pacing video 3 was titled, 'Pacing Threshold Testing', and it was viewed by 73 participants. Over 93% (*n* = 68) of participants agreed/agreed strongly that viewing the video helped them with all elements of the clinical reasoning cycle (see Figure 6.17).

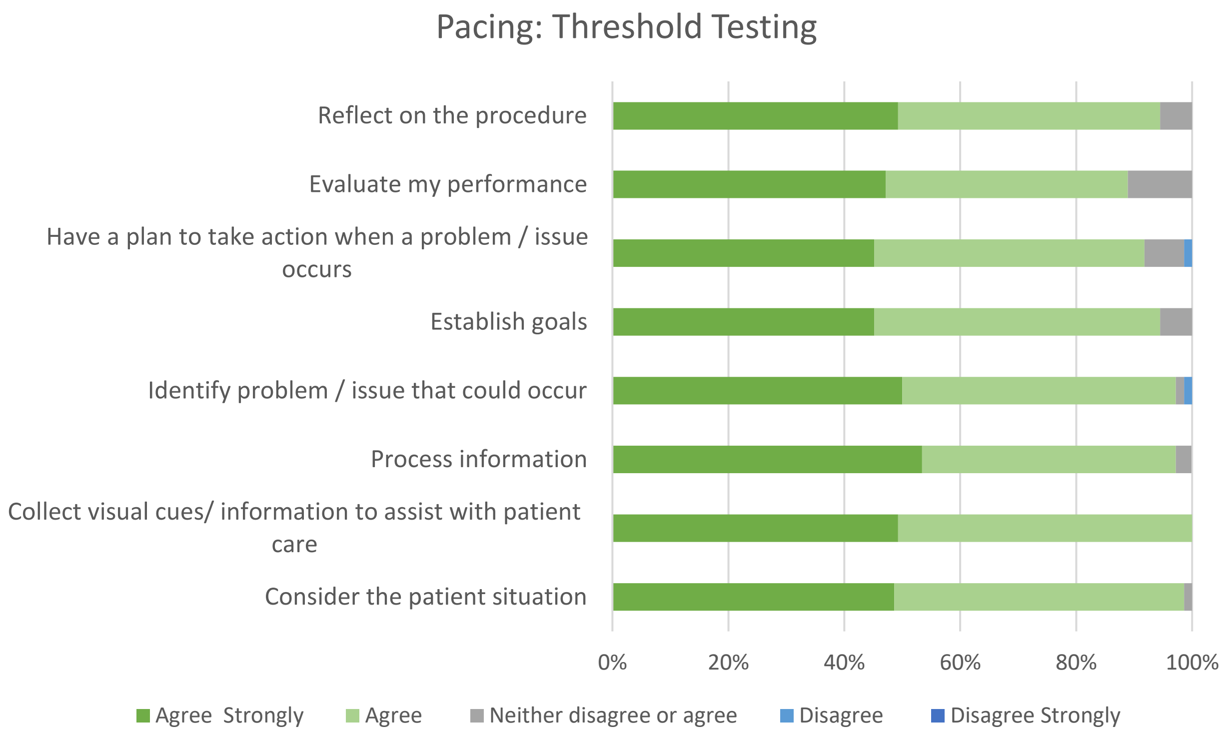

Figure 6.17 Participant responses to Likert scale statement: 'viewing a video assisted me to '

The participants were also asked to provide any other comments regarding the cardiac pacing video procedures and 21 responses were provided in open-ended comments. After an inductive content analysis was performed on these 21 responses, three major categories were identified regarding the cardiac pacing video procedures, which are presented in Table 6.4.

Table 6.4 Theme generation for survey statement: 'Please add here any comments you want to make about the pacing videos'

Categories	Quotations from participants (*edited for typographical errors*)
General feedback	• A great learning tool. (Participant 41, RN) • As I have never been involved in this procedure, I found the videos a very beneficial introduction. Prior to watching this, I probably would have incorrectly placed the defibrillator pads in the anterior lateral position rather than AP (anterior posterior). (Participant 15, CNS) • Excellent resource. (Participant 49, NM) • I found this very interesting, as I do not work in this area and have little or nothing to do with temporary pacing wire insertion. Good learning and revision tool. Apologies, I am yet to view the threshold testing videos. (Participant 8, CNC) • Good learning and revision tool. (Participant 59, CNE) • Good visual on pacing box and settings. (Participant 51, CNS) • Learned that monitoring needed to be out of the TVPW (temporary venous pacing wire) field. Cannot evaluate my own performance in relation to demonstration video as I have never assisted in TVPW insertion—just management following. (Participant 50, CNS) • I like this one because we frequently have to do it. (Participant 127, RN) • I really enjoyed the visual; it helped with my understanding. (Participant 30, RN) • Very informative and excellent resource for staff. (Participant 144, NM) • Very simple but good compared to the paper procedure. (Participant 180, RN) • Well presented in a clear way, even though a complex process. (Participant 20, CNE) • Well put together. (Participant 105, EN)
Suggestions	• Adding a rhythm strip to see changes when adjusting threshold in real time may be helpful. Troubleshooting when capture is lost/manoeuvres to help reestablish in an emergency situation may be helpful. (Participant 46, CNE)
Rare procedure	• Great introduction: a lot of information that I feel I will need a refresher for if I did need to pace. (Participant 163, RN) • Great resources; easy to access and follow. Perfect for occasion, e.g., overnight with reduced resources. (Participant 177, CNE) • Has reiterated how to proceed with temporary pacing wires and what is expected from nursing staff within this role. (Participant 2, RN) • Something that I have not done in a while and need a refresher on this as well. (Participant 112, RN)

Categories	Quotations from participants (*edited for typographical errors*)
	• Temporary venous pacing is not frequently done within the ED. It is a great resource when there are staff looking after a patient about to have temporary venous pacing about what to expect throughout the procedure. The department used the videos when there was an unwell patient requiring temporary venous pacing; staff watched it prior to the procedure and were happy to assist with the patient care before, during and after the procedure. Great resource for after hours. (Participant 55, CNE) • This was an excellent video. I had a patient that required a wire; it had been 12 months since I have assisted with a TVPW, so watching this video was an excellent refresher and very useful. (Participant 6, CNE) • Very helpful—very rare that we pace people in ED, so it’s a hard skill to keep up to date with. (Participant 60, CNE)

Note: AP = anterior posterior; CNC =clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; ED = emergency department; EN =enrolled nurse; NM = nurse manager; RN = registered nurse; TVPW = temporary venous pacing wire.

6.11.4.4 Pericardiocentesis Videos

This study included two pericardiocentesis videos. Video No 1 was titled, 'Cardiac Tamponade: Recognition and Patient Care', and it was viewed by 78 participants. Over 94% (94.8%, *n* = 74) of participants agreed/agreed strongly that viewing the video helped them with all elements of the clinical reasoning cycle (see Figure 6.18).

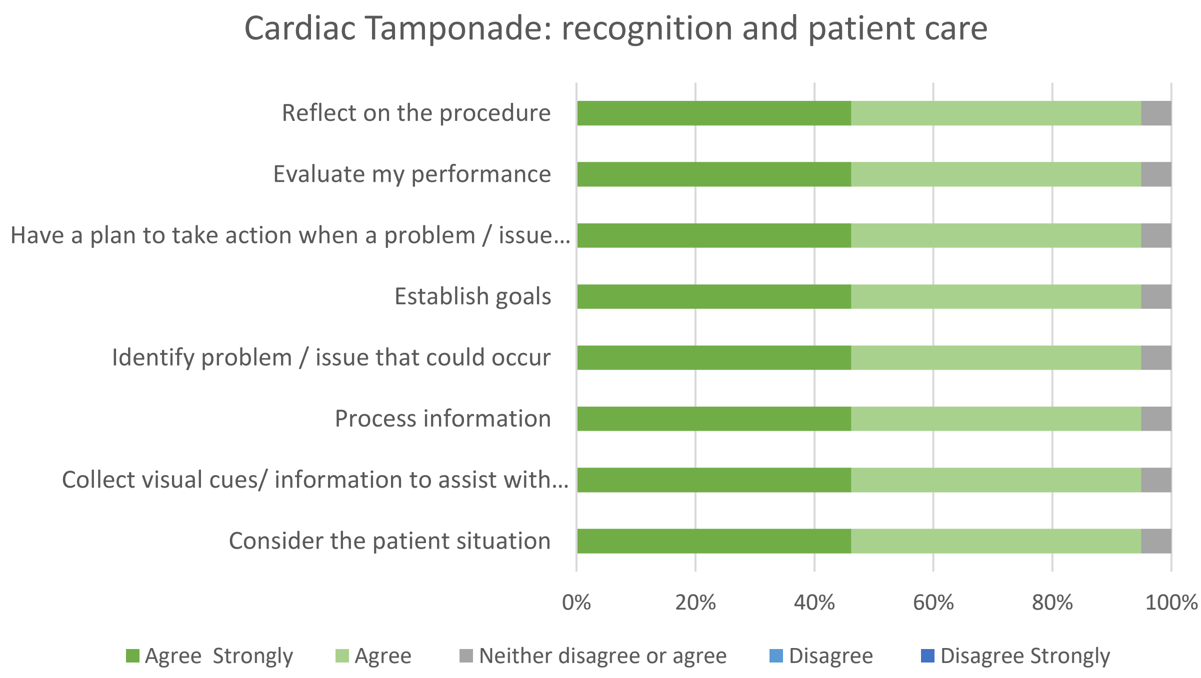

Figure 6.18 Participant responses to Likert scale statement: 'viewing a video assisted me to '

Pericardiocentesis video No 2 was titled, 'Pericardiocentesis: Nursing Considerations', and it was viewed by 86 participants. Over 95% (*n* = 82) of participants agreed/agreed strongly that viewing the video helped them with all elements of the clinical reasoning cycle (see Figure 6.19).

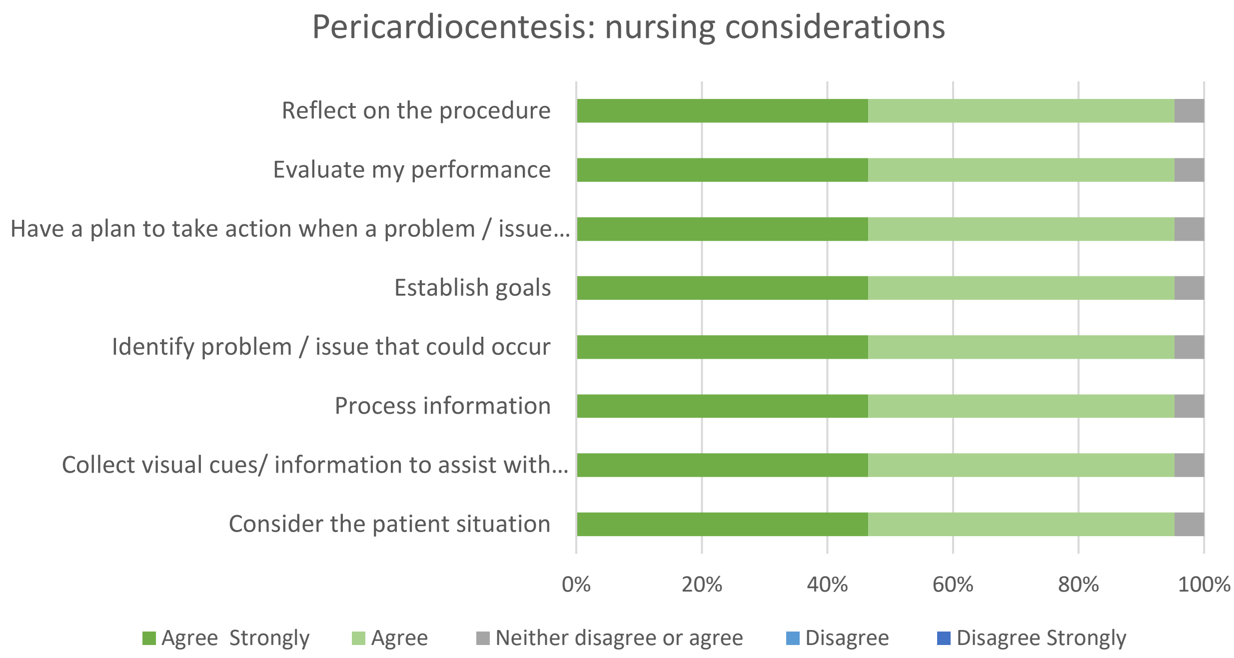

Figure 6.19 Participant responses to Likert scale statement: 'viewing a video assisted me to '

The participants were also asked to provide additional comments regarding pericardiocentesis video procedures—for which 16 responses were received; 14 participants (87.5%) provided substantive comments in the open-ended comments sections. After an inductive content analysis was performed on the 16 responses, three major categories were identified regarding the pericardiocentesis video procedures, which are presented in Table 6.5.

Table 6.5 Theme generation for survey statement: 'Please add here any comments you wish to make about the cardiac tamponade and/or pericardiocentesis video'

Categories	Quotations from participants *(edited for typographical errors)*
General feedback	• Any additional information I can collect to enhance patient safety and improve my understanding of the management of procedures is of benefit. (Participant 87, SN) • Excellent resource for staff. (Participant 144, NM) • Good; easy-to-understand introduction. (Participant 15, CNS) • Great refresher. (Participant 163, RN) • Simple but understandable. (Participant 180, RN) • Helpful in adding to the knowledge base. (Participant 60, RN) • I look forward to nursing more complex patients when I am an RN. (Participant 35, EN) • Loved the simple and clear explanation. (Participant 20, CNE) • Reminded via visual cue that patient may need chest shaved prior procedure and again that ECG dots need to be placed away from the sterile field. Learned that patients need positioning at 30-45 degrees. (Participant 50, CNS)
Suggestions	• Would be good to show the equipment needed. (Participant 154, CNS)
Rare procedure	• Again, another excellent tool for staff to use—especially given that pericardiocentesis is something we rarely deal with. (Participant 6, CNE) • Good to use as a rare procedure; nice and quick videos that align with our policy and procedure. (Participant 177, CNE) • Great resource. Rarely seen in ED, easy to follow and a fast refresher when the procedure is time critical. (Participant 55, CNE) • This is something that we don't experience very often on our ward, and I feel that having this video available is a fantastic learning environment to refresh my clinical knowledge. (Participant 2, RN)
Other	• Nil. (Participant 54, RN) • Well done. (Participant 150, RN)

Note: CNC = clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; ECG = electrocardiograph; ED = emergency department; EN = enrolled nurse; LHD = local health district; NIV = non-invasive ventilation; NM = nurse manager; RN = registered nurse; SN = student nurse.

Participants were also asked to provide any additional comments they might have in relation to viewing any of the procedure videos—for which 14 participants (11.4%) offered comments for the open-ended question. The 14 responses are presented in Table 6.6.

Table 6.6 Theme generation for survey statement: ‘Please add any additional comments about video features below’

Categories	Quotations from participants *(edited for typographical errors)*
General feedback	• Clear and succinct video about cardiac tamponade. Easy to understand, and it covers key concepts. (Participant 28, SN) • Great to see unhurried and calm approach to these procedures; however, I personally find real-life experience and repetition of procedures the best way to develop clinical skills. Accompanying dialogue in videos was helpful, though, to gain an understanding of the underlying physiological need for the videoed interventions. (Participant 50, CNS) • I find visual videos very helpful for my learning. Would love more visual learning. (Participant 30, RN) • I think visual aids and videos are a great way to assist learning. (Participant 123, EN) • It was helpful that all videos displayed the corresponding policies and procedures. (Participant 15, CNS) • So easy to access and use as an educational tool. (Participant 20, CNE) • The videos are a great resource for clinicians. This style of video is applicable in many other areas of clinical practice. (Participant 144, NM) • Videos add to the learning experience for all staff, including medical officers. (Participant 37, CNE)
Suggestions	• Would benefit from more videos on different topics. (Participant 177, CNE)
Rare procedure	• Great idea for procedures such as temporary venous pacing and cardiac tamponade/pericardiocentesis, which are not frequently seen in ED. Staff can have a quick refresher prior to the procedure being undertaken. It’s easy to follow and just the right amount of information; great for those who are tired on night shift to follow. (Participant 55, CNE) • Great introduction; it has a lot of information that I feel I will need a refresher if I did need to pace. (Participant 163, RN) • A very effective way to support practices that have low exposure but high acuity. (Participant 51, CNS)
Other	• Nil. (Participant 54, RN) • More effective than paper procedure. (Participant 180, RN)

Note: CNE = clinical nurse educator; CNS = clinical nurse specialist; ED = emergency department; EN = enrolled nurse; NM = nurse manager; RN = registered nurse; SN = student nurse.

