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Command center: Myth or reality for hospitals in Europe?

CONGRESS '19
EAHM
BELGIUM - GHENT

Breakthrough Performance

Command centres – a new approach to the management of care at scale

October 28, 2019

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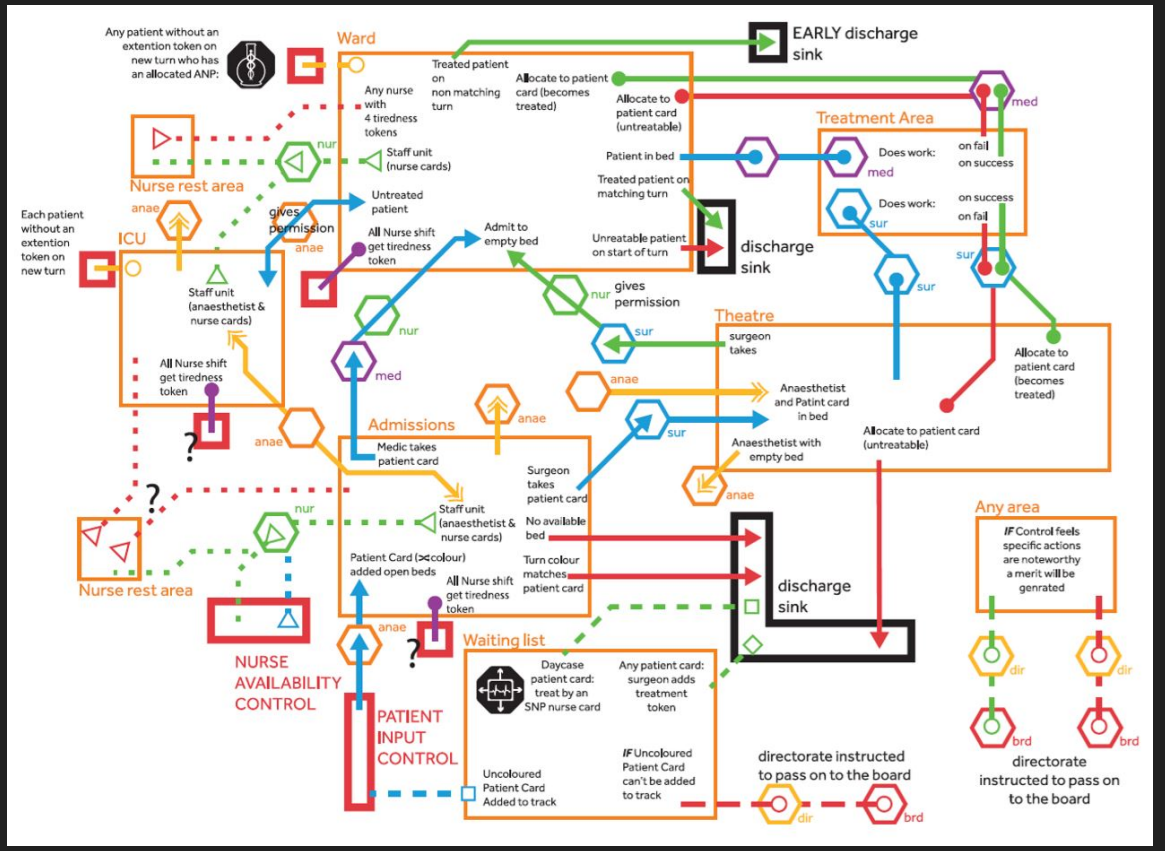
nd Centre
Breakthrough
DIAGNOSTIC IMAGING
SCHEDULED
ORDERS

Hospitals and care systems are (very) complicated

- Complexity – hundreds of interlinked pathways
- Multiple long queues
- Multiple managers l20-50) looking at different elements of flow
- Multiple (30-200) information systems
- Multiple reasons and pressure to improve patient care and performance
- Throughput – the rate of patient flow impacts:
  Quality and safety
  Finances
  Access to care



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NASA
Centralised team

Airline Operations Centre
Centralised team
Shared information

Chinese Railways
Centralised team
Shared information
Predictive analytics
投影时代
www.PjTime.com

Hospital command centre
Centralised team
Shared information
Predictive analytics
Action-focused

What is a Command Centre?

