

Integrating rural community screening initiatives into general practice: a qualitative evaluation of the Care2U rural outreach pilot program

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ABSTRACT

Background. Diabetes and cardiovascular disease profoundly affect rural Australians. The Care2U program was proposed to integrate rural community-based screening with general practice systems. Its innovative feature is a closed-loop communication model between outreach teams and general practitioners (GPs), enabling systematic tracking of diagnoses, management and outcomes for screening-detected medical conditions. This study explored the acceptability, feasibility and sustainability of the proposed model from healthcare providers' perspectives. **Methods.** A qualitative study was undertaken using a focus group. A total of 12 participants, including GPs, nurses, practice managers and health informatics professionals, took part in a 91-min discussion in April 2025. The proposed Care2U model, incorporating mobile outreach screening for diabetes and cardiovascular disease risk factors, was discussed. Transcripts were thematically analysed, with findings interpreted using the critical realism lens to account for structural, organisational and individual influences. **Results.** Four overarching themes were identified: (i) strong perceived need and value of outreach services in underserved communities; (ii) strategies and challenges in identifying and engaging at-risk patients, particularly those without a regular GP; (iii) desired scope of screening, including both biomedical and lifestyle risk factors, with mixed views on feasibility of remote heart rhythm monitoring; and (iv) communication, workflow and medico-legal responsibilities in managing abnormal findings. Participants emphasised the need to integrate results directly into GP software and to establish clear responsibility for unaffiliated patients. **Conclusions.** The Care2U program was perceived as a valuable and feasible model to extend preventive care to rural communities. Its closed-loop communication system offers the potential to ensure continuity of care, strengthen GP–community integration and measure program impact. Addressing medico-legal, workflow, and sustainability challenges will be crucial for the implementation and scale-up of this initiative.

Keywords: cardiovascular disease, continuity of care, critical realism, diabetes, outreach program, preventive care, qualitative research, screening.

Introduction

Diabetes and cardiovascular disease (CVD) are leading contributors to morbidity and mortality globally, and remain significant public health concerns in Australia (Balakumar *et al.* 2016). These chronic conditions share risk factors, such as hypertension, obesity, dyslipidaemia and physical inactivity, contributing to a high burden of disease, particularly in rural and underserved populations (Lin *et al.* 2010). In Australia, approximately 1.3 million individuals are living with diabetes (Marquina *et al.* 2022; Islam *et al.* 2023), with many cases co-occurring with CVD or other complications (Australian Bureau of Statistics 2024). The financial burden is substantial, with CVD-related healthcare costs amounting to A\$10.4 billion in 2017–2018 (Australian Bureau of Statistics 2024).

To address early detection and prevention, the Australian Government introduced the Medicare Benefits Schedule 'Heart Health Checks' (HHC; item 699) in 2019 to support structured CVD risk assessment in primary care. (Chapman *et al.* 2023) This initiative enabled patients aged ≥ 30 years to access annual cardiovascular assessments performed

by general practitioners (GPs; Australian Government Department of Health and Aged Care). Although the program initially recorded 93,997 claims in its first year (incurring \$7.5 million), uptake declined to 81,217 claims the following year (Chapman *et al.* 2023; Australian Government Department of Health And Aged Care 2024). Despite its national reach, the impact of HHCs on the detection and management of CVD has not been systematically evaluated or reported. Moreover, the delivery of preventive care by GPs is constrained by limited healthcare access in rural and remote areas, workforce shortages, and time constraints in busy clinical settings (Shahim *et al.* 2018; Osuagwu *et al.* 2021).

Alternative models of care, particularly those involving community-based outreach services, have been shown to increase coverage and early detection of chronic diseases (Hespe *et al.* 2021). Community-based outreach screening has been utilised internationally to improve the detection of chronic diseases, but results regarding long-term integration are mixed. For instance, mobile outreach programs in Sweden successfully identified individuals at high risk of diabetes (Shahim *et al.* 2018), yet these programs often lacked a structured mechanism for clinical follow up. In Australia, prior mobile outreach initiatives in peri-urban regions demonstrated high community awareness and initial engagement; however, without a closed-loop system, screening results were rarely integrated into patients' primary care records (Osuagwu *et al.* 2021). A persistent challenge remains in sustaining such models, and establishing a functional, closed-loop communication system that ensures follow-up, continuity of care and the integration of screening findings into patients' primary care records.

The proposed Care2U model uses a community-based outreach service to screen for diabetes and CVD risk in rural communities, with mechanisms intended to integrate outcomes into GP workflows. The objectives were: (i) to co-design the integration and governance mechanisms for the proposed service model with healthcare providers, including GPs, nurses and practice managers, and (ii) to assess their perspectives on its acceptability, feasibility and sustainability for implementation.