6.11.4.5 Summary of Video Feedback

Overall, the quantitative feedback received for all videos was similar (see Figure 6.20). When the scores for all videos were averaged, this study found that over 90% (*n* = 111) of participants agreed/agreed strongly that viewing a video helped them consider their patients' situation (97.5%, *n* = 119); collect (96.7%, *n* = 118) and process information (97.5% *n* = 119); identify problems (95.9%, *n* = 117); establish goals (92.6%, *n* = 113); and determine a plan of action (93%, *n* = 114). Further, most participants agreed/agreed strongly that the videos helped them evaluate their performance (87%, *n* = 106) and reflect on the procedure (94%, *n* = 115).

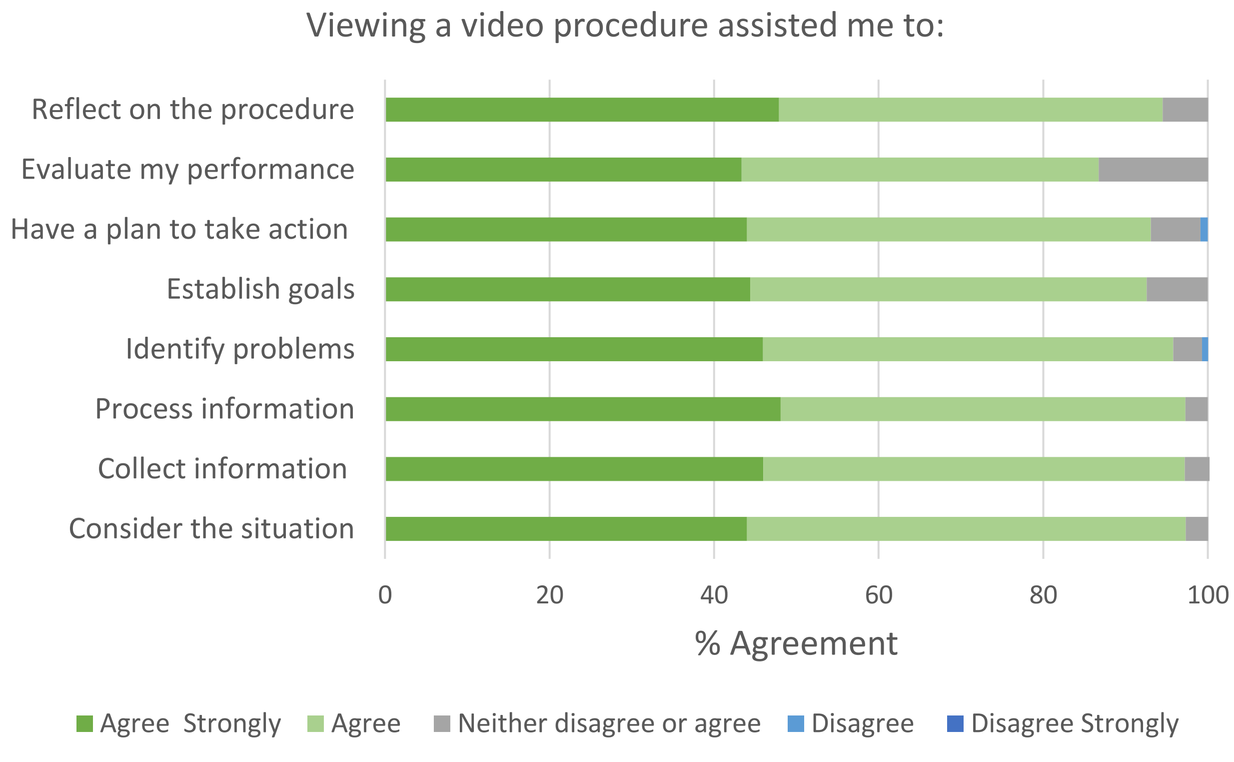

Figure 6.20 Average participant responses to Likert scale statement: 'viewing a video assisted me to ...'

An inductive content analysis that was performed revealed that the qualitative feedback provided was consistent across all videos. When all 81 (66%) comments are viewed together, three significant categories are consistent: feedback about video content or style, suggestions for video or future video topics, and comments about rare procedures (see Figure 6.21).

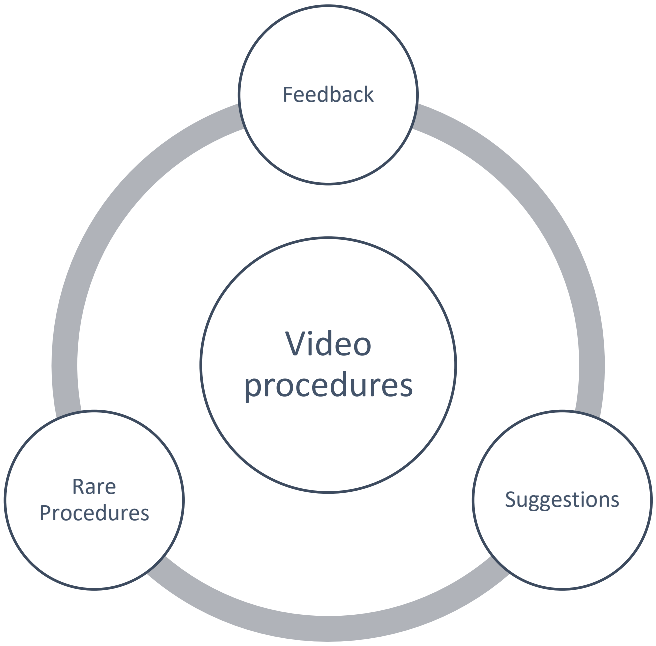

Figure 6.21 Inductive content analysis categories of participant comments on video procedures

6.11.5 Section Four: Barriers and Facilitators

6.11.5.1 Features of Video Procedures

The participants were asked to rate important features of video procedures, and most important / very important factor was access to computers (95%, *n* =111/116), followed by words on the screen to reinforce concepts (76.9%, *n* = 90) and access to videos being extended to personal mobile devices (70%, *n* =82), see Figure 6.22.

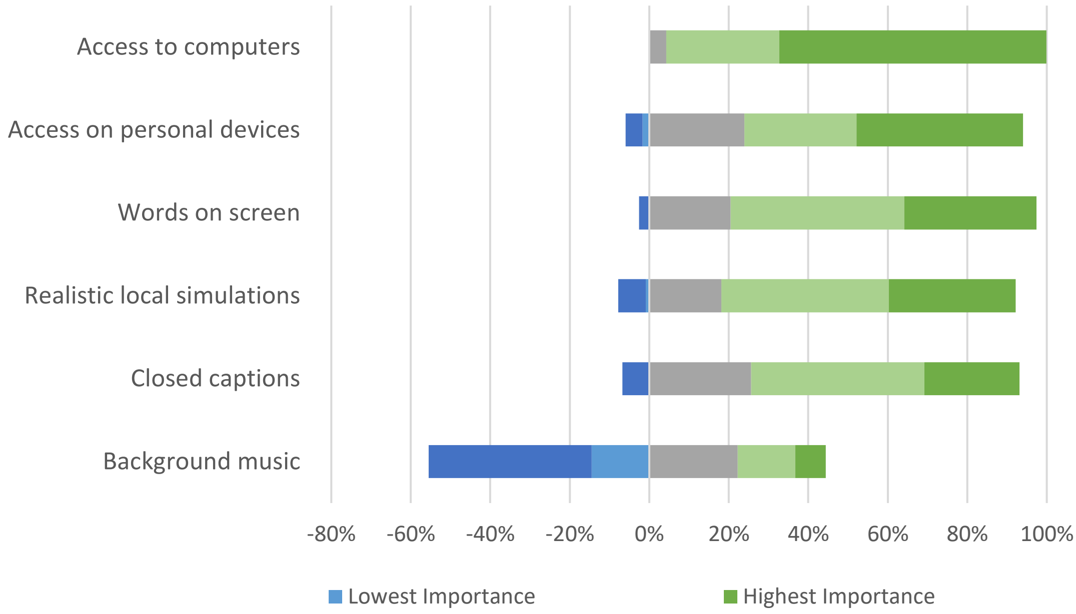

Figure 6.22 Participant responses to Likert scale question: 'how important are the following factors about video clinical procedures?'

Participants were then asked to provide any additional comments they might have regarding video features. Twelve responses (9.8%) were received as comments to an open-ended question. These 12 responses are presented in Table 6.7, and the three significant categories of comments about video features—that is, feedback, suggestions, and personal device and mobile connectivity—are presented in Figure 6.23.

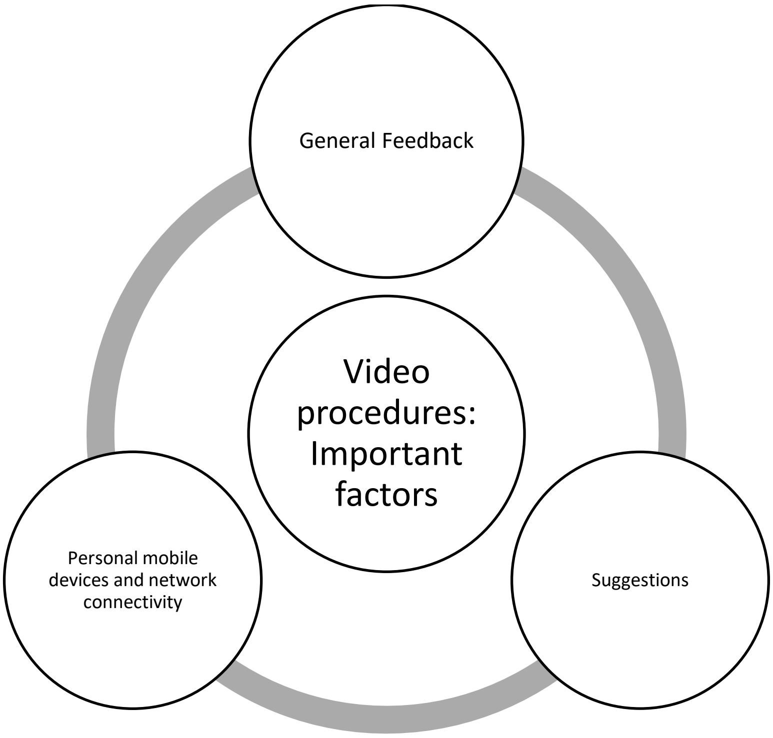

Figure 6.23 Inductive content analysis categories of participant comments on video procedures

Table 6.7 Theme generation for survey statement: 'Please indicate your preference for institutional video procedure clinical procedures; comment here'

Categories	Quotations from participants *(edited for typographical errors)*
General feedback	• Access at the right time in the clinical space easily. On the intranet, it's hard to find anything unless you know the name and random search. Linking to governing documents is a clever way to provide support and best practice in different modalities. (Participant 114, CNC) • Do not need to see staff I recognise in areas I recognise; however, realistic situations and troubleshooting is extremely important. (Participant 20, CNE) • I feel it is more valuable than reading policy and procedure. (Participant 155, RN) • I have not searched for videos via MHL, only on CCLHD intranet. (Participant 50, CNS) • I am a very visual learner, so I appreciate being able to see a procedure performed rather than just reading about it. (Participant 15, CNS) • Words and captions on the screen are important to those with hearing or language impairments to be able to keep up and reinforce what they are hearing. (Participant 34, RN)
Suggestions	• An app to access videos on mobile. (Participant 183, RN)
Personal mobile devices and network connectivity	• Access on mobile devices would be great; HETI (Health Education Training Institute) is sometimes difficult to access at home. (Participant 177, CNE) • In CCU/M2 Wyong, mobile phone reception and internet access are poor. I can't use my phone on the ward. (Participant 14, RN) • It would be great to access the videos on personal mobile devices—but, unfortunately, internet reception is patchy in areas of the hospital. (Participant 6, CNE) • Mobile devices would be extremely helpful for at-home refreshers and reflective practice for procedures past to identify what can be improved next time. (Participant 155, RN) • Unable to have personal mobile devices in clinical areas. (Participant 56, RN)

Note: CCLHD = central coast local health district; CNC = clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; HETI = Health Education Training Institute MHL = MyHealthLearning; NM = nurse manager; RN = registered nurse.

6.11.6 Section Five: Video Clinical Procedures

6.11.6.1 User Experience of Video Procedures

Understanding how participants experience locally produced clinical videos was one of this study's research aims. Therefore, participants were asked to indicate their levels of agreement for statements that addressed their experiences of using video procedures. Over 90% of participants agreed/agreed strongly that viewing a video enhanced the learning experience (94%); that it improved their memory or recall of procedures (98%); and that it made the process of learning quicker and easier (93%). Finally, participants also agreed that watching a video procedure was timesaving (88%); however, they were less in agreement that it would prompt them to change their practice (62%), see Figure 6.24.

