



Formulation and the Biopsychosocial Model: Introduction for Psychiatry Residents

Summary: The biopsychosocial model is an interdisciplinary way of understanding a patient beyond simply a diagnosis or label, to being able to understand them from a holistic view. It allows you to treat and support the person, rather than just simply a diagnosis.

What is the Biopsychosocial Model?

The biopsychosocial model is an interdisciplinary way of understanding a patient beyond simply a diagnosis or label, to being able to understand them from a holistic view. It allows you to treat and support the person, rather than just simply a diagnosis.

It is about "What's going on with this person?" as opposed to "What's wrong with this person?"

First proposed by Engel (Engel, 1977) and expanded over time to include more and more factors, the model comprises:

Biological factors:	<ul style="list-style-type: none"> • Genetic factors • Medications • Environmental and ecological factors <ul style="list-style-type: none"> ◦ E.g. influence of the built environment, nature, and global warming on health.
Physical health	<ul style="list-style-type: none"> • Psychological factors: • Coping skills, personality styles, self-esteem, the person's thoughts, feelings, behaviour
Social factors	<ul style="list-style-type: none"> • Socioeconomic status (SES), relationships, school, work • Societal factors including racism, systemic oppression, colonialism • Spirituality, the need to see beyond yourself, and to see how you are interconnected to others, your community, the world and beyond

What is Formulation?

Formulation is your clinical impression on:

- How the patient got to be where they are right now
- How to best help the patient

Royal College Psychiatry Competences

From the Royal College

http://www.royalcollege.ca/rcsite/documents/ibd/psychiatry_otr_e.pdf

PSYCHIATRY COMPETENCIES

Upon completion of residency training, Psychiatrists will have developed a range of specific competencies in multiple domains described as follows:

- Introductory knowledge: Able to recognize, identify, or, describe principles.
- Working knowledge: Able to demonstrate core aspects of Psychiatry, such as basic interviewing, **problem formulation**, and treatment. The resident can understand the scientific literature.

Objectives of Training in Psychiatry (2015)

- 3.8 Demonstrate proficiency in effective clinical problem solving and judgment to address patient problems, including interpreting available data and integrating information to generate differential diagnosis and management plans
- **3.8.1. Integrate and present a biopsychosocial understanding**
- **3.8.2. Develop and implement an integrated biopsychosocial treatment plan**

Case: Cinderella, 20-yo female with depressed mood

Cinderella T. is a 20-ish year old female who is referred to you by her family physician for depression.

C's goal is: "I want to be happy again, and stop crying all the time..."

Identifying data	25-year old female living with: <ul style="list-style-type: none"> • Evil stepmother • Two evil step siblings
Work	Domestic servant in her own home
Schooling	Did not go past high school
Presenting complaint	"I'm depressed... Will I ever be saved from this suffering?"
HPI	Numerous adverse childhood experiences (ACEs) Early loss of mother Father remarried to an evil stepmother, then father died Currently lives at home with stepmother, her two stepsiblings, and works long hours doing house chores

You perform a comprehensive psychiatric evaluation.

She meets criteria for major depressive disorder.

Q. How are you going to formulate this case?

The 5 P's

The Five P's of Case Formulation (Macneil et al., 2012)

Presenting problem	<ul style="list-style-type: none"> • What are the client's: <ul style="list-style-type: none"> ◦ Problems? ◦ Client's perspective of the problem ◦ DSM-5 diagnoses • Goals <ul style="list-style-type: none"> ◦ What are the goals from a psychiatrist's perspective? The goals of the referral source?
Predisposing factors:	<ul style="list-style-type: none"> • Factors that have happened in the past which contribute to the development of the problem • Example: <ul style="list-style-type: none"> ◦ Family and genetic history of vulnerability to psychosis ◦ Adverse childhood experiences and early trauma ◦ Poverty, systemic racism, oppression and colonialism
Precipitating factors	<ul style="list-style-type: none"> • Why now? What are the current factors or stressors that triggered the current problem at this time? • Example: <ul style="list-style-type: none"> ◦ Recent breakup in a relationship triggers the patient's current depression ◦ Recent use of marijuana triggers the patient's psychosis ◦ Recent start of school year triggers anxiety
Perpetuating factors	<ul style="list-style-type: none"> • These are any issues that contribute to the problem continuing • Think about chronic stresses such as <ul style="list-style-type: none"> ◦ Ongoing conflict between the patient and family members ◦ Using marijuana to deal with anxiety, however the marijuana only ends up adding to the anxiety
Protective factors	<ul style="list-style-type: none"> • What are the positives in this situation? • What are the strengths that we can draw upon? <ul style="list-style-type: none"> ◦ Resiliency factors such as <ul style="list-style-type: none"> ■ Healthy relationships, connection with work, school ■ Healthy coping strategies

History: Interviewing with the Biopsychosocial Model and Case Formulation

In order to be able to use the biopsychosocial model and do case formulation, one needs to do a comprehensive psychiatric history, and not simply a DSM-5 symptom checklist.

