Patient Segmentation for Population Health Management Using CRGs

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Introduction
Providers and payers face increasing pressure to understand the populations they serve. Population cohorts range from "non-users" to the critically ill with many degrees of complexity in between. Different segments of the population will present different levels of risk to financial and quality performance. Programs to improve performance are well served by the identification of clinically meaningful cohorts for specialized interventions. This presentation displays results of the application of a new aggregation of Clinical Risk Groups to population analyses in data from the United States. The clinical status and financial impact of patient segments in three settings are presented: 1) a state-wide all payer cohort; 2) a commercial insurance plan's members; and 3) a plan with a mix predominantly of Medicaid and Medicare members.

Methods
Clinical Risk Groups (CRGs) are a classification system for individuals' health status. CRGs are derived from readily available encounter and claims diagnostic information (including pharmaceutical data) accumulated during the use of healthcare over an extended period of time. CRGs are distinguished from other case mix systems by the output of mutually exclusive classification groups that explicitly recognize and display interactions among conditions and the severity of illness burden. The full array of CRGs includes 1,344 groups. For population health strategic planning, that number of groups is best reduced. We created seven aggregate categories labeled Population Health Segments: Non-user, Health, At-risk, Stable, Simple Chronic, Complex Chronic, and Critical.

These population health segments were applied to a blend of 2013 and 2014 data on over 2 million individuals belonging to the three settings described above and the relative percent of members in each cohort in each setting was compared with the total costs of care for that cohort. Members were excluded that did not have at least 12 months of enrollment or had some of their costs of care external to our data (i.e., those with coordination of benefits.)

Results
Healthy and non-users had the highest membership, representing 70% of the Statewide pool, 48% of the commercial plan, and 41% of the predominantly public plan. None of these cohorts used more than 8% of the total expenditures on health care in their setting.

At the other extreme of complexity, among those with critical health status, the cohorts were smaller: 2% of the Statewide pool, 1% of the commercial plan, and 3% of the primarily public plan. However, the total expenditures for these cohorts were significantly greater than the size of the cohort: 13% of total expenditures for the Statewide pool, 12% for the commercial plan, and 25% for the primarily public plan. Simple and complex chronic cohorts represented other areas of expenditures out of proportion to the size of the cohorts.

Conclusions
These variations have high face validity reflecting what is generally known about population differences among payers. These analyses quantify our understanding. The way these results are displayed to providers and payers, with the ability to "drill down", has been shown to be critical to their acceptance and usability. This will be demonstrated during the presentation.

As individuals experience more complex disease burdens, they require input from multiple resources including enhanced primary care teams, and eventually interaction with high-value specialists and institutional care. Delivering that care in a timely and efficient fashion requires the development of effective programs at the system level and timely interventions at the person level. Both of those objectives can only
be achieved with reliable patient segmentation. We have presented an approach that successfully discriminates among settings and populations to assist managers and clinicians in the design and delivery of appropriate care.