"People should be seen as more than a list of discrete diagnosis codes, on the back of discharge paperwork – people with multiple chronic diseases are more than the sum of those individual codes."

Providing healthcare services across the South Yorkshire region, The Rotherham NHS Foundation Trust cares for a population of over 270,000 people. Rotherham is a town with high levels of deprivation with over 50,000 people living in deprived areas. The population is older than the national average, the majority being white British with approximately 20,000 people from minority ethnic groups.

The vision for informatics is to be 'digital by default' and be a leader in providing integrated digital services for the Trust and beyond.

Population	Outpatient	AE Attendance	Operations	Employees
270,000	260,000	93,000	35,000	4,750

The Rotherham NHS Foundation Trust study of the Same Day Emergency Care (SDEC) population

Solventum partnered with The Rotherham NHS Foundation Trust (TRFT) to study how **Solventum™ Clinical Risk Groups (CRGs)** could provide them with better, more actionable insights into their inpatient utilisation patterns. The team were particularly keen to study the SDEC population and develop insights and understandings of the link between burden of illness and service utilisation for this population cohort.

Turning data into insight

"When we first met with Solventum to investigate the concept of Clinical Risk Groups (CRGs), we were immediately able to see where the potential was for us to understand our inpatient population differently.

With ever increasing focus on admission avoidance, the use of virtual wards and community interventions to prevent deconditioning in hospital, it was a perfect time to explore how Solventum CRGs could help us understand our patients' ongoing needs, as well as an opportunity to undertake a retrospective look back over their last year of care and deteriorating with regards to presentation to acute care.

It is a new area, and the conversations are only just getting started in the UK around how best to utilise segmentation models such as these. Solventum has a wealth of data to explore through patient clinically coded records which gives us a great starting point and it was a pleasure to work with the team as they build on the international use cases already in place."

Lisa Fox, Deputy Director
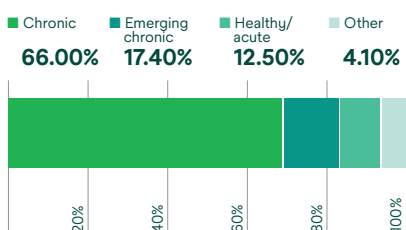Data and Insight, The Rotherham NHS Foundation Trust

In a first UK pilot, The Rotherham NHS Foundation Trust was able to demonstrate that Solventum CRGs could be successfully applied using NHS data to generate clinical insight around the service population that could be used to improve care management protocols, and support actionable insights into transitions of care, in the acute care setting and shared with community partners.

Key findings from The Rotherham NHS Foundation Trust research demonstrated the potential for Solventum CRGs to provide:

- analysis and prioritisation of care management programs based on patient burden

- segmentation of patient populations into clinically relevant groupings accounting for all patient diagnosis codes. Thus, providing a holistic view of the severity of illness of the patient population that moves beyond individual disease states

- better understanding of how mental health impacts upon care utilisation and readmissions across all chronic disease cohorts
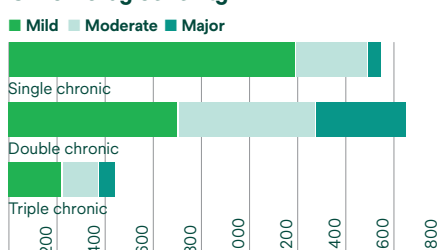
Two-thirds of the SDEC population have one or more chronic diseases.
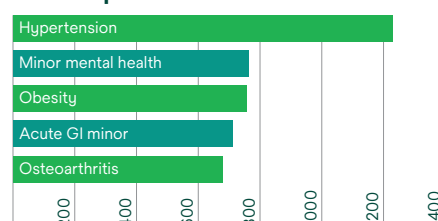
Chronic vs. non-chronic

■ Chronic ■ Emerging chronic ■ Healthy/acute ■ Other

66.00% **17.40%** **12.50%** **4.10%**

Lower severity single and double chronic patients account for nearly of 90% of the chronic population.

Chronic by severity

■ Mild ■ Moderate ■ Major

Single chronic
Double chronic
Triple chronic

Hypertension is the most prevalent chronic disease by some considerable margin.

Top 5 EDCs of single and double chronic patients

Hypertension
Minor mental health
Obesity
Acute GI minor
Osteoarthritis

For 94.0% of the 'Healthy/Acute' attendees their SDEC attendance was their only contact with that healthcare provider.

Additionally, we were able to demonstrate the impact of mental health on health care utilisation. For those patients who had at least one contact with SDEC, and who had one or more inpatient stays during the two-year study period the presence of a mental health condition extended their average length of stay and the impact of mental health increases along with patient acuity as measured by Solventum CRGs.

Hospital days by health status and MH flag

■ Non-MH flag ■ MH flag

	Non-MH flag	MH flag
Total	4.5	9.2
Pregnancy/delivery	4.5	7.1
Acute	1.7	3.1
Minor chronic	1.6	2.2
Single chronic	2.8	3.8
Double chronic	7.2	10.6
Triple chronic	14.8	23.3
Malignancy	30.9	68.8
Catastrophic	17.9	19.9

Identify medically complex individuals within a population

Solventum™ Clinical Risk Groups (CRGs) can be used to provide more accurate, comprehensive, and actionable insights into patient cohorts. In addition, the software provides an ability to understand the total burden of illness of a patient, sometimes called the patient risk, and drive improved care management strategies. Appropriate application of the Solventum CRG algorithms have the potential to drive better outcomes for patients and more efficient effective health care delivery. The most important factor that Solventum CRGs provide is the human factor. Solventum CRGs account for more than a single disease state or list of diagnosis codes and consider the whole patient.

Solventum CRGs offer the following benefits:

- Based on diagnoses, procedures, drug codes, functional and mental health status
- Able to assign each patient into a single, mutually exclusive category
- Takes a clinically driven, whole-person approach to measuring a patient's burden of illness
- Derives a patient's severity level from a clinical understanding of their chronic disease burden

- Able to support a comparison of the types and amounts of services across clinically similar individuals – 'compare apples with apples'
- Able to work in both concurrent and prospective modes
- Offers granularity and specificity

As a pure clinical categorical model Solventum CRGs are uniquely well placed to be applied to international healthcare settings. This project has demonstrated the ease with which Solventum CRGs can be applied to UK NHS data, to bring that data to life, to generate information and deliver insight that answers crucial questions.