Methods

The proposed Care2U outreach program

This study focused on the co-design and evaluation of a proposed outreach service model, but did not involve implementing the Care2U program. At the time of the focus group, the Care2U outreach service had not received dedicated funding for implementation. Screening activities were conceptualised as being undertaken by a dedicated outreach team affiliated with the research program, rather than by routine GP staff or consultations funded through the existing Medicare items. Considerations regarding workforce configuration

and funding mechanisms were, therefore, intentionally treated as implementation issues. The Care2U outreach program was initially drafted by the university researchers and the health informatics organisation, before the focus group, to provide a concrete basis for discussion, including the intended outreach setting, target population and proposed screening parameters. The focus group was then used to co-design the integration and governance mechanisms required to embed community screening within routine primary care. The program overview is shown in Supplementary Material 1.

Qualitative study design and setting

This study used a qualitative descriptive design, utilising a focus group methodology, to explore healthcare providers' perspectives on the development of the proposed Care2U program. A critical realist approach (Bhaskar 2010) was adopted to guide the design and interpretation of this qualitative study. Critical realism was selected because the Care2U program represents a complex, system-level intervention operating across multiple layers of the health system, including structural constraints, organisational workflows and individual professional roles. Although constructivist approaches, such as constructivist grounded theory, are well-suited to examining meaning-making and theory development from participants' perspectives (Mohajan and Mohajan 2022), and phenomenological approaches prioritise detailed exploration of lived experience and subjective engagement with phenomena (Cilesiz 2011), these frameworks are less suited to examining how underlying mechanisms generate or constrain implementation outcomes across system levels. In contrast, critical realism supports analytic separation between what participants report (the empirical), what occurs in practice (the actual) and the deeper causal mechanisms that shape these observations (the real). This perspective aligned with the study's aim of examining participants' perceptions, and the mechanisms that influence the acceptability, feasibility and sustainability of integrating community-based screening into routine general practice. The study was conducted in collaboration with a health informatics organisation (PenCS) that supports clinical decision-making and data integration in Australian general practice settings.

Focus group development

A semi-structured focus group facilitation guide (Supplementary Material 1) was developed collaboratively by academic researchers (KCW and ULO) and the health informatics team. The guide was designed to explore participants' perceptions and suggestions on the feasibility, target population, appropriate screening parameters, preferred screening locations, communication of screening findings, and the integration of screening findings into GP systems and patients' electronic medical records. The focus group guide was informed by the objectives of the Care2U program, and refined through

an internal trial run conducted by the researchers (KCW and ULO) and the health informatics representatives.

Recruitment

Participant recruitment was coordinated by the health informatics team, which disseminated a recruitment notice through its existing network of general practices. The invitation targeted GPs, nurses and practice managers with experience in primary healthcare delivery. Interested participants consented with assurances of confidentiality and anonymisation of responses. Participation was voluntary, but each practitioner received a \$150 gift voucher as compensation for their time.

Focus group procedure

The focus group was conducted online in April 2025 via a secure video conferencing platform (Zoom) to accommodate participants from diverse geographic locations. The session was co-facilitated by KCW and ULO, with health informatics professionals (YB and EW) contributing to technical discussions regarding health information systems and data flow. The session was audio-recorded with participants' consent.

Analytic approach

Audio-recorded discussions were transcribed verbatim by the research team. KCW verified transcript accuracy against the original recordings. The transcripts were independently coded by KCW and ULO using thematic analysis (Braun and Clarke 2019). The analytic approach was detailed in Supplementary Material 2. NVivo software (version 15; Lumivero) was used for data organisation and coding. The qualitative findings are reported in line with the Consolidated Criteria for Reporting Qualitative Research checklist (Tong *et al.* 2007).

Ethics approvals

This study was approved by the Western Sydney University Human Research Ethics Committee (approval number: 2023/ETH02335). All participants provided written informed consent before participation.

Results

A total of 12 participants (seven females, five males), including three GPs, three nurses, two practice managers, two health informatics professionals and two researchers, contributed to the 91-min discussion. Six participants had experience working in regional or rural areas (Speakers 1, 2, 3, 6, 8 and 12), and six were primarily practising in major cities (Speakers 4, 5, 7, 9, 10 and 11). Four overarching themes were identified. These included the feasibility and value of outreach programs; patient identification and

engagement; the scope and modality of screening; and communication, workflow and responsibility for managing the findings. The various themes were described below, encompassing the acceptability, feasibility and sustainability of integrating closed-loop community screening communications into primary care systems (Fig. 1).

