THE COST OF MEDICAL ERROR IN MASSACHUSETTS:

Updated Findings and an Opportunity to Accelerate Change

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INTRODUCTION

In Massachusetts and nationally, adverse events during routine medical care remain frequent, harmful, and costly. These events impact patients and families first, before rippling across the health care system, exacerbating challenges of cost, capacity and equity.[1]

Tens of thousands of patient harm events happen each year in health care settings across the state, most of which are preventable. Yet they largely go unrecognized and unaddressed.

On average, hospitals miss over 85% of harm to their own patients.[2] And harm events are even less likely to be identified in outpatient, long term care, and home care settings.[3, 4, 5] This is a problem because you can't fix what you don't see. Timely, comprehensive information about patient harm would enable:

Health care providers and leaders to recognize events and risks within their own organizations, set improvement priorities, and measure progress;

Payers to develop meaningful incentives that reward better safety outcomes;

Policymakers and state agencies to monitor the system for safety, offer public transparency tools, and integrate safety with other health system improvement initiatives; and

Patients and the public to understand potential risks in their own care, make informed choices, and engage in safety improvement.

While none of these informational needs are now being met, that could change through broad uptake of automated adverse event monitoring (AAEM). This new technology-enabled approach continuously scans patients' electronic medical records to identify harm events in near real time. It produces information that enables a quick response to the underlying risks, creating an opportunity not just to measure but to reduce patient harm and its associated costs.

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This report updates the Besty Lehman Center's pre-pandemic analysis of the financial cost of medical error in Massachusetts. It also projects harm reduction and cost savings through a state pilot of AAEM in acute care hospitals that could get underway this year.

MEASURING THE INCIDENCE AND COST OF MEDICAL HARM IN MASSACHUSETTS

In 2019, the Betsy Lehman Center released the first major study of medical harm in Massachusetts. In a single year, the Center identified almost 62,000 cases of preventable harm to patients in hospitals, outpatient settings, and nursing homes. On average, each harm event added almost $10,000 to the cost of the patient's care, resulting in over $617 million in excess claims payments by health plans.[6] As large as these figures are, they represent a substantial undercount because the primary data available to us – health insurance claims – miss some of the larger drivers of patient harm, including delays in diagnosis or treatment and many medication events and patient falls.

In 2023, another major study published in the New England Journal of Medicine found that 24% of hospital inpatients had experienced at least one adverse event during their admissions. This study was led by a team of Harvard researchers who manually reviewed a random sample of thousands of patient medical charts at 11

ANNUAL COST OF HOSPITAL HARM EVENTS TO PAYERS

179,478 harm events
24% of hospitalizations

x

$11,946
average cost per event

=

$2.14 billion
in excess claims, at least **$446 million** of which are paid by MassHealth

ANNUAL PROJECTED SAVINGS FROM A 25% REDUCTION IN HARM

Expected reduction of
44,869 harm events

=

A total savings of
$536 million/year
in excess claims, including **$111 million** to MassHealth

Massachusetts hospitals.[7] Their findings were in line with similar national studies by the Office of Inspector General of the U.S. Department of Health and Human Services (OIG) that put the rate of harm at 25% of hospitalized Medicare patients.[8]

These combined findings allow us to calculate the annual cost of patient harm events in Massachusetts hospitals with a high degree of confidence. In 2023, there were 747,823 hospital admissions statewide, 155,476 of which were covered by MassHealth.[9] Applying a 24% harm event rate and an average added cost per event of $11,946 (inflation adjusted to 2023 dollars)[10], we estimate that:

- 179,478 patients experienced at least one harm event during their hospitalizations;
- Health plans paid out $2.14 billion in excess claims for additional health care necessitated by the harm; and
- At least $446 million of these excess claims were paid by MassHealth.

Missing from this analysis are the financial costs of harm to patients and families from lost wages and added living expenses. Also missing are the costs that hospitals absorb, mainly in the form of lost revenues from extended stays for which they are not reimbursed under their health plan contracts.

Beyond the financial costs, big numbers mean other big system impacts. Preventable adverse events extend a patient's hospital length of stay by 6.6 days on average.[11] In a system operating at capacity, these extended stays slow patient throughput, increasing pressure on crowded emergency departments and scarce post-acute care services.

Harm events also levy an array of human costs that are well-documented but harder to quantify. These include burnout and attrition among the health care workforce, and loss of trust and health care avoidance by patients.

