

PATIENT NEED GROUPS

A Novel Innovation from the ACG® System



Many population health tools provide predictive models, risk scores and other clinical markers to understand the likelihood of future costs and utilization. But how can we go a level deeper, to understand the patterns of patient health needs across a population, identify actionable opportunities and provide a clinically-oriented view instead of a single score?

The Johns Hopkins ACG System team and Bloomberg School of Public Health's Center for Population Health IT are launching a unique product, Patient Need Groups (PNGs), to answer these pressing questions.

PNGs, available exclusively within the Johns Hopkins ACG System starting in 2022, allow users to level up their population health strategy creation, implementation and monitoring using an intuitive new lens into the unique patterns of patient health needs.

Introducing PNGs

The ACG System's PNG segmentation feature is an innovative approach to patient categorization from Johns Hopkins. Patients have unique health needs driven by their medical conditions and social factors, requiring a tailored approach to improving their health. Our PNG methodology assigns individuals into mutually exclusive groups, allowing ACG System users to gain deep insights and take focused action. Our PNG segmentation, in conjunction with other key ACG System features (such as Emergency Department Visit Classification), will allow users to understand where to quickly focus their population health strategy.

The PNG Module has Three Components:

Patient Need Groups:

a core set of 11 population segments

Care Modifiers (CM):

indicators that reflect opportunities for clinical intervention

Predicted Total Cost Risk:

levels used for insightful overlay of predicted cost with current health needs

Patient Need Groups

While other population health groupings identify patients by disease state, care episode or utilization incident, the ACG System has always been focused on a whole-patient approach to care. Patients, particularly those with complex health needs, cannot be defined simply in terms of their disease states ("a diabetic") or incident ("a readmission") outside the context of the whole person. This fundamental principle underlies the ACG System's longstanding and well-validated approach to measuring multimorbidity.

Our newly developed PNG segmentation takes our multimorbidity approach to the next level by assigning mutually exclusive, hierarchical and clinically-relevant categories that are easy to understand and apply.

ACG Patient Need Groups

PNG01	PNG02	PNG03	PNG04	PNG05	PNG06	PNG07	PNG08	PNG09	PNG10	PNG011
Non User	Low Need Child	Low Need Adult	Multi-Morbidity Low Complexity	Multi-Morbidity Medium Complexity	Pregnancy Low Complexity	Pregnancy High Complexity	Dominant Psychiatric Condition	Dominant Major Chronic Condition	Multi-Morbidity High Complexity	Frailty



The core 11 Patient Need Groups represent a person-oriented approach to understanding health needs, applicable to all age groups and populations. Individuals move into and out of various levels of need over the course of their lifetime.

PNG categories can be used to understand a population's health needs, develop clinical programming specific to different patient types, understand utilization patterns and take targeted action to improve service use and costs.

Each individual is different, so describing a population based on the care they need is critical to understanding trends and deploying of an effective population health strategy.

Care Modifiers

The ACG System's proprietary Care Modifiers are actionable patient-specific factors that impact the patient's health needs. The Care Modifiers are a unique way of further stratifying different population segments by grouping impactable factors with known opportunity to improve care. As optional supplements to PNGs, the Care Modifiers provide yes/no flags for clinical characteristics of an individual, such as a care coordination issue or polypharmacy.

Care Modifiers add additional stratification and granularity within and across PNG segments, to focus on actionable opportunities to improve patient health.

Care Modifiers are indicators of individual traits with opportunities for clinical intervention and other special health care needs. Substance use, tobacco use, severe polypharmacy, care coordination and lack of primary care are potentially modifiable patient attributes that, if addressed, can generate a meaningful improvement in overall patient health.

Predicted Total Cost Risk Levels

Layering the PNG framework with the ACG System's predicted total cost risk levels enables users to rapidly identify high need and high risk individuals for health improvement.

The total cost risk levels stratify patients by predicted expenditures in the coming year, building upon the ACG System's existing total cost prediction model. Combining the PNG's clinically-oriented health needs with the patient's predicted cost draws attention to specific categories of high-risk patients and allows for rapid understanding of differences between patient groups.

Cost Risk Insights

High-risk patients are primarily driven by **frailty, complex pregnancy** and **multimorbid chronic disease**

