# A Biopsychosocial Approach to 6-Year-Old Patient With Impetiginized Atopic Dermatitis: A Case Report

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## Abstract

INTRODUCTION: This case report examines a 6-year-old male patient, with a complex presentation of impetiginized atopic dermatitis. The report adopts a biopsychosocial approach, considering the interplay of biological, psychological, and social factors influencing the patient's condition and management.

METHODS: The case study methodology involved a comprehensive review of the patient's medical history, family background, and current clinical presentation. A multidisciplinary approach was employed, integrating insights from dermatology, pediatrics, psychology, and social work to holistically address the patient's needs. Consent was obtained prior to drafting the case report.

RESULTS: Biologically, the patient's condition was characterized by severe exacerbation of atopic dermatitis, likely triggered by environmental pathogens, and compounded by iron-deficiency anemia. Psychologically, the severity of his skin condition led to increased irritability and social withdrawal, a notable deviation from his previously cheerful temperament. Social considerations highlighted the supportive family environment and the challenges posed by the visible nature of his skin lesions, affecting his school attendance and potential social stigma.

DISCUSSION: The case underscores the intricate relationship between biological predispositions, psychological resilience, and social environmental factors in managing pediatric atopic dermatitis. It highlights the importance of a multidisciplinary approach in treating such complex cases, considering not only the physical but also the emotional and social wellbeing of the patient.

CONCLUSION: This patient's case demonstrates the critical need for an integrated biopsychosocial approach in pediatric dermatology, particularly in complex cases like impetiginized atopic dermatitis. Tailoring treatment to address the multifaceted aspects of the patient's condition can lead to more effective management and improved quality of life for both the patient and their family.

## Introduction

The International Classification of Functioning, Disability and Health (ICF) is a robust approach to a biopsychosocial model "in which health and disability are viewed as the result of the interaction between a health condition and contextual factors," including both psychological and social factors[1]. The late 1970s saw Dr. Engel's advocation and defence for the shift from a biomedical model of medicine to a biopsychosocial model. This movement was predicated on the assumption that the approach of doctors to a patient is derived from their instructed framework that serves to organize their knowledge[2]. The biopsychosocial model is now a well-established approach to the practice of medicine that enables members of a multidisciplinary team to address all the biopsychosocial determinants of health on an individually tailored basis[3].

https://doi.org/10.33178.SMJ.2024.1.9

The nature of atopic dermatitis makes it particularly suitable for the application of the biopsychosocial model. This is because the condition leads to visible changes on the skin. These changes can evidently be detrimental to the patient's confidence and negatively affect social interaction. These social factors can contribute, over a period of time, to psychologic impacts on the child, such as a shy temperament and social withdrawal. So, while the condition indeed has a biomedical stem, there are numerous branches of the patient as a whole which are affected.

## Case Background

The patient is a 6-year-old Irish-Caucasian male with a complex presentation to the inpatient pediatric service.

BIOLOGICALLY, the patient is experiencing a severe exacerbation of atopic dermatitis, now complicated by impetiginization. This acute episode is influenced by a combination of environmental, immunological, and psychosocial factors.

PSYCHOLOGICALLY, the severity of the patient's skin condition has shifted his demeanor from cheerful and engaging to increased irritability and social withdrawal, further exacerbated by sleep disturbances from itching and pain.

SOCIALLY, the patient's family, though proactive in allergen control and supportive of his needs, is facing emotional strain due to his condition. This has affected the patient's school attendance and raised concerns about the potential social stigma associated with his visible skin lesions

## Case Details

### PRESENTING COMPLAINT:

The patient, a 6-year-old male, is experiencing a severe exacerbation of atopic dermatitis with intense pruritus and discomfort, impacting his daily life and sleep.

### FAMILY HISTORY:

The patient has a strong family history of atopic conditions: asthma in his mother and atopic dermatitis in his father, indicating a genetic predisposition. Recent exposures to infectious agents like respiratory syncytial virus (RSV) and Streptococcus Group A have exacerbated his condition.

### PAST MEDICAL/SURGICAL HISTORY:

The patient's medical history includes allergic rhinitis and atopic dermatitis, along with iron-deficiency anemia, but no significant surgical history.

### PREMORBID BEHAVIOR:

Prior to his current condition's exacerbation, the patient was cheerful, engaging, and resilient, actively participating in social interactions.

### ENVIORNMENTAL AND SOCIAL FACTORS:

The patient's supportive family minimizes allergen exposure, yet the exacerbation of his dermatitis has disrupted family life and affected his school attendance, raising concerns about social stigma.

### CURRENT MANAGEMENT:

The patient's treatment regimen includes topical therapies, antihistamines, and iron supplements, with a multidisciplinary team addressing his physical and psychological needs.

## Clinical Findings

### PHYSICAL EXAMINATION:

Physical examination revealed multiple vesicular, weeping, and crusting lesions predominantly located on his arms, legs, and trunk. The lesions were consistent with impetiginized atopic dermatitis. There were no systemic signs of severe infection such as fever or lethargy. His skin showed signs of chronic changes associated with atopic dermatitis, including lichenification and xerosis. The areas around the lesions were erythematous and edematous, indicating inflammation.

