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: | • Genetic factors  
|                     | • Medications  
|                     | • Environmental and ecological factors  
|                     | ▫ E.g. influence of the built environment, nature, and global warming on health.  
| Physical health     | • Psychological factors:  
|                     | ▫ Coping skills, personality styles, self-esteem, the person’s thoughts, feelings, behaviour  
| Social factors      | • 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/lbd/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...”

<table>
<thead>
<tr>
<th>Identifying data</th>
<th>25-year old female living with:</th>
</tr>
</thead>
</table>
| | • 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)
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:

<table>
<thead>
<tr>
<th>Biological</th>
<th>Psychosocial</th>
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<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>What are the patient’s physical health problems?</td>
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<td>What are the patient’s goals or hopes, i.e. what would they like to see different with their physical health?</td>
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<td>Any medical issues?</td>
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<td>Any conditions that run in the family?</td>
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<tr>
<td><strong>Predisposing</strong></td>
<td>Around the time when the problems started, any changes with your physical health? Medications?</td>
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</tbody>
</table>
### 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:

<table>
<thead>
<tr>
<th>Predisposing (Biological)</th>
<th>Precipitating (Psychological)</th>
<th>Perpetuating (Social)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sensitive temperament</td>
<td>• Losses, separation</td>
<td>• Poverty</td>
</tr>
<tr>
<td>• Invalidating environment, i.e. mismatch between child’s needs and environment</td>
<td>• Conflicts</td>
<td>• Systemic racism, oppression, colonialism</td>
</tr>
<tr>
<td>• Insecure attachment</td>
<td></td>
<td>• Low SES</td>
</tr>
<tr>
<td>• Alcohol, drugs, medications?</td>
<td></td>
<td>• Lack of spirituality</td>
</tr>
<tr>
<td>• Change in seasons (i.e. sunlight)?</td>
<td></td>
<td>• Gender</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Perpetuating (Biological)</th>
<th>Precipitating (Psychological)</th>
<th>Perpetuating (Social)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Any medical issues?</td>
<td>• Any ongoing relationship stresses, e.g. conflict, losses?</td>
<td>• Lack of school, employment, relationships, or lack of social resources</td>
</tr>
<tr>
<td>• Medication issues?</td>
<td>• Unhealthy coping strategies, e.g. avoidance, addictive behaviours</td>
<td>• Recent immigration</td>
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<td>• Substance use?</td>
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<td>• Poor finances</td>
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<tr>
<td></td>
<td></td>
<td>• Long hours of work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Isolation, unsafe environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Excessive screen use</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Societal oppression, colonialism</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Protective (Biological)</th>
<th>Protective (Psychological)</th>
<th>Protective (Social)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Physically healthy</td>
<td>• Positive coping strategies such as altruism</td>
<td>• Positive connections to people, activities, community, spirituality</td>
</tr>
<tr>
<td>• Good IQ</td>
<td>• Psychologically minded</td>
<td>• Positive school, work, social relationships</td>
</tr>
<tr>
<td>• Easy temperament</td>
<td></td>
<td>• Financial resources</td>
</tr>
<tr>
<td>• Abstaining from drugs / alcohol</td>
<td></td>
<td>• Having health providers</td>
</tr>
</tbody>
</table>

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**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...

<table>
<thead>
<tr>
<th>Brief summarizing statement</th>
<th>“This is a 25-year old female who presents with signs and symptoms that meet criteria for major depressive disorder.”</th>
</tr>
</thead>
</table>
| Predisposing factors       | “She is predisposed from....
• Early losses such as her mother |
| Precipitating factors      | “Her current episode appears to be precipitated by...
• 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
• 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
• Collateral history
• Lifestyle recommendations
  ◦ Ensure adequate sleep
  ◦ Ensure adequate healthy nutrition
• Relationship recommendations
  ◦ Improve her connection with healthy adults, such as through connecting her with her fairy godmother, and the Prince.
• School/work recommendations
  ◦ She has a hostile living and work environment, and it is recommended that
    ▪ 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
  ◦ 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
  ◦ 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...)
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
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:

<table>
<thead>
<tr>
<th>Predisposing</th>
<th>Biological</th>
<th>Psychological</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Extended family history of depression</td>
<td>• Adverse childhood events (ACEs) included early loss of mother</td>
<td>• Always shy and difficulty making social connections</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precipitating</td>
<td>• Onset of puberty, along with painful menstrual periods</td>
<td>• Loss of father led to world view that “Now I’m all alone, and things will never get better”</td>
<td>• Loss of father</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perpetuating</td>
<td>• Has been coping with marijuana use; although initially helpful, now it just makes her more depressed.</td>
<td>• Coping style tends to be avoidance, self-blame, which contributes to perpetuate the problem</td>
<td>• Lack of friends, lack of own financial resources</td>
</tr>
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<td></td>
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</tr>
<tr>
<td>Protective</td>
<td>• Enjoys long walks in nature, i.e. the woods.</td>
<td>• Compassionate, kind and hardworking</td>
<td>• Fairy Godmother, whom she has not yet met</td>
</tr>
</tbody>
</table>

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


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


https://pubmed.ncbi.nlm.nih.gov...


https://pubmed.ncbi.nlm.nih.gov...

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

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Addendum: Interviewing Template

Formulation Worksheet

<table>
<thead>
<tr>
<th>NAME/INITIALS OF CLIENT _________________________ DATE ____________</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
</tr>
<tr>
<td>What is the Problem? How can we make this a helpful visit? What is your best hope from coming here today?</td>
</tr>
<tr>
<td>Any diagnoses that you have been given already?</td>
</tr>
<tr>
<td>What is the Problem What are the main problems that bring you here?</td>
</tr>
<tr>
<td><strong>Predisposing</strong></td>
</tr>
<tr>
<td>• Biological Any medical issues?</td>
</tr>
<tr>
<td>• Psychosocial Any early losses or trauma? Which adults were you closest to in your childhood?</td>
</tr>
<tr>
<td><strong>Precipitating</strong></td>
</tr>
<tr>
<td>• Biological When the problems started, any changes with your physical health? Physical environment (e.g. winter)? Medications?</td>
</tr>
<tr>
<td>• Psychological When the problems started, what stresses were you under? How were things with your work, school, relationships?</td>
</tr>
<tr>
<td><strong>Perpetuating</strong></td>
</tr>
<tr>
<td>• Biological Any chronic medical issues?</td>
</tr>
<tr>
<td>• Psychological How is your self-esteem? Self-acceptance?</td>
</tr>
<tr>
<td>What stresses do you have with people, work, school?</td>
</tr>
<tr>
<td><strong>Protective</strong></td>
</tr>
</tbody>
</table>

• 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

<table>
<thead>
<tr>
<th>Biological</th>
<th>Psychological</th>
<th>Social</th>
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</thead>
<tbody>
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