Q&A

Smarter Segmentation: Identifying and Addressing Rising Risk Patients to Improve Population Health

WWW.HOPKINSACG.ORG

In the world of population health analytics, **population segmentation** is an integral part of data analysis. At its most basic level, **segmentation separates a population into distinct groups based on specific health needs, individual characteristics or specific behaviors**. By identifying and categorizing similar individuals or groups, health care providers can tailor interventions, programs and communication strategies to address those individuals' needs.

Closely related to population segmentation is **risk stratification** — or **categorizing individuals within a population based on their level of health risk** or likelihood of experiencing certain health outcomes. The goal is to prioritize resources and interventions for individuals who are at a higher risk of poor health outcomes.

So, how does this apply to you?

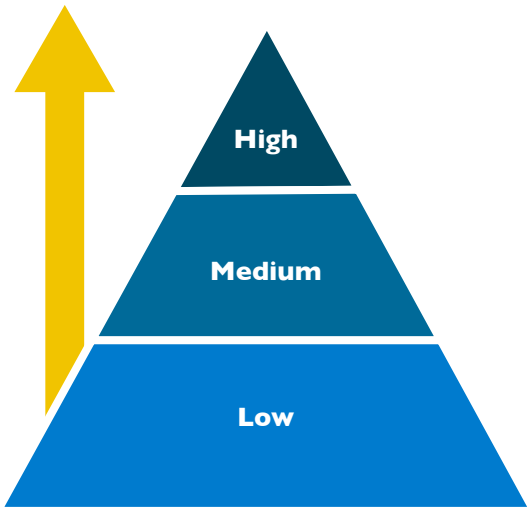
Health care providers can benefit greatly from using data analytics to segment patient populations and stratify risk:

- Effectively manage patient populations
- Optimize resource allocation
- Improve the quality and efficiency of care delivery
- Enhance patient outcomes
- Reduce costs
- Improve population health

Population health analytics experts at Johns Hopkins HealthCare Solutions have put together this handbook to guide you on how to use analytics to identify rising-risk patient cohorts and enable effective intervention.

Q: "What is 'rising risk' and why is it a top priority in population health management?"

A: When thinking about the levels of patient need as a pyramid, low-risk patients are in the bottom tier, often representing the largest group of patients with the lowest health care costs. These patients are generally healthy and often refill their prescriptions (if they have any) on time, receive regular preventive health care and have a minimal number of, or well-managed, conditions.



The patients at the very top of the pyramid have the highest amount of need. They have the highest health care costs, may have multiple chronic conditions or be frail or elderly. This group of patients requires a lot of attention, and they are unlikely to move back into one of the lower-need categories, even with intensive care and intervention.

The largest segment that can be positively affected by effective interventions is the rising risk category of patients, or the patients in the middle of the pyramid who are on their way to becoming high risk. The health status of these patients is gradually worsening, indicating an increasing likelihood of developing new or additional chronic conditions or experiencing adverse health events in the near future. **The goal is to mitigate this group's risk by either intervening to support patients back into the lower-need category or prevent them from moving up the pyramid to the highest level of need.** Targeted interventions in this population are crucial to determining better health outcomes for patients and mitigating health care costs.

An individual with rising risk may have behavioral, social and clinical risk factors that predispose them to future health problems. They may already have one or more chronic conditions, including a mental health condition, issues with medication adherence, above-average utilization of health care resources and be a tobacco user or an individual without access to personal transportation. By proactively identifying this population, health care organizations can engage individuals in preventive care, such as lifestyle interventions, health education programs or care management initiatives that promote healthier behaviors.

Effectively managing rising risk individuals isn't easy. It requires a comprehensive population health approach that integrates data analytics as well as personalized interventions. By identifying and engaging rising risk individuals early on — and providing them with the necessary support and resources — you can help mitigate the progression of health issues and ultimately improve the overall health and well-being of your population.

Q: "My organization uses a risk score, why is that not enough?"

A: Each patient's relative risk—whether they are low, medium or high compared to the rest of the population—is typically presented as a risk score. Risk scores measure the likelihood that an individual will experience a particular outcome such as a hospital admission or emergency department visit. And while these scores are vital to understanding annual expenditures, **there is often more information to be considered about an individual, beyond their risk score.**

Here's why:

Lack of Context: Risk scores typically focus on individual-level factors such as demographics, health conditions and behaviors. However, they may not consider broader contextual factors such as social determinants of health (e.g., socioeconomic status, access to care, environmental factors) that significantly influence health outcomes at the population level.

Dynamic Nature of Health: Health risks and outcomes are dynamic and multifaceted. A static risk score may not adequately account for changes in health status over time, evolving risk factors or the impact of interventions aimed at improving health outcomes.

Population Diversity: Populations are diverse, with individuals varying widely in their health needs, preferences and responses to interventions. A one-size-fits-all risk score may overlook the unique characteristics and needs of different subgroups within the population.