Main theme 1: feasibility and value of outreach programs

This theme captured participants' overall perceptions and enthusiasm for the Care2U model, directly informing its acceptability and initial feasibility, particularly in rural settings. The results below present the sub-themes generated by the focus group.

Sub-theme 1.1: perceived need and benefit

There was a strong, unanimous consensus among participants on the critical necessity and positive impact of outreach services, especially for underserved populations in rural and remote Australia. Many lamented the existing service gaps, with one speaker articulating,

The lack of services or resources in remote and rural areas of Australia is a huge issue. It's something that needs to be addressed [Speaker 8 – Practice Manager].

The geographical divide was seen as a fundamental inequity:

Where you live, your postcode shouldn't dictate your healthcare or disease outcome, but unfortunately, it does. It's a chronically understaffed area in the health system [Speaker 6 – Nurse].

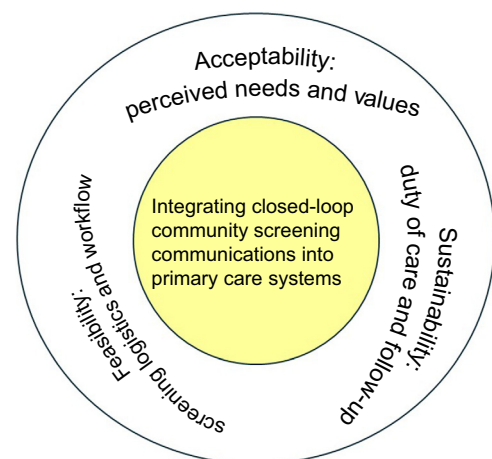


Fig. 1. An overview of the acceptability, feasibility and sustainability of the proposed system.

Practitioners [Speaker 6 (Nurse) and Speaker 10 (Practice Manager)] expressed a keen interest in linking patients to such services to manage chronic conditions, such as diabetes and cardiovascular disease, particularly when traditional access routes, including telephone services, were challenging in remote ‘bush’ areas.

Furthermore, the program was recognised as particularly vital for high-risk populations, such as the significant proportion of Aboriginal and Torres Strait Islander and Pacific Islander patients identified by one speaker as having a

very high risk of diabetes [Speaker 6 – Nurse].

The outreach model was also seen as a crucial tool to prevent patients from being ‘lost to follow up’ in the community [Speaker 10 – Practice Manager].

There was strong support for the program as a ‘great place to start’ [Speaker 6 – Nurse] and an opportunity for preventative care, extending to engaging entire families, including children and grandchildren, to address risk factors proactively rather than reactively [Speaker 8 – Practice Manager]. This proactive approach underscores the program’s potential for long-term sustainability through early intervention.

Sub-theme 1.2: program logistics and practicalities

Participants raised several operational considerations crucial for the program’s feasibility and long-term sustainability. A key aspect was the frequency of the outreach, with a suggestion for regular visits [Speaker 8 – Practice Manager]. The proposed 3-month interval for screenings, aligned with glycated haemoglobin check-up schedules, was considered pragmatic, allowing continuity of care for a population that might otherwise lack it [Speaker 12 – Researcher]. One speaker noted the potential benefit:

If the vans come every 3 months, and we have a patient record in the van. We’ll get to see continuity of care among a group that may never have had continuity of care before [Speaker 2 – Health Informatics Professional].

Creative location and engagement strategies were also highlighted. Suggestions included positioning the mobile service near community hubs, such as

Park your bus in the middle of town, near the pub. I’m actually not joking, and you will get everybody to turn up [Speaker 8 – Practice Manager].

The visual presence of a brightly coloured bus was expected to generate community interest [Speaker 8 - Practice Manager]. Alternatively, leveraging existing infrastructure, such as a nurse station in a rural town, was proposed as a resource-efficient approach [Speaker 12 – Researcher]. However, logistical challenges, particularly regarding access to ‘rural

areas that might be a little bit more difficult to access’, were acknowledged by a participant [Speaker 4 – GP]. These discussions underscore the need for flexible and community-tailored approaches to maximise reach and engagement.

Main theme 2: patient identification and engagement

This theme explored strategies for identifying at-risk individuals and the inherent challenges they pose, which are crucial to the program’s feasibility and sustainability. The various sub-themes are highlighted below

Sub-theme 2.1: identifying at-risk individuals

Participants proposed various methods for identifying potential beneficiaries. Stratification by age and risk factors was a common suggestion, targeting individuals ‘above 40 or [with] family history or even like smoking’ for cardiovascular risk [Speaker 7 – GP]. The focus was on engaging the ‘healthy otherwise asymptomatic population’ as the ‘biggest bang for buck,’ as one participant put it [Speaker 7 – GP].