A co-located team using artificial intelligence 24x7 to optimize the delivery of patient care in real time

- **Actions** designed to enable, help and support front-line caregivers
- **People** co-located to collaborate and act on common, consistent, real-time information
- **Analytic Tiles** to scan, detect and alert using real-time intelligence and advanced analytics

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Starting from a problem – the Bradford (UK) example
Challenges in non-elective flow

Pressure on ED: Congestion in ED and in Majors specifically is causing waiting, sub-optimal decisions, and pressure on staff

Capacity & Demand: Bed and staff capacity is not consistently matched to demand, resulting in delays and congestion.

Care Setting: Patients are not always placed in the most appropriate care settings first time, leading to sub-optimal care and extended length of stay.

Situational Awareness: Information required to make highly reliable decisions in real-time is not readily available or visible, leading to delays in care and variation.

Process-Driven Delay: Lack of process standardisation and operational rigour results in unwarranted variation, waste and extended length of stay.

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Bringing **teams** together – bed managers, theatre managers, logistics managers, clinicians

- ***73*** *BTHFT staff using design thinking principles to form the foundation of the BTHFT Command Centre*

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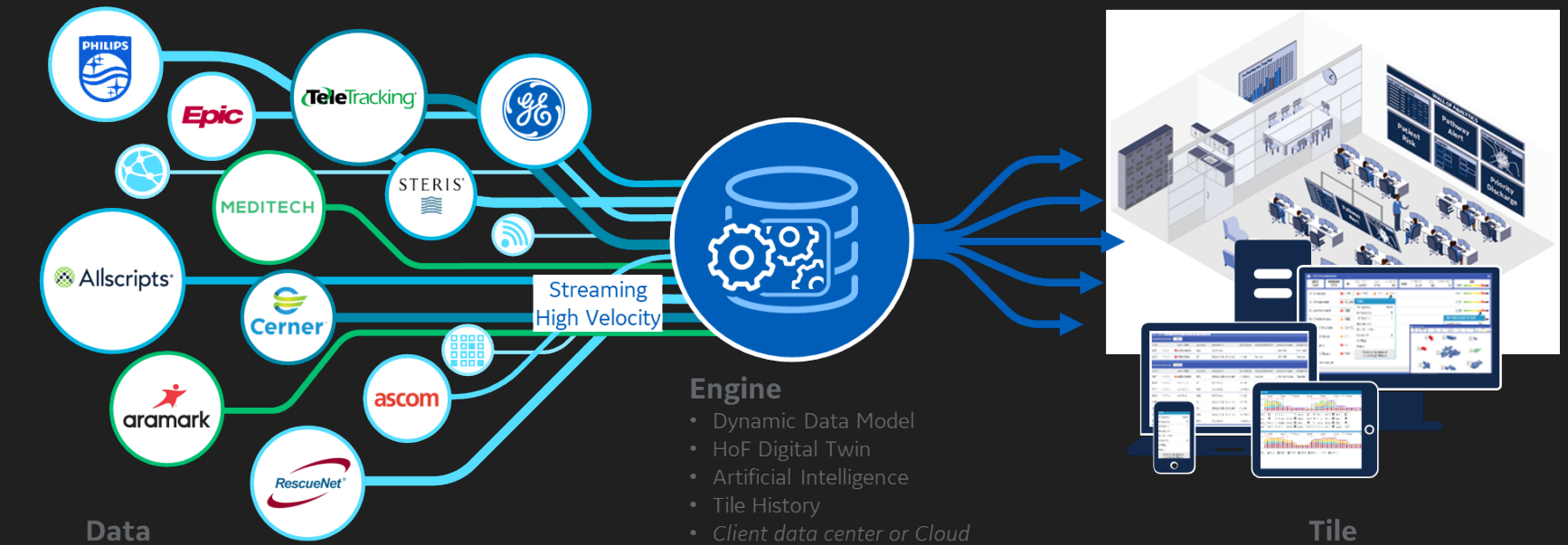
New Intelligence from Existing Systems

GE “Wall of Analytics” software platform applies advanced analytics to data from across existing systems, bringing it into one place to provide intelligence not available from any one system alone.