Interconnected Risks: Health risks are often interconnected, with complex interactions between physical health, mental health, lifestyle factors and social determinants. A risk score focusing solely on one aspect may miss important connections and patterns in the data.

Actionable Insights: While a risk score can identify individuals at higher risk, it may not provide actionable insights into how to effectively intervene and improve population health outcomes. A more comprehensive approach that integrates data analytics, clinical expertise and community resources is needed to develop targeted interventions that address the underlying determinants of health and mitigate risks effectively.

So while risk scores are valuable tools for identifying individuals at higher risk, they should be complemented with a broader population health management strategy that considers contextual factors and rising risk, among others variables, to achieve meaningful improvements in population health outcomes.

More than a risk score

When focusing on rising risk populations, a view of whole person health and overall health care utilization is needed. The ACG System has different risk models to help you achieve your goals:

Concurrent risk - understand retrospective patterns of health care utilization and cost compared to a reference population
Predictive risk - measure future health risk and cost compared to a reference population
Hospitalization risk - evaluate the likelihood of certain events occurring in the next 12 months (e.g. hospitalization or readmissions)

Using diagnosis and pharmacy data from across primary and secondary care settings as inputs to the risk models ensures a comprehensive methodology to give you confidence in your population health management risk stratification approach.

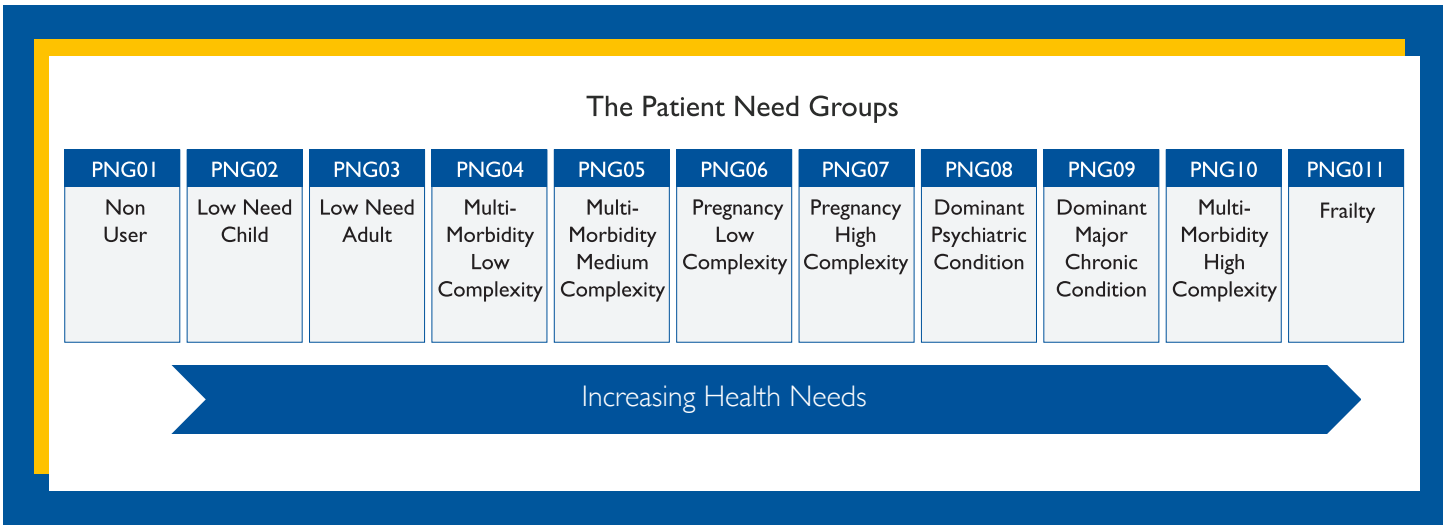
Q: "How can I use the ACG System to identify rising risk patients?"

A: The ACG System's core models focus on whole-person health, which gives a more complete view of the utilization of health care resources an individual may need over their lifetime. Patients, particularly those with complex health needs, cannot be defined simply in terms of a single disease state ("a diabetic") or episodic event ("a readmission") outside the context of the whole person. The fundamental principle of patterns of comorbidity underlies the ACG System's longstanding and well-validated approach to measuring risk. But how does the ACG System identify rising risk patients?

Many population health tools provide predictive models, risk scores and other clinical markers to understand the likelihood of future costs and utilization. **But the ACG System goes 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.**

One unique segmentation feature — Patient Need Groups (PNGs) — expands the focus beyond high-risk groups such as the elderly and disabled and allows users to focus on rising risk patients, such as those with newly diagnosed or worsening chronic diseases.

