

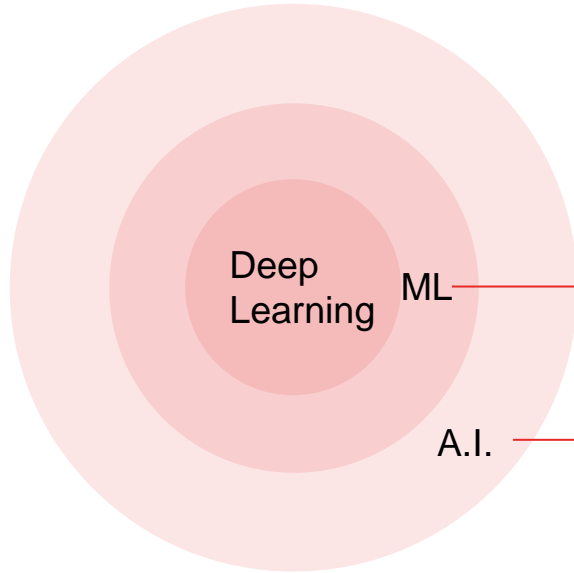


The Role of Artificial Intelligence

Enabling Operational Efficiency & Elevated Patient Experience

The Leadership Institute
May 18, 2017

What is ML / AI?



Machine Learning: Giving computers the ability to learn without being explicitly programmed

Artificial Intelligence: Study of intelligent agents that that perceives its environment and takes actions that maximize its chance of success at some goal

Questions?

“ ...Much of what we do with **machine learning happens beneath the surface**. Machine learning drives our algorithms for demand forecasting, product search ranking, merchandising placements, and much more. Though less visible, much of the impact of machine learning will be of this type – **quietly but meaningfully improving core operations**. ”