### LABORATORY FINDINGS:

Routine blood tests revealed mild iron-deficiency anemia, which aligns with his past medical history. A swab of the skin lesions was taken for bacterial culture, which is critical in differentiating impetiginized atopic dermatitis from primary bacterial infections.

## Discussion

### BIOLOGICAL CONSIDERATIONS:

The patient's biological predisposition to atopic conditions is evident. His recent history suggests

that exposure to infectious agents, particularly from his sister's RSV and possible school-based exposure to Streptococcus Group A, may have served as precipitating factors for the current skin infection[4]. This is compounded by the history of iron-deficiency anemia, which could contribute to his overall vulnerability to infection and poor healing[5]. Iron-deficiency anemia has been associated with atopic dermatitis, however the mechanism for this is still unclear[6]. The physical examination supports the diagnosis of impetiginized atopic dermatitis, given the presence of vesicular, weeping, and crusting eruptions, without systemic signs of severe infection.

### PSYCHOLOGICAL CONSIDERATIONS:

Psychologically, the patient's case presents a notable contrast between his typical behaviour and the impact of his dermatological condition. The severity and chronic nature of his atopic dermatitis have precipitated significant behavioral changes, reflecting the profound psychological impact of his condition.

The patient's increased irritability can be seen as a direct response to the constant discomfort he experiences. The pruritus and pain associated with his skin lesions are not only physical irritants but also psychological stressors. They disrupt his comfort and render him less tolerant of minor frustrations.

The social withdrawal observed in the patient is also a critical psychological aspect. Social interactions during childhood are essential for development, including language, emotional regulation, and relationship formation. The visibility of his skin condition, coupled with the discomfort it causes, may precipitate insecurity, and decrease engagement in social activities, leading to feelings of isolation.

Additionally, sleep disturbances increase his psychological distress. Chronic sleep deprivation is known to affect mood, cognitive function, and overall quality of life[7]. For the patient, the disruption of sleep likely contributes to his irritability and behavioral changes. It is also common for parent's own interpersonal relationships to be affected by the need to care for the child at night.

Similarly, chronic disease can lead to a sense of helplessness or frustration. This can degrade family dynamics, as parents or siblings may feel overwhelmed or unequipped to handle the fluctuations in the patient's mood and behavior[8].

### SOCIAL CONSIDERATIONS:

The social context is composed of the supportive role of his family, the disruption caused by his illness, and the social implications of visible skin lesions. The patient's family provides a nurturing environment, proactive in managing his health needs. This active involvement reflects their understanding and commitment to his well-being, essential for the management of chronic conditions like atopic dermatitis[9].

The admission has significantly disrupted the family's routine and emotions. Managing a child with a chronic, visibly distressing skin condition can be emotionally taxing for caregivers. They may experience feelings of helplessness, frustration, or guilt, particularly when interventions do not yield immediate results[10]. This can cause a cycle of stress and anxiety that can further impact the patient's condition.

Social interactions are also impacted, particularly in school. His hospitalization led to absences from school, impacting his educational progress and social development. School-age children are acutely aware of peer perceptions, and visible skin lesions can make a child such as the patient vulnerable to social stigma or bullying, potentially leading to a decline in self-esteem and further social withdrawal[11,12]. This can lead to a reluctance to participate in group activities or physical education classes, further isolating him from his peers.

## Conclusion

The case's psychosocial complexity highlights the necessity of a holistic approach, emphasizing that treating psychological aspects is as vital as addressing physical symptoms. A multidisciplinary strategy, encompassing family support, school involvement, and counseling services, is essential to manage the psychological and social impacts of the patient's condition effectively[13].

## Acknowledgments

Sten H. Kajitani, Dr. Raymond Barry

GUARANTOR:Anthony J. Goodings

Table 1: This table summarizes the principal points discussed in the three core domains of a biopsychosocial approach.

| Factor Type | Biological | Psychological | Social |
|---|---|---|---|
| Predisposing | • Strong family history of atopy<br>• School-aged child regularly<br>• exposed to pathogens<br>• Dislike and poor adherence for emollients. | • Shy temperament makes the patient more vulnerable to stress. | • Social interactions and self-esteem can be impacted by the visible skin lesions. |
| Precipitating | • Sick contact (RSV) from sister<br>• Sick contact at school (Gr. A Strep)<br>• Recent VZV infection | • Recent stressors such as his sister's illness disrupting the household routine. | • Stress of a new social environment and interactions can precipitate or worsen exacerbations. |
| Perpetuating | • Initial refusal of antibiotics (PO)<br>• Poor adherence to emollients causing continued skin breakage and infection. | • Sleep disturbances from intense pruritis and other symptoms can cause chronic distress and psychological disturbances | • Absence from school can disrupt the patient's routine and lead to worry about missing out, this can perpetuate stress and his illness. |
| Protecting | • Otherwise good physical health<br>• Administration of IV antibiotics. | • The patient has demon-strated previous resilience in adapting to different sit-uations such as beginning school. | • Patient has an extremely supportive fam-ily network to help support him with feeling better, catching up with school, and help him cope to mitigate distress. Parents able to take time off work to stay with him in the hospital |

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