Community-based outreach was identified as a key strategy, including offering ‘free health check or free blood pressure check’ [Speaker 7 – GP], reaching out to employers and community services [Speaker 7 - GP], and strategically siting the screening bus in central community locations [Speaker 8 – Practice Manager].

Data extraction from GP practices was identified as a powerful tool.

Using coded data from existing GP software, facilitated by health informatics organisations like PenCS, could allow for identifying at-risk patients at a practice level with appropriate consent and ethical approvals [Speaker 2 – Health Informatics Professional].

One participant expressed willingness to participate in ‘identifying our own patients at risk with data from the general practices’ [Speaker 11 – Nurse].

Sub-theme 2.2: challenges in reaching unaffiliated patients

A significant challenge highlighted was engaging individuals who do not have a regular GP or are otherwise hard to reach, as these patients often get ‘lost to follow up’ [Speaker 5 (GP), Speaker 11 (Nurse), Speaker 10 (GP)]. The implications for follow up were a major concern, particularly the potential to overwhelm already busy GPs. As one speaker vividly put it,

If you go out and do it, outreach, well, who are you going to send the result to? Because you can’t just bombard the local GP, because the local GP will be overwhelmed [Speaker 4 – GP].

The scenario of finding a patient with a critically high glycated haemoglobin who has never seen a GP, only to find that the local GP practice is booked out for months, underscores the practical difficulties of managing such cases [Speaker 4 – GP]. This highlights a core tension between reaching the most vulnerable and ensuring sustainable follow-up within existing healthcare constraints.

Main theme 3: scope and modality of screening

This theme examined the specific health parameters desired by participants and the practicality of remote monitoring technologies, thereby informing the acceptability of the screening scope and the feasibility of the proposed technologies.

Sub-theme 3.1: desired screening parameters

Beyond the initially proposed tests (blood glucose, glycated haemoglobin, lipids, blood pressure, weight, height), participants expressed a desire for a more comprehensive health check. This included additional anthropometric measurements, such as ‘waist measurement’ [Speaker 6 – Nurse] and ‘BMI’ [Speaker 7 – GP]. More significantly, there was a strong emphasis on collecting data on lifestyle and the social determinants of health. This encompassed ‘SNAP’ factors (smoking, nutrition, alcohol, physical activity) [Speaker 8 – Practice Manager], ‘occupational risk exposure’ [Speaker 9 – Nurse], ‘smoking status’ (including vaping, ex-smoker history, passive/active smoking and duration) [Speaker 9 – Nurse], ‘family risk’ or ‘family cardiac history’ [Speaker 8 (Practice Manager), Speaker 7 (GP)], ‘alcohol use’ [Speaker 7 (GP), Speaker 11 (Nurse)] and ‘snoring history’ [Speaker 7 – GP].

This holistic approach was considered crucial for providing better risk stratification and comprehensive care, aligning with the goal of preventive rather than restorative care [Speaker 8 – Practice Manager].

Sub-theme 3.2: feasibility of remote heart rhythm screening

The practicality of using remote ECG patches for heart rhythm screening in rural areas presented both interest and significant practical barriers. Although the idea was considered ‘a really great idea’, the lack of reliable mobile reception and technology access in rural areas emerged as a major hurdle [Speaker 8 – Practice Manager], as articulated below.

The technology and the reception, the phone reception is just not adequate in this area, in the remote areas to support that technology [Speaker 8 – Practice Manager].

Although it was clarified that the specific ECG patch might store data locally without requiring continuous connectivity [Speaker 12 – Researcher], concerns about overall technological support persisted.

Patient compliance and support for such devices also raised questions, with one participant noting

It’s so hard with compliance and support – sounds amazing if achievable [Speaker 10 – Practice Manager].

The program aimed to implement robust follow-up plans to encourage compliance and GP visits [Speaker 3 – Researcher]. As an alternative, a simpler ‘checking the pulse’ was suggested as a basic screen [Speaker 10 – Practice Manager]. The target group for remote atrial fibrillation screening was also specified as older patients with suspected paroxysmal atrial fibrillation, often presenting with stroke, and with a CHA₂DS₂-VASc score of ≥ 2 , indicating a targeted rather than random application [Speaker 12 – Researcher].

