Chapter 7: Formulation

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Making a correct diagnosis is a necessary first step when planning clinical management, however, it is insufficient for the development of a comprehensive management plan. This is because a diagnosis does not inform us about *why* a person develops a disorder, *what* the underlying vulnerabilities are, or indeed *which* factors are maintaining the symptoms. In management planning we need to have a more detailed understanding of why the individual before us is presenting with a particular set of symptoms or problems, and formulate what it is they are suffering from. This is where a formulation is helpful as it facilitates a comprehensive understanding of the patient, and importantly, where to target specific interventions to help the patient most effectively.

The origins of psychiatric disorders are complex and multifaceted. Their development is rarely attributable to a single cause and often involves interactions between an individual's biology (genetic predisposition), psychological makeup (including personality, coping mechanisms and thinking styles) and their social environment as well as their support networks. Therefore, to understand a patient comprehensively requires making use of the *biopsychosocial model*. This model was

introduced by George Engel (a psychiatrist and a physician), as a result of his dissatisfaction with the basic biomedical model of disease, which he regarded as insufficient to explain, or understand, psychosomatic disorders (Engel, 1977).

Formulation Strategies

The essence of being able to formulate a patient lies in careful history taking (formally known as anamnesis). The psychiatric history needs to be more than just eliciting the current symptoms the patient is manifesting - a *cross-sectional* approach that is necessary to make a DSM diagnosis but one that tells us little else. Instead, we need to adopt a *longitudinal* approach to explore what predisposes the person to develop a psychiatric disorder and what triggers there are for the onset of the disorder. To do this a detailed family and developmental history is essential as it provides the necessary context to understand the individual's present predicament and future life trajectory. Here we need to cast the net wide and search for the full range of biological, psychological, social and cultural factors that could play a part in the patient's illness.

The Five P's

The formulation makes use of the 5 'Ps' approach, trying to tease out **p**redisposing, **p**recipitating, **p**erpetuating and **p**rotective factors that contribute to the presenting **p**roblem (see Figure 7.1). There is another P that describes the pattern of illness, and this is particularly important for those with recurrent illnesses (see chapters on Depressive Disorders and Bipolar Disorder). Once all the necessary information has been gathered it is then possible to construct a formulation grid (see Table 7.1).

Table 7.1. The formulation grid.
A typical example of factors that may impact the manifestation of a psychiatric disorder are shown.

	Predisposing	**Precipitating**	**Perpetuating**	**Protective**
Biological	*Mother has Psychiatric disorder*			
Psychological		*Recent loss of father*		*Psychologically minded and resilient*
Social			*Work related stress*	*Supportive partner*

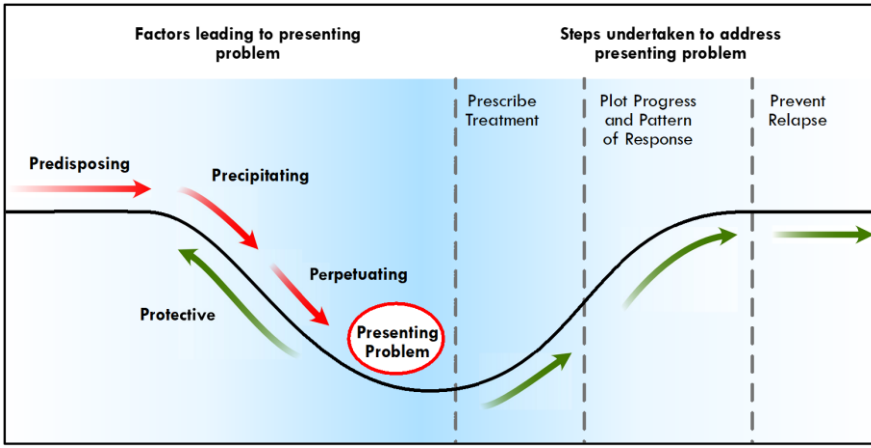

Figure 7.1. 5P Model. In this figure an expanded version of the conventional 5P Model approach to formulation is shown, which includes the three phases of management , adapted from Malhi et al. (2015).

Predisposing Factors

Individuals are predisposed to developing a psychiatric disorder if they have been exposed to, or inherited, a risk factor distal to the onset of the disorder. Identifying predisposing factors requires taking a careful developmental history that assumes a longitudinal perspective (see Figure 7.2 below). The aim is to find elements in the patient's life story that may have contributed to their vulnerability to develop a psychiatric disorder. This requires using open ended questions enquiring about the patient's cultural background, socioeconomic status, family environment, schooling, social networks, intimate relationships, personality functioning and coping mechanisms as well as pursuing biological factors such as genetic endowment, physical illness and exposure to potential neurotoxins such as alcohol, tobacco and illicit substances.

While listening to their history, it is important to start considering hypotheses about possible predisposing factors that can then be tested out by formulating more targeted questions to the patient. These risk factors will have an evidence base coming from longitudinal cohort studies, family studies, twin studies and epidemiological studies that identify risk factors for specific illnesses.

