Identifying Pediatric Patients at High Risk for Adverse Events in the Hospital

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Adverse events are an important cause of morbidity and mortality for pediatric inpatients, accounting for >4400 deaths per year.1-3 Despite growing attention to patient safety, the rates of adverse events have remained unchanged.4 In addition, little is known about which patient populations are at the greatest risk for adverse events. In most studies, researchers estimate that approximately one-half of these events are preventable, but strategies to decrease harm are difficult to implement without first identifying patients who are at high risk.5-7

Adverse events are hard to detect, and research in this field has been hampered by the many different methodologies used across studies. Traditionally, the detection of adverse events has relied on voluntary event reporting by providers, which is subject to bias from providers and in which the true incidence of events is underestimated.5,8 There is a growing interest in the role of family-safety interviews in identifying harm to children during a hospital stay; this methodology may be used to counteract some of the bias in reporting and identify additional events not documented by providers.6,9 Administrative database reviews that include discharge codes have been used in lieu of individual chart reviews in the past, but this automated approach is limited regarding correctly identifying adverse events.10-13 The recently validated Global Assessment of Pediatric Patient Safety (GAPPS) Trigger Tool is used to provide a more objective measure of adverse events in pediatric inpatient care and allows for providers to use focused chart review to identify adverse events in children who are hospitalized.14

In their study “Racial, Ethnic, and Socioeconomic Disparities in Patient Safety Events for Hospitalized Children,” Stockwell et al15 used the GAPPS Trigger Tool to identify adverse events that occurred in a random selection of pediatric inpatients discharged from 16 hospitals (both academic and nonacademic) across all 4 regions of the United States. They identified 413 adverse events in 3790 reviewed medical records and found that the total number of adverse events, preventable adverse events, and high-severity adverse events was disproportionately higher in Latino children compared with in white children. Another key finding was that children with public insurance had higher rates of preventable adverse events compared with children with private insurance. The authors did not find differences in adverse-event rates between the other groups studied, which included children who were black or of other races and those with self-pay insurance or no insurance.

This study has several limitations. As acknowledged by the authors, their data include hospital admissions from 2007 to 2012 and therefore may not represent current demographics or practice patterns. Although the GAPPS Trigger Tool represents the most objective measure of adverse events currently available, like any safety event...
studies on the optimal number and types of
patients selected for review also have the
total potential to improve patient-safety monitoring
at individual institutions.

Ultimately, the goal of patient-safety practices and research is not merely the
identification but the prevention of adverse events. The efficient implementation of
preventive strategies requires an
understanding of which patients are at the
highest risk of harm during hospitalization. Therefore, a second, important next step for
the field is to develop risk-prediction models
for different types of adverse events and
identify optimal prevention strategies for
each event type and population. Knowledge
of disparities in the rates of adverse events
is crucial for identifying patients at high
risk of harm during hospitalization. As
noted above, providers using the GAPPS tool
may not capture all adverse events, and the
current ideal for harm identification may be
a composite of voluntary event reporting
from providers, manual chart reviews
conducted with a trigger tool, and
patient–family safety interviews. However,
all 3 of these methodologies may introduce biases in the events that are identified. For
example, it is easy to imagine that family
engagement and activation could influence the
likelihood of an event being documented in a family-safety interview and, if a
discussion with the family led to a change in clinician documentation within the medical
record, possibly through voluntary event
reporting and even trigger-tool review.
Similarly, provider biases, including racial
bias, weight bias, or others, could influence event identification and documentation.17-20

Limited data currently exist on patient,
family, provider, and institutional factors
that influence the detection of adverse
events. Stockwell et al15 provide early data
on patient demographics that may be
associated with adverse events identified in
chart reviews conducted with trigger tools.
Most studies in which researchers have
identified children at risk for adverse events
have been focused on medical diagnoses or
medical complexity.15 Other studies have
revealed that obesity, race, insurance
status, and age are potentially associated
with patient safety, although some of these
results have varied between studies.16,21-22 It
is not surprising that socioeconomic status
and race and/or ethnicity would increase a
patient’s risk of adverse events because these factors are associated with numerous
disparities in health care, including patient
safety indicators.21,22 Similar data are
needed for voluntary event reporting and
patient-family interviews to improve
institutional interpretations of local data,
for which voluntary event reporting is still
overwhelmingly relied on. A comprehensive
understanding of the patient characteristics
that are associated with different types of
adverse events and detected by using
different mechanisms will ultimately allow
for us to predict which patients are likely to experience specific adverse events and to
target preventive measures efficiently and
appropriately to improve hospital safety.

In their study, Stockwell et al15 provide
high-quality data collected from multiple,
geographically diverse institutions on
associations of patient race and insurance
status with adverse event rates, as detected
by using the validated GAPPS Trigger Tool.
Their study represents an important first
step in assessing a variety of potential
patient and institutional characteristics
associated with the occurrence of patient
harm in children who are admitted to the
hospital. Hopefully, it will motivate the
pediatric community to gain a better
understanding of the causative mechanisms
through which these discrepancies in
adverse event rates have been created and
pursue further research to decrease harm in
children of all races and economic statuses.

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