JOHNS HOPKINS MEDICINE

Using Technology to Help with Quality, Staffing and Economics: Command Center

Society of Academic Associations of Anesthesiology and Perioperative Medicine (SAAAPM)

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Disclosures and Bias

- No personal financial interests
- No off-label uses will be discussed
- Johns Hopkins and GE Healthcare have a financial agreement regarding command center IP
- Some content for this presentation has been provided by GE Healthcare

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Workstreams Reaching Conflunece

- Tele-ICU
- Alarms Management
- Command Centers

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A Model of a Tele-ICU

Photo from Tele-ICUs: Remote Management in Intensive Care Units -NEHI

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Command Center People

1. **Co-locate existing teams**
2. **Create new "expediter roles"**

CCs include some or all of:

- ❑ Bed Management
- ❑ Transfer Center
- ❑ Transport & EVS Dispatch
- ❑ Ambo & Flight Dispatch
- ❑ Patient Registration
- ❑ Procedure Scheduling
- ❑ RN Float Pool Scheduling
- ❑ Remote Radiology Reads
- ❑ Virtual Sitters
- ❑ Virtual ICU
- ❑ Virtual Hospitalists
- ❑ Telemetry
- ❑ Clinical Expediters
- ❑ Procedural Expediters
- ❑ And more…

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What is a Command Center?

Command Center Program Elements

New Department
- Co-locate functions
- New roles
- Hub for innovation, culture & learning
- **Clinical & operational**

Analytics Platform
- Scalable AI
- Engine & "Tiles"
- Cross-system & Open
- Outside the EMR
- **Real time, all time**

Cultural Transformation
- For patients and families
- Massive collaboration
- Enterprise & local optimization
- **New energy**

Reengineer Processes
- E.g., reallocate bed base, reinvent care mgt., optimize surgical schedule & flow, etc.
- Target w/ **Digital Twin**

Staff engaged to develop ideas with modern Design Thinking techniques

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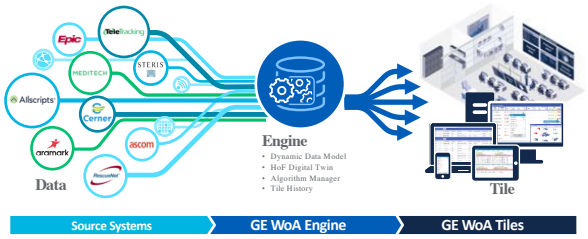
GE Wall of Analytics Software Platform applies advanced analytics to data from across existing systems



Source Systems → GE WoA Engine → GE WoA Tiles

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Examples of GE Command Center* Programs

Each center evolves over time, delivering more and more impact

Johns Hopkins Command Center
- ✓ Gen1: Access
- ✓ Gen2: Throughput
- Gen3: Clinical Care Pathways
- Gen4: Imaging
- Gen5: Critical Care
- Gen6: System

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

Humber River Command Centre
- ✓ Gen1: Throughput & Access
- ✓ Gen2: Quality
- Gen3: Mother Baby
- Gen4: 2nd Level Early Warning
- Gen5: Home Health
- Gen6: Virtual Sitters w/ Computer Vision

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

OHSU Mission Control
- ✓ Gen1: System Capacity
- ✓ Gen2: Throughput
- Gen3: Sepsis
- Gen4: Delays in Progression
- Gen5: NASA Style Space

Impact:
- ✓ 3 point increase in admissions
- ✓ 8 bed equivalents created
- ✓ 554 cross-system admissions

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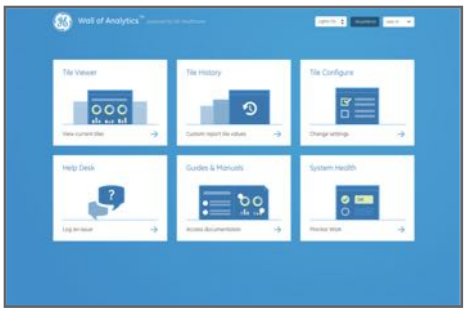
*Names vary: Command Center, Mission Control, Situation Room, etc.