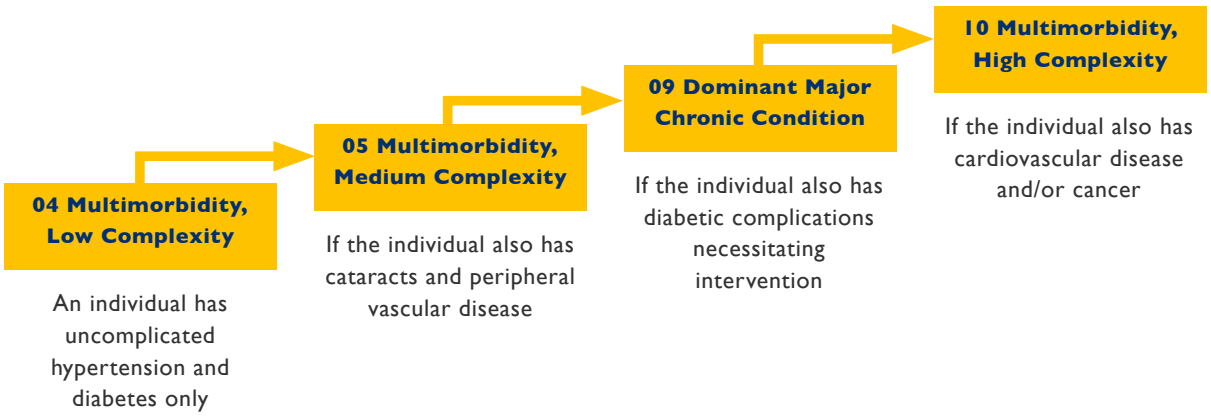
Our PNG methodology assigns individuals into mutually exclusive groups, allowing ACG System users to gain deep insights and take focused action. The core 11 Patient Need Groups represent a person-oriented approach to understanding health needs, applicable to all age groups and populations. Individuals move into and out of various levels of need over the course of their lifetime.



Q: Where would a person with rising risk fall on this continuum?

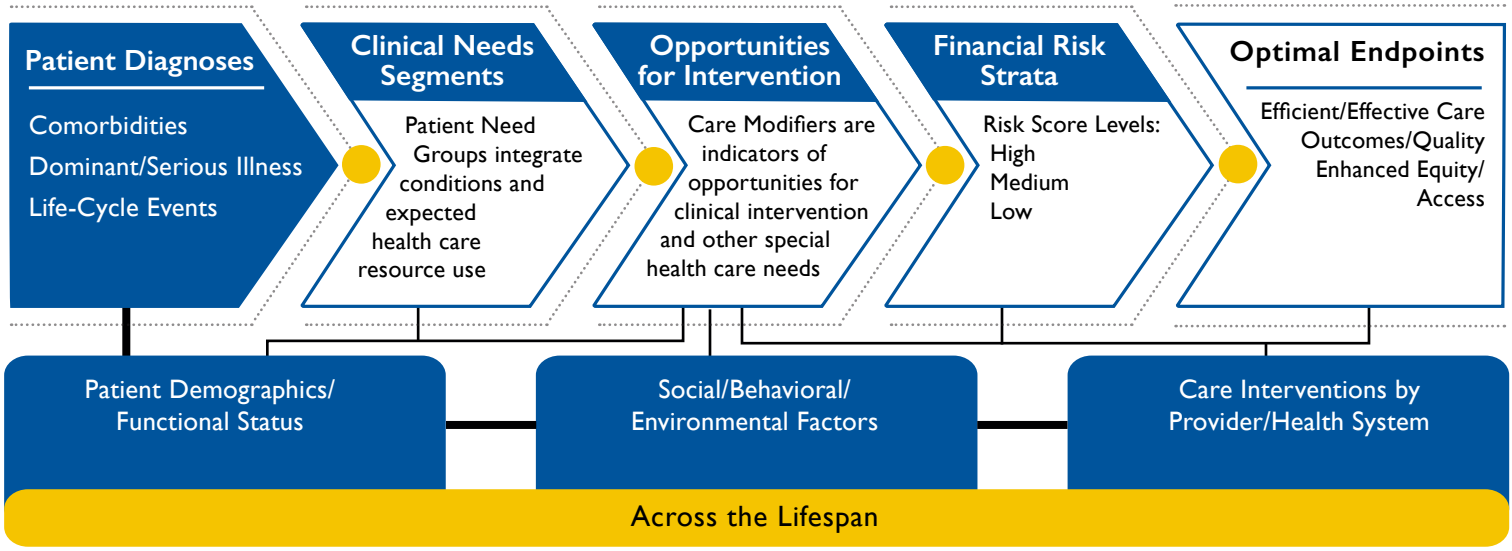
A: Imagine an individual with uncomplicated diabetes and hypertension, assigned to PNG04. The person may be newly diagnosed, progressed from pre-diabetes and trying to manage their diagnosis with diet and lifestyle changes. As their conditions worsen and require the use of prescribed medications, they 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 more severe health status (PNG09) for the patient, higher use of more specialist resources and as a result, increased costs. With continued worsening health, the patient develops serious cardiovascular complications (PNG10).

