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A New Pairing: Root Cause and Success Analysis

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Introduction

Root cause analysis (RCA) is commonly used in attempts to improve the safety of healthcare delivery, but a variation—success analysis—may also be useful. Traditional RCA is based in Safety-I principles¹: to improve safety, practitioners focus on serious events² with undesired outcomes and attempt to identify what went wrong using investigative techniques.³⁻⁶ Success analysis, evolving from Safety-II principles, can be used to learn how success was achieved, reinforce correct decisions and actions, and learn how process modifications might contribute to greater improvements.

Limitations of RCAs

RCA has been lauded because it was one of the first tools available to healthcare that looked beyond proximate cause (e.g., the final act or omission) by a healthcare provider closest to or at the "sharp end" of an undesired patient outcome. However, the traditional RCA approach has important limitations.^{7,8}

RCA inquiry focuses primarily on determining where "errors" or failures may have occurred. The RCA may determine that factors at the "blunt" end, distal or far from actual patient care processes (e.g., staffing decisions, equipment purchases) contributed to a serious event; however, that analysis may still suggest that responsible people made incorrect decisions. Some hazards may be identified, or antecedent or contributing factors may become evident during the investigation. However, finer details and granularity, such as momentary distractions, plausibility of decision-making, and options available to the involved providers in the moment are often elusive. RCA variations such as apparent cause analysis, common cause analysis, and root cause analysis and action (RCA²)³ generally follow similar principles of critical inquiry.

Health and illness are biologic processes, whereas the delivery of healthcare is a complex socio-technical system that requires human workers to coordinate the work on other humans. Because healthcare delivery is a human-made system, "the search for a human in the path of a failure is bound to succeed. . . . The assumption that humans have failed therefore always vindicates itself."⁹

An often-overlooked aspect of healthcare work is the overarching contribution of all the humans within the system to *the vast majority of the care that is delivered safely and without incident*. Understanding how "things go right" provides an untapped opportunity for mitigation of risk from less frequent incidents of harm and injury within a healthcare system.

The Safety-II Approach

Safety-II principles, based in resilience engineering theory, find value in the exploration, replication, and amplification of events with desirable outcomes.¹⁰ These events include successful responses to extraordinary circumstances or, more often, everyday achievements and normal care.

Because the circumstances of patient care often include fluid, evolving elements, adaptability is necessary to attain success. Rather than seeking to constrain healthcare providers, their knowledge and skills are valued and the healthcare provider is afforded the flexibility to provide care in a way that maximizes the chance for success.¹ RCAs are typically based in Safety-I principles aimed at preventing failure; success analysis can be based on Safety-II principles aimed at achieving success and safe healthcare. Safety-I and Safety-II principles can coexist and complement each other (Table).

Table. Complementary Approaches to Understanding Patient Care Events

Safety-I	Safety-II
What goes wrong	What goes right
Defined by failure	Defined by success
Humans are a problem	Humans are a resource
Achieved by limits and constraints	Achieved by adaptability
Inquiry tone is critical	Inquiry tone is appreciative

Source: Adapted from Hollnagel E, Wears RL, Braithwaite J. From Safety-I to Safety-II: a white paper. University of Southern Denmark; University of Florida; 2015. 43 p.

Success Analysis

Success analysis, while not yet codified, is based on principles of Safety-II and explores "what went well" or "what went right" during patient care events. In this context, the term *events* refers to patient care interactions (e.g., at the "sharp end"), or actions that occur even earlier in the healthcare delivery process, such as providing redundancy in staffing or structuring decision-making in a manner that allows input from all individuals with insight about the care being delivered (e.g., at the "blunt end"). A success analysis could be conducted in a manner similar to RCAs, with a focus on identifying actions and resources that contribute to success, with the same caveats about limitations.

For example, after identifying challenges in the provision of extracorporeal membrane oxygenation (ECMO), an organization that responded to a patient care crisis with successful emergency implementation of ECMO then conducted a success analysis. The event investigators found that provider capacity (e.g., availability because of margin in their workload) was a critical component of the ability to respond rapidly.

Two of the National Academy of Medicine's publications espouse a similar principle of learning from success. *Improving Diagnosis in Healthcare* states that organizations can "ensure that their evaluations generate much-needed evidence to identify successful interventions" and that "feedback entails informing an individual, team, or organization about its diagnostic performance, including its successes. . ." as well as near misses and diagnostic errors.¹¹ *Crossing the Quality Chasm* states that "the 21st-century health care system means combining the many ways to generate and test ideas with ways to enhance the spread of 'good ideas' and impede the spread of 'not so good' ideas."¹²

Ideally, the serious events that serve to initiate RCAs are uncommon and unexpected. In contrast, implementing success analysis on a predictable schedule (as well as in conjunction with RCAs) may mitigate some logistical challenges. The regular occurrence of success analyses would help safety and risk personnel refine their understanding of healthcare delivery as a complex and dynamic socio-technical system, which would also provide an opportunity for more robust and realistic action plans and interventions. Success analysis also can help build team relationships as team members gain understanding of the ways each individual's actions contribute to safe care, perhaps in ways that were previously unrecognized.

Allowing Safety to Emerge

Of course, it is not that simple. Whether event explorations occur during RCAs or during success analyses, it will not be possible to identify *all* of the discrete causes and circumstances that contribute to success and failure. Pairing these approaches may provide the most holistic perspective of how "work is done" and what is needed to ensure the ratio of success to failure remains high for every patient. Success analysis focused on events that go well—both extraordinary and ordinary events—offers greater opportunities to support organizational resilience. To paraphrase a concept attributed to James Reason, "opportunities for patient harm are infinitely creative." So, too, are opportunities for safety. Success analysis, based in Safety-II principles, provides a change in focus that can help us understand and support systems that allow safety to emerge.

Notes

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