Sample questions that ask about the 5 P's across biological and psychosocial domains are:

	Biological	Psychosocial
Problem	<p>What are the patient's physical health problems?</p> <p>What are the patient's goals or hopes, i.e. what would they like to see different with their physical health?</p>	<p>What are the patient's emotional, behavioural, psychological problems or distress?</p> <p>What would the patient like to see different?</p>
↓		
Predisposing	<p>Any medical issues?</p> <p>Any conditions that run in the family?</p>	<p>What was your childhood like? What were the positives? Negatives? E.g. Any early losses or trauma? What were things like with your mom? Your dad? Any other key adults in your childhood?</p>
↓		
Precipitating	<p>Around the time when the problems started, any changes with your physical health? Medications?</p>	<p>Around the time when the problems started, were there any particular stresses? Relationships stresses, work, school stress?</p>
↓		

Perpetuating ↓	Since the problem started, any new physical issues getting in the way? Any old physical issues?	Since the problem started, any new stresses getting in the way of things? Any old stresses?
Protective	Any drug or alcohol use? How is your overall health?	How do you normally cope with stress? E.g. healthy strategies or not so healthy strategies? Who are the most important people in your life?

Case Formulation with the Biopsychosocial Model

The biopsychosocial model ensures that your case formulation will be holistic, and will capture biological, psychological and social factors.

Here is the classic grid model of biological, psychological, social factors, along with the 4 P's. Factors include (but are not limited to) the following

	Biological	Psychological	Social
Predisposing ↓	<ul style="list-style-type: none"> • Sensitive temperament 	<ul style="list-style-type: none"> • Invalidating environment, i.e. mismatch between child's needs and environment • Insecure attachment 	<ul style="list-style-type: none"> • Poverty • Systemic racism, oppression, colonialism • Low SES • Lack of spirituality • Gender
Precipitating ↓	<ul style="list-style-type: none"> • Any acute change in physical status, e.g. medical illness? • Alcohol, drugs, medications? • Change in seasons (i.e. sunlight)? 	<ul style="list-style-type: none"> • Losses, separation • Conflicts 	<ul style="list-style-type: none"> • Losses or separations from supportive family or friends • Recent immigration • Loss of school, work, income • Parental separation/divorce
Perpetuating ↓	<ul style="list-style-type: none"> • Any medical issues? • Medication issues? • Substance use? 	<ul style="list-style-type: none"> • Any ongoing relationship stresses, e.g. conflict, losses? • Unhealthy coping strategies, e.g. avoidance, addictive behaviours 	<ul style="list-style-type: none"> • Lack of school, employment, relationships, or lack of social resources • Recent immigration • Poor finances • Long hours of work • Isolation, unsafe environment • Excessive screen use • Societal oppression, colonialism
Protective ↓	<ul style="list-style-type: none"> • Physically healthy • Good IQ • Easy temperament • Abstaining from drugs / alcohol 	<ul style="list-style-type: none"> • Positive coping strategies such as altruism • Psychologically minded 	<ul style="list-style-type: none"> • Positive connections to people, activities, community, spirituality • Positive school, work, social relationships • Financial resources • Having health providers

Standard Script or Template

Here is an example of some useful phrases that you might use when doing a verbal presentation:

- “This is a (age of patient) who presents with signs/symptoms of depression.
- She may be predisposed by the following factors....
- The current problems with (depression) appear to be precipitated or triggered by....
- Furthermore, factors that maintain the problems may be....
- Fortunately, despite the (depression), there are various protective factors such as....”

How to Present Your Formulation: Verbal Presentation

Here is an example of how one might do a verbal presentation in our case example, Cinderella...