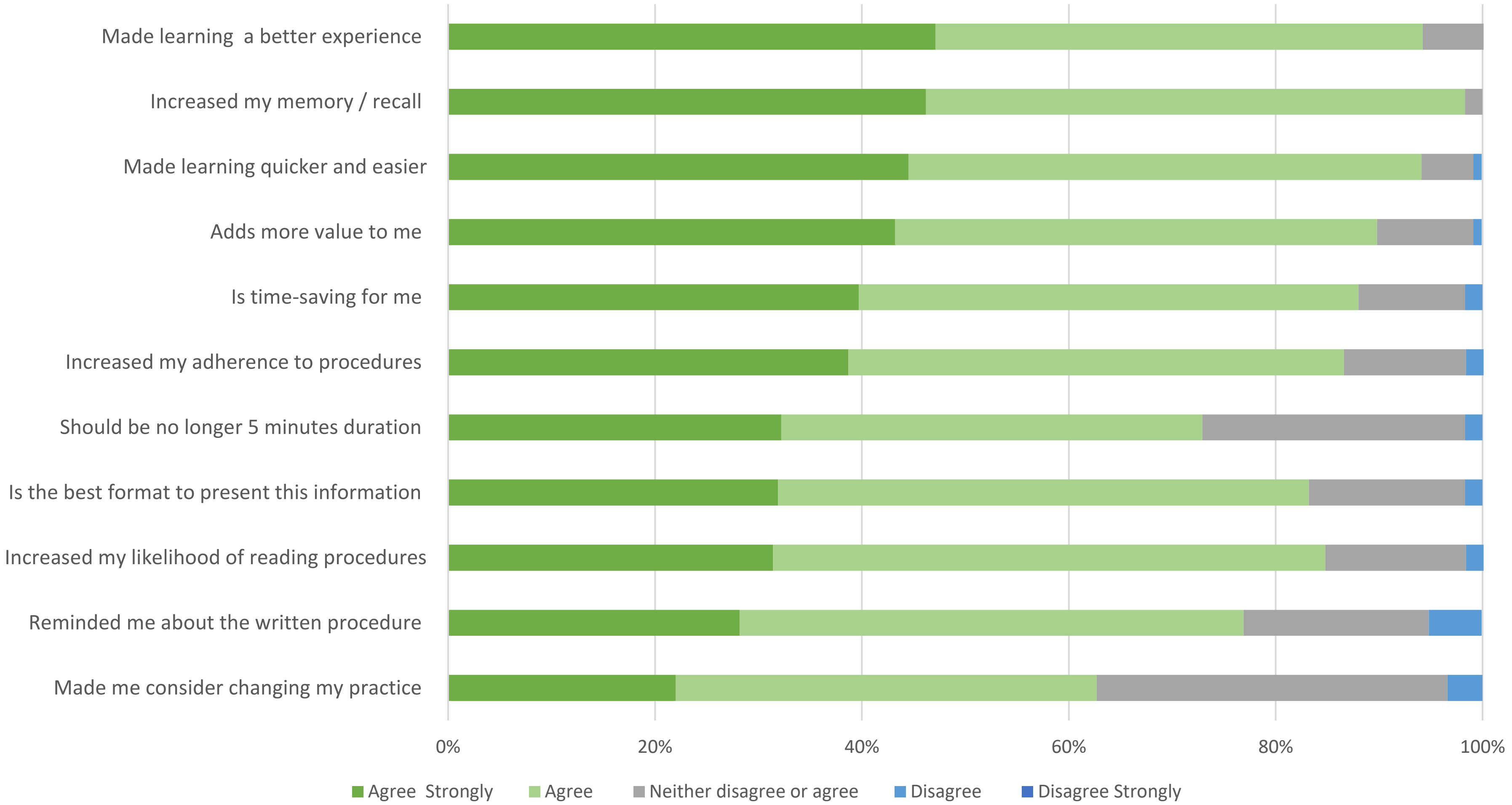

Figure 6.24 Participant responses to Likert scale statement: 'using a clinical video procedure (select your response on the scale for each option)'

6.11.6.2 Using Video Procedures

Participants were also asked about their confidence in terms of finding and using procedures, which they rated using a five-point Likert scale that ranged from1 *strongly disagree* to 2 *disagree*, 3 *neither disagree nor agree*, 4 *agree* and 5 *strongly agree*. Most respondents agreed/agreed strongly that they could apply video procedures in their practice (96.6%), and that using a video procedure increased their confidence in terms of managing the procedure (93.1%), see Figure 6.25.

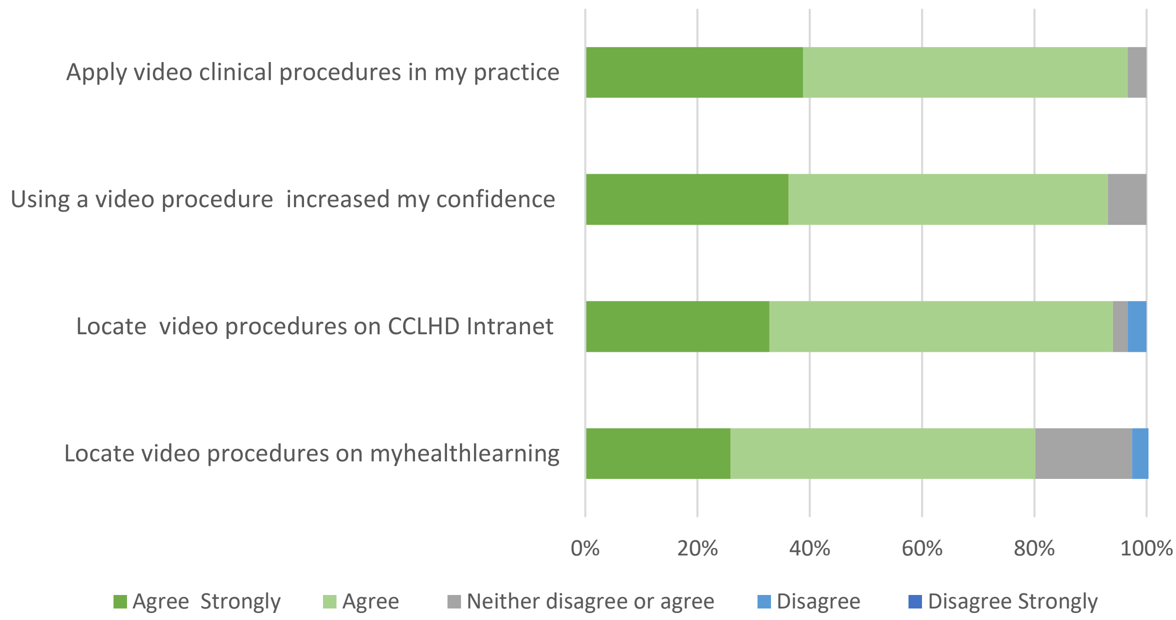

Figure 6.25 Participant responses to Likert scale statement: 'I am confident in my ability to'

6.11.6.3 Procedure Storage and Access

The participants were also asked to rate their preferences for the format of clinical procedures, which they could indicate by selecting from three options. When asked what their preferences were for the format of institutional procedures, the overall preference was for both video and written procedure guidelines (78.4%, *n* =91/116). The second most popular choice was video procedure (17.2%, *n* =21), followed by written procedure guidelines (1.6%, *n* =2).

Two participants selected ‘other’ for their preference for institutional clinical procedures, and comments (2/122, *n* = 1.6%) were subsequently presented in this section. Their comments are listed below:

- *In person, in-service/clinical skills station—allows for questions. (Participant 116, CNS)*
- *While both written and video procedures are a great tool for learning, hands-on simulations, I feel, are the best way that I learn. (Participant 164, RN)*

6.11.6.4 Suggestions for Future Video Topics

Participants were then asked to list any suggestions regarding topics for new videos—and 13 participants (12%; *n* = 13/110) subsequently responded with 19 suggestions. After NVivo (release 1.6.1) was used for analysis, three main categories were derived regarding the frequency of participant responses on the topics of airway and breathing (*n* = 7), circulation related (*n* = 5) and other clinical procedures (*n* = 3). Approximately 50% of these procedures could be classified as clinically urgent (see Table 6.8).

Table 6.8 Theme generation for survey question: 'Do you have other specific suggestions for procedural videos you would find useful?'

Categories	Quotations from participants (*edited for typographical errors*)
Airway and breathing	• Chest tubes—insertion and taping. (Participant 116, CNS) • Intubation/surgical airway. (Participant 13, RN) • Intercostal catheter (ICC) insertion and management of underwater seal drain (UWSD). (Participant 15, CNS) • Tracheostomy. (Participant 114, CNC) • Tracheostomy management :). (Participant 8, CNC) • UWSD management. (Participant 172, RN)
Circulation	• Arterial line set-up/troubleshooting. (Participant 162, CNC) • Intraosseous (IO) insertion and securing, umbilical catheters. (Participant 59, CNE) • Peripherally inserted central catheter (PICC) dressing and line change. (Participant 36, RN) • Portacath access. (Participant 116, CNS) • Preparing for cardioversion. (Participant 2, RN) • Would like more on COACHED (advanced life support cognitive aid)—continue compressions, oxygen away, all others away, charging, hands off, evaluate, defibrillate or disarm; high-flow nasal prong therapy/high-flow paediatrics; art line set-up insertion and management. (Participant 177, CNE)
Other—clinical support	• Ascites tap. (Participant 15, CNS) • Some real-life photos/examples of possible problems; for example, trauma/infection at the drain site. (Participant 20, CNE) • Vacuum assisted closure (VAC®) dressings. (Participant 183, RN)
Other comments	• Gives more clarity. (Participant 169, RN) • Great work. Thank you. (Participant 44, RN) • I think both video and written procedure guidelines are important—video is easier in time-critical situations. (Participant 177, CNE) • In person. (Participant 171, RN) • Nil. (Participant 54, RN) • Video is very quick and simple, but I still like to see paper procedure to make sure. Maybe PowerPoint for a slideshow. (Participant 180, RN)

Note: CNC =clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; RN = registered nurse.

6.11.6.5 Perceived State Anxiety When Undertaking a New Procedure

Participants (n = 110) were asked to rate their anxiety levels before they undertook a new procedure; their mean anxiety score was 42.20 (SD = 9.31). Younger age (r = –0.134, p = 0.02) and fewer years spent in the role (r = –0.12, p < 0.03) were associated with higher levels of anxiety. Further, females reported significantly higher levels of anxiety than males (mean score 43.05 [SD = 7.61] vs 37.20 [SD = 8.82]).

The participants were asked to describe the feelings they experienced when they undertook a new procedure, of which 51 participants (41.8%) described their feelings in an open-ended question. After an inductive content analyse was performed for the 52 responses received, six major categories were identified regarding how participants felt about performing new procedures (see Figure 6.26). For the category and generation process, see Table 6.9.

Figure 6.26 Inductive content analysis categories of staff feelings when performing new clinical procedures

Table 6.9 Theme generation for survey question: 'When undertaking a new procedure, usually (select all options that apply). What do you think makes you feel this way? Please add your comments here'

Categories	Quotations from participants *(edited for typographical errors)*
Procedure support	• Any new procedure is met with some trepidation; but with a sound education, this is/would be certainly reduced. (Participant 52, CNS) • Dependant on the support present. Where there is minimal support, I feel like I am underprepared, and this makes me nervous because I want to ensure my patients receive the best possible care and get the best outcome. (Participant 55, CNE) • I like learning and expanding my skills, and with the right support, I feel safe doing that. (Participant 114, CNE) • New procedures are always daunting. Sometimes I feel out of my depth; however, with appropriate support, I feel more relaxed. (Participant 183, RN) • Peer support and years of experience. (Participant 51, CNS) • Person instructing. (Participant 171, RN) • Prior knowledge, practice, clinical support and resources available. (Participant 162, CNC) • Slightly nervous to expose myself to new procedures that I am not completely confident in; but at the same time, I feel excited to become more experienced, and I feel safe in my environment and prepared for the procedures adequately. (Participant 155, RN) • Supportive co-workers and access to current policies and procedures. (Participant 118, RN) • The person instructing. (Participant 172, RN) • Trying to remain calm; making sure I have supportive clinical and pre-look-up procedures to make me feel more at ease. (Participant 163, RN) • When performing a new procedure, I am always a little apprehensive, as it is something unknown. However, I also feel somewhat comfortable and self-confident, as I always review the relevant policies/procedures and seek advice from senior colleagues; and I am confident in my own clinical abilities and in identifying when something is outside my scope, or when I need to ask for help. (Participant 15, CNS)
Confidence	• After 29 years of nursing, I am confident in performing procedures, even if new. I am aware of the support around me in policies and procedures, video links and other staff. (Participant 34, RN) • At ease, comfortable, relaxed. (Participant 180, RN) • Experience, and enjoy procedures—it fascinates me. (Participant 176, CNE) • Experienced nurse. (Participant 181, CNC)

Categories	Quotations from participants *(edited for typographical errors)*
	• I'm also an enrolled nurse, so I have learned that the job is not impossible. I enjoy what I do and wish to further my knowledge. I try to be realistic about most things, and I know that if desired, enough can be learned. (Participant 87, N) • I'm confident in my abilities. (Participant 41, RN) • Knowledge, confidence and experience. (Participant 144, NM)
Rare procedures	• Anxious about procedures that are not everyday business. (Participant 149, CNE) • Being out of practice; knowing the theory, but I haven't had enough clinical practice. (Participant 88, RN) • Exposure to the practice; how often you get to do it. (Participant 179, RN) • Fear of the unknown. (Participant 14, RN) • Some new procedures are done under duress and with urgency. (Participant 50, CNS) • Unknown; doing a task that is not practiced every day. (Participant 59, CNE) • When placed in situations I am not overly exposed to. (Participant 2, RN)
Concerns about causing pain or harm	• Fear of making a mistake and harming a patient. Fear about having a lack of support. (Participant 14, RN) • Love doing new procedures, but I want to ensure safety for the patient and staff. (Participant 48 RN) • Performing a new procedure makes me feel nervous, as I do not want to do any harm to the patient. (Participant 58, RN) • Situational urgency and time pressures. Also, wanting to cause no harm and being a role model. (Participant 46, CNE) • The procedure simply being unfamiliar and the possibility of doing harm. (Participant 111, CNS) • Wanting to ensure I do the procedure correctly. Once done 1–2 times, I feel more confident and at ease. (Participant 30, RN) • Worried about making a mistake and harming the patient. (Participant 166, RN) • Worried something might be adverse. (Participant 97, CNE)
Uncertainty	• Anticipation of not knowing what to expect and lack of experience. (Participant 66, RN) • Because of procedures that require more experience. (Participant 28, SN) • I am anxious by nature. (Participant 164, RN) • I get nervous if I am new to a procedure that I'm unfamiliar with. (Participant 177, CNE) • New procedures cause some anxiety, requiring support from written procedure guidelines and video procedures. (Participant 33, RN) • Normal nerves when doing something new. (Participant 24, RN) • Overwhelmed at times. (Participant 165, EN)

Categories	Quotations from participants *(edited for typographical errors)*
	• Risk of procedures is recognised. Risk for patient and staff performing or assisting. (Participant 49, NUM)
The team	• Level of training, experience and previous exposure; quality of team. (Participant 116, CNS) • I also feel confident with the support I receive from the team around me. (Participant 155, RN) • The team in which you perform a new procedure also affects how you feel—i.e., a supportive team reduces anxiety and stress. (Participant 15, CNS)
Workload pressures	• Anxiety and workload pressures. (Participant 17, RN) • High turnover, high acuity of patients and high volume of patients. (Participant 60, RN)
Other	• Happy to learn. (Participant 20, CNE) • Lengthy policy and procedures that don’t have pictures/diagrams. (Participant 154, CNS) • Practice makes perfect. (Participant 36, RN) • Opportunity to learn. (Participant 169, RN) • Unknown. (Participant 40, RN) • Unsure. (Participant 31, RN) • Work/life. (Participant 96, CNC)

Note: CNC =clinical nurse consultant; CNE = clinical nurse educator; CNS = clinical nurse specialist; EN =enrolled nurse; NM = nurse manager; NUM = nursing unit manager; RN = registered nurse; SN = student nurse.

6.11.7 Pre and Post Comparisons

This project used de-identified pre and post-implementation surveys, so it is impossible for matched pairs to be analysed. Additionally, the post-implementation survey could not be promoted because of the COVID-19 pandemic. This could account for the difference in number of surveys completed pre and post-implementation (*n* =247 vs *n* =133). However, the surveys were distributed in the same departments, so some pre-post comparisons are possible. The groups were similar—in that they were predominately female (84.2% vs 85.6%); had a similar mean age (40.81 years old vs 40.75 years old); mostly worked at Gosford Hospital (67.6% vs 65.6%); and were predominantly registered nurses (67.1% vs 67.7%).

The most common specialty was cardiology (48.4 % vs 48.9%), and the median time spent in the role was five years (1QR 1.8–10) versus six years (1QR 2.5–10). The groups also expressed similar reasons for accessing clinical procedures, such as ‘new knowledge’ (68% vs 69%).

6.11.7.1 Pre-Post Perceived State Anxiety When Undertaking a New Procedure

Prior to the implementation, the mean score for state anxiety experienced before undertaking a rare procedure was 41.43 (*SD* = 9.317), in which scores over 40 indicate clinically significant levels of anxiety. The perceived anxiety that was related to rare procedures did not significantly change when pre and post-implementation were compared (*P* = 0.43, see Figure 6.27).