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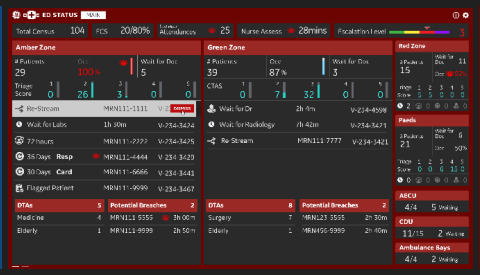
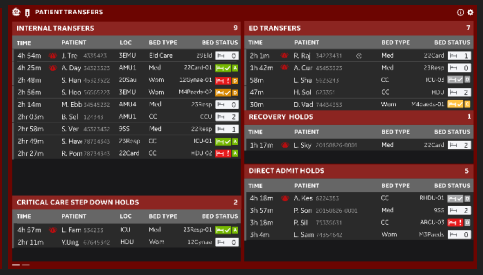
Analytic Tiles

Capacity Snapshot

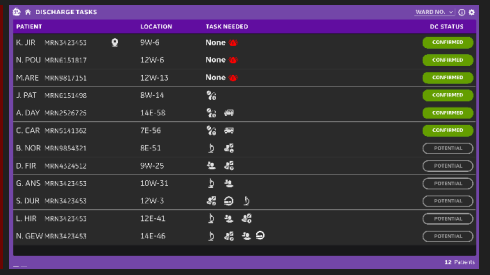
ED Status



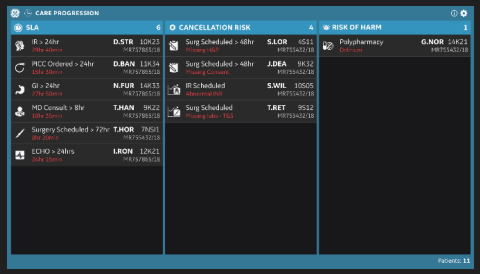
Patient Transfers



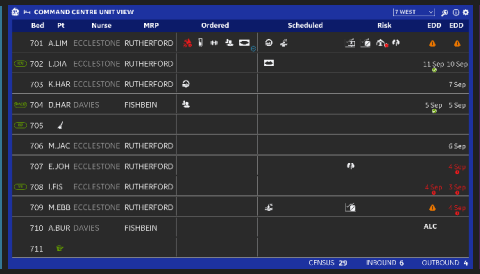
Discharge Tasks



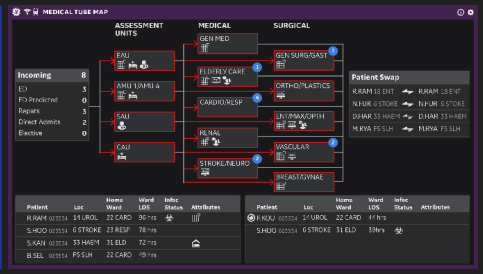
Care Progression



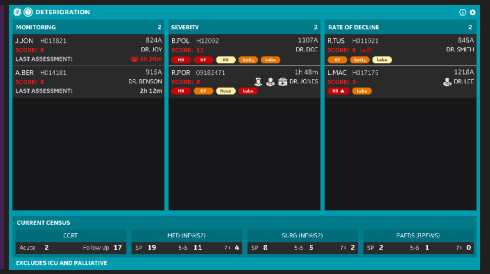
Ward Link



Right Patient, Right Place