Brief summarizing statement	“This is a 25-year old female who presents with signs and symptoms that meet criteria for major depressive disorder.”
Predisposing factors	“She is predisposed from....” <ul style="list-style-type: none"> • Early losses such as her mother
Precipitating factors	“Her current episode appears to be precipitated by...” <ul style="list-style-type: none"> • Losing her father, which has led her to experience the world as an unsafe place, and leaving her to feel abandoned by the double loss of mother, father, without any other protective attachments to buffer the loss.
Perpetuating factors	“Her difficulties are perpetuated by an unsupportive stepmother, unsupportive siblings, and domestic servitude, with having to work long hours for little pay.
Protective factors	“Fortunately, despite her difficulties with depression, she does have positive coping strategies in that” <ul style="list-style-type: none"> • She has not turned to negative coping strategies such as substance use • She is hardworking, patient, and kind and • She has a fairy Godmother and future Prince who will be able to support her through her difficulties.
Treatment plan	In terms of the treatment plan, here are my recommendations <ul style="list-style-type: none"> • Collateral history • Lifestyle recommendations <ul style="list-style-type: none"> ◦ Ensure adequate sleep ◦ Ensure adequate healthy nutrition • Relationship recommendations <ul style="list-style-type: none"> ◦ Improve her connection with healthy adults, such as through connecting her with her fairy godmother, and the Prince. • School/work recommendations <ul style="list-style-type: none"> ◦ She has a hostile living and work environment, and it is recommended that <ul style="list-style-type: none"> ■ She receive assistance in finding alternate housing; ■ She receives assistance with financial support, and eventually finding a new employment and/or returning to school to upgrade her skills. • Psychotherapy / treatment recommendations <ul style="list-style-type: none"> ◦ Given that she has troubles with self-regulation, she might benefit from DBT ◦ Given that she has troubles with cognitive distortions that contribute, she may benefit from CBT • Medications <ul style="list-style-type: none"> ◦ In the event that non-medication strategies are unsuccessful, then consider medication ◦ First line options include SSRI.

Principles:

- Be respectful and tentative in order to avoid sounding arrogant, e.g. “I wonder if...” “It is possible that...” (as opposed to being definite...)

How to Present Your Formulation: Your Write Up in the Psychiatric Assessment

Writing up your formulation in the psychiatric assessment is similar to the verbal presentation. It will naturally be more brief and concise, given that it is a write up.

Treatment Recommendations

A good biopsychosocial formulation helps you come up with a comprehensive, holistic treatment plan. Here is an example of a set of treatment recommendations:

- Disposition
 - What level of care is required?
 - Outpatient care, or
 - Day treatment program, or
 - Inpatient care
- Psychotherapy
 - Types of therapy
 - CBT
 - DBT
 - Attachment, interpersonal, family therapy
 - Subcortical therapies such as
 - EMDR
 - Brainspotting
- Mental health provider
 - What type of provider is required?
 - Private practice professional
 - Psychologist
 - Psychiatrist
 - Social worker
 - Registered psychotherapist
 - Occupational therapist
 - Community-based mental health services
 - Tertiary care services
- Biological / Lifestyle recommendations
 - Ensure adequate nature time
 - Ensure adequate sleep
 - Ensure adequate healthy nutrition
 - Limit excessive technology
- School/work recommendations
 - School
 - School accommodations
 - Liaise with the school
 - Work accommodations
- Medications
 - In the event that non-medication strategies are unsuccessful, then consider medication
 - First line options include SSRI.

Variations on Case Formulation

Case formulations can vary depending on your theoretical orientation whether it is:

- Behavioural

- Cognitive-behavioural
- Psychodynamic
- Attachment-based, etc.

Case: Cinderella, Part 2

Cinderella is a 25-yo female who presents with depressive symptoms.

You do a comprehensive psychiatric evaluation.

You diagnose major depression, as she meets the classic DSM criteria for major depression.

You think about the patient's story, and your comprehensive history, and you come up with the following formulation:

	Biological	Psychological	Social
Predisposing	<ul style="list-style-type: none"> • Extended family history of depression 	<ul style="list-style-type: none"> • Adverse childhood events (ACEs) included early loss of mother 	<ul style="list-style-type: none"> • Always shy and difficulty making social connections
⇓			
Precipitating	<ul style="list-style-type: none"> • Onset of puberty, along with painful menstrual periods 	<ul style="list-style-type: none"> • Loss of father led to world view that "Now I'm all alone, and things will never get better" 	<ul style="list-style-type: none"> • Loss of father
⇓			
Perpetuating	<ul style="list-style-type: none"> • Has been coping with marijuana use; although initially helpful, now it just makes her more depressed. 	<ul style="list-style-type: none"> • Coping style tends to be avoidance, self-blame, which contributes to perpetuate the problem 	<ul style="list-style-type: none"> • Lack of friends, lack of own financial resources
⇓			
Protective	<ul style="list-style-type: none"> • Enjoys long walks in nature, i.e. the woods. 	<ul style="list-style-type: none"> • Compassionate, kind and hardworking 	<ul style="list-style-type: none"> • Fairy Godmother, whom she has not yet met

You ensure a good therapeutic alliance, whereby there is agreement on goals and you create the following treatment recommendations and plan, which you will discuss with the patient in a collaborative manner:

1. Biological recommendations

Non-medication strategies such as

- Sleep hygiene: Instead of going to bed by 12 AM, you recommend sleep hygiene strategies.
- Nature time: Getting more time outside.
- Nutritional strategies: Improving her diet, with less processed foods and increasing fruits and vegetables.