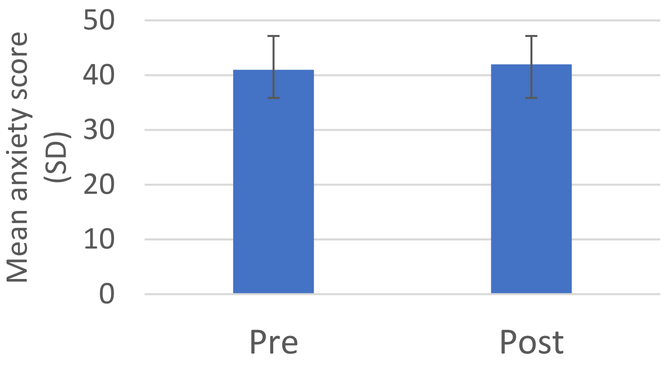

Figure 6.27 Spielberger's state–anxiety inventory scores: pre and post

6.11.7.2 Pre-Post Preferences for Procedure Storage and Access

Before the implementation, most participants preferred both written and video procedures for procedure support; this did not change post-implementation (80% vs 78.4%). Post-implementation, a 5.7% increase in support for video procedures was observed (Pearson's Chi-square test = 9.50; p = 0.02; see Figure 6.28).

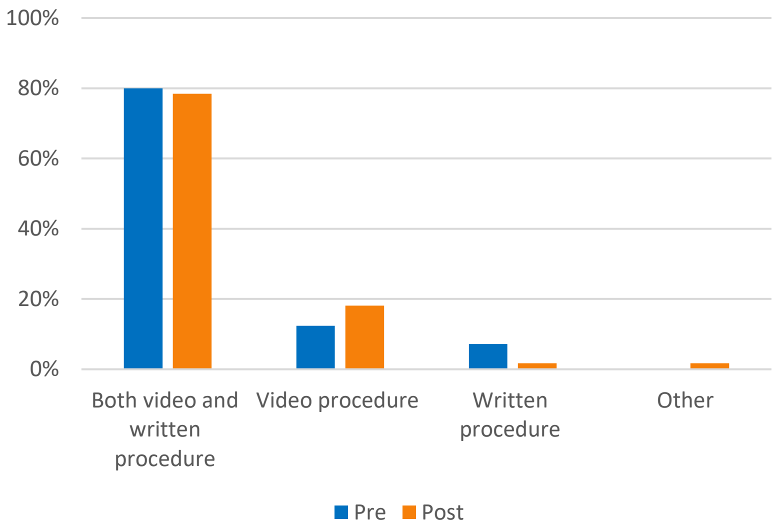

Figure 6.28 Pre-post participant responses to Likert scale statement: 'please indicate your preference for institutional clinical procedures'

6.12 Key Findings

This phase of the study addressed the research aim:

- to assess website views, video analytics and feedback surveys to assess how video procedures are used and accepted.

6.12.1.1 Key findings from post-implementation phase

Video procedures are used: Video procedures were used via the intranet and MyHealthLearning system. In addition, study findings demonstrate despite rarer procedures such as pericardiocentesis and cardiac procedures not being performed, the study video procedures were still accessed. This may be as participant feedback indicated procedures guidelines are used for other purposes such as clinical teaching and incident investigation.

Video procedures are valued: The majority of participants in this study valued video procedures- even those who had not watched them. Participants offered suggestions for future videos- many of which were urgent or emergent procedures.

Video procedures enhance clinical skill and knowledge: The majority of participants agreed video assisted clinical reasoning and increased their recall of procedure steps. These are important outcomes for infrequent procedures. Viewing a video before a procedure may give health professionals a ‘clinical edge ‘which could have important outcomes for patient safety and clinician wellbeing.

Anxiety about new procedures: Participants had significant anxiety about new or rare procedures. Viewing the study videos did not reduce this, which indicates additional support is needed.

6.13 Chapter Summary

In this chapter the use of a rigorous implementation plan and evaluation of both the plan and the intervention was reported. The intervention was assessed to address the research aim of using user 1) feedback surveys, 2) website analytics and 3) a six month post implementation survey to understand the usage and acceptability of procedure videos.

The chapter discussed the methods, analysis and the findings associated with each evaluation method. The intervention was evaluated over a six month period post implementation. Firstly, the results of video viewer feedback, which was completed by 266 participants in a survey. Secondly the results of website analytics for written and video procedure usage during the six month implementation period was reported. Thirdly, the six month survey based on the TDF and CRC was completed by 133 participants. The results identified that nurses value video procedures and accessed them primarily through the intranet. Despite some months there being no corresponding procedures video procedures were still accessed, indicating they have a use beyond immediate procedure support. Critically, new clinical procedures are associated with anxiety.

Further, exploring the relationship between participants' state anxiety scores after implementation perceived anxiety related to new procedures did not change. In the next chapter, the conclusions from the research in this thesis, as well as key findings and recommendations for future research and practice are outlined. In addition, the sustainability and dissemination of the intervention are discussed.

Chapter 7: Discussion and Conclusion

7.1 Introduction

The overall purpose of this thesis is to understand the acceptability and use of locally tailored procedure videos. The research aims were to:

- Determine the barriers and facilitators to implementing locally tailored clinical procedure videos at two hospitals in NSW, Australia
- Design a plan to implement clinical procedure videos using behaviour change theories
- Use website data, analytics, and user feedback surveys to understand the usage and acceptability of the videos during the implementation period.

This final chapter presents the interpretation of the thesis key findings, the scoping review results (Chapter 2) and study results (Chapters 4–6), in relation to the study's research aims. Recommendations for practice are provided, followed by implications for future research and the dissemination of the study. Finally, the strengths, limitations and outputs from the thesis are presented.

7.2 Summary and Significance of Key Findings

This section begins with a summary of key findings for each stage presented in Figure 7.1.

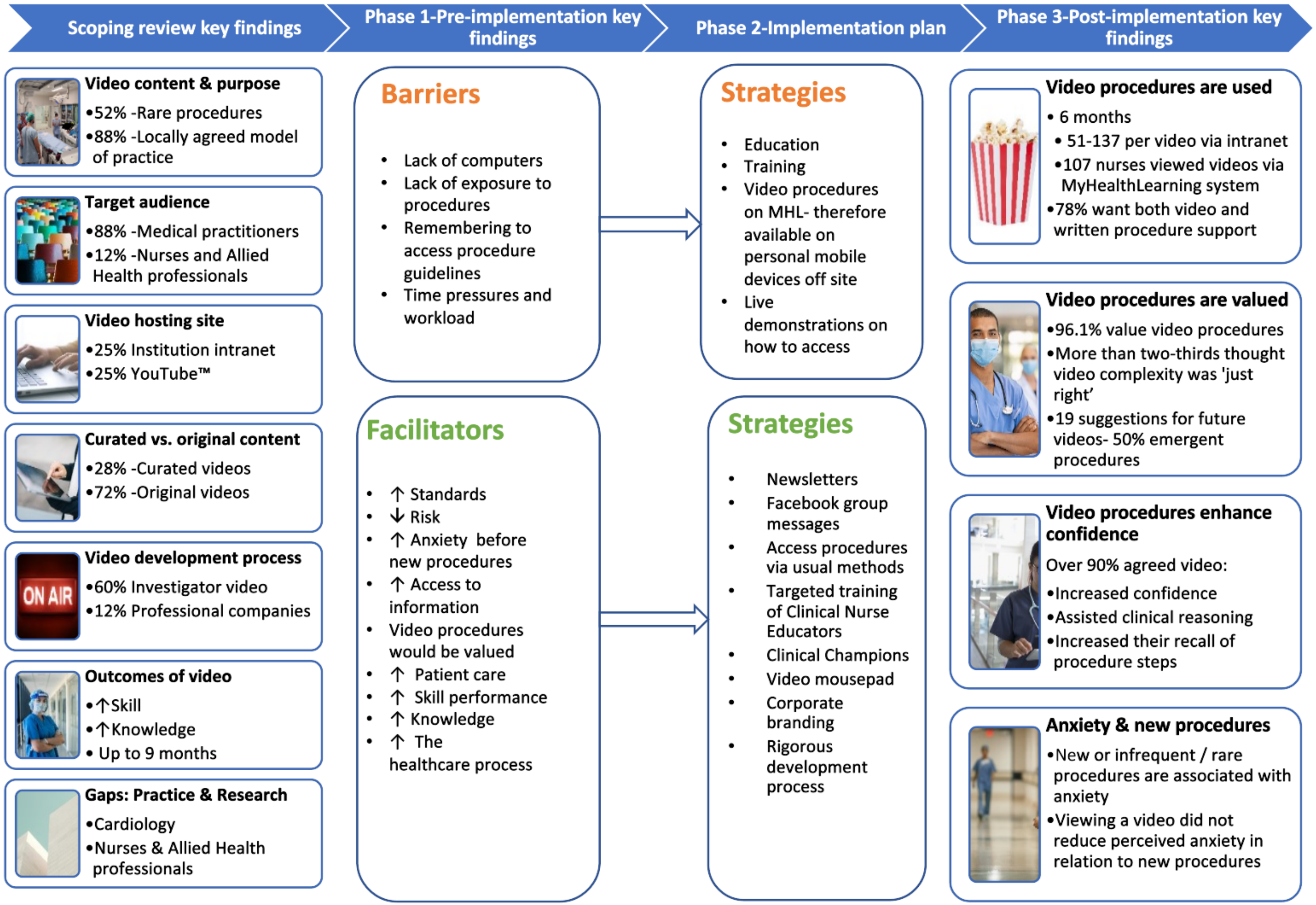

Figure 7.1 Summary of study phases and findings

7.3 Scoping Review Key Findings

The scoping review was conducted to answer the review question: *What is known from peer-reviewed research publications about video use by health care workers to support practice or procedures at the point of care?"* Findings from the review revealed that the development and use of videos to support clinical procedures is an emerging area of research, with a 47% increase in publications between 2021 and 2023.

In the studies reviewed 50% of the videos were made specifically to cover rare procedures. This could be one of the reasons for the high number of videos created by researchers, as these procedures require specialised knowledge. Only a little detail was available on the techniques used to produce the videos, but most demonstrated agreed-upon local practice models. The study by Kandler et al. (2016) referred to their video procedures as a "shared mental model", which is crucial in establishing a collective understanding of best practices.

The review has identified several areas that require further research regarding using videos to support procedures. Although healthcare professionals are creating videos, guidelines for their development and publication are needed. Moreover, the need for more research on the impact of videos on patient care outcomes should be addressed.

During the scoping review, it was surprising to find that no published literature explicitly explores the use of videos in the field of cardiology. Additionally, only 12% of the studies were conducted by nurse investigators. The insights gained from this review could be helpful for nurses who plan to develop video resources in the future.

7.4 Pre-Implementation Key Findings

The main purpose of this thesis is to understand the acceptability and use of locally tailored procedure videos. This phase of the study addressed the following research aims:

- Determine the barriers and facilitators to implementing locally tailored clinical procedure videos at two hospitals in NSW, Australia.

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Using a pre-survey mapped to the TDF allowed the identification of barriers and facilitators that could be addressed. Four barriers to implementation were identified:

Lack of computers. According to the quantitative data, nearly all participants rated computer access's importance in the clinical area as very important/important for accessing procedures. This supports previous findings from a survey among Australian nurses (Eley et al., 2009). It may be more noticeable due to the widespread implementation of electronic medical records and medication systems (Shin et al., 2018; Walker et al., 2021).

Workarounds such as printed copies of procedures were a strategy participants used to address the issue of the lack of computers. Access to procedures on personal mobile devices was not seen as a feasible solution due to issues around screen size, hospital policy against personal devices in clinical areas and network connectivity issues:

Participants comments denote unease with the use of mobile devices, and concerns about being professional. Participants expressed beliefs that viewing a video should be done away from patient care areas, as patients who saw health professionals viewing a video would make negative assumptions about their competence. There are similarities between the attitudes expressed by participants in this thesis study and those described by Jacob et al. (2020), who identified social and cultural factors such as personal beliefs that impact technology acceptance. However, others put forth the view that study videos could be used for patient education, which is supported by previous research on urological consent processes (Winter et al., 2016). Clear communication with patients to explain why health professionals are viewing videos on computers or mobile devices would be key to reducing any misunderstandings or damage to the nurse patient therapeutic relationship.

Lack of exposure to procedures. Close to three quarters of participants found it difficult to recall clinical procedures in their practice. The study video topics were chosen as they are infrequent at service (cardiac pacing and pericardiocentesis) or individual nurse (NIV) level. The procedure frequency matters, with several participants requesting repetition and practice of procedures to help them remember procedures. The issue of rare procedures was something that participants thought could be mitigated with education or practice.

The type of procedure was relevant too, with less support required for those that are an extension of usual skills compared to higher-risk procedures infrequent procedures. Online videos were used for clarification of written procedures. However, for some participants video or visual materials, such as images or photos in written procedures was a personal preference.

The underlying frequent concern was about the patient. Procedure instructions should be short- less than four pages or seven minutes. Participants recognised nuance in the requirement for educational information and procedure step-by-step guides that some would need to be longer reflecting the complexity of the procedure.

Remembering to access procedure guidelines. Nearly three quarters of participants agreed that there are too many clinical procedures to remember during their working day. In this thesis study, over three-quarters of participants knew where to access procedures on the intranet. Participants top three information sources for procedure information were the hospital intranet, YouTube™ & Google. Reducing extra 'clicking' to other documents or additional searching was also timesaving. Linking the study videos on the procedure's front page created the one-stop-shop, which participants desired.

As an alternative clinical support mobile phone applications are popular but are often standalone and do not link to hospital systems (Cuddigan et al., 2022; Jacob et al., 2020; Moore et al., 2022). An RCT from Taiwan, a mobile phone app with four embedded central venous line care information and videos used during hospital induction only, led to higher knowledge and skill scores one week after exposure (Huang et al., 2021). However, in a pre-post study of a wound assessment clinical support mobile application, revealed that 45% of non-wound specialists who had access to the app did not use it consistently. The reasons were either needing access to a mobile device or simply forgetting to use it (Moore et al., 2022).

Time pressures and workload. An underlying theme in participant comments was workload intensity, and several words refer to saving time. Competing priorities added to the pressure participants experienced. The nursing literature extensively demonstrates the pressure that time and workload can exert on nurses (Chiappinotto & Palese, 2022; Govasli & Solvoll, 2020; Harvey et al., 2020; Mantovan et al., 2020; Simpson-Collins et al., 2023). As previously stated, cardiac procedures are often emergent, and preparation time may be limited—so anything that is timesaving has the potential to be valued by nurses.

Using a pre-survey mapped to the TDF, nine facilitators to implementation were identified:

Clinical procedures improve standards. Participants highly valued written procedures and a common theme in qualitative comments was the link between procedure guidelines and patient safety.

Clinical procedures reduce risk. Almost all participants agreed that written clinical procedure guides increased awareness of clinical risks. The documents allowed participants to follow approved procedure steps, thus in some participant's minds keeping patients safer.

Clinical procedures improve access to information. Participants' comments highlighted the importance of knowing why procedure steps are required, which has been previous demonstrated to be an important factor to improve clinical skill (Cheung et al., 2018). Participants preferred official information rather than relying on verbal information from colleagues. The absence of information led staff to initiate online searches.

Video procedures will improve patient care. Most participants agreed that if video procedures were available, they would improve patient care by being available when there are short staffing episodes. Video procedures could also be teaching resources for both staff and patients.

Video procedures are valued. Most participants agreed that video procedures are useful, especially for low-frequency procedures. Personal preference played a significant role.

Video procedures improve access to information. Most participants agreed that video procedures would make it easier to access information, particularly for initial skill learning. Participants believed video would help health professionals retain information.

Video improves clinical skill performance. Most participants agreed that video procedures would make it easier to recall procedures, and this would benefit novice nurses the most. Many participants reported experiencing anxiety before undergoing new clinical procedures. This is often due to concerns about causing harm or causing pain during the procedure. Moreover, our study identified that younger and less experienced nurses were more likely to experience anxiety when undergoing new clinical procedures. This is particularly significant because between 2015 and 2020, the number of nurses and midwives aged 20-34 increased by 24% (Australian Institute of Health and Welfare, 2022):

Clinical procedures increase knowledge. Most participants accessed the procedures to refresh their knowledge. Video procedures each month were accessed despite there no actual procedure undertaken. This confirms they are used for other reasons and staff value that they contain current procedural information and are updated regularly.