Deterioration



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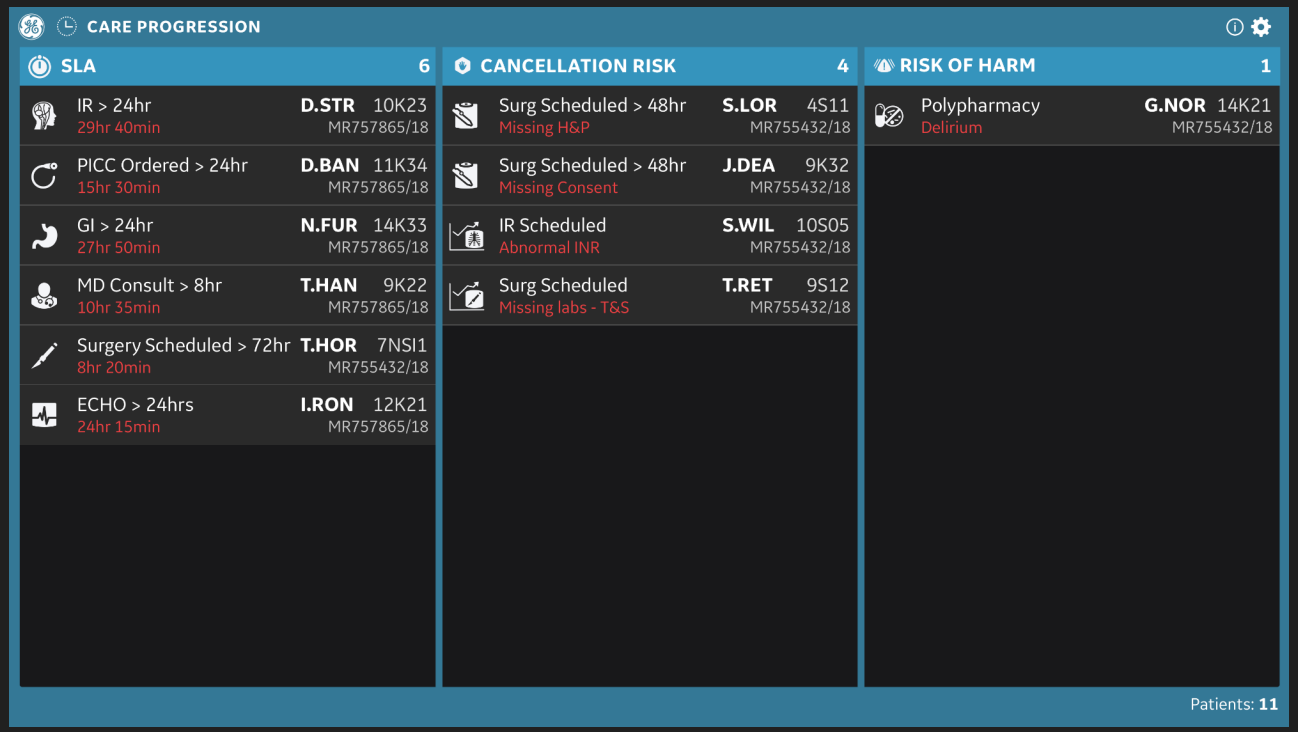
Care Progression

Real-time patient-level delays, potential cancellations and clinical risks



- Which patients are likely to cancel a procedure?
- Which patients won't be ready for their CT scan?
- Who has waited too long for lab results?
- Who is at high risk of infection?

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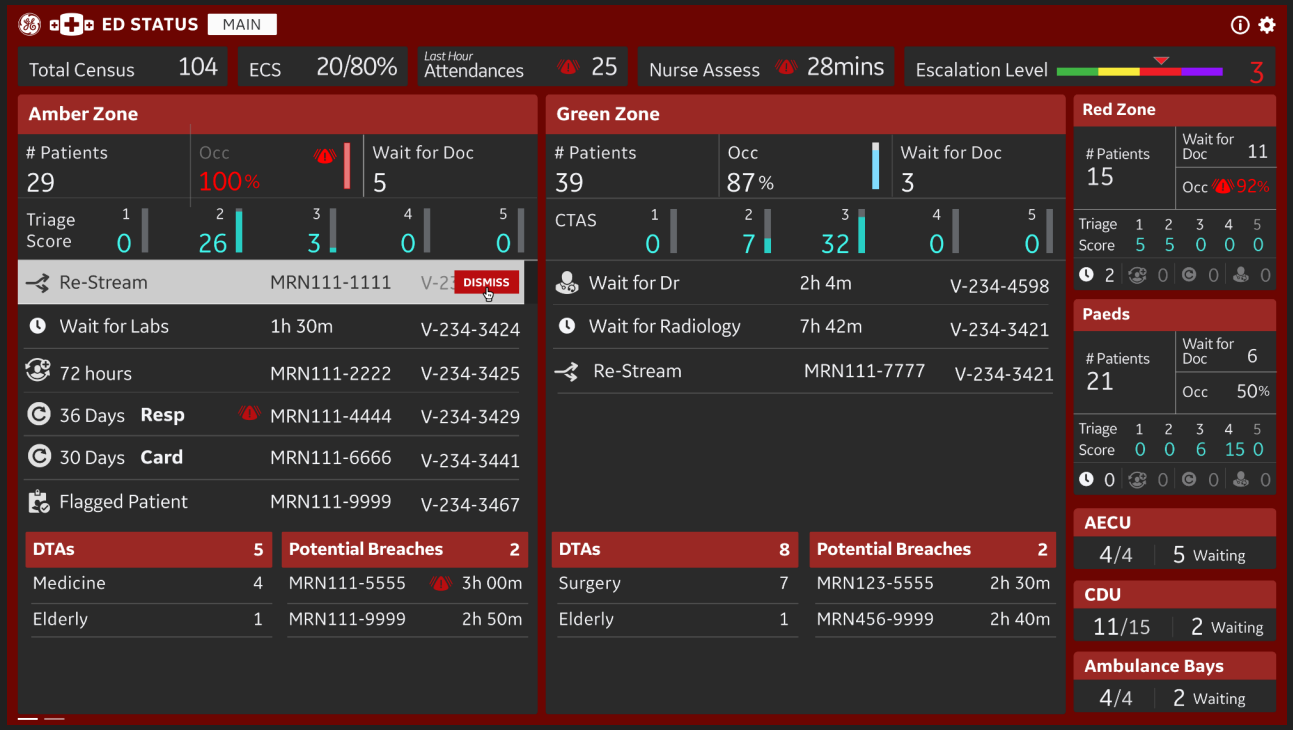
ED Status

