The Challenge of Multimorbidity: Towards Integrated and Data Driven Care Models: Insights from International Collaborations

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Introduction

The rising prevalence of multimorbidity presents significant challenges to healthcare systems worldwide, necessitating a shift from traditional care models to integrated, team-based, and data-driven approaches. Healthcare organizations are leveraging risk stratification and digital health solutions to enhance care delivery, improve patient outcomes, and ensure hospital sustainability. Inspired by successful frameworks such as Kaiser Permanente's model—where 25% of patients required acute care, while 75% had chronic conditions, 80% of whom were multimorbid—driving the transition from specialty care to Kaiser Medical Groups' team-based approach, this study highlights the necessity of tailored interventions and optimized resource allocation. The Rivierenland Hospital in the Netherlands has undertaken a risk stratification project (2020–2024) using the Johns Hopkins Adjusted Clinical Groups (ACG) classification system and its 11 Patient Need Groups(PNG). This initiative provides insights into multimorbidity levels, facilitating evidence-based discussions among clinicians and hospital management to optimize care strategies.

Methods

A key component of this initiative is an **international collaboration** between **the Netherlands, Australia, and Ontario, Canada**. This partnership will focus on:

- **Analyzing diagnosis data** from hospital treatments over one calendar year.
- **Applying the ACG classification system and Patient Need Groups** or the POP grouper equivalent to establish a standardized patient stratification methodology.
- **Assessing the scalability and adaptability** of this approach across different healthcare systems.

By developing a **consistent and effective framework** for implementing integrated care pathways, this initiative aims to ensure that **best practices in multimorbidity management** can be successfully adapted and applied across diverse healthcare settings internationally.

Results

Preliminary results indicate improved health outcomes for multimorbid patients, greater efficiency in healthcare delivery, and reduced hospital (re)admissions through preventive interventions and better care coordination. Implementing predictive analytics and patient-centered care models has demonstrated significant potential in setting a new standard for multimorbidity management within regional and international healthcare frameworks. A critical challenge in this endeavor is developing a sustainable funding model that supports both acute care interventions and value-based healthcare financing for low-volume, high-cost multimorbid patients.

Discussion and Conclusion

This study explores international collaboration on multimorbidity management and its impact on hospital operations and funding. Specifically, risk stratification and care redesign approaches will be tested in large community hospitals in Toronto, Ontario, and Australia to assess adaptability across diverse healthcare systems. These

findings will inform a multi-hospital study spanning three countries, aiming to develop scalable models for chronic disease management and hospital sustainability.
To further advance this initiative and stimulate international discussion on this crucial issue, a workshop proposal will be submitted to the PCSI conference. By fostering interdisciplinary and cross-border collaboration, this session aims to contribute to shaping the future of multimorbidity care and integrated healthcare strategies.
This paper examines methodologies, outcomes, and policy implications, offering a roadmap for hospitals transitioning toward data-driven, hybrid care models to address the growing burden of multimorbidity.