Main theme 4: communication, workflow and responsibility for findings

This theme critically examined how screening results should be managed, the workflow for abnormal findings, and the vital issues of duty of care and legal responsibility, which directly affect the program’s feasibility and sustainability. The sub-themes are discussed below.

Sub-theme 4.1: managing urgent abnormal results

For urgent abnormal findings, participants consistently emphasised the need for real-time communication, with phone calls as the unequivocally preferred method. As one speaker stated,

An urgent abnormal result requires real-time communication. So that’s the best way to put it: phone call [Speaker 5 – GP].

Practices typically have established accreditation processes for urgent results, and the expectation was for the Care2U program to integrate into this existing hierarchy: phone calls first, followed by fax or email if necessary [Speaker 5 – GP].

The screening team’s responsibility was highlighted, with the initiator of the assessment having

ultimate responsibility of managing the patient or any abnormal results until such time they can be referred to the next appropriate person [Speaker 7 – GP].

It was suggested that Care2U should have an on-site clinician to provide initial management plans or refer patients directly to the emergency department for critical abnormalities [Speaker 5 (GP), Speaker 7 (GP)]. Some GPs demonstrated proactive management strategies, with one reporting that they personally took an asymptomatic patient with a blood pressure >200 mmHg to the emergency department [Speaker 8 – Practice Manager]. The need for ‘advanced notice of the outreach community screening to

potentially allocate follow-up visits for new patients' was also mentioned [Speaker 11 – Nurse].

Sub-theme 4.2: integration of non-urgent results

The seamless integration of screening results into existing GP software systems was deemed essential. Participants stated that the results

must come in as integrated into the BP [Best Practice] software or Medical Director [software], whichever you use, and all the pathology and radiology companies do this already and just comes into your inbox [Speaker 4 – GP].

Any separate login or dashboard for results was viewed as 'time consuming and onerous' and 'not gonna happen' [Speaker 4 – GP]. This direct integration was crucial for acceptability and feasibility, mirroring the method used for receiving and managing other pathology results [Speaker 4 (GP), Speaker 11 (Nurse)].

Although an alternative platform, such as PenCS's 'practice cloud', was mentioned to potentially share updated patient information in a dashboard view for pre-visit planning [Speaker 2 – Health Informatics Professional], the strong preference remained for direct integration. The existing workflow and follow up for existing patients typically involves recall processes, with urgent results followed up by doctors or nurses, and non-urgent results managed via electronic recall systems [Speaker 4 (GP), Speaker 8 (Practice Manager)].

GPs expressed willingness to receive reports such as those from 'Heart Bug' for atrial fibrillation to organise further testing [Speaker 7 – GP]. A 'closed-loop communication system' was highly favoured to ensure integrated care and support for both the outreach team and GP practices [Speaker 8 – Practice Manager]. Establishing a long-term memorandum of understanding with practices was also suggested to improve relationships and integration [Speaker 4 – GP].

Sub-theme 4.3: legal and ethical considerations (duty of care)

A major roadblock and central concern highlighted was the legal and ethical responsibility (duty of care) for patients without an established GP relationship. Participants expressed significant anxieties, describing it as 'a minefield' and 'a legal issue for GPs', anticipating that 'most GPs probably wouldn't want that extra work' [Speaker 10 – Practice Manager]. The consensus was that if there's no pre-existing relationship, the practice 'has no duty of care to follow that up' [Speaker 5 – GP]. The duty of care, in such cases, was seen as lying with 'the person who took that data in the first place' [Speaker 5 – GP].

The current system, in which pathology and radiology requests are linked to a provider number, was viewed as a means of managing medico-legal liability [Speaker 4 – GP]. To address these concerns, participants proposed several solutions (Table 1). The solutions aim to clarify responsibility, and ensure that patients receive appropriate follow-up care without overburdening existing primary care services or creating unforeseen legal liabilities. Concerns about duty of care are a significant barrier that must be carefully addressed in the program's design and implementation, shaping its overall acceptability and sustainability. Table 2 summarises the Care2U model, distinguishing elements that were prespecified before the focus group from those identified/refined/clarified/proposed through the focus group discussion.

Discussion

The findings of this study resonate with and extend existing research on community-based outreach screening. Although previous programs have demonstrated success in improving access and early detection of disease, participants in this study identified persistent barriers related to workflow integration, responsibility for follow up and sustainability. These findings explain why many outreach models, despite strong initial engagement, struggle to achieve lasting integration with

Table 1. Proposed solutions to address the perceived barriers.