Exception based alerts to patient-level delays in ED and essential situational awareness



- Who are my likely breaches and what is preventing them from moving?
- Is pressure balanced across all zones?
- Who was streamed to the wrong area?

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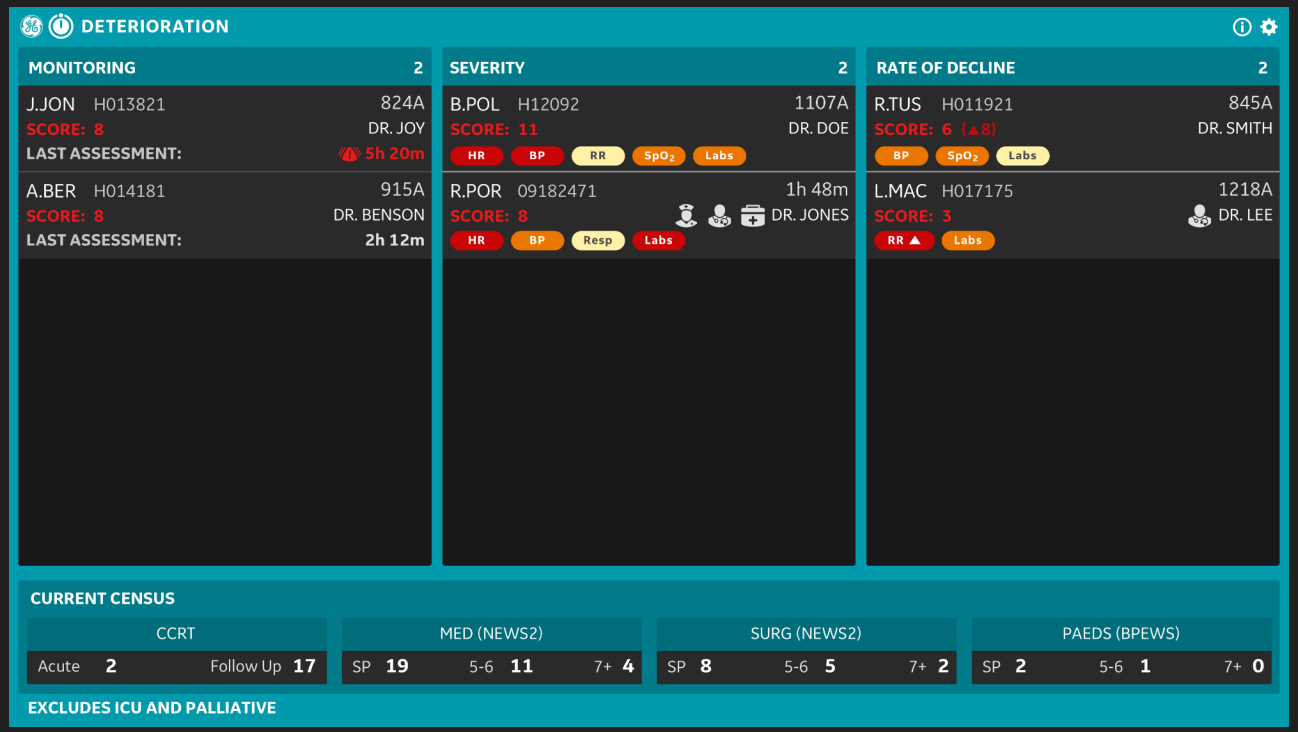
Deterioration

View of BRI's sickest patients to ensure they are being seen by the right staff at the right frequency



- Where are my sickest patients?
- Who is due for another clinical assessment?
- Which patients are showing the early signs of deterioration?
- What factors are driving a patient's deterioration score?