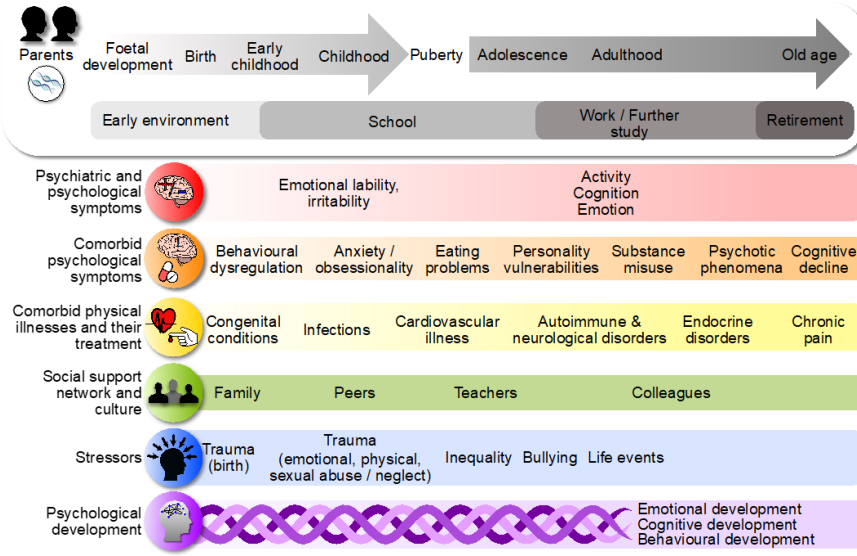

Figure 7.2. An example of predisposing factors for a patient with a mood disorder, from Malhi et al. (2020). A framework for assessing the clinical factors that contribute to depression. The growth and development of an individual is depicted at the top of the figure and this 'life-line' provides a timeframe for changes across a number of domains. The domains are shown on the left and within these key aspects that should be considered and assessed are depicted according to the approximate stage of life. This then provides a framework for eliciting the clinical factors that can putatively contribute to the development and maintenance of depression.

When adopting a biopsychosocial (and cultural) approach it is important to keep in mind that there is an interplay between biological factors, the social environment, and internal psychological factors as these are not independent factors and they cannot be fully compartmentalised. For example, socioeconomic disadvantage (a social factor) can be a risk factor on its own, but we know that it also contributes to chronic illness, which may then further contribute to the risk of developing a mental illness. Even a seemingly distinct psychological risk factor such as the personality trait of shyness is likely to be associated with the individual having a limited social network, which is, in and of itself, a risk factor for mental illness.

There are several predisposing risk factors for the development of a psychiatric disorder that should be considered when taking a history. Table 7.2 lists the major domains of predisposing factors, with some select examples in each.

Table 7.2. Examples of Predisposing Factors.

Biological	Genetic endowment *(e.g. family history of schizophrenia)*
	Neurodevelopment
	Intrauterine *(e.g. maternal influenza)*
	Brain trauma/injury *(e.g. hypoxia)*
	Physical health *(e.g. chronic disease)*
	Medication *(e.g. steroids)*
	Illicit drugs and alcohol *(e.g. methamphetamine)*
Psychological	Temperament *(e.g. impulsivity)*
	Attachment style *(e.g. anxious attachment)*
	Loss (*e.g. bereavement*)
	Childhood adversity *(e.g. childhood abuse)*
	Intelligence *(e.g. intellectual disability)*
	Health literacy *(e.g. treatment non-adherence)*
	Personality style *(e.g. neuroticism)*
	Self-identity *(e.g. risk taker)*
	Self-esteem
	Habits (*e.g. gambling*)
Social	Socio-economic *(e.g. poverty)*
	Housing *(e.g. homelessness)*
	Socio-cultural *(e.g. marginalisation)*
	Migration
	Religious affiliation *(e.g. persecution)*
	Family environment *(e.g. dysfunction and conflict)*
	Interpersonal relationships *(e.g. domestic violence)*
	Social network *(e.g. limited social support)*
Lifestyle	Activity level *(e.g. sedentary lifestyle)*
	Diet *(e.g. unhealthy diet)*
	Sleeping pattern *(e.g. poor sleep hygiene, insomnia)*
	Social media *(e.g. excessive use)*
	Substance use
	Smoking
	Alcohol use

Precipitating Factors

In addition to identifying predisposing factors, it is important to work out what has led to the illness now. In other words, what has precipitated the illness? Can you identify the potential precipitating factors that have led to the onset of the illness. This requires taking a detailed account of any life events that may have

happened prior to the onset of symptoms. It is also important to find out if there have been any changes in the person's life (such as physical illness) or a change in their medication, as is often the case in severe mental illness. Select examples of precipitating factors are shown in Table 7.3.

Table 7.3. Examples of Precipitating Factors.