Gateway to the Command Center



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Surgical ICU Beds

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Projecting ICU Holds

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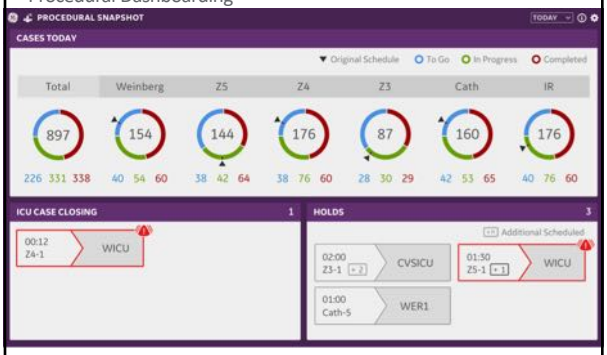
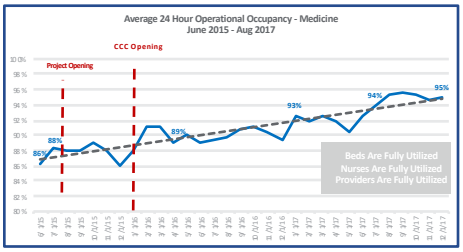
Procedural Dashboarding



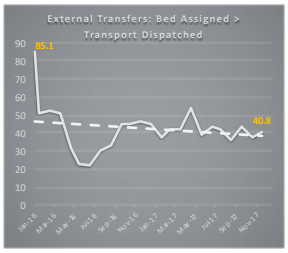
Operational Occupancy

Average 24 Hour Operational Occupancy – Medicine
June 2015 – Aug 2017



Results: Medic Unit Dispatch

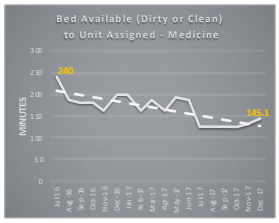
Lifeline medic units are being assigned more quickly for patient transfers



Results: Time to Bed Assignment

Beds are assigned sooner for Medicine admissions

- *New DOM staffing means providers are available*
- *"Decoupled" provider and bed assignment*

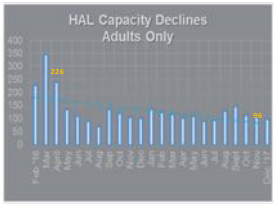


Results: Inpatient Boarding

- **Boarding time is reduced significantly**
  - *Fewer patients boarding at any given time of day*
  - *Further improvement expected although fundamental capacity is an issue.*

Results: Patient Transfers

- **Able to accept and transfer additional patients**
  - *Better able to accommodate volume and have increased transfer of specific patient types*

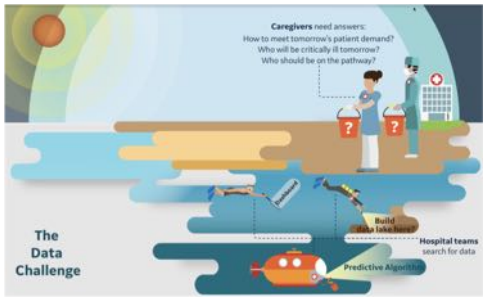


Results: OR Hold

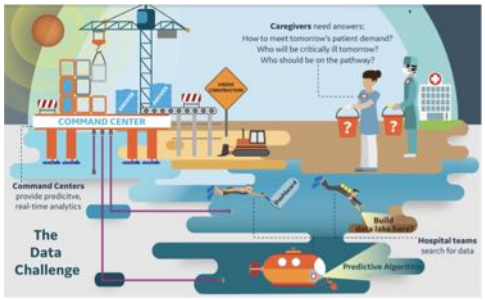
The number and length of patients holding in the OR post-operatively is reduced

– *Fewer case cancellations.*

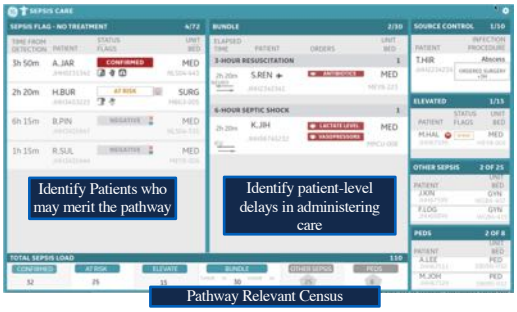
How will Clinicians Meet the Data Challenge?



Command Centers Provide a Clinical Data Managem Platform



Sepsis Pathway Tile – Stakeholder Engagement



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