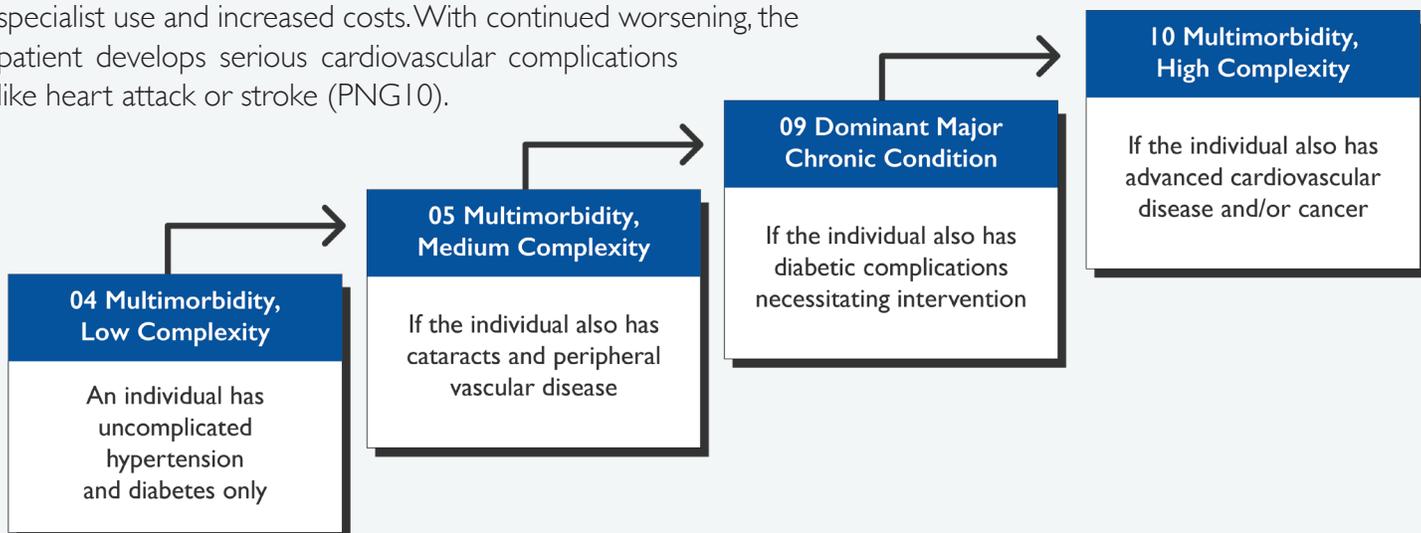
15% of patients with a dominant mental health condition fall into the highest predicted cost category

6% of emergency room visits occur in healthy children with low medical needs

PNGs: A Deeper Dive

As we've described, PNGs represent an ascending set of health needs, beginning with low-need individuals and rising to multimorbid and frail. At any given time, a person is assigned the highest segment that represents their individual needs.

Imagine an individual with uncomplicated diabetes and hypertension, assigned to PNG04. The person may be newly diagnosed, progressed from pre-diabetes or trying to manage with diet and lifestyle. As their conditions worsen, they begin to develop disease complications and progress to PNG05 – they have more complex medical needs as a result of their complications. Without optimal diabetes management, complications worsen and require intervention – representing a worsened health status (PNG09) for the patient, higher specialist use and increased costs. With continued worsening, the patient develops serious cardiovascular complications like heart attack or stroke (PNG10).



For some additional insights, let's take a look at utilization and cost through the lens of selected PNGs¹. Fortunately, most of the plan's diabetics fall into low and medium complexity categories. While only a small fraction (4%) have highly complex multimorbidity, this subset is almost 10 times as costly as their less complex counterparts. **As we typically see, despite being the smallest patient group, the highest need patients account for the highest costs and vast majority of hospital utilization.** Understanding who these patients are and how to help them is essential in reducing health care costs and improving patient care.

PNG	% Diabetics	PMPM cost*	% of inpatient days
04: Multimorbidity Low Complexity	21%	\$151	3%
05: Multimorbidity Medium Complexity	15%	\$351	7%
09: Dominant Major Chronic Condition	7%	\$985	11%
10: Multimorbidity High Complexity	4%	\$3,314	73%

*PMPM= Per Member Per Month

How can this information help users improve their population health strategy? First, by designing and directing care improvement programs based on individual needs. We know individuals are most responsive to messaging and health interventions that are tailored to their needs. Less-complex PNG groups may receive digital health improvement programs such as the [Johns Hopkins Blossom program](#), to focus on appropriate lifestyle management and prevention of worsening disease. Likewise, additional resources may be focused on highly-complex patients, to focus on management of serious cardiovascular disease and prevent future hospitalizations.

PNGS ALLOW FOR TARGETED, WHOLE-PERSON CARE

Ultimately, however users decide to mix and match the various elements of PNGs for their specific populations, the result is the same—targeted, patient-specific insights that lead to actionable results.

Best of all, PNGs allow ACG System users to stay a step ahead of their population's needs with an advanced view of segment-level performance and trends, improving resource allocation by directing precise efforts towards the specific patients most likely to benefit.

*To learn more about PNGs and the ACG System, please visit HopkinsACG.org, or email info@HopkinsACG.org.
If you are a current ACG System user, please contact your account manager.*

¹ Data on file at JHHCS; sourced from an ACG System customer Medicaid plan engaged in PNG beta-testing. Categories truncated for illustrative purposes.