ICU
MANAGEMENT & PRACTICE

#EUSEM18: Is it a zebra, horse or chameleon? Diagnostic reasoning in the ED

How can we predict errors in the emergency department? Clinician judgement is key, said Eric Dryver, speaking at the European Society for Emergency Medicine annual congress, held in Glasgow earlier this month. Dryver, emergency medician physician at Skåne University Hospital in Lund, Sweden, and chair of the EUSEM education committee, said that in practice, diagnostic error in the ED is the failure to accurately evaluate the likelihood of time-sensitive conditions based on available information.

Diagnostic error leads to increased hospital stay and mortality. The U.S. Institute of Medicine's 2015 report *Improving diagnosis in health care* in suggested that diagnostic error has been largely unappreciated in efforts to improve the quality and safety of health care.

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But it's difficult. Dryver quoted Jerome Kassirer, Professor, Tufts University School of Medicine: *"Absolute certainty in diagnosis is unattainable, no matter how much information we gather….our task is…to reduce the level of diagnostic uncertainty enough to make optimal therapeutic decisions."*

He warned of mimics and chameleons. For example the conditions that mimic stroke are migraines, seizures, infections and psychiatric conditions, which can lead to false positive stroke diagnoses. False negative stroke diagnoses can arise from stroke chameleons — nausea/vomiting, falls, vertigo and movement disorders. One study found that misdiagnosis occurred both in a community hospital and an academic teaching hospital. 22% of strokes were initially misdiagnosed.

The Zebra/horse dyad refers to uncommon conditions that can be mistaken for common ones with a focus on false positive. Chameleons are common conditions with uncommon presentations with focus on false negative.

What leads to diagnostic error in the emergency department?

There are system-related errors, due to limited time and/or data, multi-tasking, interruptions and equipment failure. There are cognitive errors on the part of the physician and also no-fault errors, such as an uncooperative patient. There may be insufficient data or that doctors only see what they know. Data can be interpreted in different ways (premature closure).

"The root cause of diagnostic error is difficult to study as errors tend to be defined only in hindsight and the 'microscope' that can enable detection of mental processes in live time has yet to be invented"—Geoffrey Norman. Professor of Clinical Epidemiology & Biostatistics, McMaster University

Physicians can reduce the risk of diagnostic error by 'cognitive debiasing'- so being aware of your biases and applying a counter-strategy. However, there are more than 38 cognitive biases. And you may risk over-investigation - as explored in an Emergency Medicine Cases blog and podcast.

In the emergency department at Lund they have symptom checklists, e.g. for chest/thoracic pain - these cover background information to be collected, history, physical examination and tests with suggested diagnoses. These are available on the lucem (clarity in emergency medicine) website.

Dryver cited anonymous internal medicine dogma: "when you hear hoofbeats, think horses, not zebras" and Kline's dogma collar "If you don't know what a zebra looks like, good luck putting a saddle on that 'horse'.

And he recommended reading Effect of Systematic Physician Cross-checking on Reducing Adverse Events in the Emergency Department: The CHARMED Cluster Randomized Trial.

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