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Population Health Segmentation and Stratification: Applications of Patient Need Groups (PNGs)

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Introduction

Population segmentation is an analytical technique used to understand populations and match clinical need with appropriately resourced interventions and resources. A segmentation-driven approach facilitates improved delivery of health services and allows for more nuanced tracking of outcomes.

Risk stratification differs from segmentation in that it identifies people at high risk of a certain event or high health care costs. In other words, risk stratification ranks individuals within a population based on degree of need, whereas segmentation groups individuals within that population based on what that health need actually is.

This paper will discuss the recent applications of segmentation and stratification, and examples of how the ACG based Patient Need Groups (PNGs) and predictive risk models are being used.

Methods

The development of PNGs considered 3 constructs: Population Segments (PNGs); Care Modifiers; and Risk Stratification. The PNG methodology uses morbidity markers already available in the ACG System. Patients are assigned to one of eleven mutually exclusive population segments based on the individual's range of morbidities, conditions, and care needs. Each segment can optionally be further subdivided by using "Care modifiers", which identify individual traits with opportunities for intervention (for example poor care coordination). Finally, each segment can optionally be subdivided into risk strata e.g. low, medium, and high risk of high total cost in the following year, which enables prioritization of individuals.

Results

(1) Transforming Patient Care through Digital Triage and Segmentation (UK)

Brookside Surgery in the UK significantly improved patient access, care continuity and outcomes by implementing an innovative non-clinician triage model that utilizes digital tools including the Johns Hopkins ACG System.

(2) Using Segmentation Methodology to Optimize Patient Outcomes in Primary Care

PNG segmentation tool is helping to reshape the day-to-day operations at Kumar Medical Centre in the UK by optimizing scheduling and enhancing patient outcomes. Prioritising QOF by need (the PNG they are assigned to) means offering appointments for more complex patients earlier in the year. The main aim is to optimise care for complex patients' prior to winter.

(3) Using PNGs to Understand Urgent Care Demand in the UK - Integrated Care Board

Frimley Health and Care Integrated Care Board (Frimley ICB) and Frimley Health Foundation Trust (FHFT) worked with clinical leads from both primary and secondary care to develop a common framework for understanding urgent care holistically. The framework uses PNGs and segmentation methodology to tackle the challenge in a novel and intuitive way.

Discussion

Segmentation using PNGs provide an overview of the healthcare needs of a population which can help inform the design of care models for the population. The approach aggregates existing markers and population characteristics associated with complex and high-risk patient groups, in a comprehensive population health view. Risk stratification within segments provides a way of prioritising patients for intervention when resources are limited. The approach is modifiable for national or specific populations needs, so provides the ability to analyse care need and utilisation in vulnerable populations, while ensuring a comprehensive representation of the whole population.

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