



# Aligning population-based care management with chronic disease complexity

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## ABSTRACT

**Background:** Risk-stratified care management requires knowledge of the complexity of chronic disease and comorbidity, information that is often not readily available in the primary care setting. The purpose of this article was to describe a population-based approach to risk-stratified care management that could be applied in primary care.

**Methods:** Three populations (Medicaid, Medicare, and privately insured) at a regional health plan were divided into risk-stratified cohorts based on chronic disease and complexity, and utilization was compared before and after the implementation of population-specific care management teams of nurses.

**Results:** Risk-stratified care management was associated with reductions in hospitalization rates in all three populations, but the opportunities to avoid admissions were different.

**Conclusions:** Knowledge of population complexity is critical to the development of risk-stratified care management in primary care, and a complexity matrix can help nurses identify gaps in care and align interventions to cohort and population needs.

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Current federal initiatives to control medical expenses have focused on the avoidance of readmissions in specific chronic conditions including heart failure, acute myocardial infarct, and pneumonia (Berenson, Paulus, & Kalman, 2012; Centers for Medicare & Medicaid Services, 2012a). However, failure to recognize the impact of chronic disease comorbidity can result in poorly coordinated transitions and visits to multiple specialists and primary care physicians (Schoen, Osborn, How, Doty, & Peugh, 2009) and fails to address the underlying problem of care fragmentation,

especially for those with multiple chronic diseases. Poorly integrated care results in communication errors and a lack of coordination, which may lead to poor quality and adverse patient outcomes (Fagan et al., 2010). A systems approach that examines the patient's total experience during an episode of illness and considers multiple chronic disease comorbidity is needed to reduce fragmentation and improve integration of services (Hewner & Seo, 2014). An example is the Comprehensive Primary Care Initiative (CPCI), which aims to improve quality; lower cost; and improve

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patient experience through risk-stratified care management, improved continuity of care, planned care for chronic conditions and preventive care, patient and caregiver engagement, and care coordination (Boult & Wieland, 2010; Centers for Medicare & Medicaid Services, 2012b). Population-based alignment of interventions that are designed to meet the needs of cohorts stratified for hospitalization risk and level of complexity are essential components of this model (Lynn, Straube, Bell, Jencks, & Kambic, 2007). Comprehensive primary care has the potential to change the current fragmented health care system into one that provides patient-centered care that is appropriate to individual needs (Lewis, Kirkham, Duncan, & Vaithianathan, 2013).

However, care coordination, risk-stratified care management, and quality improvement skills in primary care are not well developed, even in patient-centered medical homes (Shapiro, 2013). In contrast, a regional health plan covering 411,407 lives developed a clinical algorithm to divide the population into cohorts based on chronic disease complexity starting in 2005. The original cohorts are “no chronic” for those without the nine chronic diseases in the algorithm; “minor chronic” for individuals with hypertension or hyperlipidemia; “major chronic” for cases with asthma, chronic obstructive pulmonary disease, diabetes, depression, or coronary artery disease; and “system failure” for persons with heart failure (with or without comorbidity) and chronic kidney disease. “Chronic disease” includes both “major chronic” and “system failure” segments. Analysis of existing electronic clinical information from claims showed major differences in chronic disease prevalence and comorbidity based on insurance type. For example, the Medicare population, composed primarily of individuals over age 65, had the greatest proportion with chronic disease, whereas the Medicaid population, defined by income eligibility (low income), included the largest proportion of children and chronic disease complicated by social factors. The group insured by their employer (privately insured) had the largest proportion with minor chronic disease. These differences led to the decision to develop care management teams that addressed the unique needs of each population (implemented in January 2009).

The implementation of population-specific teams is described in this article. Data from 2009 show the transition to risk-stratified care management in different populations and the impact on hospitalization rates. An analysis of cost in the Medicare population showed a reduction of \$54 a month for each member with chronic disease between 2008 and 2009, resulting in a total avoided expense of \$16,923,708 (Hewner, in press). The complexity algorithm was adapted and applied to a statewide Medicaid Data Warehouse using 2009 health plan data to validate results (Hewner, Mehrok, Wu, & Doloresco, 2014). Current research uses an adapted complexity algorithm to analyze avoided admissions using 2012 data from the

Medicaid Data Warehouse. Future research will focus on the translation of risk-stratified care management interventions into primary care settings supported by health information technology.

The purpose of this article was to describe a population-based approach to risk-stratified care management that could be applied by nurses in primary care. The specific aims are to describe the complexity matrix and to show the association of risk-stratified care management interventions to avoided admissions in a regional health plan.

## Risk-stratified Care Management

Public health has long divided the population into primary, secondary, and tertiary segments based on health promotion needs (Homer & Hirsch, 2006). Healthy individuals require primary prevention, whereas secondary and tertiary prevention is focused on the population who are at risk to develop major chronic disease or who already have one or more chronic diseases. Risk-stratified care management includes identifying cohorts based on health risk, use of evidence-based care management pathways that are appropriate to the risk, and managing care across transitions (Centers for Medicare & Medicaid Services, 2012b). Table 1 provides definitions for terms related to risk-stratified care management. One approach to the identification of risk is to analyze results of self-reported health risk assessments that can be incorporated into the electronic health record (EHR). However, claims data or the problem list of an EHR could also be used to determine health risk based on chronic disease complexity. At the health plan, analysis of complexity

**Table 1 – Key Definitions**

Care coordination “is a function that helps ensure that the patient’s needs and preferences for health services and information sharing across people, functions, and sites are met over time” (Lamb, 2013, p. 3).

Complexity cohorts are segments of the population with similar care needs based on comorbidity patterns of nine prevalence chronic diseases.

Continuity of care is an outcome, rather than process, that is focused on the patient and happens over time. Three types of continuity are informational, relational, and management (DiStanislao, Visca, Caracci, & Moirano, 2011; Holland & Harris, 2007).

Population health management includes “a set of interventions designed to maintain and improve people’s health across the full-continuum of care—from low-risk, healthy individuals to high-risk individuals with one or more chronic condition” (Felt-Liks & Higgins, 2011, p. 1).

Risk-stratified care management includes identifying cohorts based on health risk, use of evidence-based care management pathways that are appropriate to the risk, and managing care across transitions (Centers for Medicare & Medicaid Services, 2012b).

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