

South Carolina hospitals see major drop in post-surgical deaths with safety checklist

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South Carolina saw a 22 percent reduction in post-surgical deaths in hospitals that completed a voluntary, statewide program to implement the World Health Organization Surgical Safety Checklist.

The findings of the five-year project between the South Carolina Hospital Association, Ariadne Labs, and Harvard T.H. Chan School of Public Health will appear in the August 2017 print issue of the *Annals of Surgery* and is published online. The study is the first to demonstrate large-scale population-wide impact of the [checklist](#).

"That is a major reduction in post-surgical [mortality](#) and it demonstrates that when done right, the Surgical Safety Checklist can significantly improve patient safety at large scale," said lead author Dr. Alex B. Haynes, associate director of the Ariadne Labs Safe Surgery Program and a surgeon at Massachusetts General Hospital.

Adoption of a [safe surgery checklist](#) has been demonstrated to reduce deaths in controlled research studies since 2009. But the ability to produce improved outcomes at large scale has remained questioned.

In the Safe Surgery South Carolina program, all hospitals in the state were invited to participate in a voluntary, statewide effort to complete a twelve-step implementation program with Ariadne Labs that included customizing the checklist for the local setting, doing small scale testing, and observing and coaching on checklist performance. Fourteen hospitals, representing nearly 40 percent of the inpatient [surgery](#) volume

in the state, completed the program. Researchers compared the 30-day post-surgery mortality outcomes between these hospitals with the mortality outcomes of the rest of the hospitals in the state. Surgical procedures in the analysis represent a wide range of specialties, from neurological, thoracic and cardiac, to soft tissue and orthopedic.

The study found that the post-surgery death rate in the 14 hospitals that completed the program was 3.38 percent in 2010 (prior to implementation) and fell to 2.84 percent in 2013 after implementation. In the other 44 hospitals in the state, mortality was 3.5 percent in 2010 and 3.71 percent in 2013. This corresponded to a 22 percent difference in mortality between the groups.

With these results, South Carolina offers a national model of best practices in implementing a team-based, communication checklist to drive quality improvement in the operating room.

"We are honored to be a learning lab for the rest of the country," said Thornton Kirby, President and CEO of the South Carolina Hospital Association. "The study validates what we hoped and believed from the outset—if you change the operating room culture of how you communicate and coordinate your efforts, you can produce better outcomes."

Ariadne Labs' Executive Director Dr. Atul Gawande led the development of the WHO Surgical Safety Checklist in 2008 with a team of international experts. The 19-item checklist prompts surgical team discussion of the surgical plan, risks, and concerns. Following surgery, patients are at risk of complications and death from a variety of causes such as infection, hemorrhage, and organ failure. Collectively, the checklist items create a culture of operating room communication that improves overall surgical care and safety.

Evidence from a 2009 pilot study with selected operating teams in eight countries around the world demonstrated a 47 percent decrease in post-surgical mortality. Further studies went on to confirm the powerful effect. But translating the checklist into population-wide mortality reduction has not been proven until now.

"Safety checklists can significantly reduce death in surgery. But they won't if surgical teams treat them as just ticking a box," said Gawande. "With this work, South Carolina has demonstrated that surgery checklists can save lives at large scale—and how hospitals can support their teams to do it."

More information: Alex B. Haynes et al, Mortality Trends After a Voluntary Checklist-based Surgical Safety Collaborative, *Annals of Surgery* (2017). [DOI: 10.1097/SLA.0000000000002249](https://doi.org/10.1097/SLA.0000000000002249)

Provided by Harvard T.H. Chan School of Public Health

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