Finally, patient harm events happen in all settings, including outpatient, long-term care, and home care. A companion study by the Harvard research team that conducted the hospital inpatient study found adverse events in 7% of outpatient encounters in a random sample of patients from 13 outpatient settings in four Massachusetts health systems.[12] Nevertheless, we have limited this updated analysis to hospitals because our ability to measure patient harm in other settings is far more constrained.

AUTOMATED MONITORING OF ELECTRONIC HEALTH RECORDS FOR HARM EVENTS WILL ACCELERATE IMPROVEMENT

For decades, a leading barrier to safety improvement has been the lack of actionable information about safety outcomes. Hospitals typically rely on frontline staff to recognize and manually report safety risks and actual harm events. The OIG, however, has documented that these systems pick up just 14% of patient harm.[13]

Some underreporting may be linked to staff reticence, stemming from fear of negative consequences or the perception that reporting is burdensome or pointless. But far more often, staff do not "see" the harm events or recognize them as reportable. Because these events happen so routinely, staff may attribute an unexpected development in a patient's progress to normal complications of care, patient history, or other factors[14] rather than the medication error that caused it, for example. Racial and other biases in event reporting are also well established, with staff less likely to document harm when the patient is part of a minoritized group.[15]

> Information about patient harm events is hiding in plain sight in electronic health records.

But information about patient harm events is hiding in plain sight in electronic health records. Automated adverse event monitoring can detect over 100 common types of harm events in near real-time by continuously scanning the EHRs of current patients. It is not subject to the blind spots of manual "see and say" reporting systems. And it essentially automates the slow, costly manual clinical chart review process that has been the gold standard for researchers, making it practical for clinical teams to access the information they need to manage and reduce harm in daily operations.

For several hundred early adopters of AAEM in other states, daily access to reliable, unbiased information about harm events has changed the equation. These hospitals are finding about 10 times the number of serious harm events as before—even hospitals with strong reporting practices. In some cases, the timeliness of the information allows them to intervene with patients to mitigate the harm. In most cases, the information reveals patterns that enable staff to quickly address the underlying risks and prevent future harm.

The result has been unprecedented reductions in a wide range of harm events—25% on average—with some hospitals achieving even greater reductions over time. Measurable improvement begins within several months, suggesting that initial gains can be achieved without major operational or culture change.

PROJECTED HARM REDUCTION AND COST SAVINGS THROUGH AAEM

A foundational action step of the *Roadmap to Health Care Safety for Massachusetts* is a pilot of automated adverse event monitoring in a diverse cohort of 6-8 Massachusetts acute care hospitals.

During an 18-month pilot covering 10% of hospital admissions statewide, and applying a 25% harm reduction rate, we project that 4,487 patient harm events would be prevented at a savings of $54 million to all payers. These figures include $11.1 million in savings to the state through 933 fewer harm events to MassHealth members.

Longer term, with adoption of AAEM by all Massachusetts acute care hospitals, payers could save nearly $536 million each year, with $111 million of those savings realized by MassHealth. Greater gains are also possible with continuous improvement efforts by providers to raise the harm reduction rate beyond 25%, and by extending AAEM to outpatient and long-term care settings.

INVESTMENT IN AAEM WILL PAY FOR ITSELF AND BENEFIT THE STATE IN OTHER WAYS

Investment in a statewide pilot is needed to more rigorously evaluate the benefits of AAEM. Although many early-adopter hospitals have provided information to the Betsy Lehman Center on a confidential basis, they have not published or publicly disclosed their data.

The Center has procured the services of Pascal Metrics, Inc., a pioneer of AAEM. The cost of their services during the 18-month pilot is $3.5 million. The state can expect a strong return on its investment as the break-even point on the cost of the pilot would be reached by just a 10% reduction in harm to MassHealth members, well below the projected 25% reduction rate.

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The pilot will support hospital efforts to improve outcomes for patients while providing insight into longer-term returns on investment through continued use of AAEM beyond the pilot period. It also will inform how AAEM could benefit all Massachusetts patients, providers, and payers—including the state—if it were more broadly implemented in hospitals and eventually in outpatient and long-term care settings.

Finally, the pilot will open a window into statewide safety outcomes, risks, and trends presently not visible through available data. This will inform how the state could leverage AAEM to monitor the health care system for safety risks, preserve system capacity, and power useful public transparency tools.

The state's *Roadmap to Health Care Safety* sets a bold aim: a health care system that continuously strives to eliminate patient harm. By radically improving everyone's ability to see and then fix the risks that can lead to harm, AAEM presents a unique opportunity to advance that aim.

ENDNOTES

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