Video procedures will improve the healthcare process. The majority of participants agreed that video procedures could improve healthcare processes. Participants did not want to eliminate written procedures; they wanted both written and video procedures.

7.5 Implementation Plan Key Findings

This phase of the study addressed the following research aims:

- Design a plan to implement clinical procedure videos using behaviour change theories.

The implementation period on 15 March 2020 was just as the COVID-19 pandemic began. This initially enhanced interest in the video project and in the uptake of educational sessions because of low hospital activity levels (Australian Institute of Health and Welfare, 2021). During the implementation period the thesis author delivered face-to-face education about video procedures in both hospital emergency depts, intensive care and cardiology units.

During pandemic planning, concerns about a shortage of ventilators and limited intensive care capacity led to planning ventilatory support outside of intensive care using Non-Invasive Ventilation (NIV). An unexpected outcome was the utilisation of the thesis study videos as part of health professional training for NIV treatment in the newly created COVID-19 wards. Video has been reported in other studies of adapting clinical skills teaching to video in the COVID-19 pandemic, such as nasopharyngeal swab screening (Ladak et al., 2021) and onboarding of new health professionals (Weiss et al., 2021).

During the pandemic, video-based education and training rapidly evolved to educate trainees (Patel et al., 2021) or patients (Posner, n.d.) while adhering to physical distancing requirements. Later as the pandemic intensified, all face-to-face education was ceased. The study videos could still be accessed on the intranet during work hours or offsite by logging into the MyHealthLearning system.

7.6 Post-Implementation Key Findings

This phase of the study addressed the following research aims:

- Use website data, analytics, and user feedback surveys to understand the usage and acceptability of the videos during the implementation period.

Video procedures are used. Website data, analytics and user feedback surveys were used to understand how the videos were used and accepted during implementation. The hospital intranet was the quickest way to access videos, as no password was required. The videos hosted on the intranet attained 598 total views in six months.

The most viewed video on the intranet was 'Temporary Pacing Preparation'. A possible explanation for patients having temporary cardiac pacing is the extended wait for a permanent pacemaker. Reasons for this can be capacity issues or concurrent infections, waiting times reported vary from 1 to 7.5-8.9 days (Barbosa et al., 2023; Diemberger et al., 2020{Hama, 2021 #1927)}. This wait time will increase the number of nursing staff exposed to temporary pacing, who may seek out the procedure guidelines and video.

The procedure videos were created to provide support for rare procedures. This was recognised in participant comments. The videos portrayed best practice and expected procedural roles, and this clarity was acknowledged by viewers of the temporary pacing procedure video. The videos aimed to provide on-demand clinical support as needed, recognising how infrequent these procedures can be for individuals.

A password login was required to view videos on the MHL system. Despite this, over a hundred nurses viewed the video procedure this way. The most viewed modules were NIV and pacing. A benefit of viewing the videos this way for participants was their completion is recorded on their learner transcript. Lifelong learning is encouraged in the nursing profession to maintain or update skills and deliver best practice patient care (Mlambo et al., 2021). This could be an incentive for a learning activity to count towards annual continuous professional development registration requirements (Nursing and Midwifery Board of Australia, 2022).

Video procedures are valued. After the video procedures were implemented, most participants agreed or agreed strongly that they found them valuable. Video procedures were highly valued even by participants who had not viewed them. This was not unexpected since the pre-implementation survey showed that more than two-thirds of the participants looked at online videos related to procedures. Moreover, we found that the video procedures were accessed every month during the implementation period, even in months that did not include a related clinical procedure, and the use of corporate branding provided assurance that the videos were approved resources.

After watching the videos, more than two-thirds of the viewers reported that the complexity of the procedures was just right. This is reassuring as the videos were created by the author of the thesis in collaboration with the Coronary Care unit team. According to the participants, watching these videos made their learning experience more efficient, accessible, and timesaving. The value of these videos was demonstrated by the fact that participants provided nineteen suggestions for new video procedures. When grouped together, around 50% of these procedures could be classified as clinically urgent.

Video procedures enhance confidence. Most participants agreed that using a video procedure increased their confidence in managing the procedure. The video depicts rare or infrequent procedures, including temporary cardiac pacing. Clinically adverse events have been reported with a prevalence of 14% for this procedure (Hooper et al., 2022; Meere et al., 2023). Enhancing confidence was seen as a benefit of the video procedures. Over 90% of participants agreed/strongly agreed that viewing a video improved their clinical reasoning (Levett-Jones et al., 2009). Having low levels of clinical reasoning skills has been demonstrated to be adverse patient outcomes (Lapkin et al., 2010).

Anxiety and new procedures. Participants reported experiencing significant levels of anxiety before they commenced new clinical procedures. Anxiety is characterised as 'apprehension and somatic symptoms of tension in which an individual anticipates impending danger, catastrophe, or misfortune' (American Psychological Association, 2023 para. 1). Work-related anxiety has been reported in the nursing population, in which the prevalence of anxiety in the group ranges from 20% to up to 66% (Maharaj et al., 2019). High levels of anxiety have been reported for nurses when they are caring for patients with COVID-19 (Fernandez et al., 2021; Savci et al., 2021); when they undergo cardiac and respiratory emergency simulations (Al-Ghareeb et al., 2019; O'Brien et al., 2023); and when they experience the death of a patient (Alexander, 2019). The NIV video procedure did include personal protective equipment information, which participants valued:

Despite the study videos being valued and accepted, which subsequently increased participants' beliefs that they could manage the procedure—the anxiety experienced about rare procedures did not significantly change from pre- to post-implementation. Further, younger age and fewer years spent in the role were associated with higher anxiety scores. This suggests that videos alone may not reduce the anxiety that nurses feel before they commence new or rare procedures. Instead, a combination of clinical instruction methods—such as simulation—may be considered to refresh knowledge (Buckley & Gordon, 2011). Participants identified factors that could reduce anxiety, such as procedure guidelines, and the support from the team around you.

7.7 Author's Reflections on Research in Practice

Through this research project, the thesis author has had the opportunity to learn how to implement a new intervention rigorously. Although incorporating video procedures might appear uncomplicated, using a pre-implementation survey that was structured according to the TDF/BCW was crucial for providing essential insights. Applying behaviour change theories also revealed the significance of incorporating nurse habits and reducing the burden of password log on in case of emergencies. Further, the findings from the pre-implementation survey also helped determine the optimal location for hyperlinks to be used to access the videos: on the front page of the written procedure.

A significant show of support for the videos happened during the implementation period due to the worsening local COVID-19 pandemic. This study's NIV videos were used as clinical support resources. The aim was to upskill ward nurses and help them prepare for anticipated COVID-19 admissions In addition study videos also functioned as a template for an additional NIV COVID-19 video, highlighting the appropriate infection precautions as a socially distanced education strategy.

7.8 Implications for Research and Practice

This study can be used to offer valuable insights for other implementation projects in both nursing, and the acute care field. The scoping review identified various research opportunities, including the need to develop a framework that determines what role videos play in workplace learning, ethics of video and the need to identify the critical features of workplace videos. This study highlighted the significance of using theory and rigorous methods to implement such initiatives. Although research conducted by nursing and allied health workers is limited, studies that focused on videos have demonstrated certain improvements, such as increased compliance with best practices (Kandler et al., 2016) and infection control (Wolfensberger et al., 2019). The absence of research that focuses on the patient perspective and longer-term outcomes of video use also represents an opportunity for future investigations.

Participant insights can be applied in future studies to design interventions that aim to reduce anxiety among nurses when they prepare for new and rare procedures. Institutions can use existing research procedures to establish robust development and review processes for video resources.

The process of video development itself also presents a learning opportunity. Collaborating with health professionals allows them to develop skills while a mutual understanding of the procedure standard is promoted. Once created, rare procedure video libraries can function as a valuable micro-learning resource (Palmon et al., 2021) when face-to-face instruction is not possible sharing tacit nursing knowledge (Majima et al., 2018). Video procedures can also enhance the capabilities of experienced health professionals and those in training during critical moments.

This study demonstrated the importance of collaborating with academic colleagues to implement with rigour and support, and to be able to measure outcomes. Partnerships between hospitals and health disciplines for video development increase access to content experts, expand the reach of videos and reduce costs. Hosting videos on YouTube™ allows sharing to occur across organisations, and it broadens access to procedure videos.

7.9 Sustainability of Implementation

The video procedures were viewed consistently throughout the six-month implementation period. The benefits of video procedures have been demonstrated within the study site, and results confirm that video procedures are a support method that staff will use. Measures within the implementation plan were taken to ensure video procedure sustainability outcomes included partnerships, strategic planning, organisational capacity, and communications of the study’s findings to key stakeholders (Lennox et al., 2018).

Securing political support and ensuring rigorous development methods with extensive consultation has also contributed to the sustainability of procedure videos. In addition, evaluating the videos through this thesis will add credibility. Ongoing monitoring and evaluation have already been integrated into the existing procedure review cycle, so it will not require any additional ongoing support from the implementation team.

7.10 Research Dissemination

The study described in the present thesis has been presented to several key audiences. Dissemination activities have included one publication and 12 conference presentations. For further information, see Section 1.2.5.

This study influenced clinical support methods early during the COVID-19 pandemic. For example, the respiratory CNC created an additional procedure video about NIV; it outlined the procedure used in CCLHD regarding how NIV was used for patients with COVID-19 (Respiratory Medicine, 2020).

Figure 7.3 Central Coast Local Health District Non-Invasive Ventilation COVID-19 Video Procedure

Within CCLHD, as part of an educational program for registered nurses in residential aged care facilities, local community nurses created a video that demonstrated the insertion of indwelling urinary catheters. This video was used as part of an emergency department avoidance strategy and was presented before a skill assessment (Mari, 2023).

Three local health districts in NSW requested access to pericardiocentesis procedures specifically for just in time procedure support (May 2021 and November 2022). These video procedures were delivered via a private YouTube™ link immediately before a procedure commenced.

After a request the two NIV videos were also provided via a private YouTube™ link to a clinical nurse educator in regional NSW. These videos were used for heath professional training before a new NIV service was commissioned (March 2023). When the thesis study was presented at the Association of Cardiovascular Nursing & Allied Professions conference, following a request the pericardiocentesis video was shared with a senior cardiology nurse from a hospital in Ireland (June 2023).

7.11 Thesis Strength and Limitations

The current research has demonstrated several strengths and a few limitations. This thesis explored an under-researched area of clinical practice support, and it used rigorous methods that underpinned its theories and frameworks to address a clinical problem. The study also addressed evidence gaps in organisational procedure support tools, such as written documents or videos.

One of the study's strengths is its collaboration with clinical nurses who had co-designed the procedure videos and functioned as implementation champions. This research also collaborated with other key stakeholders in the project, including clinical governance, infection control and senior nursing leaders. This project has increased awareness for alternative modes of clinical practice support in the local district.

The thesis study also encountered some limitations. Most participants were critical care nurses who were required to help with emergent and time-critical procedures; therefore, the findings may be less relevant in areas in which these procedures are less common. Further, the videos were implemented in a local health district in NSW and were locally tailored; this could have limited their relevance to other local health districts. Although one participant noted that they viewed the videos immediately before a procedure, it was impossible to determine when or why videos were viewed from the survey results. The video procedures were developed in-house, and they were co-designed by cardiology nurses—which could have prompted a bias in the results, given that the surveys were completed by nursing staff only.

Changes to COVID-19 work practices severely affected the post-implementation survey response rate, given that thesis author could not promote the videos or enter other units. Therefore, promotion of the post-implementation survey was conducted via email or social media only; this could explain the post-implementation response rate, which was lower than the response rate for the pre-implementation survey.

7.12 Conclusion and Recommendations

The research presented in this thesis has made an original contribution to the use of videos for supporting nurses during procedures in acute cardiology. The findings have improved the knowledge regarding the need for clinical support during infrequent procedures. The research supports the use of behaviour change theories and frameworks in acute healthcare, as evidenced by the targeted implementation plan and subsequent uptake of the video procedures.

Patient outcomes may be improved by broadening the depth of clinical procedure support tools. This will in turn have a positive result for staff wellbeing. The results in this thesis have clear outcomes for, and can inform future design, methods and implementation of video interventions and create an impetus for increased use of theory in acute care contexts.

In conclusion, this thesis contributes significantly to the growing body of research that highlights the importance of using videos to support health professionals during infrequent procedures. In closing this thesis, the author remains motivated by the words from one participant:

> *"I believe clinical videos would improve patient care and be valuable in times when more experienced staff are not available."*

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Appendices

7.13 Procedure Videos

Title	Video Key messages	Video length (mm.ss)	QR code to view
NIV: Why and when 	• Goals of NIV therapy • Factors to consider for NIV to be beneficial • What equipment is needed and available	3.12	
NIV Setup and Patient Care 	• The nurse needs to be familiar with the settings. • How to set the machine • Commencement of NIV and fitting of the mask • Assessing response to NIV • Documentation and observations	6.07	
Pacing: Preparation 	• Preparing for the procedure • Equipment to have ready	3.52	
Pacing: Procedure 	• Roles - Advanced Life Support Nurse: caring for the patient and clinical monitoring and assist set up pacing box • Roles- Procedural scout nurse: assisting with the procedure requirements • Post procedure management • Patient safety- red flags in pacing	4.34	
Pacing: Threshold testing	• Why and how of threshold testing • Scope of practice	2.29	

			
Cardiac Tamponade 	• Definition of cardiac tamponade • How it can occur • Definition of pericardiocentesis	2.04	
Pericardiocentesis Procedure 	• Clinical monitoring of a patient undergoing pericardiocentesis • Equipment • Preparation • Assisting the medical officer • Monitoring during and post the procedure	3.23	

7.14 Research Grant

Health
Central Coast
Local Health District

18 February 2020

Ms Jacqueline Colgan
Cardiac Clinical Nurse Consultant
Cardiology Department
Gosford Hospital
Holden Street
Gosford NSW 2250

Dear Ms Colgan,

RE: Caring for our Future Research Grant – 2019
Project Title: Evaluation of Clinical Procedure Videos
Investigators: J Colgan, K Miles

This letter is to confirm that you were awarded a Central Coast Local Health District (CCLHD) **Caring for our Future Research Grant** valued at $12,000 and the **Emerging Researcher Grant** valued at $4,000 for the above-mentioned project in 2019.

Once the project has been authorised by the Research Office, the **Caring for our Future Research Grant** money will be transferred into a newly created research specific cost centre, as per the Research and Clinical Trials - Financial Management procedure . These funds are to be utilised within 12 months unless an extension is requested and authorised by the CCLHD Research Office.

As per the conditions for this grant, an interim report will be required outlining the progress of the project and any barriers that may be impeding progress. It is requested that this short report be provided to the CCLHD Research Office by 30 June 2020 so we can assess if additional support is required.

If you would like to make an appointment to discuss the most appropriate authorisation pathway or any other concerns, please contact myself or Brianna Attard, Acting Research Governance Officer, by email to CCLHD-Research@health.nsw.gov.au or call 4320 2085.

Yours sincerely,

Research Office
CENTRAL COAST LOCAL HEALTH DISTRICT

Central Coast Local Health District
ABN 88 523 389 096
Research Office
L1, Health Services Building, Hospital Road, Gosford NSW 2250
PO Box 361, Gosford NSW 2250
Tel: 02 4320 2085 Fax: 02 4320 3860

7.15 Governance approval (LNR)

Health
Central Coast
Local Health District

22/04/2020

Ms Jackie Colgan
Critical Care Department J8,
Gosford Hospital
Holden Street
Gosford, NSW, 2250

Dear Jackie,

RE: 0120-007C: Staff survey on the facilitators and barriers of clinical procedure use
Site Investigators: J Colgan, K Miles, T Buckley, S Kourouche
Site Contact: J Colgan

I am pleased to inform you that the CCLHD Acting Research Manager has authorised the HREC Exempt Low/ Negligible Risk (LNR) Research application for the above study on behalf of Central Coast Local Health District (CCLHD).