Medication strategies

- Consider the possibility of medications, if other strategies have all been tried without success.

2. Psychological recommendations

Counseling/therapy

- She is interested in having a therapist to talk to and thus you recommend a registered psychotherapist, for which parents have funding for.

3. Psychosocial recommendations

School / workplace accommodations / strategies

- You provide a letter to her school/workplace stating that she has a medical conditions, which requires accommodations such as
 - Reducing her workload;
 - Flexibility with shifts;
 - Ensuring regular breaks to help her self-regulate.

Family interventions

- Improving whatever existing family relationships she has, e.g. (re)connecting her to fairy Godmother

Peer supports

- She is interested in peer support, so you recommend youth-based mental health support.

Suggestions for Learning Formulation

Psychiatry residents have reported the following helpful for learning formulation:

- Watching the HBO series "In Treatment" and formulating the cases
- Watching movies

References

Engel, GI: The clinical application of the biopsychosocial model. Am J Psychiatry 137:535-544, 1980.

Ghaemi SN: Paradigms of psychiatry: eclecticism and its discontents. Curr Opin Psychiatry 19:619-624, 2006

Guerrero, A et al: Use of the Mechanistic Case Diagramming Technique to Teach the Biopsychosocial-Cultural Formulation to Psychiatric Clerks.

McLaren N: A critical review of the biopsychosocial model. Aust NZ J Psychiatry 32:86-92, 1998.

Fleming J, Patterson P: The Teaching of Case Formulation in Canada, Can. J. Psychiatry Vol 38, June 1993.

<https://pubmed.ncbi.nlm.nih.go...>

[Seltzer R, Ellen S: Formulation for Beginners, Australasian Psychiatry, 2014, Vol 22\(4\): 397-401.](#)

Weerasekera, P: Formulation: A multiperspective model. Can. J. Psychiatr, Vol 38(5), Jun 1993, 351-358.

<https://pubmed.ncbi.nlm.nih.go...>

Useful Websites

PsychDB is a website by a Canadian psychiatry resident that has impressive content for psychiatry residents.

<https://www.psychdb.com/teaching/biopsychosocial-case-formulation>

Authors

Written by Dr's Michael Cheng, FRCP(C), Psychiatrist, CHEO, uOttawa; Dhiraj Aggarwal, Psychiatrist, CHEO, uOttawa.

Conflicts of Interest: No competing interests declared.

Disclaimer

This information is offered 'as is' and is meant only to provide general information that supplements, but does not replace the information from a qualified expert or health professional. Always contact a qualified expert or health professional for further information in your specific situation or circumstance.

Creative Commons License

You are free to copy and distribute this material in its entirety as long as 1) this material is not used in any way that suggests we endorse you or your use of the material, 2) this material is not used for commercial purposes (non-commercial), 3) this material is not altered in any way (no derivative works). View full license at <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Addendum: Interviewing Template

Formulation Worksheet

NAME/INITIALS OF CLIENT _____ DATE _____

Problem

What is the Problem?

How can we make this a helpful visit? What is your best hope from coming here today?

Any diagnoses that you have been given already?

What is the Problem

What are the main problems that bring you here?

Predisposing

• Biological

Any medical issues?
Any conditions that run in the family?

• Psychosocial

Any early losses or trauma?
Which adults were you closest to in your childhood?

⇓

Precipitating

• Biological

When the problems started, any changes with your physical health? Physical environment (e.g. winter)? Medications?

• Psychological

When the problems started, what stresses were you under? How were things with your work, school, relationships?

⇓

Perpetuating

• Biological

Any chronic medical issues?

• Psychological

How is your self-esteem? Self-acceptance?
What stresses do you have with people, work, school?

⇓

Protective

- | | |
|-----------------|--|
| • Biological | Any drug or alcohol use?
How is your overall health? |
| • Psychological | How do you normally cope with stress? E.g. healthy strategies or not so healthy strategies?
Who are the most important people in your life? |

Addendum: Blank Grid to Use

	Biological	Psychological	Social
Predisposing			
⇓			
Precipitating			
⇓			
Perpetuating			
⇓			
Protective			