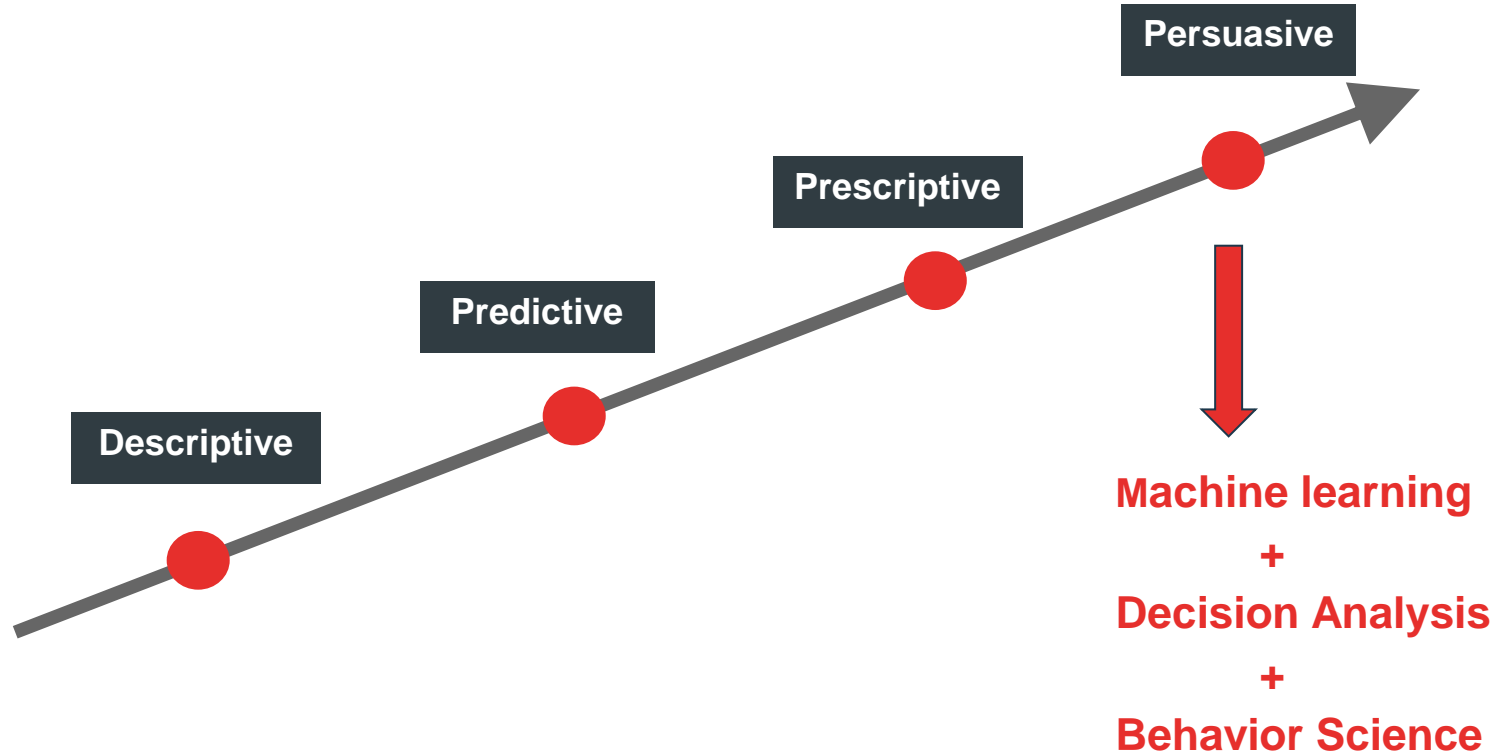


Jeff Bezos
Founder, Amazon
Letter to Shareholders,
2017



World class medicine: What is holding us back?

Lesson: The fallacy of more data



Emergency Department status

Showing the state of the emergency room on September 22 at 03:10 PM



Total Census



Recent Discharge
Length of Stay



Expected patients will
be discharged in the
next hour

Status Counts

Waiting Room (6)



Triaged (10)



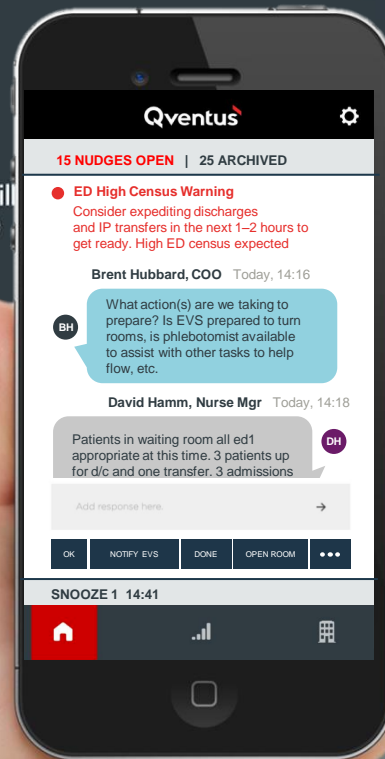
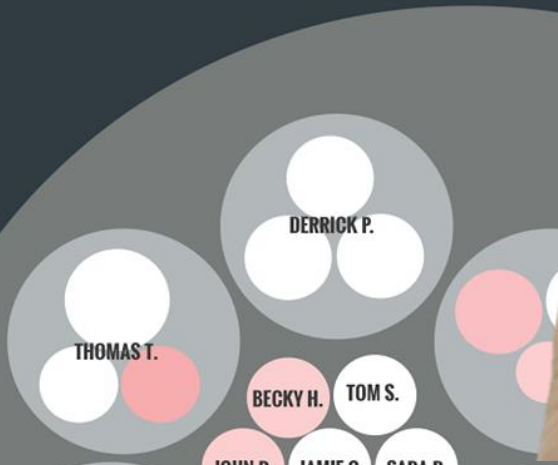
Roomed (16)



Pending Discharges (4)



Pending Admits (5)

