

# Rate of Diagnostic Errors & Serious Misdiagnosis-Related Harms for the “Big Three”

Major Vascular Events — Infections — Cancers



SOCIETY to IMPROVE DIAGNOSIS  
in MEDICINE

**Big Three** = Major Vascular Events, Infections, and Cancers  
**Serious Harm** = Permanent Disability or Death

## Why focus on the “Big Three”?

- **Three quarters of all diagnostic errors that cause serious harm** (75.8%) are attributable to the “Big Three.”
- **One in 10 people** with symptoms caused by a “Big Three” condition will be misdiagnosed (9.6%).
- Of the people with the most commonly misdiagnosed “Big Three” conditions, **approximately half suffer a permanent disability or death** because of the error (53.9%).
- The top five specific diseases most misdiagnosed in each of the “Big Three” categories together represent roughly **half of all misdiagnoses resulting in serious harm**.

## Rate and Impact of Misdiagnoses and Related Serious Harms for Top Five Diseases in Each Category

Condition	% of Patients Misdiagnosed	% of Patients Harmed
<b>Major Vascular Events (All)</b>	<b>8.7%</b>	<b>2.8%</b>
Aortic Aneurysm & Dissection	27.9%	17.0%
Arterial Thromboembolism	23.9%	12.5%
Venous Thromboembolism	19.9%	10.4%
Stroke	8.7%	4.8%
Myocardial Infarction	2.2%	1.2%
<b>Infections (All)</b>	<b>10.2%</b>	<b>4.2%</b>
Spinal Abscess	62.1%	36.0%
Meningitis & Encephalitis	25.6%	14.4%
Endocarditis	25.5%	13.5%
Sepsis	9.5%	5.5%
Pneumonia	9.5%	4.5%
<b>Cancers (All)</b>	<b>11.1%</b>	<b>6.6%</b>
Lung Cancer	22.5%	13.9%
Melanoma	13.6%	5.6%
Colorectal Cancer	9.6%	5.5%
Breast Cancer	8.9%	4.4%
Prostate Cancer	2.4%	1.2%

### Methodology

Building on the previous study from the CRICO Strategies CBS data (which derived the list of conditions), the authors searched PubMed, Google, and cited references. To quantify errors, the authors selected high-quality, modern, US-based studies, if available, and best available evidence otherwise. To quantify harms, the authors used literature-based estimates of the generic (disease-agnostic) rate of serious harms (morbidity/mortality) per diagnostic error and applied claims-based severity weights to construct disease-specific rates. Results were validated via expert review and comparison to prior literature that used different methods. The authors used Monte Carlo analysis to construct probabilistic plausible ranges around estimate.

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