Proposed solution	Narrative
Robust consent processes	Patients should be explicitly asked who they would like to receive any abnormal results from and be informed of follow-up, making this part of the study protocol and consent [Speaker 5 – GP]. A 'two-stage consent process' was suggested, where a practice consents to the outreach screening team identifying whether a patient is in its practice system, and, if a match is found, the practice explicitly accepts the information [Speaker 2 – Health Informatics Professional].
Telehealth GP support	Establishing pre-arranged telehealth GP providers who are expecting to take over care for patients without a usual GP was seen as 'very viable' [Speaker 6 (Nurse), Speaker 2 (Health Informatics Professional)].
Patient's onus for follow up	Another suggestion was to place the onus on the patient to follow up with a nominated provider by handing them all results to take to their preferred GP [Speaker 7 – GP].
Phased implementation	Starting with patients already linked to a GP practice for a pilot phase was recommended to simplify duty-of-care complexities and enable robust testing of the data integration system. This does not negate the broader model's intent, but evaluates a phased implementation approach to test feasibility while building capacity.

Table 2. Descriptions of the proposed care model domains and components.

Domain	Care2U model component	Description	Status in this study
Purpose	Program aim	To extend preventive screening for diabetes and cardiovascular disease into rural communities and integrate screening findings into general practice through a closed-loop communication system that supports follow-up and continuity of care.	Pre-specified
Target population	Community members aged ≥ 30 years	Rural residents attending community screening sites, including individuals with and without an established general practitioner. Additional identification of at-risk patients may be performed using GP practice databases and predefined risk criteria.	Pre-specified and expanded by the focus group
Screening setting	Community-based outreach	Screening conducted outside general practice clinics, using a mobile outreach service (e.g. a van) or existing community infrastructure (e.g. nurse stations in rural community centres), depending on local context.	Pre-specified
Screening personnel	Outreach screening team	Trained clinical staff affiliated with the research program, not routine general practice staff, will be responsible for conducting screening and initial triage of abnormal findings.	Pre-specified
Screening scope	Biomedical measures	Blood pressure, anthropometry, blood glucose (glycated haemoglobin), lipid profile, and calculation of cardiovascular and diabetes risk scores using standardised tools.	Pre-specified and expanded by the focus group
Extended screening considerations	Lifestyle and contextual factors	Collection of lifestyle risk factors (e.g. smoking, alcohol use, physical activity, family history) to support holistic risk assessment and preventive counselling.	Suggested by the focus group
Heart rhythm screening	Targeted atrial fibrillation screening	Optional, targeted use of ambulatory ECG monitoring for selected high-risk individuals (e.g. CHA ₂ DS ₂ -VASc ≥ 2), recognising feasibility constraints in rural settings.	Refined by the focus group
Data management	Digital data capture	Screening data captured electronically at the point of care to enable structured reporting and downstream integration with primary care systems.	Refined by the focus group
Integration mechanism	Closed-loop communication	Screening results will be transmitted directly into general practice clinical software (e.g. the investigation or pathology inbox), mirroring existing workflows and avoiding the need for duplicate systems.	Identified and clarified by the focus group
Responsibility for urgent findings	Immediate escalation	The outreach team is responsible for recognising urgent abnormal findings and initiating real-time communication (e.g. by phone) and referral to emergency care or to appropriate clinicians.	Clarified by the focus group
Responsibility for non-urgent findings	Shared follow-up pathway	Non-urgent results will be integrated into GP systems for review and follow up in accordance with usual practice workflows, with clear delineation of responsibilities.	Clarified by the focus group
Unaffiliated patients	Follow-up pathways	Explicit consent processes, patient nomination of a provider, potential use of telehealth GPs or phased pilot implementation to manage duty-of-care risks.	Proposed by the focus group
Governance and medico-legal considerations	Duty of care	Clarification that responsibility for follow up rests with the initiating service until care is formally transferred, particularly for patients without an existing GP relationship.	Proposed by the focus group
Implementation approach	Phased rollout	The initial implementation may prioritise patients already linked to participating general practices to test systems before a broader community rollout.	Proposed by the focus group
Evaluation focus	Program outcomes	Tracking of screening findings, follow-up actions, confirmed diagnoses, and continuity of care to assess acceptability, feasibility and sustainability.	Clarified by the focus group

primary care. By foregrounding the need for closed-loop communication, alignment with existing general practice systems and explicit clarification of the duty of care, the Care2U model addresses the limitations reported in earlier outreach initiatives. Viewed in this context, Care2U does not seek to replace existing screening approaches, but to address the structural and organisational mechanisms that have historically constrained their effectiveness.