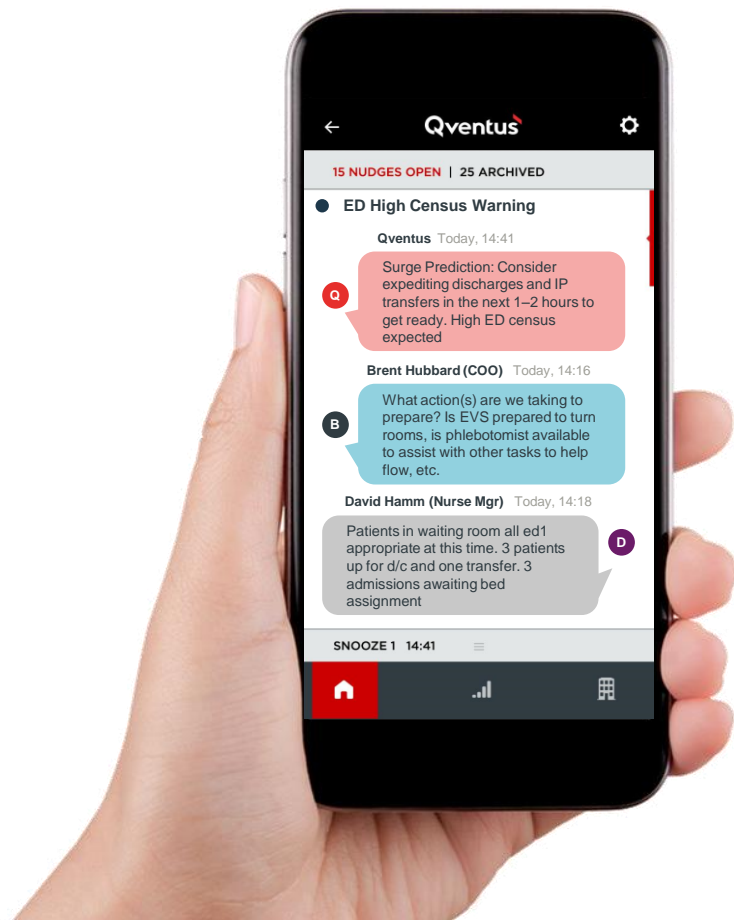


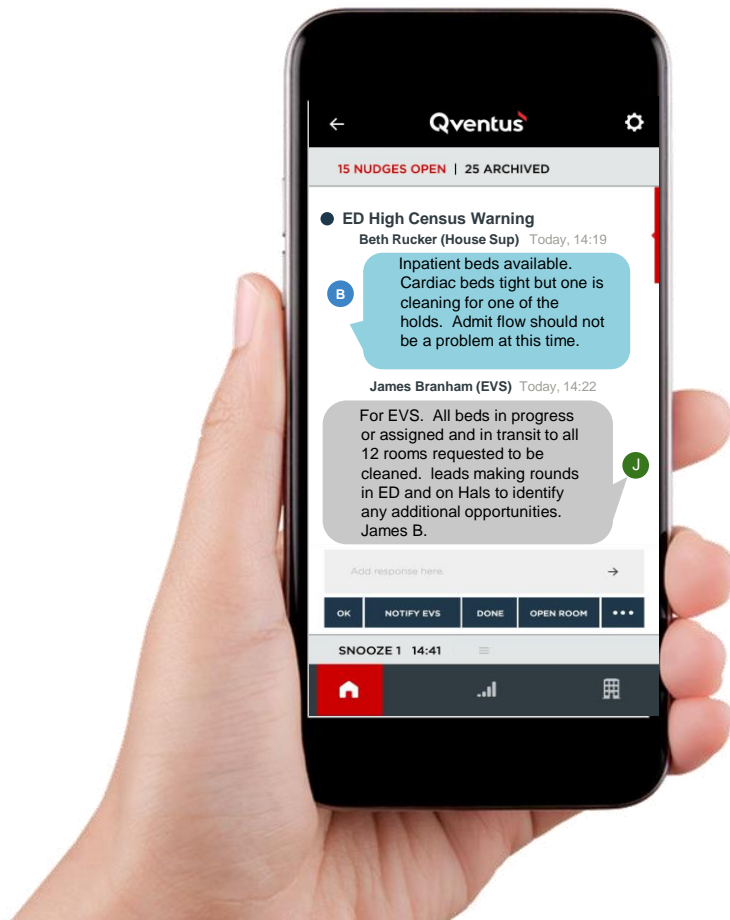
POWERED BY Qventus

Patients will
in the

Congestion Warning Recipe

- Statistical monitors detect anomaly and predict lack of beds
- Hallway beds opened up 3 hours in advance
- Discharge process accelerate





