# The Top Patient Safety Strategies That Can Be Encouraged for Adoption Now

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Over the past 12 years, since the publication of the Institute of Medicine's report, "To Err is Human: Building a Safer Health System," improving patient safety has been the focus of considerable public and professional interest. Although such efforts required changes in policies; education; workforce; and health care financing, organization, and delivery, the most important gap has arguably been in research. Specifically, to improve patient safety we needed to identify hazards, determine how to measure them accurately, and identify solutions that work to reduce patient harm. A 2001 report commissioned by the Agency for Healthcare Research and Quality, "Making Health Care Safer: A Critical Analysis of Patient Safety Practices" (1), helped identify some early evidence-based safety practices, but it also highlighted an enormous gap between what was known and what needed to be known.

For the past 4 years, with support from the Agency for Healthcare Research and Quality, our group (a project team from the RAND Corporation; Stanford University; the University of California, San Francisco; Johns Hopkins University; and ECRI Institute) and an international panel of 21 stakeholders and evaluation methods experts conducted an evidence-based assessment of patient safety strategies (PSSs). Our efforts involved 3 phases. In the first phase, we developed a framework for reviewing existing studies and prospectively evaluating new PSS implementation studies (2). This framework identified several key points about the importance of theory, context, and implementation (**Table 1**) (2).

The second phase was a review of current patient safety strategies. We started with the 79 topics in Making Health Care Safer and added practices from the National Quality Forum's 2010 update, the Joint Commission, and the Leapfrog Group; those we identified in an initial scoping search; and those suggested by experts. From this list of 158 potential topics, we used several rounds of voting with our stakeholders to narrow the scope to 41 PSSs that the expert panel judged to be most important to the largest audience. Given limited time and resources, we prioritized topics as needing either a traditional systematic review or only a "brief review." The latter generally focused on a specific aspect of the PSS, such as emerging data or new insights about implementation.

We chose 18 topics for in-depth reviews. As a first step for the reviews, we searched for existing relevant systematic reviews. To assess the potential utility of such reviews, we followed procedures proposed by Whitlock and colleagues (3) and asked the following questions: Is the existing review sufficiently "on topic" to be of use? Is the review of sufficient quality to foster confidence in the results? If we determined that the existing systematic review was sufficiently on topic and of acceptable quality, we took 1 of 2 further steps. In some cases, we did an "update" search (that is, we searched databases for all new relevant evidence published since the search end date in the existing systematic review); in others, we conducted searches for "signals for updating." Such searches generally followed the criteria proposed by Shojania and colleagues (4), which involved a search of high-yield databases and journals for pivotal studies that could signal that a systematic review is out of date. A pivotal study is one that may call into question the results of a previous systematic review. We added any evidence identified in either the update search or signals search to the evidence base from the existing systematic review. Some PSSs had no existing systematic reviews and others had previous reviews that were not of sufficient relevance or quality to be used. In those situations, we conducted new searches using existing guidance (5).

Evidence about context, implementation, and adoption was a key focus of our reviews. We searched for evidence on these aspects of primary studies in 2 ways. First, we sought and extracted data about context, implementation, and unintended harms from articles that evaluated the effectiveness of PSSs. Second, we identified "implementation studies" from our literature searches. These studies focus on the implementation processes, particularly elements demonstrated or hypothesized to be of special importance for the success, or lack of success, of the intervention. To be eligible, implementation studies needed to

*See also:*

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*Table 1.* **Recommendations for Evaluating the Effectiveness of Patient Safety Strategies and High-Priority Contexts to Include in Reports of Patient Safety Research***

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| **Recommendations for evaluating the effectiveness of patient safety strategies** |
| Explicitly describe the theory behind the chosen intervention components or an explicit logic model for why this patient safety practice should work |
| Describe the patient safety practice in sufficient detail so it can be replicated, including the expected effect on staff roles |
| Measure high-priority contexts in the 4 domains described below |
| Detail the implementation process, the actual effects on staff roles, and how the implementation or intervention changed over time |
| Assess the effect of the patient safety practice on outcomes and possible unexpected effects, including data on costs, when available |
| For studies with multiple intervention sites, assess the influence of context on the effectiveness of the intervention and implementation |
| **High-priority contexts to include in reports of patient safety research** |
| External factors, such as regulatory requirements, public reporting, or pay-for-performance, and local sentinel events |
| Organization structural characteristics, such as size, complexity, and financial status or strength |
| Teamwork, leadership, and patient safety culture |
| Management tools, such as training resources, internal organization incentives, audit and feedback, and quality improvement consultants |

* From reference 2.

either report or be linked to reports of effectiveness outcomes.

