

The Role of Clinical Risk Management and Quality and Safety Departments for the Resilient Management of Workarounds: A Study of Barcode Medication Administration

Danielli Cossul, Tarcisio Abreu Saurin and Luisa Eder de Azevedo

Industrial Engineering Post-Graduate Program
Federal University of Rio Grande do Sul
Porto Alegre, RS, Brazil

danielli.cossul@ufrgs.com.br, saurin@ufrgs.br, luisa.der@ufrgs.br

Ricardo de Souza Kuchenbecker and Gabriela Wingert Nunes

Clinical Risk Management Department
Hospital de Clínicas de Porto Alegre
Porto Alegre, RS, Brazil

rkuchenbecker@hcpa.edu.br, gabrielanunes@hcpa.edu.br

Helena Barreto dos Santos and Simone Silveira Pasin

Quality and Safety Department
Hospital de Clínicas de Porto Alegre
Porto Alegre, RS, Brazil
hbsantos@hcpa.edu.br, spasin@hcpa.edu.br

Abstract

Patient safety in health services often relies excessively on workarounds (WAs) carried out by frontline workers to cope with constraints. As a drawback, WAs imply risks and have dual effects on overall system performance. Moreover, WAs are triggered by social, technical, and organizational factors that cannot be completely eliminated through work system design. Therefore, managing WAs by using resilience engineering (RE) principles seems to be a suitable approach as it acknowledges the complexity underpinning WAs and their dual sides. This study explores how RE can contribute to managing WAs in health services. A case study of 22 WAs used in barcode medication administration (BCMA) of a large teaching hospital was conducted. In particular, the study investigated organizational practices adopted by the clinical risk management and quality and safety departments. Data collection included document analysis, 12 interviews, and 100 hours of non-participant observations of activities conducted in both departments. The dataset underwent a thematic analysis using the four potentials of resilient systems as predefined themes. The results revealed 26 practices, of which: 11 contribute to anticipating the need for WAs and their risks; six contribute to learning from WAs, informing system design improvements; five contribute to monitoring system performance and the conditions associated with the emergence of WAs; and four contribute to responding to the factors that trigger the need for WAs, thereby reducing their occurrence. The study also discusses relationships between these practices and how they can be enhanced or complemented by other practices, aiming at safe and resilient BCMA.

Keywords

Safety Management, Resilience, Workarounds, Health Services, Barcode Medication.

Acknowledgments

The author Danielli Cossul is grateful for the scholarship received from Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES). Grant ID code 001.

Biographies

Danielli Cossul holds a Master's degree in Industrial Engineering (2025) from the Federal University of Rio Grande do Sul (UFRGS) and a Bachelor's degree in Psychology (2023) from the University of Santa Cruz do Sul. She is currently a PhD student in the Postgraduate Program in Industrial Engineering at UFRGS and a member of the Center for Studies in Operations Management in Complex Systems.

Tarcisio Abreu Saurin holds a PhD in Industrial Engineering (2002) and a Master's degree in Civil Engineering (1997) from the UFRGS, as well as a Bachelor's degree in Civil Engineering (1994) from the Federal University of Santa Maria. He is currently a Full Professor at UFRGS in the Department of Industrial Engineering and the coordinator of the Center for Studies in Operations Management in Complex Systems. He is also an Associate Editor of the journal Safety Science and a member of the executive committee of the Resilient Healthcare Society.

Luisa Eder de Azevedo is an undergraduate student in Industrial Engineering at UFRGS and a research assistant at Center for Studies in Operations Management in Complex Systems.

Ricardo de Souza Kuchenbecker holds a PhD in Epidemiology (2006) from UFRGS, a Master's degree in Epidemiology (1999) from UFPEL, and a Bachelor's degree in Medicine (1993) from UFRGS. He is a Professor of Epidemiology at the School of Medicine and in the Postgraduate Program in Epidemiology at UFRGS. He is a member of the Epidemiology Committee of the Brazilian Association of Collective Health and of the Deliberative Council of the Brazilian Society for Patient Safety. He is also a collaborating researcher in the Global Burden of Disease study at the Institute for Health Metrics and Evaluation.

Gabriela Wingert Nunes holds a Bachelor's degree in Nursing from Universidade Luterana do Brasil (2000), a specialization in Adult and Pediatric Intensive Care from University of Vale dos Sinos (2011), and an Executive MBA in Healthcare Quality Management and Hospital Accreditation from Unyleya (2020).

Helena Barreto dos Santos holds a PhD in Epidemiology (2009) from UFRGS, a Master's degree in Epidemiology (1999) from the Federal University of Pelotas (UFPEL), and a Bachelor's degree in Medicine (1990) from UFRGS. She also holds a specialization in Healthcare Operations Management from the Postgraduate Program in Industrial Engineering at UFRGS (2016) and in Quality Improvement from the Institute for Healthcare Improvement (2017).

Simone Silveira Pasin holds a Master's degree in Nursing (2012) from UFRGS, as well as a Bachelor's degree in Nursing (1988) and a Licentiate degree in Nursing (2005) from UFRGS. She also holds a specialization in Healthcare Operations Management from the Postgraduate Program in Industrial Engineering at UFRGS (2015).