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Harnessing Casemix Data and Coding Systems: A Tool for Population Health Measurement

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Introduction

Population health and disease prevention are essential for improving healthcare value, quality of care, and efficiency. Population health indicators provide a means to monitor improvements, benchmark and compare across healthcare provider organizations and insurance companies. They also help evaluate interventions and programs, and guide policy development. Yet, comprehensive tools tailored to national or organizational priorities remain scarce. We propose a tool designed to measure population health, customized to address Saudi Arabia's national priority conditions.

Methods

The purpose of the tool was to capture population health and subpopulation needs for five priority conditions: diabetes, hypertension, obesity, cardiovascular disease, and smoking. The tool was developed through four sequential steps: 1) Selection of indicator sources, 2) Prioritization of indicators, 3) Indicator specifications, and 4) Indicator coding. Sources had to have published and validated indicators that highlight gaps in care and could be improved upon measurement. We then prioritized the indicators based on prespecified criteria: alignment with the identified priority conditions, presence in >2 sources, and validation by international experts in population health. For each selected indicator, we specified definitions, rationale, inclusion/exclusion criteria, calculation methodology, frequency, clinical setting, and international benchmark referenced from the selected sources. All indicators were then coded using the approved standards for coding, International Classification of Diseases 10th Revision Australian Modification (ICD-10-AM 10th Edition) for diagnoses, Saudi Billing System Version 2 (SBS) for procedures, and the Saudi Food and Drug Administration (SFDA) registration codes for medications. All steps and results were built into a user-friendly format using Excel.

Results

A standardized tool was created, incorporating population health indicators that address priority conditions and mapped across the continuum of care. Eight international sources were used to select an initial set of indicators based on predefined criteria. Out of the 130 long-listed indicators, 25 indicators were prioritized, specified, and coded. The tool was pilot tested with seven healthcare organizations and three insurance companies using the National Platform for Health Insurance Exchange System (NPHIES), demonstrating its feasibility and applicability within Saudi Arabia's private health sector. Of the 25 selected indicators, 12 were successfully implemented in realworld settings. Results of these indicators were visualized in dashboards using Power BI and shared with the pilot sites, tailored to their specific data.

Discussion/Conclusions

This tool offers a comprehensive view of population health, stratified by priority conditions and organizational level. Using casemix data and coding systems ensures a common language across all organizations, facilitating benchmarking and improving population health. Further testing and refinement are needed to improve the tool usability and quality.

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