

# The Johns Hopkins ACG® System

## Proactive identification of individuals at higher risk of adverse outcomes from COVID-19



Located in the UK, NHS South Central & West Commissioning Support Unit (SCW) are long-term users of the Johns Hopkins ACG System. Recently the SCW team has been helping health care organizations and clinicians identify individuals at a higher risk of complications as a result of contracting COVID-19.

Proactively providing outreach and resources to at-risk patients is critical to population health. The ACG System is able to classify diseases and map diagnosis codes into approximately 280 disease groups called Expanded Diagnosis Clusters (EDCs). The EDCs – and other markers within the ACG System – simplify the translation of the outreach specifications issued by organizations such as the

Center for Disease Control, the World Health Organization or departments of health.

Filters are applied to the data within the ACG System to identify the group of individuals most vulnerable to complications as a result of contracting COVID-19. For the purpose of the SCW's analysis, only patients over 65 – or under 65 with certain chronic conditions – were considered.

## PROACTIVE RISK MANAGEMENT

The UK Government and National Health Service require the identification of individuals at a higher risk of complications from COVID-19. This necessitates proactive risk management for 20% of the population.

## THE APPROACH

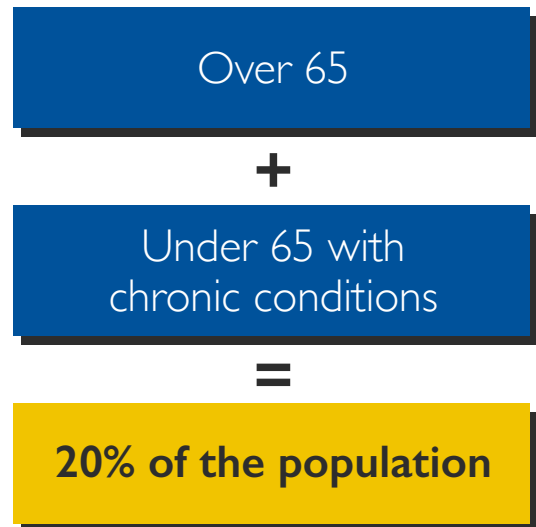
In order to provide outreach to patients matching the guidelines issued by NHS England, SCW used the following methods of identification:

- **ACG System outputs**
- **Cross-reference against functional vulnerabilities (such as a mental health diagnosis)**
- **3 age band segments (children & young adults, adults of working age, older adults)**

SCW's Insight Population Analytics platform (IPA) includes the integration of the ACG System. Working collaboratively with the IPA platform and clinical inputs, the SCW team was able to identify and segment the at-risk population into smaller and more contactable groups.

With clinical input from Dr. Steven Laitner of the National Association of Primary Care – as well as managers and clinicians from Berkshire West Integrated Care

Partnership – the team designed a segmentation model to confirm the groups created were clinically sound and contained a manageable number of individuals.



## THE OUTCOME

The population at higher risk of complications from COVID-19 was too large a group of people to proactively manage all at once. Through their segmentation and stratification of the at-risk group, SCW has provided their customers with a breakdown of that group so that they can prioritize candidates for proactive clinician, care manager and social worker intervention.

“We worked with respected academic partners and networks on population health, using a variety of tools including the Johns Hopkins Adjusted Clinical Groups (ACG) System, giving customers the opportunity to engage with integrated data in a meaningful and powerful way. Using the ACG System as an integral part of our IPA solution means we have access to a very detailed dataset to allow very specific fine tuning, ensuring the outputs are tailored to the task in hand quickly and efficiently. This prototype was developed within five working days and the approach has now been piloted, so the principles that were used would be useful for Primary Care Networks and other healthcare groups.”

**-Chris Morris, Associate Solution Lead  
Population Health Management and Business Intelligence at SCW**

## SEGMENTATION MODEL WITH PATIENT DISTRIBUTION

Life Course

Vulnerability Types	Life Course			Total
	Children and Young Adults (0-24 years)	Adults of Working Age (25-64 years)	Older Adults (65+ years)	
None	73	1,859	1,205	3,317
Functional Only	20	747	2,119	2,886
Mental Health Only	16	569	208	793
Social/Environmental Only	3	84	153	240
Any Two Vulnerability Types	17	558	1,470	2,045
Functional plus Mental Health plus Social/Environmental	1	86	437	524
	130	3,903	5,592	9,625

*This type of segmentation analysis allows the health care organization to tailor interventions to the specific needs of the people in each segment.*

## 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.



*To learn more about the ACG System, or if you are a customer needing further guidance on using the ACG System for risk stratification, please contact [acginfo@jh.edu](mailto:acginfo@jh.edu)*