The 23 brief reviews were explicitly designed not to be full systematic reviews or updates. The goals of each brief review varied by PSSs, according to needs identified by technical experts and stakeholders. The brief review could focus primarily on information about the effectiveness of an emerging PSS or implementation of an established PSS. Alternatively, the review could explore whether new evidence calls into question the effectiveness of an existing PSS or identifies unintended consequences of safety interventions. In general, a content expert on the topic, working with the project team, conducted the brief reviews. The methods involved focused literature searches for evidence relevant to the specific need. Typically, the author narratively summarized the evidence in a format tailored to the particular goal of the brief review.

We used standard instruments, such as the Cochrane Effective Practice and Organisation of Care criteria (6), the U.S. Preventive Services Task Force criteria (7), and the Cochrane Risk of Bias criteria (8), to assess the quality or risk of bias for individual studies of safety interventions. We developed criteria to evaluate strength of evidence across studies of effectiveness (9) that were informed by existing methods (10, 11) and incorporated criteria about the use of theory and description of implementation.

All of the reviews can be found in the Agency for Healthcare Research and Quality evidence report, "Making Health Care Safer II: An Updated Critical Analysis of the Evidence for Patient Safety Practices" (9). In this supplement issue, we present the reviews for 10 PSSs. In an upcoming issue of *BMJ Quality & Safety*, we will present several more. A summary of the evidence for all 41 PSSs is available in Table 1 of Chapter 44 in that report (9). It categorizes each PSS according to the following: the scope of the underlying problem that the PSS addresses (its frequency and severity); the strength of evidence about the effectiveness of the safety strategy; the evidence or potential for harmful consequences of the strategy; a rough estimate of the cost of implementing the strategy (low, medium, or high); and an assessment of the difficulty of implementing the strategy.

In the last phase of our effort, the expert panel explicitly considered the strength and quality of evidence about effectiveness and implementation for each PSS and concluded that 22 PSSs are ready to be encouraged for adoption by health care providers (**Table 2**). The first 10 are those that the expert panel believed should be "strongly encouraged" for adoption. The remaining 12 are ones they "encouraged" for adoption. Future implementation and evaluation will further our understanding of how best to implement these 22 practices to make them most effective and help health care organizations become learning health care systems. In the meantime, our expert panel believes that providers should not delay adopting these practices,

*Table 2.* **Patient Safety Strategies Ready for Adoption Now**

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| **Strongly encouraged** |
| Preoperative checklists and anesthesia checklists to prevent operative and postoperative events |
| Bundles that include checklists to prevent central line–associated bloodstream infections |
| Interventions to reduce urinary catheter use, including catheter reminders, stop orders, or nurse-initiated removal protocols |
| Bundles that include head-of-bed elevation, sedation vacations, oral care with chlorhexidine, and subglottic suctioning endotracheal tubes to prevent ventilator-associated pneumonia |
| Hand hygiene |
| The do-not-use list for hazardous abbreviations |
| Multicomponent interventions to reduce pressure ulcers |
| Barrier precautions to prevent health care–associated infections |
| Use of real-time ultrasonography for central line placement |
| Interventions to improve prophylaxis for venous thromboembolisms |
| **Encouraged** |
| Multicomponent interventions to reduce falls |
| Use of clinical pharmacists to reduce adverse drug events |
| Documentation of patient preferences for life-sustaining treatment |
| Obtaining informed consent to improve patients' understanding of the potential risks of procedures |
| Team training |
| Medication reconciliation |
| Practices to reduce radiation exposure from fluoroscopy and CT |
| The use of surgical outcome measurements and report cards, such as those from ACS NSQIP |
| Rapid-response systems |
| Use of complementary methods for detecting adverse events or medical errors to monitor for patient safety problems |
| Computerized provider order entry |
| Use of simulation exercises in patient safety efforts |

ACS = American College of Surgeons; CT = computed tomography; NSQIP = National Surgical Quality Improvement Program.



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particularly the strongly encouraged ones. Enough is known now to permit health care systems to move ahead.

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