It is noted that this approval covers:

- Central Coast Local Health District

The documentation included in the approval is as follows:

- CCLHD HREC Exempt LNR Research Application form (authorised 22/04/2019)
- Survey v6
- Invitation to Participants v3

The following documentation is noted:

- Investigator CVs
- External Researcher supporting documents for;
    - Thomas Buckley
    - Sarah Kourouche

External researcher access has been approved for Thomas Buckley & Sarah Kourouche. Please be aware that if Thomas Buckley or Sarah Kourouche is charged or convicted of any criminal offence after the date of issue of their National Police Certificate, and prior to completion of this research project, they are required to notify the CCLHD Research Manager before continuing with the research project.

At this time, we also remind you that, in order to comply with the *Guidelines for Good Clinical Research Practice (GCRP) in Australia*, and in line with CCLHD policy, the Principal Investigator is responsible to ensure that:

1. The CCLHD Research Office is notified of anything that might alter the ethical requirements of this project and hence effect the waiver of review of the project by a lead NSW Human Research Ethics Committee (HREC), including unforeseen events that might affect the ethical acceptability of the project.

ANNUAL REPORT DUE: 22 April 2021
CCLHD PROJECT EXPIRY: 22 April 2023
REF NO: 1119-149C

RESEARCH OFFICE - Central Coast Local Health District
LEVEL 1, HEALTH SERVICES BUILDING
(INSIDE GOSFORD HOSPITAL LIBRARY)
GOSFORD HOSPITAL, HOLDEN ST, GOSFORD NSW 2250
TEL (02) 4320 2085 FAX (02) 4320 3860

Health
Central Coast
Local Health District

2. Proposed amendments to the research protocol or conduct of the research that may affect the ethical acceptability of the project are submitted to the CCLHD Research Office on an amendment form (including any relevant attachments).
3. Proposed changes to the personnel involved in the study are submitted to CCLHD Research Office.
4. The CCLHD Research Office must be provided with an annual progress report for the study and a final report upon completion of the study.
5. The CCLHD Research Office is notified, giving reasons if the project is discontinued before the expected date of completion.
6. The following CCLHD Procedures are considered in the implementation and conduct of all CCLHD-approved research:

- *Research - Code of Conduct - CCLHD (PR2018_027);*
- *Research – Management of Clinical and Non Clinical Data (PR2017_099);*
- *Research and Clinical Trials - Financial Management (PR2017_040);*
- *Research - Collection, Storage, Transfer and Disposal of Human Biospecimens (PR2018_026);*
- *Research - Management of a Complaint about a Research Project (PR2018_013) .*

Site Authorisation remains valid until 22 April 2023, with the first Annual Report due to the CCLHD Research Office by 22 April 2021.

If an extension is required, you would need to negotiate this with the Research Office.

The CCLHD Library Services provides the following resources to support researchers:

1. Literature searches – the library staff will work with you to develop a search strategy and advise on bibliographic databases available to CCLHD staff;
2. Document delivery – where journal articles are not available in full text via CIAP or the library's other subscribed resources, library staff will obtain full text copies of journal articles from other health libraries at no charge to you; and
3. Managing your references – the library maintains an LHD-wide subscription to EndNote reference management software. You may request EndNote to be installed on your work computer by logging a job with the Statewide Service Desk. Disks are also available for loan from Gosford and Wyong Hospital libraries to enable you to install EndNote on your home computer and/or laptop. Library staff provide training in the use of EndNote.

For further information, please contact Gosford (4320 3370) or Wyong (4394 9022) Hospital Libraries or contact the Library Manager, Suzanne Lewis (4320 3856; suzanne.lewis@health.nsw.gov.au).

Yours sincerely,

ANNUAL REPORT DUE: 22 April 2021
CCLHD PROJECT EXPIRY: 22 April 2023
REF NO: 1119-149C

RESEARCH OFFICE - Central Coast Local Health District
…vel 1, Health Services Building
…oe Gosford Hospital Library)
…olden St, Gosford NSW 2250
… 4320 2085 Fax (02) 4320 3860

7.15.1 LNR amendment governance authorisation

Health
Central Coast
Local Health District

03 September 2020

Briana Attard
Research Governance Officer
Level 1 Health Services Building,
Gosford Hospital,
Holden Street, Gosford, NSW, 2250,

Dear Briana

RE: Amendment to LNR 0120-007C - HREC Exempt LNR – Authorisation

We are now applying for local Research Governance approval for amendments to the LNR. This includes details of phase 2 of our project based on information gained from phase 1 survey. We are also requesting the additional of another investigator to the project.

To support our application, please find the following documents attached:

1. Cover letter
2. Details of proposed amendment to approved LNR 0120-007C
3. Additional Investigator supporting documentation (Professor G Tofler)

Please contact me if you require further information

Ms Jackie Colgan
Principal investigator
Clinical Nurse Consultant Cardiac Services | Critical Care
Central Coast Local Health District
PO Box 361 Gosford 2250
Tel. 02 4320 2371 | Mob. 0404 484 762 | pager 18642
E: Jacqueline.Colgan@health.nsw.gov.au

7.16 Pre-Implementation survey

Clinical Procedures Survey

Thank you for taking the time to complete this survey. This survey is the first part of a multi-phased research project to implement and evaluate clinical procedure videos.The purpose of this research project is to obtain information about the use of clinical procedures by nurses.This survey is being conducted by Jackie Colgan Cardiac CNC as part of a research degree at The University of Sydney and Kim Miles Education Consultant Central Coast Local Health District.

This project is being supervised by Sydney University Associate Professor Tom Buckley and Ms Sarah Kourouche.You are invited to participate in this research project because you are a staff member in Central Coast Local Health District.This study has been reviewed and approved by the Central Coast Local Health District Research Governance Office.

Thank you!

If you are completing this survey on a mobile phone we suggest using landscape mode for optimal viewing.

PLEASE NOTE YOU CAN CONTROL THE FONT SIZE FROM ZOOM BUTTONS IN TOP RIGHT-HAND CORNER OF YOUR SCREEN

You will have unlimited time to complete this survey, however, if you log out prior to completion, your responses will not be saved.

Participant Information Sheet

Please take time to read.

[Attachment: "Participant Information Sheet_ v3 24042020.pdf"]

By completing this survey, you will be providing implied consent and confirming that you have read the Participant Information Sheet. This Sheet can be read, saved and printed by clicking the link.

ELECTRONIC CONSENT: Please select your choice below.
Clicking on the "agree" button below indicates that:
• you have ready the above information
• you voluntarily agree to participate
If you do proceed you agree to participate in the research study.

○ Agree

Section 1: Demographics

What is your age? (please answer in years)	____________ (in years)
What is your gender?	○ Female ○ Male ○ Non-binary/ third gender ○ Prefer to self-describe ○ Prefer not to say
What hospital site do you currently work at:	○ Gosford ○ Wyong ○ Woy Woy ○ Long Jetty
What is your role at CCLHD?	○ Registered Nurse ○ Clinical Nurse Specialist ○ Clinical Nurse Educator ○ Clinical Nurse Consultant ○ Nurse Unit Manager ○ Other
If you selected other, please specify:	____________
What clinical specialty area do you work the majority of your shifts in?	○ Cardiology ○ Emergency ○ Intensive Care ○ Other
If you selected other, please specify:	____________
How long have you been in your current role, please answer in years to 1 decimal point (e.g. 1.5 years)	____________ (in years)

Section 2: Knowledge and Skills
The following questions relate to hospital clinical procedure documents, for example, to documents that exist on the central coast local health district intranet site.

A 'clinical procedure' is defined as a set of approved steps for a particular act or sequence of acts. Procedures are based on validated evidence, have a consistent application and inform the clinician reader how to achieve the necessary results.

Please rate you agreement with the following statement: I value written clinical procedures.

- ◯ Disagree strongly
- ◯ Disagree
- ◯ Neither agree or disagree
- ◯ Agree
- ◯ Agree strongly

I access LHD intranet clinical procedures approximately (select one):

- ◯ once per shift
- ◯ once per week
- ◯ once per month
- ◯ once per year
- ◯ never (I don't access clinical procedures)

Please select the reasons you are most likely to search the intranet in relation to clinical procedures (you may select more than one):

- ☐ New knowledge
- ☐ Knowledge refresher
- ☐ For teaching purposes
- ☐ For best practice advice
- ☐ Referred to by my manager
- ☐ Referred to by my educator
- ☐ Told about it by my peers
- ☐ Other

If you selected other, please specify:

____

How important are the following in relation to written clinical procedures (select your response on the scale for each intervention)
Clinical procedures (defined as a set of approved steps for a particular act or sequence of acts) should be...

	Unimportant	Of little Importance	Moderately Important	Important	Very Important
Practical and useful	○	○	○	○	○
Just the right length	○	○	○	○	○
Easy to follow and understand	○	○	○	○	○
Easy to locate and access	○	○	○	○	○

Please rate in order of importance the following qualities from the lowest (1) to the highest (4) in relation to current written clinical procedures.

	1 (lowest importance)	2	3	4 (highest importance)
Practical and useful	○	○	○	○
Just the right length	○	○	○	○
Easy to follow and understand	○	○	○	○
Easy to locate and access	○	○	○	○

What do you believe is the right number of pages for a written clinical procedure (defined as a set of approved steps for a particular act or sequence of acts) ?

____
(number of pages)

Please specify any other aspects that are important to you in relation to the current written clinical procedures: ______________________

I am confident in my ability to (select your response on the scale for each intervention):

	Disagree strongly	Disagree	Neither agree or disagree	Agree	Agree strongly
Locate procedures on the intranet	○	○	○	○	○
Understand written clinical procedures	○	○	○	○	○
Apply written clinical procedures in my practice	○	○	○	○	○

Select your response in relation to your experience with clinical procedures:	Never	Rarely	Sometimes	Very often	Always
I find it easy to remember where to access new clinical procedures	O	O	O	O	O
During my work day I think there are too many clinical procedures to remember	O	O	O	O	O
I find it difficult to recall written clinical procedures in my practice	O	O	O	O	O

Section 3: Facilitators and Barriers

How important are the following environmental factors in helping you to remember clinical procedures (defined as a set of approved steps for a particular act or sequence of acts):

	Unimportant	Of little importance	Moderately important	Important	Very important
Having a list of clinical procedures on the intranet/internet	O	O	O	O	O
A printed copy of the procedure kept in the patient notes	O	O	O	O	O
A guide to show how to access clinical procedures	O	O	O	O	O
Access to intranet computers in the clinical area	O	O	O	O	O
A video resource that show the clinical procedural steps on the intranet	O	O	O	O	O
A poster with QR codes to look up clinical procedure videos on mobile devices	O	O	O	O	O

Please specify any other factors that help you to remember clinical procedures: ______________________________

Please rate how important (or not important) the following factors are in improving your use of clinical procedures (defined as a set of approved steps for a particular act or sequence of acts):

	Unimportant	Of little importance	Moderately important	Important	Very important
Knowing I will be spoken to by a superior if I do not follow recommended clinical procedure steps	○	○	○	○	○
Knowing my practice may be audited	○	○	○	○	○
Feeling that the clinical procedure will make a difference to the patient	○	○	○	○	○
Other staff reminding me too	○	○	○	○	○
Identifying myself as a "change agent"	○	○	○	○	○
Being aware of risks associated with not following a clinical procedure	○	○	○	○	○

Other (please comment) ______________________

How important are the following educational supports in using/doing a new clinical procedure (select your response on the scale for each intervention)?

	Unimportant	Of little importance	Moderately important	Important	Very important
A short course on material	○	○	○	○	○
Online learning program	○	○	○	○	○
Help on the floor from senior	○	○	○	○	○
In-service on procedure content	○	○	○	○	○
My colleagues reminding me	○	○	○	○	○
An endorsed locally tailored video procedure	○	○	○	○	○
Other - please comment below	○	○	○	○	○

Please tell us any other educational supports you use when using a new clinical procedure (not listed in the previous question): ______________________

Almost finished! Thank you for your persistence.

When undertaking a new procedure, usually I feel (select all options that apply):

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	○	○	○	○
I feel secure	○	○	○	○
I feel tense	○	○	○	○
I feel regretful	○	○	○	○
I feel at ease	○	○	○	○
I feel upset	○	○	○	○
I am presently worrying over possible misfortunes	○	○	○	○
I feel rested	○	○	○	○
I feel anxious	○	○	○	○
I feel comfortable	○	○	○	○
I feel self-confident	○	○	○	○
I feel nervous	○	○	○	○
I feel jittery	○	○	○	○
I feel "high strung"	○	○	○	○
I am relaxed	○	○	○	○
I feel content	○	○	○	○
I am worried	○	○	○	○
I feel over-excited and "rattled"	○	○	○	○
I feel joyful	○	○	○	○
I feel pleasant	○	○	○	○

In relation to the previous question, what do you think makes you feel this way?

Please add your comments: ______________________________

Section 4: Video clinical procedures

Video is an effective, accessible, and low-cost method of delivering health information messages to a wide audience.

This study proposes the creation and implementation of locally tailored clinical procedure videos (defined as video simulation of clinical procedures with key messages for procedure safety) as an adjunct to written procedures.

Please rate your agreement with the following statement: I would value clinical procedure videos.	○ Not at all ○ Somewhat ○ Moderately so ○ Very much so
Have you ever searched for videos for procedure information related to your work?	○ Yes ○ No
Please describe below all of the sources you have looked for procedure information	______________________________
Where do you think video procedures should be made available (you can choose all that options that apply)?	☐ Hospital Intranet site ☐ NSW My Health Learning ☐ Downloadable onto personal mobile devices ☐ Other
If you choose other, please tell us any other locations you think video procedures should be:	______________________________

Select your response on the scale for each option,
if video procedures are accessible in your health service, it will

	Disagree strongly	Disagree	Neither agree or disagree	Agree	Agree strongly
Improve patient outcomes	○	○	○	○	○
Make your workload higher	○	○	○	○	○
Make your workload lower	○	○	○	○	○
Have no change to your workload	○	○	○	○	○
Make it easier to access information	○	○	○	○	○
Reduce delays when preparing patients for clinical procedures	○	○	○	○	○
Decrease errors in patient care	○	○	○	○	○
Improve overall patient care	○	○	○	○	○
Improve health care process	○	○	○	○	○
be acceptable by managers to view clinical procedure videos	○	○	○	○	○
Result in staff on computers/phones all the time	○	○	○	○	○
increase complaints by staff, relatives and patients about staff watching clinical procedure videos at work	○	○	○	○	○
Result in patients losing confidence in staff if they see clinicians watching clinical procedure videos at work	○	○	○	○	○

Please add any additional comments:

____

If clinical procedure videos were available in Central Coast Local Health District it would:

	Not at all	Somewhat	Moderately so	Very much so
Enhance my understanding of the specific clinical procedure	○	○	○	○
Be more value to me than a written clinical procedure	○	○	○	○
Increase my clinical skills	○	○	○	○
Increase my memory / recall of written clinical procedure steps	○	○	○	○
Increase my understanding of my role in a clinical procedure	○	○	○	○
Increase my likelihood to use it	○	○	○	○
Increase my adherence to Central Coast Local Health District procedures	○	○	○	○
Increase my awareness of the clinical risk associated with procedure	○	○	○	○

What is the maximum time length in minutes you believe a video procedure should be in duration?