The multidisciplinary focus group perceived the values, benefits and acceptability of the proposed Care2U outreach program. The perceived benefits resonate with the Australian Government-initiated HHC (Chapman *et al.* 2023), which was

recently extended for another three years until 2028 (Heart Foundation of Australia 2025). However, the HHC program does not systematically report its impacts, such as the findings and outcomes of HHC-detected medical conditions. The Care2U program could address gaps in HHC by integrating diabetes and CVD screenings, and by designing a system that enables closed-loop communication to follow up with screened individuals and report their outcomes. The primary objective of Care2U is to identify individuals at increased risk and support timely engagement with preventive care through integrated follow-up mechanisms. At this design stage, success is defined by process indicators, such as completion

of follow-up, confirmation of diagnoses, initiation of recommended care and integration of screening outcomes into patients' medical records. Although the model may also support generating summary reports based on these indicators for service monitoring, this function is secondary to its preventive care intent.

Macro level (structural and policy context)

At the macro level, workforce shortages and under-resourcing in rural and remote regions form a persistent structural context within which preventive care is delivered, rather than discrete problems that can be resolved by a single service model. Participants consistently described how limited workforce availability, geographic distance, and fragmented digital infrastructure constrain access to timely preventive care and follow up, particularly for populations living outside metropolitan centres. These conditions align with national evidence showing that rural and remote communities experience poorer health outcomes and reduced access to primary care, reinforcing the observation that geographical location remains a key determinant of health outcomes (Australian Institute of Health and Welfare 2025).

Importantly, the Care2U model does not aim to resolve workforce issues. Instead, Care2U could operate within these structural constraints to mitigate access gaps created by workforce maldistribution. Care2U is a complementary outreach approach that extends preventive screening to communities with limited routine access to general practice, thereby reducing reliance on already overstretched local services. By shifting selected preventive activities into community settings and digitally integrating results back into primary care, the model could enable more efficient use of existing workforce capacity.

Participants also emphasised that the perceived value of Care2U lay in its alignment with broader system realities, including the need to prioritise continuity of care and avoid creating parallel services that further fragment the health system. In this sense, Care2U was viewed as addressing health inequities indirectly, by improving reach, coordination and follow-up. This interpretation is consistent with international guidance that highlights the role of integrated, digitally supported outreach models in strengthening primary healthcare systems under conditions of constrained workforce capacity (World Health Organization 2025).

Meso level (organisational and practice dynamics)

At the meso level, organisational challenges include workflow, integration and responsibility. Participants emphasised the need for seamless interoperability with existing GP systems, as any duplication or additional administrative burden was deemed undesirable. In Australia, national systems, such as My Health Record, enable information sharing and currently function primarily as unidirectional repositories for uploaded documents (Australian Government 2026). In contrast, the

proposed Care2U model encompasses bidirectional systems that support closed-loop communication, acknowledgement and follow up within general practice workflows.

Issues of 'duty of care' and medico-legal liability were identified as central concerns, particularly when screening unaffiliated high-risk individuals not currently linked to a GP (Bryden and Storey 2011). These concerns, which have been raised previously (Raveesh *et al.* 2016; Sinha *et al.* 2022), expose the organisational logics and institutional norms that mediate whether programs, such as Care2U, are adopted and embedded. Furthermore, discussions on logistics, such as the frequency of visits, community engagement strategies and the feasibility of mobile technology, reveal that sustainability depends on aligning outreach activities with the workflows and capacities of existing healthcare practices. Partnerships with health informatics organisations and telehealth providers were viewed as possible mediating structures that could bridge gaps between outreach and primary care, but only if trust, accountability and clear role delineations are established.

Micro level (individual experiences and agency)

At the micro level, practitioners' voices reflected both enthusiasm and apprehension about their roles in Care2U. Participants expressed strong support for preventive care and early engagement with at-risk populations, including families and Aboriginal and Torres Strait Islander communities, but they were equally candid about the risks of overwhelming already stretched GPs. Their insights revealed the tension between professional commitment to patient care, and the realities of workload and time scarcity (Sinnott *et al.* 2022). The discussion also highlighted patients' agency, particularly unaffiliated individuals, who may resist or disengage from follow-up care. Proposed solutions, such as patient consent, responsibility for follow-up and telehealth linkages, demonstrate how practitioners sought to redistribute agency among patients, outreach teams and GP services. Ultimately, it is at this micro level that the success of Care2U will be tested – through practitioners' and patients' willingness to engage, comply and adapt to new models of care.