Example: Dissatisfied patients in the ED

Male, 38, Sore
Throat, 33 minutes

20%

Female, 33, acute
pain, 23 minutes

67%

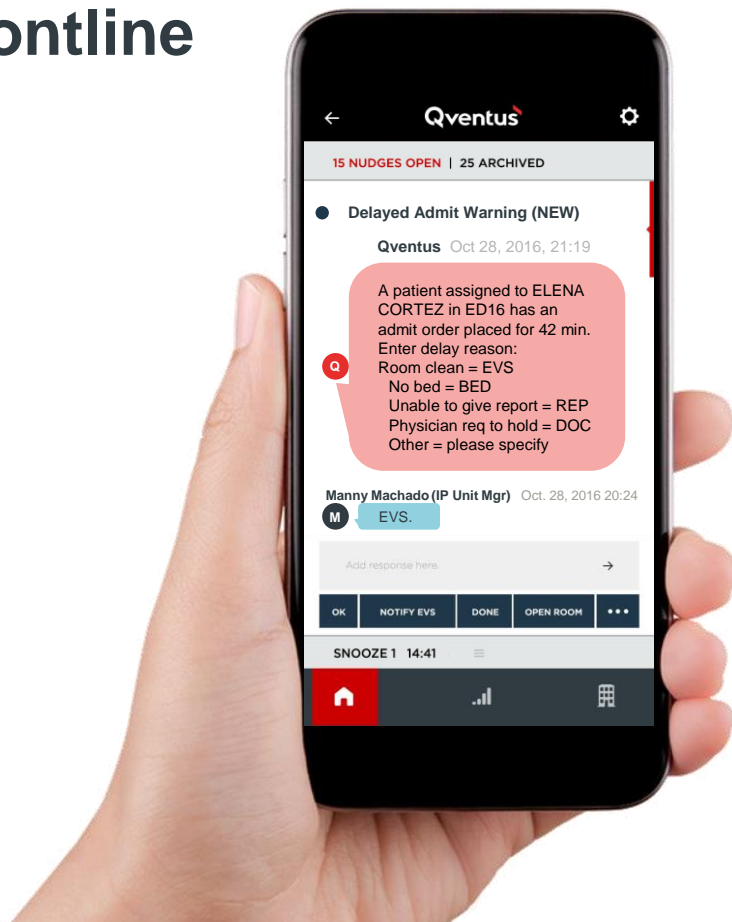
Male, 43, Fever, 43
minutes

41%

Automated notification to charge nurse to provide service
recovery

Automatically notify patient with the “next step” in their ER
journey

Enabling Frontline Ideas



New Recipe to diagnose
and prevent admit delays

Case Study: 200 bed hospital in OK

Median decision to admit
has dropped from 90 to 73
minutes

Median admit LOS has
dropped from 194 to 178
minutes

Case Study

30%

Reduction in
LWBS

15%+

Reduction in
LOS

40%+

Reduction in
Unnecessary
Testing

2%+

Increase in
Volume

Improving Patient Safety

**Real-time
data sources**



Call light



Med admin



Fall risk
assessments

Qventus
**Statistical
Analysis &
Machine Learning**

**Warning to
staff**




**El Camino
Hospital**

39% reduction in
patient falls

"Qventus/ predictions helped us gain even more situational awareness over the patient in our units. The predictions allowed us to intervene with the right patients at the right time - which is really important given the dynamic pace & long list of priorities on the floor to enable a safe and high quality environment."