____
(in minutes)

Please indicate your preference for institutional clinical procedures:

○ video procedure
○ written procedure
○ both video and written procedure
○ Other, please comment below

Please add any additional comments below about your preferences for clinical procedure support:

____

Thank you from the project team.

7.17 Implementation resources: Video procedure memo

Health
Central Coast
Local Health District

Memo

Critical Care – Gosford

TO	All Clinical Staff – Critical Care Services		
FROM	Kelly Cridland, Operational Nurse Manager Critical Care, Gosford Hospital		
SUBJECT	Implementation of clinical procedure videos	DATE	15th October 2020

Dear Colleagues,

Please be aware that CCLHD Cardiac Services and CCLHD Education and Training Service, in collaboration with clinical experts, developed locally tailored clinical procedure videos, aligned to the existing written procedures. Creation of the videos was supported by a NSW Nursing and Midwifery Office Innovation Scholarship in 2018. This project has Research Governance Office authorisation: 0120-007C - HREC Exempt LNR –Implementing and Evaluating Clinical Procedure Videos. This project is supported by a 2019 CCLHD Caring for the Coast Research Grant.

Staff can access the videos here via the hyperlinks on the front page of procedures or via the cardiovascular intranet site. Video procedures are available for

1. Non Invasive Ventilation
2. Pericardiocentesis
3. Temporary Cardiac Pacing

The videos are also available in myhealthlearning:

1. CCLHD Non-Invasive Ventilation (NIV) Module (No: 332322863)
2. CCLHD Pericardiocentesis Module (No: 332324252)
3. CCLHD Temporary Venous Pacing Wire (TVPW) Module (No: 332325192)

Please note feedback is welcome on the videos via this link: https://redcap.sydney.edu.au/surveys/?s=JTHM97YL7D

For further information please contact:

Jackie Colgan – Cardiology Clinical Nurse Consultant:
4320 2371 (Internal 92371) | Pager 18642 | Mob [REDACTION] | Jacqueline.Colgan@health.nsw.gov.au

7.18 Implementation resources: Video Procedure flyer

Health
Central Coast
Local Health District

CRITICAL CARE SERVICE EDUCATION NEWS

November 2020

Jackie Colgan & Kim Miles

Clinical procedure videos

In 2019 CCLHD Cardiac Services and Education and Training Service developed clinical procedure videos, aligned to written procedures. The video procedures are available for:

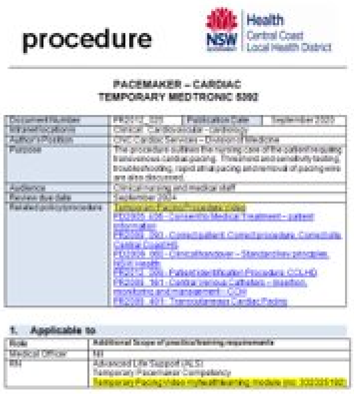
- Non Invasive Ventilation
- Temporary Cardiac Pacing
- Pericardiocentesis

You can access the videos either via the hyperlink in the procedure, or the intranet. To have this recorded in your MHL transcript, the videos can be viewed also through elearning modules in My Health Learning.

MY HEALTH LEARNING

Access the videos via the procedure, cardiovascular intranet site or myhealthlearning:

- CCLHD Non-Invasive Ventilation (NIV) (332322863)
- CCLHD Pericardiocentesis (332324252)
- CCLHD Temporary Venous Pacing Wire (TVPW) Insertion (332325192)



This is a CCLHD research project:– Authorisation 0120-007C - HREC Exempt LNR *Implementing and Evaluating Clinical Procedure Videos*

7.19 Implementation resources: Video procedure mousepad

7.20 Participant Information Sheet

THE UNIVERSITY OF SYDNEY

NSW GOVERNMENT Health Central Coast Local Health District

Invitation to Participate

My name is Jacqueline Colgan; I am a Clinical Nurse Consultant in the Critical Care Stream, Central Coast Local Health District. I am Chief Investigator to a research group investigating the implementation, use and acceptability of clinical procedure videos. My Co-Investigators are Kim Miles (RN), Associate Professor Thomas Buckley (RN, PhD) Sarah Kourouche (RN) and Professor Geoffrey Tofler (MBBS MB FRACP FACC), Northern Sydney Local Health District (Royal North Shore Hospital).

As part of this project, I am now seeking participation from current employees of the Gosford and Wyong Hospitals.

This research has governance approval from Central Coast Local Health District Research Governance Office REF: 0120-007C

Before you decide whether you wish to participate in this study, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish.

What is the purpose of the study?
The purpose is to investigate and evaluate the use and acceptability of locally developed videos of nursing procedures

Who is invited to participate?
You are invited to participate in this study because you are a health care professional who will likely view new video procedures being introduced at Gosford and Wyong Hospitals.

Do I have a choice?
Participation in this study is voluntary. The decision not to participate, or to withdraw, will not affect your position or your relationship with the Central Coast Local Health District.

What will happen in the study?
If you agree to participate in this study, you will be asked to complete **one** survey. The survey will take approximately 10-15 minutes to complete. You can access the online survey by clicking on the link at the end of your email. Completion of the survey will indicate your consent to participate in the study. The final survey question will be an expression of interest to register for a focus group meeting.

Please note that once you have submitted the survey unless you have registered interest in the focus group we will no longer be able to link you to your data and therefore we will not be able to withdraw the information you have provided.

Are there any risks or inconveniences to me?
Apart from the 15 minutes of your time to complete the survey, there are no foreseeable risks. If you choose to register for the focus group meeting it will take place at a convenient time for you. The discussion will last for around an hour. Data collected from the focus group will be analysed independently by the research team.

7.21 Behaviour Change Techniques APEASE assessment

Intervention Functions	Affordability	Practicability	Effectiveness & & cost effectiveness	Acceptability	Side effects/ safety	Equity	Comments	Decision: Yes/No for next phase
Education	✓	✓	✓	✓	✓	✓	Providing information (online or face to face) to increase nurses knowledge and awareness of the video project. NSW Health has a policy of providing education/on-going CPD to clinical staff and has previously provided face to face training for priority issues. We do not anticipate any unwanted consequences.	Yes
Training	✓	✓	✓	✓	✓	✓	Providing training to raise awareness is a common strategy within the LHD. We can also train staff over online meetings. We do not anticipate any unwanted consequences.	Yes
Enablement	✓	✓	?	✓	✓	✓	Video procedures will be made available to staff via the written procedure for clinical care purposes. As access may be in urgent clinical scenarios no password is required. Staff will be assured by branding and governance system. Use of project mousepad for communication.	Yes
Environmental Restructuring	✓	✓	✓	?	✓	✓	Video procedures will be added to the Myhealthlearning system as standalone modules which will be available for staff to access at home. access. These are affordable, practicable, acceptable, equitable and unlikely to have unwanted consequences. Effectiveness unknown.	Yes
Persuasion	✓	✓	?	✓	?	✓	Use of change champions and corporate branding.	Yes
Modelling	✓	✓	✓	✓	-	✓	Change champions to promote use, and education awareness sessions. We do not anticipate any unwanted consequences.	Yes

Key: ✓ = Yes; x = No; ? = Unsure; - = not assessed

7.22 Video procedure implementation plan

Clinical Procedure Videos

IMPLEMENTATION PLAN

VERSION 1.0 | 28/09/2020

VERSION HISTORY

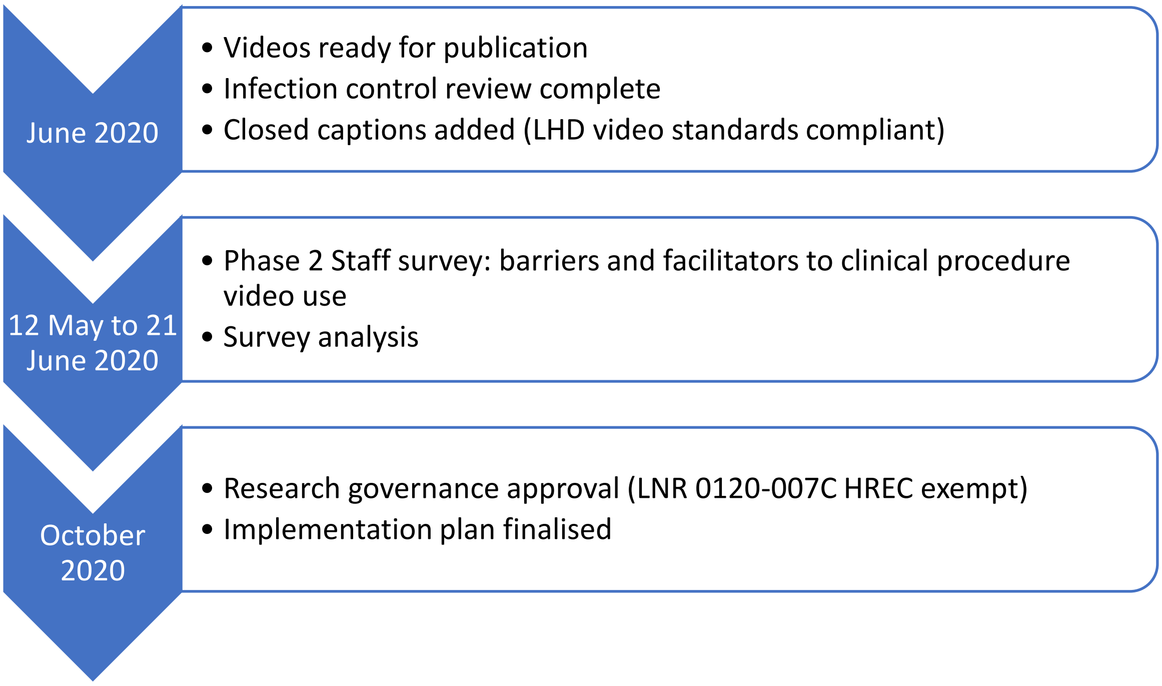
Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0					
1.1					

7.22.1 Introduction

7.22.2 Purpose

The purpose of this document is to outline a plan for the implementation of clinical procedure videos in Central Coast Local Health District. Phase 1 involved developing and filming clinical procedure videos and was supported by a 2018 NSW Nursing and Midwifery Office Innovation Scholarship. This document outlines phase 2 (Figure 1) which is the implementation of the videos. Phase 2 is a research study is supported through the 2019 CCLHD Caring for the Coast Research Grant program.

Figure 1: Phase 2



7.22.3 Intervention design

Table 1: Implementation Overview

Implementation Focus	Elements of the intervention
WHAT is being implemented (Innovation)	Clinical procedure videos for 3 emergent interventions: locally tailored Overarching aim: understand the use and acceptability of
WHO is being targeted (Recipients)	Coronary Care nursing staff Cardiology ward nursing staff

	Emergency department nursing staff Intensive care nursing staff Respiratory ward nursing staff
WHERE **(Context)**	Acute health care setting: Gosford and Wyong Hospitals Accessible at work – no password required Accessible at home – password protected
HOW **(Facilitation)**	ICT support for video embedded Facilitation teams: external/internal expert and novice facilitators, clinical leaders, research supervisors Tailored facilitation support for individuals

7.22.4 Implementation design

The implementation design was planned based on the findings of a staff survey, which was based on the theoretical domains framework (TDF). The quantitative and qualitative results from the survey will be integrated and mapped to each of the TDF domains to address the barriers and facilitators to utilisation of the clinical procedure videos. This survey is based on one used previously in NSW to implement a Blunt Chest Injury protocol. A survey of staff has been undertaken to inform the implementation process. The survey was based on the 14 domains of the TDF. Through mapping to the TDF, the survey has identified barriers and facilitators to implementation.

The barriers and facilitators will be evaluated using the Behaviour Change Wheel (BCW) to extract specific intervention functions, policies, behaviour change techniques and implementation strategies Intervention strategies were then identified in a step-by-step process to find intervention functions and policy changes that would need to occur for behaviour change to occur.

Table 2.

Intervention functions	COM-B components served by intervention functions	BCTs to deliver intervention functions	Policy categories through which BCTs can be delivered	Intervention strategy Education, Enablement Persuasion Modeling
Education	Capability - Physical Capability - Psychological	Education and training	Communication marketing	1. Involve stakeholders in project development 2. Open videos to comment / review 3. Build myhealthlearning (MHL) modules with video embedded 4. Confirm learning outcomes for MHL modules 5. Update procedures with video hyperlinks 6. Build REDedcap surveys and link on intranet 7. Governance office implementation authorisation approved 8. Final version videos uploaded to intranet 9. MHL modules forwarded to be uploaded to platform 10. Procedure document revised to include embedded links to videos 11. Skype and in person in-services provided to cardiology, intensive care, emergency department, and ward nurses 12. Change champions (video development team) 13. Flyers with information and team contact details 14. Emails to all staff involved 15. Emails to relevant managers 16. Email to relevant clinical nurse consultants 17. Email to relevant clinical nurse educators 18. Invitations sent out to focus group's - patient
Environmental restructuring **Enablement**	Opportunity-Physical	Training	Communication Marketing Adding objects to the environment	
Persuasion Modeling	Motivation-Reflective & automatic	Vicarious consequences -beliefs about best practice and patient safety	Communication & marketing Procedures include links (credibility)	

Intervention functions	COM-B components served by intervention functions	BCTs to deliver intervention functions	Policy categories through which BCTs can be delivered	Intervention strategy Education, Enablement Persuasion Modeling
				actors and video development team 19. 6 months post implementation : REDcap evaluation survey circulated to critical care nursing staff with EOI for nursing focus group

7.22.5 Assumptions and Constraints

Stakeholders have been consulted before development of this plan, and it is assumed that their support will continue for the implementation process. There is strong CCLHD support for the implementation as it has been funded by a research grant.

7.22.6 Management Overview

The responsibility of management will lie with the CCLHD Cardiology Clinical Nurse Consultant Ms Jacqueline Colgan. Executive sponsors are Critical Care Operational Nurse Manager Ms Kelly Cridland, and Director of Cardiology Services –Dr Maged William.

Major tasks for management include:

- Communication with key stakeholders
- Review and approval of policy

7.22.7 Description of Implementation

Video procedures will go live in both sites on the same day on 15th October 2020.

Intervention Strategies are:

1. Involve stakeholders in project development
2. Open videos to comment / review
3. Build myhealthlearning (MHL) modules with video embedded
4. Confirm learning outcomes for MHL modules
5. Update procedures with video hyperlinks

6. Build REDcap surveys and link on intranet
7. Governance office implementation authorisation approved
8. Final version videos uploaded to intranet
9. MHL modules forwarded to be uploaded to platform
10. Procedure document revised to include embedded links to videos
11. Skype and in person in-services provided to cardiology, ICU, ED and ward nurses
12. Change champions (video development team)
13. Flyers with information and team contact details
14. Emails to all staff involved
15. Emails for managers
16. Invitations sent out to focus group's - patient actors and video development team
17. 6 months post implementation: REDcap evaluation survey circulated to critical care nursing staff with EOI for nursing focus group

7.22.8 Points of Contact

ROLE	NAME	EMAIL
Nursing Sponsor	Kelly Cridland	Kelly.Cridland@health.nsw.gov.au
Cardiology Sponsor	Dr Maged William	Maged.william@health.nsw.gov.au
Chief Investigator	Jackie Colgan	Jacqueline.colgan@health.nsw.gov.au
Coordinating investigator Education consultant	Kim Miles	Kim.Miles@health.nsw.gov.au
Research supervisor	Assoc Prof Tom Buckley	Tom.buckley@Sydney.edu.au
Research supervisor	Sarah Kourouche	Sarah.kourouche@Sydney.edu.au
Research supervisor	Prof Geoff Tofler	Geoffrey.Tofler@health.nsw.gov.au

7.22.9 Major Tasks

STAGES OF IMPLEMENTATION	Status
• Meet with Key Stakeholders	
• Undertake pre implementation survey	
• Survey results analysed and implementation plan devised and approved	
• Governance office implementation authorisation approved	
• MHL modules finalised and forward to HETI	

• Final version videos loaded to intranet	
• Develop and book educational inservices (skype and in person)	
• Email to clinical staff & manager	
• Invitations sent out to focus group's	

Evaluation

a. Focus groups: project team	
b. Focus groups: patient actors	
c. Evaluation: nurse survey REDcap (6 months post implementation)	
d. Focus groups: nurse volunteer (6 months post implementation)	

Green: Complete	Amber: In Progress	Red: Still to complete

7.22.10 Implementation Schedule

Go live for clinical procedure videos is October 15, 2020.