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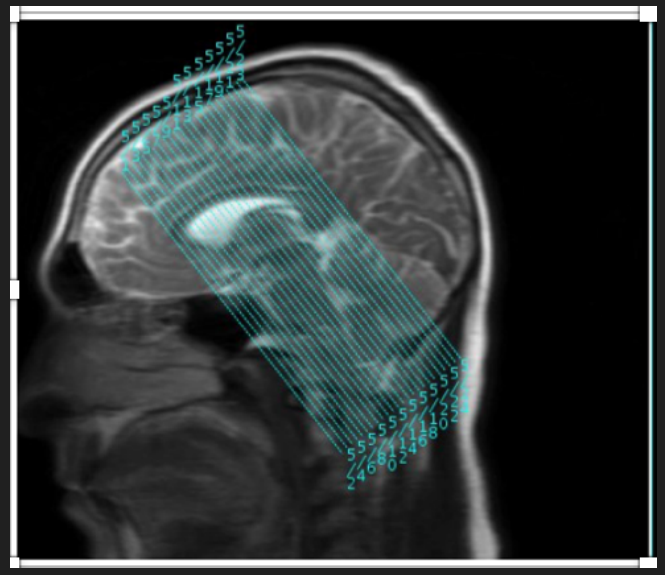
Predictive analytics

we already embed AI in medical devices – applying machine learning to create a digital twin of a whole hospital



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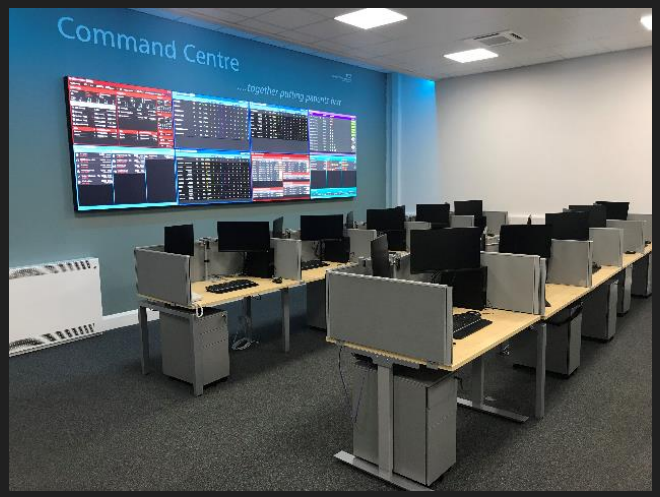
The Bradford Command Centre

Physical Space

1,000 square feet ● Video wall with 8 monitors (55”) ● 15 workstations ● Office ● Conference Room



Together, putting patients first

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Scalable Sustained Impact – the first

Johns Hopkins
Capacity Command Center

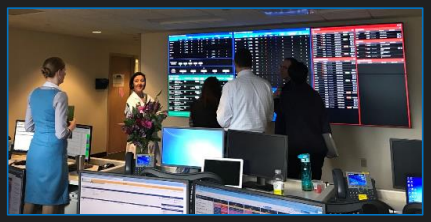
1: Access
2: Throughput
3: Care Progression
4: System Capacity
5: Critical Care
6: Imaging

- ✓**65% increase in transfer acceptance**
- ✓6 point increase in admissions
- ✓25% reduction in ED boarding
- ✓70% reduction in OR holds

Humber River
Quality Command Centre

1: Throughput & Access
2: Quality
3: Staffing & Imaging
4: Mother Baby
5: Deterioration
6: Risk of Harm
7: Frail & Elderly Patients

- ✓**56 bed equivalents created**
- ✓8 point increase in admissions
- ✓**52% reduction in acute conservable days**
- ✓23% reduction in ED boarding hours
- ✓38% reduction in U/S turnaround time



OHSU
Health System Mission Control

1: System Capacity
2: Throughput
3: Care Progression
4: Sepsis
5: Periop
6: Observation Mgt.
7: NASA Style Space

- ✓**+913 acute complex transfers**
- ✓+519 admission to partner hospitals
- ✓Sustained occupancy of +3.4 pts
- ✓CMI +.24 points
- ✓7:1 ROI in year 1

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