

The Soil, Not the Seed: The Real Problem with Root Cause Analysis

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Perspective

Throughout most of his life, 19th century French chemist Louis Pasteur insisted that germs were the cause of disease, not the body. It wasn't until Pasteur was nearing the end of his life that he came to believe just the opposite. After reaching this conclusion, he declined treatment for potentially curable pneumonia, reportedly saying, "It is the soil, not the seed."⁽¹⁾ In other words, a germ (the seed) causes disease when our bodies (the soil) provide a hospitable environment.

This bacteriology lesson is relevant to our patient safety efforts. Health care organizations are implementing numerous safety improvement techniques, many borrowed from other industries. One such technique is root cause analysis (RCA), commonly used to identify and correct the factors that led to an untoward patient incident. Health care organizations were introduced to this accident investigation technique in the mid-1990s. Now, accreditation groups and some state regulatory agencies mandate RCAs after a sentinel or significantly harmful adverse event.

In a recent [article](#) in the *Journal of the American Medical Association (JAMA)*, [Wu](#) and colleagues questioned whether RCAs have actually reduced the risk of adverse events and unintended patient harm.⁽²⁾) Citing published studies going back as far as 2002, the authors reported problems with RCAs such as incomplete investigations, ineffectual corrective actions, failure to follow through on implementing actions, and lack of evaluation to assess the outcomes from actions that are implemented. Similar problems have been reported by Maryland's Office of Health Care Quality (OHCQ), a state agency that reviews the RCAs of serious adverse events conducted in Maryland hospitals.⁽³⁾

One conclusion that could be drawn from these experiences is that the RCA tool, apparently only marginally successful, needs to be significantly modified. In fact, the authors of the JAMA article suggest that a new incident investigation model is needed: one that has been adequately tested for its effectiveness. This recommendation caused us to reflect on Pasteur's dying words. For all of our patient

safety efforts, which has a greater influence on outcomes, the seed (a safety intervention) or the soil (the host organization)? It is our contention that hospitable organizational factors are the most important predictor of safety intervention effectiveness. If we are correct, then the RCA tool is not the problem. Rather, the "soil" must be well prepared and fertile for discovery to take root.

Organizations are often unprepared to respond to medical tragedies. In health care, errors are seen as character flaws. The focus is on individuals, rules, and sanctions; therefore, lessons learned are not shared. There is fear of embarrassment, peer and patient reaction, and litigation. In this environment, it's not surprising that an RCA fails to uncover and correct system failures.

However, due in part to growing experience using the RCA tool, the environment is shifting. There are published reports of the culture-changing benefits of multidisciplinary patient incident investigations.^(4,5) While RCA is just one piece of the culture changing puzzle, it has been an important tool for preparing the more hospitable soil that we have today. Imagine the push-back if we'd tried to implement teamwork training among caregivers in 1990, before we'd begun to use the RCA tool to investigate events.

Although caregiver collaboration is improving and organizations are focusing less on individual blame, RCAs do not always result in sustainable safety gains. Here too, the fault lies with the soil, not the seed. OHCQ's review of RCAs reveals that many of the hospitals that fail to find and fix serious systematic problems lack leadership involvement in the investigation process.⁽³⁾ Administrative and medical staff leaders must do more than endorse the formation of an RCA team and approve the final report. They must ensure that relevant physicians and staff members attend and fully participate in RCA discussions. Even better, they themselves should also attend.

Leaders must encourage RCA teams to delve deeper to find the system problems that contributed to the occurrence of errors or that allowed the errors to cause harm to patients. System problems, often called latent conditions, cause an unhealthy environment that sets up failures at the front lines of patient care. To discover latent conditions, participants in the RCA training sessions offered by the Maryland Patient Safety Center are taught to ask a simple, yet powerful question, "Why is this situation allowed to exist?" For instance, suppose the RCA team finds that staff members were not adequately trained on a new piece of equipment. Rather than pronounce the root cause to be "lack of training" and stop at that point, the team is encouraged to ask, "Why are staff members not adequately trained before using new equipment?" The answer to this question points to the latent conditions that also must be resolved to reduce the risk of future untoward events.

Finding root causes and latent conditions is just the start. Next, the problems need to be fixed. Frontline caregivers—people with little training in mistake-proofing techniques and systems redesign—are asked to create effective interventions. Is it any wonder that we end up with so many weak actions? This shortcoming is evident in OHCQ's review of RCAs done in Maryland hospitals. Of the 168 RCAs reviewed in 2007, the most common action plan was to educate staff (65% contained this recommendation).⁽³⁾ More personal involvement by leadership is needed during the action-planning phase to redesign processes and create system changes that will result in safer patient care over the long term.

The final role for administrative and medical staff leaders is to hold people accountable for timely completion of process improvements and compliance with safe practices. For example, at one hospital, a patient known to be allergic to latex had an anaphylactic reaction to a Penrose (latex) drain inserted during surgery. Following an RCA of this event, the operating room (OR) manager was instructed to evaluate all OR supplies and convert to non-latex where such products were available. Six months after the RCA, the manager had not yet started the evaluation. Anesthesiologists at another hospital complained that it wasn't convenient to always label medication containers on the sterile field and they often didn't follow this safe practice. Medical staff leaders were unwilling to speak up and say, "For the sake of patient safety, we will no longer accept this behavior."

To achieve a highly reliable and safer health care system, we need a hospitable soil where the seeds of improvement can thrive. Instead of replacing the RCA tool with yet another improvement technique, it's time we heeded the lesson discovered by Pasteur so many years ago.

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[Back to Top](#) 1. Sergent E, Sergent E. Ann Inst Pasteur (Paris). February 1904. 2. Wu AW, Lipshutz AK, Pronovost PJ. Effectiveness and efficiency of root cause analysis in medicine. JAMA. 2008;299:685-687. [go to PubMed] 3. Maryland Hospital Patient Safety Program Annual Report. Catonsville, MD: Office of Health Care Quality, Department of Health & Mental Hygiene; December 2007. Available at: https://health.maryland.gov/ohcq/hos/docs/Reports/mhpsp_07_report.pdf 4. Braithwaite J, Westbrook MT, Mallock NA, Travaglia JF, Iedema RA. Experiences of health professionals who conducted root cause analyses after undergoing a safety improvement programme. Qual Saf Health Care. 2006;15:393-399. [go to PubMed] 5. VA Patient Safety Program: A Cultural Perspective at Four Medical Facilities. Washington, DC: Government Accounting Office; December 2004. GAO-05-83. Available at: <http://www.gao.gov/new.items/d0583.pdf>.