The goal is to identify the patient before complications worsen and — through targeted interventions and resources — bring them back into the lower-need category or prevent them from moving to the highest level of need.



What makes PNGs different? **PNGs allow us to examine clinical need and financial risk factors at the same time.** These richer insights can help facilitate more efficient care and targeted clinical support.

Take a look at the figure below, which depicts how the PNG framework interacts with multiple factors to impact and explain health outcomes.



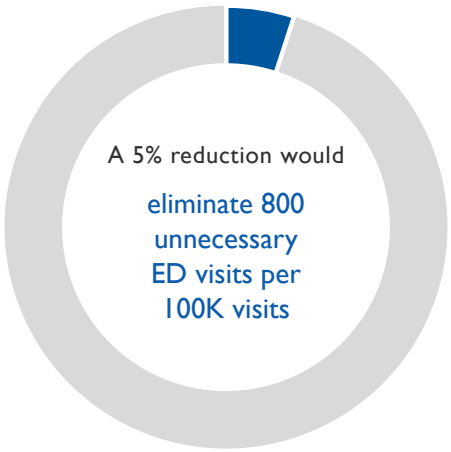
Q: "How can my organization use risk stratification to improve our population health strategy?"

A: Hospitals, health systems and other health care providers can use risk stratification to identify and prioritize individuals based on their likelihood of experiencing certain health outcomes or events. By analyzing and categorizing their population into different risk groups, health care providers can tailor interventions and allocate resources more effectively.

Reduce Cost of Care

Most health care organizations operate with lean resources, making the efficient delivery of high quality resources a priority. Additionally, many providers have implemented or joined incentive payment programs designed to reduce the cost of care while improving outcomes – known as Value Based Care (VBC) programs. In VBC arrangements, the two areas most often targeted for cost reduction are **hospitalizations/readmissions** and **emergency room visits.** Both of these are high-cost events where **risk-driven patient engagement programs could have a significant impact on cost savings.** In fact, just a 5% reduction in unnecessary emergency department visits could save nearly one million dollars per year.

REDUCING THE NUMBER OF PREVENTABLE ED VISITS COULD RESULT IN SIGNIFICANT COST SAVINGS



At an average cost of $1,055 per visit, the cost savings would be

-$1M per 100k visits

Learn more about ED cost savings in this blog post.

Tailor Interventions

High-risk individuals often require more intensive and coordinated care because of the number of disparate specialist providers they are seeing. Health systems can design targeted care management programs to address the specific needs of these individuals, preventing complications and reducing health care costs.

Individuals are most likely to engage with messaging around health interventions that are tailored to their needs. Interventions for less-complex PNG groups may focus on appropriate lifestyle management and health education to prevent worsening illness. Patients in more complex PNG groups may require additional clinical and medication resources focused on management of serious cardiovascular disease and preventing future hospitalizations.

Manage Patient Health Needs Proactively

At the core of effective population health management lies the ability to proactively and effectively manage a population's health needs. Retrospective risk analysis can offer invaluable insights into disease patterns, enabling health care providers to anticipate and address health needs before they worsen. By examining social determinants of health (SDOH) markers, such as socioeconomic status, education level and access to resources, organizations can better allocate services, ensuring equitable access to care for

all patients. Moreover, understanding care coordination risk enables health care leaders to deploy the appropriate staff members, creating seamless transitions between different levels of care. These insights help to facilitate the implementation of tailored interventions such as more frequent follow-up visits, specialized referrals, lifestyle modification education, medication management programs and other services aimed at mitigating health risks, specifically for rising-risk patients, and reducing costs.

Risk stratification and segmentation offers a simple yet effective way to understand and address the diverse needs of your patient groups. Among these, the ACG System stands as a unique toolkit, offering the tools to implement effective population health management strategies and allowing you to pioneer a path towards optimized care delivery and improved patient outcomes.

To learn more about the ACG System, please contact acginfo@jh.edu. If you are a customer needing further guidance on using the ACG System to identify your rising risk population, please contact your account manager.

ABOUT THE JOHNS HOPKINS ACG SYSTEM:

The ACG System is a flexible, transparent set of tools developed and validated by scientists and clinicians at the Johns Hopkins Bloomberg School of Public Health. The ACG System is used by Medicare, Medicaid and commercial health plans in the U.S.; health care providers; and technology companies. Customers use the ACG System to segment their patient populations and to process their organization's existing medical, pharmacy and lab data to generate clinical risk markers and predictive models at the population and patient level. The ACG System provides health care analytics teams with the insights they need to inform rapid decisions about patient care, resource planning and service design.

acg
JOHNS HOPKINS