Driving Analytics to the Point of Care

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Conflict of Interest Disclosure

Mark D. Sugrue, MSN, RN-BC, FHIMSS, CPHIMS has no real or apparent conflicts of interest to report.

Objectives

- Discuss cognitive computing and artificial intelligence as methods for enabling decision making at the point of care.
- Explore the importance of capturing health and care data in a structured way to achieve clinical outcomes measurement.
- Discuss natural language processing and its future role in nursing documentation.
Outline

• Introduction/Definitions
• Historical Perspective
• Data & Analytics Today
• Applied Analytics
• Closing Thoughts

What is Analytics

Analytics is the discovery and communication of meaningful patterns in data.

Artificial Intelligence

The theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.
**A Look Back**

**Historical Perspective of Data and Analytics**

**Reporting and Analytics Pioneers**

The Russians were a minor enemy. The real enemies were cholera, typhus, and dysentery. Once the military looked at that eloquent graph, the modern army hospital system was inevitable.

Florence Nightingale, 1856
Suggested Reading...beside Notes on Nursing

- The Visual Display of Quantitative Information
- Author Edward R. Tufte
- Best 100 Non-Fiction books of the 20th Century, Amazon.com

1915: Dr. Ernest Amory Codman

Dr. Codman’s “End Result System” began the medical outcomes movement in the US and led to the creation of the Joint Commission

Evolution of Computing
We believe a historic shift in technology has occurred.

<table>
<thead>
<tr>
<th>Year</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>Tabulating</td>
</tr>
<tr>
<td>1950</td>
<td>Programmable</td>
</tr>
<tr>
<td>2011</td>
<td>Cognitive</td>
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</tbody>
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Hidden Figures: Dorothy Vaughan

Fast Forward to the 21st Century
"BIG DATA" !!!!
Data Today

• Ubiquitous
• The Internet of Things
• Privacy
• Social Media
• eCommerce

Healthcare Data and Analytics

EHR = Big Data?.... I Don't Think So !!

If the average length of stay in a hospital is 4.8 Days

One Year in the Life of our Patients…….

Our EHR Data !!!

1.31%

The other 360.2 Days !!

98.69%
Bigger Data

“Healthcare data is getting bigger all the time, just look at EHRs alone: Medical records becoming electronic, with the ability to access vast amounts of data about patients and the health system, is increasing rapidly.

...and when you start to combine that data with things like human resources, supply chain, characteristics of clinics and hospitals, provider training, reimbursement schemes – it just gets bigger.

When I was a graduate student, data was extensive and analysts were plentiful. Now, data is ubiquitous and the bottleneck is our analytic capacity.”

Stefano Bertozzi
Dean and professor of health policy and management
UC Berkeley School Of Public Health

Reporting Maturity

Data: Drinking from the fire house !!
IT IS ESTIMATED THAT 80% OF CLINICAL DATA IS UNSTRUCTURED.
“Code Blue !!”

400 → 54


Sepsis: John’s Hopkins

“Computer algorithm could aid in early detection of life-threatening sepsis”

- TREWS – Targeted, Real-time, Early Warning System
- Science Translational Medicine, August, 2015
- Combines 27 factors to assess patient risk
- Henry, Hager, Pronovost, Saria
"Our methods are reaching a point where they can be a real aid to clinicians,” Saria said, “especially in noticing subtle hints, buried deep in a chart, that a problem is developing.”

“The tricky issue is thinking about how the clinical team is provided with information,” David Hager, MD said. A hospital’s electronic health records system could be set up to convey alerts to clinicians via pager or cellphone at regular intervals, he said.

“But we have to do this in a way that it is well-integrated into the existing clinical workflow and does not cause alarm fatigue,” Saria said. That is the focus of ongoing study.

“Alexa, pull those lab results”: A hospital tries out virtual assistants

"The real heroes are those who find a way to improve things around them through the course of their daily lives.

In the nursing industry, there are many heroes who leave fine imprints of positive change because they deliver exceptional care to patients than what’s expected of them.

Keep doing whatever you’re doing and you could be one of them.”
A Closing Thought

“In God we trust, all others must bring data.”
W. Edwards Deming

Thank You and Questions !!

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