-- Meriam Signo, Nursing
Manager

Perioperative Use Cases

20% reduction in case time mis-estimation

25% reduction in same day case cancellations

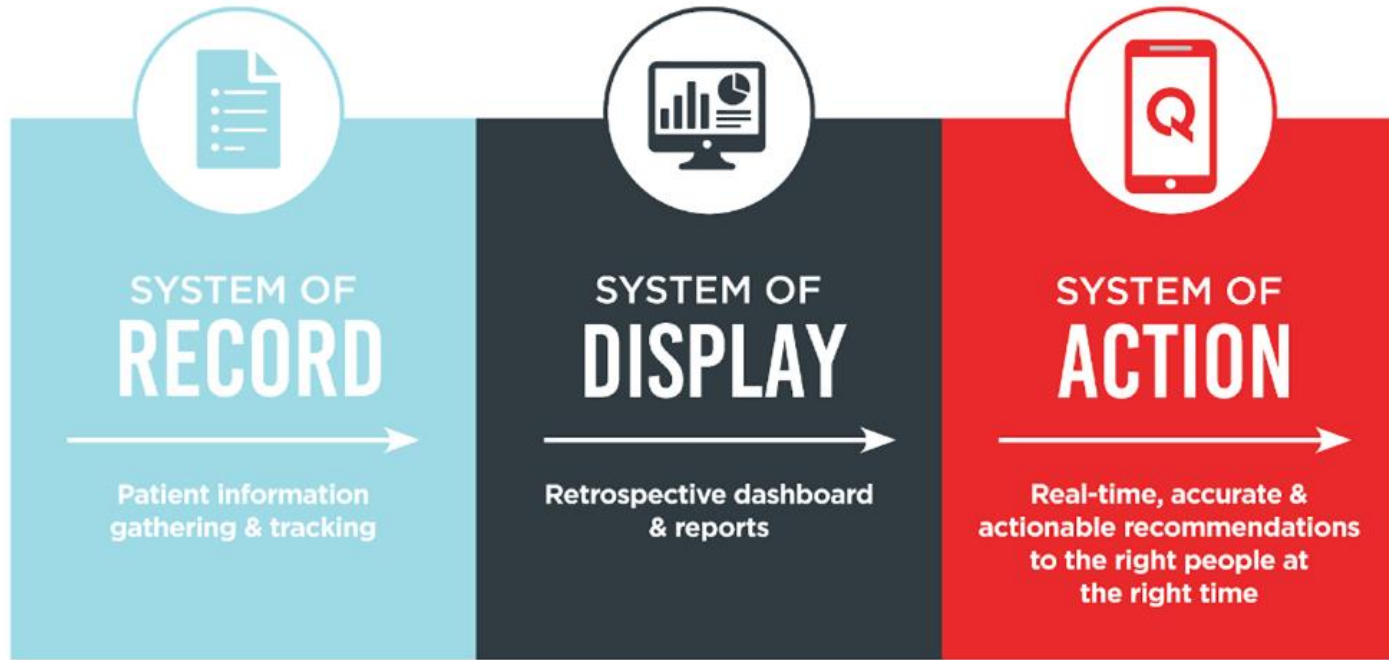
10% reduction in case start delays

18% increase in Press Ganey patient satisfaction scores

*"I absolutely LOVE this. **Nothing like real time feedback** to uncover problems and be able to act on them*

Urology Surgeon

Lesson: A System of Action



Questions

Think of an operational problem you'd like to solve.

At each table,

- Discuss 2-3 ideas and pick one that you think could be immediately beneficial
- Think of specific processes / decisions you would like to be anticipated and acted upon proactively

At the end we will have a brief report out

Rules of Thumb for Identifying Good Use Cases

- What is a process step you would do with 1-2 minutes of cognitive effort if you had time to stare at data
- Most of your staff just don't have time to do this proactively. Your best managers may do this but doesn't happen consistently.
- This is not a one-time decision / action. It needs to happen constantly and needs to happen reliably
- There is sufficient context / data is captured in your 'systems of record'

Key Takeaways

- Machine learning can help create highly reliable organization that continuously adapts in real time
- More reports is not the answer to go from data to action
- Frontline staff are overburdened. Use of data needs to reduce cognitive load



Thank You

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