7.22.11 Security and Privacy

All project survey's will be distributed electronically via Research Electronic Data Capture (REDcap) to nursing staff in two hospitals. It will also be available in paper copy for staff to complete and with manual data entry by the project team. It will collect non identifiable data Videos accessed via myhealthlearning (MHL) platform, have a generic voluntary evaluation form attached. De-identified data from MHL will be downloaded at 6 months following implementation. Quantitative data and will be analysed using SPSS IBM v.29 and qualitative using inductive content analysis.

7.22.11.1 Security Setup

Vimeo platform has been utilised to store videos, and they are not available to download to personal devices.

7.22.11.2 Software

Vimeo- district license already available.

7.22.12 Personnel and training requirements

Facilitators

Facilitators will be from existing staff.

Research Nurses

CCLHD caring for the Coast Research grant has been received to support the implementation of videos; some funds will be dedicated to the hiring of casual research nurse to support implementation as required.

Super users (Clinical champions)

Super users or clinical champions who were part of the implementation team who have been part of the video development project. They will assist on the floor, provide guidance, and help with questions.

Instructors for in-services:

Cardiac CNC and Education consultant.

7.22.13 Implementation Impact

This project has minimal increased requirements on staff. This will be reduced by an allocation of research nurses and clinical champions to provide extra facilitation.

7.22.14 Evaluation

This implementation will be evaluated as part the larger research project. The uptake of video procedures will be measured at six - twelve months post-implementation. This is part of a larger study with research governance approval. Furthermore, a second survey of staff will be done six months post-implementation with expression of interests for a nursing focus group. The focus group will take place at six - twelve months post-implementation.

7.22.15 Documentation

Three existing clinical procedures have been updated and published relating to the implementation of clinical procedure videos.

DOCUMENT NAME	LOCATION
PR2012_025 Pacemaker – cardiac temporary medtronic 5392	http://intranet.cclhd.health.nsw.gov.au/ppg/PPGLibrary/Cardiovascular/PR2012_025.pdf
PR2009_042 Pericardiocentesis (Percutaneous) - patient preparation and assistant role	http://intranet.cclhd.health.nsw.gov.au/ppg/PPGLibrary/Cardiovascular/PR2009_042.pdf
PR2009_017 Non Invasive Ventilation (NIV) – Adults (Acute) CCLHD	http://intranet.cclhd.health.nsw.gov.au/ppg/PPGLibrary/Medicine/RespiratoryMedicine/PR2009_017.pdf

7.22.16 Performance Monitoring

Vimeo analytics - viewing numbers

MHL analytics – numbers of completions

IIMS+ data

Staff feedback surveys (via MHL learning modules and intranet site)

References

1. Kourouche, S., Buckley, T., Munroe, B. and Curtis, K., 2018. Development of a blunt chest injury care bundle: an integrative review. Injury, 49(6), pp.1008-1023.

2. Cane, J., O'Connor, D. and Michie, S., 2012. Validation of the theoretical domains framework for use in behaviour change and implementation research. Implementation science, 7(1), p.37.

3. Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., Eccles, M.P., Cane, J. and Wood, C.E., 2013. The behaviour change technique taxonomy (v1) of 93 hierarchically clustered techniques: building an international consensus for the reporting of behaviour change interventions. Annals of behavioural medicine, 46(1), pp.81-95.

7.23 Post video /MyHealthLearning module viewing feedback survey

NSW GOVERNMENT Health Central Coast Local Health District

THE UNIVERSITY OF SYDNEY

1. Please indicate the name of the video (es) you viewed today (free text)

2. Post online procedure video survey. Please indicate your level of agreement with the following statements.

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree
The content area is relevant to my job.	1	2	3	4	5
I can make a difference in my job by using what I have learned.	1	2	3	4	5
I have clear ideas about how I can use the new skills and knowledge.	1	2	3	4	5
I intend to use the new skills and knowledge.	1	2	3	4	5
The video provided a thorough coverage of the subject matter.	1	2	3	4	5
The video structure helped me learn the knowledge and skills.	1	2	3	4	5

3. The content was:
   - Too basic
   - Basic
   - Somewhat basic
   - Just right
   - Somewhat complex
   - Complex
   - Too complex

7.24 Post-implementation survey

Confidential

Page 1

Post Video Procedure Implementation Survey

Thank you for taking the time to complete this survey. This survey is part of a multi-phased research project to implement and evaluate clinical procedure videos.The purpose of this research project is to obtain information about the use of clinical procedures by nurses.This survey is being conducted by Jackie Colgan Cardiac CNC as part of a research degree at The University of Sydney and Kim Miles Education Consultant Central Coast Local HealthDistrict.

This project is being supervised by Sydney University Associate Professor Tom Buckley, Dr Sarah Kourouche and Professor Geoff Tofler. You are invited to participate in this research project because you are a staff member in Central Coast Local Health District.This study has been reviewed and approved by the Central Coast Local Health District Research Governance Office.

If you are completing this survey on a mobile phone we suggest using landscape mode for optimal viewing.

You will have unlimited time to complete this survey, however, if you log out prior to completion, your responses will not be saved.

Please complete the survey below.

Thank you!

PLEASE NOTE YOU CAN CONTROL THE FONT SIZE FROM ZOOM BUTTONS IN TOP RIGHT-HAND CORNER OF YOUR SCREEN

Participant Information Sheet

Please take time to read.

[Attachment: "Invitation to Participate Letter_ v1_survey_2.pdf"]

By completing this survey, you will be providing implied consent and confirming that you have read the Participant Information Sheet. This sheet can be read, saved and printed by clicking the link.

ELECTRONIC CONSENT: Please select your choice below.

Clicking on the "agree" button below indicates that:

• you have read the above information

• you voluntarily agree to participate

If you do proceed you agree to participate in the research study.

○ Agree

Section 1: Demographics

What is your age? (please answer in years)	______________ (in years)
What is your gender?	○ Female ○ Male ○ Non-binary/ third gender ○ Prefer to self-describe ○ Prefer not to say

What hospital site do you currently work at:	○ Gosford ○ Wyong ○ Woy Woy ○ Long Jetty
What is your role at CCLHD?	○ Enrolled Nurse ○ Registered Nurse ○ Clinical Nurse Specialist ○ Clinical Nurse Specialist grade 2 ○ Clinical Nurse Educator ○ Clinical Nurse Consultant ○ Nurse Unit Manager ○ Nurse Practitioner ○ Other (If you have more than one role, please choose the role you work in the majority of your shifts.)
If you selected other, please specify:	__________________________________
How long have you been in your current role, please answer in years to 1 decimal point (e.g. six months or less =0.5 years)	__________________________________ (in years)
What clinical specialty area do you work the majority of your shifts in?	○ Cardiology ○ Emergency ○ Intensive Care ○ Respiratory Medicine ○ Perioperative ○ Surgery ○ Other
If you selected other, please specify:	__________________________________

Section 2: Knowledge and Skills

The following questions relate to clinical procedures presented in video format (referred to as video clinical procedures):

Please rate your agreement with the following statement: I value video clinical procedures.	○ Disagree strongly ○ Disagree ○ Neither agree or disagree ○ Agree ○ Agree strongly

Please select the reasons you are most likely to search in relation to clinical procedures (you may select more than one):

☐ For patient care
☐ New knowledge
☐ Knowledge refresher
☐ For teaching purposes
☐ For best practice advice
☐ Referred to by my manager
☐ Referred to by my educator
☐ Told about it by my peers
☐ Other

If you selected other, please specify:

____

CCLHD Clinical Procedure Videos

Have you viewed any CCLHD procedure videos?

- ○ Yes
- ○ No

(Tip: If you havent viewed all of the videos you can access them at work via the relevant procedure-hyperlink on front page or here: http://intranet.cclhd.health.nsw.gov.au/clinical/AcuteCare/Medicine/cardio/pv/Pages/default.aspx At home or work you can access them via myhealthlearning.)

Please indicate which NIV video you have viewed.

	Yes	No
Video: Why and when to use it	○	○
Video: Set up and patient care	○	○

About the NIV videos

	Disagree strongly	Disagree	Neither agree or disagree	Agree	Agree strongly
Viewing a NIV video procedure assisted me to consider the patient situation	○	○	○	○	○

Viewing a NIV video procedure assisted me to collect visual cues/ information to assist with patient care	○	○	○	○	○
Viewing a video assisted me to process information for NIV procedure	○	○	○	○	○
Viewing a video assisted me to identify problem / issue that could occur when using NIV	○	○	○	○	○
Viewing a video assisted me to establish goals for NIV	○	○	○	○	○
Viewing a video assisted me to have a plan to take action when a problem / issue occurs during NIV	○	○	○	○	○
Viewing a video assisted me to evaluate my performance when using NIV	○	○	○	○	○
Viewing a video assisted me to reflect on the NIV procedure and new learning	○	○	○	○	○

Please add here comments you want to make about about the NIV videos: ______________________________________

Please indicate which pacing related video you viewed:

	Yes	No
Video: Temporary venous pacing: preparation	○	○
Video: Temporary venous pacing: procedure	○	○
Video: Temporary venous pacing: threshold testing	○	○

About the pacing videos

	Disagree strongly	Disagree	Neither agree or disagree	Agree	Agree strongly
Viewing a temporary pacing video procedure assisted me to consider the patient situation	○	○	○	○	○
Viewing a video procedure assisted me to collect visual cues/ information to assist with patient care during temporary pacing	○	○	○	○	○
Viewing a video assisted me to process information for temporary pacing procedure	○	○	○	○	○
Viewing a video assisted me to identify problem / issue that could occur during temporary pacing	○	○	○	○	○
Viewing a video assisted me to establish goals for temporary pacing procedures	○	○	○	○	○
Viewing a video assisted me to have a plan to take action when a problem / issue occurs during temporary pacing	○	○	○	○	○
Viewing a video assisted me to evaluate my performance in the temporary pacing procedure	○	○	○	○	○
Viewing a video assisted me to reflect on the temporary pacing procedure and new learning	○	○	○	○	○

Please add here any comments you want to make about the pacing videos: ______________________

Please indicate which video-cardiac tamponade and / or pericardiocentesis procedure you viewed:

	Yes	No
Video: Cardiac tamponade: recognition and patient care	○	○
Video: Pericardiocentesis: nursing considerations	○	○

About the cardiac tamponade and / or pericardiocentesis video

	Disagree strongly	Disagree	Neither agree or disagree	Agree	Agree strongly
Viewing a video procedure assisted me to consider the patient situation during cardiac tamponade and / or pericardiocentesis	○	○	○	○	○
Viewing a video procedure assisted me to collect visual cues/ information to assist with patient care during cardiac tamponade and / or pericardiocentesis	○	○	○	○	○
Viewing a video assisted me to process information for cardiac tamponade and / or pericardiocentesis procedure	○	○	○	○	○
Viewing a video assisted me to identify problem / issue that could occur in cardiac tamponade and / or pericardiocentesis	○	○	○	○	○
Viewing a video assisted me to establish goals for cardiac tamponade and / or pericardiocentesis procedure	○	○	○	○	○
Viewing a video assisted me to have a plan to take action when a problem / issue occurs during cardiac tamponade and / or pericardiocentesis	○	○	○	○	○
Viewing a video assisted me to evaluate my performance during cardiac tamponade and / or pericardiocentesis procedure	○	○	○	○	○
Viewing a video assisted me to reflect on cardiac tamponade and/ or pericardiocentesis procedure and new learning	○	○	○	○	○

Please add here any comments you wish to make about the cardiac tamponade and / or pericardiocentesis video: ______________________________

Please leave any additional comments about viewing any of the procedure videos here:

____

Using video procedures

I am confident in my ability to (select your response on the scale for each intervention):

	Disagree strongly	Disagree	Neither agree or disagree	Agree	Agree strongly
Locate video clinical procedures on the intranet	○	○	○	○	○
Locate video clinical procedures on myhealthlearning	○	○	○	○	○
Apply video clinical procedures in my practice	○	○	○	○	○
Use of a video procedure increased my confidence that I could manage in the procedure	○	○	○	○	○

Section 3 Barriers and Facilitators to using video procedures

How important are the following factors about video clinical procedures:

	Unimportant	Of little importance	Moderately important	Important	Very important
Realistic simulations with staff who I recognise in locations I am familiar with	○	○	○	○	○
Words on screen to reinforce concepts in the video	○	○	○	○	○
Background music on the clinical procedure videos	○	○	○	○	○
Closed captions on the clinical procedure videos	○	○	○	○	○
Access to intranet computers in the clinical area	○	○	○	○	○
Access to clinical procedure videos on personal mobile devices	○	○	○	○	○

Please add any additional comments about video features below:

____

Section 4: Video clinical procedures

Using a video clinical procedure (Select your response on the scale for each option):

	Disagree strongly	Disagree	Neither agree or disagree	Agree	Agree strongly
Increased my likelihood of reviewing the written document and video about the procedure before performing it	○	○	○	○	○
Increased my adherence to CCLHD procedures	○	○	○	○	○
Reminded me to look up the written procedure	○	○	○	○	○
Increased my memory / recall of clinical procedure steps	○	○	○	○	○
The video made learning about the topic a better experience than I would have had otherwise	○	○	○	○	○
I learned about the topic more quickly and easily because of watching the video	○	○	○	○	○
Video is the best format to present this information	○	○	○	○	○
The video has prompted me to consider changing my practice	○	○	○	○	○
Video procedures should be no longer 5 minutes duration	○	○	○	○	○
Is time-saving for me	○	○	○	○	○
Adds more value to me than what is already clinical available	○	○	○	○	○

Please indicate your preference for institutional clinical procedures:

○ video procedure
○ written procedure
○ both video and written procedure
○ Other, please comment below

Please comment here:

____

Do you have other specific suggestions for procedural videos you would find useful?

____
(Please list ideas or recommendations for videos you would find useful in your clinical practice.)

Almost finished! Thanks for your patience

When undertaking a new procedure usually (select all options that apply):	Not at all	Somewhat	Moderately so	Very much so
I feel calm	○	○	○	○
I feel secure	○	○	○	○
I feel tense	○	○	○	○
I feel regretful	○	○	○	○
I feel at ease	○	○	○	○
I feel upset	○	○	○	○
I am presently worrying over possible misfortunes	○	○	○	○
I feel rested	○	○	○	○
I feel anxious	○	○	○	○
I feel comfortable	○	○	○	○
I feel self-confident	○	○	○	○
I feel nervous	○	○	○	○
I feel jittery	○	○	○	○
I feel "high strung"	○	○	○	○
I am relaxed	○	○	○	○
I feel content	○	○	○	○
I am worried	○	○	○	○
I feel over-excited and "rattled"	○	○	○	○
I feel joyful	○	○	○	○
I feel pleasant	○	○	○	○

What do you think makes you feel this way? Please add your comments here: ______________________

Please indicate if you are happy to be contacted in the future to explore themes of video procedures in this survey for group or one on one interview (telephone, skype or in person)

○ Yes
○ No

Please leave your name, contact details and preferred method of contact below:

____
(Name)

____
(Phone number)

____
(Email address)

____
(Preferred method of contact)

Thank you from the project team for completing this survey