The critical realism perspective demonstrates that the acceptability, feasibility and sustainability of Care2U are contingent on addressing structural inequities, embedding outreach within existing organisational systems, and supporting the agency of practitioners and patients to ensure effective continuity of care (Wong 2024). This multi-layered understanding underscores the necessity of designing Care2U not only as a service, but as a sociotechnical intervention that must navigate the interplay of policy, organisational and individual factors.

Taken together, the barriers identified by participants across macro, meso and micro levels do not represent implementation failures, but rather illuminate the structural, organisational and relational design constraints that informed the refinement of

Table 3. Strengths and limitations of the proposed Care2U model of care.

Strengths	Limitations
The proposed Care2U model represents an innovative approach to preventive healthcare delivery by integrating community-based screening with general practice.	Participants were recruited via email dissemination to clinicians and practice staff within a single health informatics organisation, which may limit representation from other organisations and contexts.
The in-depth focus group included a multidisciplinary health team (GPs, nurses, practice managers and informatics professionals) from both rural and metropolitan settings, providing diverse and constructive perspectives.	Patients were not included in this design phase. The findings primarily reflect professional perspectives on feasibility, workflow integration, medico-legal responsibility, and system sustainability rather than patient perceptions. Patient involvement will be essential in subsequent phases to ensure responsiveness to community needs and equitable uptake.
Direct involvement of a health informatics organisation in co-design with clinicians and users enabled development of practical, workflow-relevant insights grounded in real-world system use.	The proposed phased implementation (i.e. starting with patients already linked to a GP practice for a pilot phase) approach does not fully align with the broader objectives of Care2U; however, the feasibility of the model will be assessed as capacity is built for a wider rollout in the future.
The qualitative study design and analysis were structured across macro, meso and micro levels using a critical realist framework, enabling identification of actionable insights for future system design, implementation and evaluation.	Findings were based on a discussion of the proposed Care2U model; real-world implementation may differ and will require further qualitative evaluation post-implementation.

the Care2U model. The strengths and limitations of the Care2U model are summarised in Table 3.

Conclusions

This qualitative evaluation highlights the promise of the Care2U model for addressing longstanding health inequities in rural Australia. The findings reveal strong support for its preventive potential, but also significant concerns about integration, workload and medico-legal responsibility. The medico-legal and logistical ‘roadblocks’ identified by participants constitute critical parameters for developing a safer, more sustainable model. For example, rather than seeing the issue of ‘unaffiliated patient’ as a failure of the model, it became a minefield that led to the co-design of two-stage consent processes and the proposal for telehealth GP support, which are innovative solutions to bridge the duty-of-care gap. Another concerns GP workload, which led to refining the model to ensure seamless software integration and to mirror existing pathology workflows to prevent administrative duplication. The identified technological barriers, including limited ECG signal transmission via the internet in remote areas, led to the proposal of local device data storage to ensure the technology is tailored to the real-world rural environment.

Viewed through a critical realist lens, the program’s success depends on negotiating macro-level structural barriers, aligning with meso-level organisational practices, and enabling micro-level engagement among clinicians and patients. By embedding closed-loop communication, clarifying roles and responsibilities, and leveraging health informatics and telehealth support, Care2U offers a feasible pathway to strengthen continuity of care, and to facilitate early diagnosis and treatment of diabetes and CVD in underserved populations. This model of care has the potential to be adapted to screen for other guideline-driven medical conditions.

Supplementary material

Supplementary material can be accessed from the article page online.

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Author reflexivity. KCW is currently a senior research fellow at the university. He was a GP with 20 years of clinical experience. He has experience in designing and implementing qualitative research as part of his PhD studies with a particular focus on cardiovascular disease. ULO is an experienced researcher in public health and rural health. He has extensive expertise in designing population-based approaches to disease prevention, with a particular focus on diabetes. EW is a PhD candidate. She has extensive knowledge and skills in the design and implementation of health informatics in primary care. YB is a project manager at the health informatics organisation. He recruited participants and assisted with the focus group. TMC is a rural clinician and academic with extensive knowledge and experience in healthcare delivery and evaluation in rural settings. DM oversees project administration and completion, and is interested in evaluating healthcare delivery systems.

Data availability. The data used to generate the results in the paper are provided in the supplementary materials.

Conflicts of interest. All authors declare no conflicts of interest.

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Author contributions. The team (KCW, ULO, EW, YB, TMC and DM) participated in the conceptualisation of the research project). KCW, ULO, EW and YB designed the focus group facilitation guide, and conducted the focus group discussions. KCW checked the accuracy of the transcript against the audio recordings. KCW and ULO coded the transcript independently, and reached consensus on the codes and themes through discussion. KCW and ULO shared first authorship and drafted the manuscript, which was reviewed and approved by the team.

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