Biological	• Medical illness
	  ○ Infections
	  ○ Inflammation
	  ○ Childbirth
	• Medications
	• Non-adherence to medication

Psychological	• Interpersonal conflict
	• Severe trauma
	• Family conflict
	• Experience of loss or significant change in
	  ○ Relationship
	  ○ Occupation
	  ○ Retirement

Social	• Relationship problems • Community discord/unrest
Socioeconomic	• Unemployment • Homelessness
Lifestyle	• Substance misuse • Alcohol misuse • Sleep dysfunction

Perpetuating Factors

Once a disorder emerges and becomes established, there are a range of factors that may maintain the illness. Such perpetuating factors need to be addressed to achieve full remission, recovery and ultimately return to full functioning. Select examples of perpetuating factors are shown in Table 7.4.

Table 7.4. Examples of Perpetuating Factors.

Biological	• Physical illness/comorbidity
	• Medication
	  ○ Non-adherence
	  ○ Insufficient dose
	  ○ Pharmacokinetic problems
	  ○ Incorrect medication
	  ○ Non-psychotropic drugs maintaining illness

Psychological	• Illness behaviour ○ Malingering • Denial • Poor mental health literacy • Lack of insight
Social	• Poor social support • Family disharmony • Relationship problems • Domestic Violence • Lack of access to care e.g. because of rurality • Inability to afford care • Unemployment • Poverty • Homelessness • Marginalisation
Lifestyle	• Substance misuse especially alcohol • Smoking • Poor sleep hygiene • Poor diet • Lack of exercise

Protective Factors

As well as determining risk factors it is important to identify the elements in a person's life that are protective and shield the patient against the development or recurrence of a mental illness. Once again, the protective factors that need to be considered, can be grouped using the biopsychological and lifestyle framework (see Table 7.5). It is essential to emphasise these in management planning, as the protective factors can be developed and/or enhanced to engender greater resilience. These protective factors contribute to the broader construct of

resilience, which has in-built (intrinsic) components in addition to those that are acquired through experiences. For further information on resilience, see Malhi et al. (2019).

Table 7.5. Examples of Protective Factors.

Biological	• Healthy • Intact cognition • Accepting of medication
Psychological	• Mental health literacy • Effective coping strategies • Able to establish working therapeutic relationship
Social	• Strong and diverse social support network • Supportive intimate relationship • Supportive family • Supportive work environment • Stable housing • Financial stability • Access to mental health services
Lifestyle	• Exercising • Healthy diet • Good sleep hygiene and quality sleep • Not drinking alcohol to excess • Not smoking or taking illicit substances

Formulation

After teasing out the predisposing, precipitating, perpetuating factors that are contributing to the patient's current illness, along with the protective factors that will assist the patient's recovery, the various pieces of relevant information need to be integrated to provide a cohesive narrative that explains the person's current circumstances and how their current situation has come about. If done properly, this should provide a useful framework upon which a clear management plan for the patient can be constructed. We have provided a relatively straightforward example (See below).

Formulation Example

John is a 24-year-old single unemployed male who has presented with a relapse of schizophrenia (hallucinations, delusions and thought disorder). These symptoms emerged one month after he was made redundant from his job as a labourer (*psychological/social precipitant*). After he lost his job, he stopped taking his antipsychotic medication as he thought it wasn't helping him (*biological precipitant*) and since then he has started to use methamphetamine (*biological precipitant*).

He was first diagnosed with schizophrenia two years earlier and made a good response to antipsychotic medication and had been functioning well in his job. He formed a positive and supportive relationship with his psychiatric case manager.

He has a *genetic vulnerability* for schizophrenia as his father has schizophrenia for which he has received treatment. His early life was characterised by family dysfunction, with little parental care *(social predisposing factor)*. School was difficult because of being marginalised and his family having financial hardship. He found it difficult to make close friends and was bullied *(social predisposing factors)*. Adolescence was characterised by poor school performance *(psychological predisposing factor)* and experimentation with illicit drugs *(biological predisposing factor)*. After school, he was only able to hold down unskilled work and had fleeting intimate relationships.

Protective factors are that when John was engaged with treatment, he adhered to medication (*biological protective factor*) and with the support of his case manager (*social/psychological protective factor)* he is able to cease substance misuse (*biological protective factor*.).
Therefore, in sum, he has schizophrenia, which is responsive, and provided substance misuse can be avoided he is likely to benefit from medication in conjunction with psychosocial interventions.

For further, comprehensive examples of case formulations: (**https://onlinelibrary.wiley.com/doi/10.1111/bdi.13350**).

Conclusion

Eliciting the signs and symptoms of mental illness (anamnesis) and conducting a mental state examination can be regarded as threads, each providing a theme that contributes to an overall story – the narrative that the person experiences. Weaving all these threads together to create a tapestry that accurately

reflects the person's life is the sophisticated process of formulation. Diagnosis sits within formulation and although it informs treatment to some extent, it is formulation that provides the basis for a comprehensive management plan – one which draws on the past and present to meaningfully prognosticate.

Further Reading

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