

# Diagnostic Errors and the Bedside Clinical Examination



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## KEYWORDS

- Diagnostic error • Clinical reasoning • Clinical decision-making
- Heuristics and biases • Dual-processing theory • Medical education

## KEY POINTS

- Diagnostic errors are common in clinical practice and result in adverse patient outcomes.
- Diagnostic errors are frequently unrecognized and under-reported because of individual and systematic factors.
- Deficiencies or omissions in the bedside clinical examination and in disease-specific content knowledge are among the most common causes of diagnostic errors.
- Unconscious heuristics and biases contribute to diagnostic errors.
- Research in clinical settings suggests that education in clinical content knowledge and bedside history and physical examination skills can reduce diagnostic errors.

## INTRODUCTION

In 2014, a 48-year-old woman with a history of stroke and uncontrolled diabetes presented to her local hospital for evaluation of a lesion on the left side of her face (Fig. 1). Previous swabs of the lesion had grown methicillin-resistant *Staphylococcus aureus*, so her doctors diagnosed her with cellulitis and sent her home with a peripherally inserted central catheter (PICC) line and a 10-day course of intravenous (IV) vancomycin. Unfortunately, the lesion did not improve, and she returned to the same hospital

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**Fig. 1.** 48-year-old woman with trigeminal trophic syndrome.

twice over the next year. Both times, her doctors sent her home with a PICC line for more IV vancomycin. Convinced that the woman had refractory cellulitis, her outpatient doctors gave her additional courses of oral antibiotics. Despite these treatments, the lesion on her face never improved.

More than a year later, she was admitted to the general medicine service of a teaching hospital. Her neurologic examination revealed decreased sensation on the right side of her body and a left-sided Horner syndrome consistent with a prior lateral medullary stroke, a diagnosis confirmed by review of a prior MRI scan. Additionally, a punch biopsy of the facial lesion showed no evidence of cancer, infection, or autoimmune pathology. This, combined with evidence of injury to the left spinal trigeminal nucleus led to the diagnosis of trigeminal trophic syndrome—a rare, noninfectious condition caused by neuropathic itch, decreased facial sensation, and chronic skin abrasion from scratching in the distribution of the trigeminal nerve.<sup>1</sup>

In the end, it took more than a year to give the woman an accurate diagnosis. Why did it take so long, and what explains the tenacity of the cellulitis diagnosis despite abundant evidence against it? Finally, and most importantly, how can it be done better?

Diagnostic error is a central concern in medicine and has had increased focus from stakeholders across the professional community and the public over the last 20 years. This article aims to orient readers to this complex field, with particular attention to

1. The impact of diagnostic errors on patient outcomes
2. Controversies in defining and studying diagnostic errors
3. Diagnostic errors common in clinical practice
4. Conditions, both environmental and cognitive, that predispose doctors to making diagnostic errors
5. Methods for improving diagnostic accuracy

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