Real-Time Healthcare with BI and Analytics
“Predictive Success”
To Begin ... Introductions

1. Introductions
   - InfraScience
     - Who we are and what we do
   - J.C. Layton
     - Director, Healthcare Practice
   - Kelly Crossley
     - Application Infrastructure Practice Lead
Presenting from InfraScience

Director, Healthcare Practice

Application Infrastructure Practice Lead

Specializing in:
- Business Strategy
- Analytics and Business Intelligence
- Solution Architecture
- Cloud Strategy
- Systems Integrations
- Azure, Office 365, SharePoint, SQL and Custom Development
About Us

• Founded in 2003
• Consulting & Systems Integration Firm
• Packaged & Custom *Client First Managed Services*
• Microsoft Gold & Silver Competencies
• Southeast Managed Partner
• Microsoft Technology Specialist Program
• Deployment Planning Services Qualified
• Locations: Atlanta, Charlotte, Raleigh & Tampa
• Coverage: Region, National, International
Overview

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Agenda

• How will Healthcare Service Organizations become more cost-effective in the future
• Predictive Success
• Successful Outcomes and Real-Time Analytics
• Predictive Analytics Predicting Revenue Effectively
• Questions

Your participation is encouraged.
How will Healthcare Service Organizations become more cost-effective in the future?
Predicting Successful Outcomes

Problem: Sporadically measured outcome statistics does not allow for consistent improvement in patient health and/or payer reimbursements.

Resolution Process:
1. Identification of patients who are highly-likely to return to a healthcare provider due to a failure to execute post-visit care instructions.
2. Implement follow-up procedures with the patient ensuring consistent notifications and guided management throughout a Successful Outcome Journey™ Plan.
Becoming more cost-effective

Predicting Revenue Effectively

Problem: Generating accurate revenue models is a historically difficult task for a Health System

Resolution Process:
1. Identification of Scheduled and Ad-Hoc patient visits.
2. Leveraging patient treatment plans and specific procedural needs, healthcare systems can more accurately predict staffing and material needs.
3. Cyclical trends and non-cyclical market demographics can be integrated within an analytics process to determine projected volumes.
As an individual, how do you define success?
Predicitve Success - What is success

• Means something different for everyone
  – Where a person is in life
    • Age specific – Definition changes as you progress through life
• Success is important to
  – Individual, Family and group
• Expansion – Continued Success
  – Without continued growth, we cease to exist
    • The medical profession is wholly suited to success as the primary purpose is to ensure patients to improve from one state of wellness to another
"Coming together is a beginning, staying together is progress, and working together is success."

“If everyone is moving forward together, then success takes care of itself.”

—Henry Ford
Using Predictive Analysis Results to Improve Successful Outcomes

Identification

Specialty Qualification

Interactive Outcome Triage

Assessment & Specialty Redirects

Finalization & Follow up modality

Scheduled Inpatient

- Surgical
- Medical
- Obstetrics

Scheduled Outpatient

- Oncology
- PT / OT
- Radiology
- Surgery
- Cardiology
- Orthopedics

Unscheduled Outpatient

- Emergency

General Screening questions that prompt the Assessment and Specialty Redirect.

As an example: The perception of what successful outcome is, as a goal, varies by age and could play a determining factor in the downstream assessment questions.

Based upon the triage questions, this specific visit may be as a follow up to another Successful Outcome Journey™ Plan. As such, a redirect to that plan would be executed.

Additional Specialty assessment questions are asked.

Finalization is the stage where communication preferences are determined.

Next steps: Analytics and Successful Outcome Treatment Planning
Consider the following scenario:

How would a successful outcome treatment plan proceed?
How would a successful outcome treatment plan proceed?

It would vary based upon the predictive analytics.

A Successful Outcome Journey™ plan system has the following characteristics:

For the Patient:
- Exists as a patient-centric, goal oriented system.
- Easily accessible via mobile devices.
- Provides notification of future activities or medical provider changes to the successful outcome treatment plan.
- Most importantly – Provides reassurance to the patient knowing that their improved health is a shared goal.
How would a successful outcome treatment plan proceed?

It would vary based upon the predictive analytics.

A Successful Outcome Journey™ plan system has the following characteristics:

For the Healthcare System
- Provides automated, real-time guidance for successful outcome-oriented treatment plans.
- Provides a technical architecture to support predictive analytics systems.
- Provides exceptional reporting of outcome statistics.
- Provides significant increases in hospital revenue by providing measurable patient satisfaction.
Examples of Data Sources
• Patient Entered Questionnaire
• EMR
• Previous Outcome Results
• Many other possibilities

Medical Professionals construct and update the treatment plan

Automated monitoring guides the patient through their Successful Outcome Journey™

Analytics and workflow engines Dynamically construct outcome questionnaires
What we have covered

5 Using predictive analysis to ensure successful outcomes

Key Points to take with you...

A patient’s Successful Outcome Journey™ relies on data throughout the process.

• Visibility of data and the checkpoints in the SOJ promote
  • An patient’s perception of Success
  • Internal and External Collaboration
  • Improved Care
  • Patient Satisfaction
  • Predictability
  • Improved Operational Efficiencies and Reimbursements
Using predictive analysis to ensure successful outcomes
How can we more efficiently predict revenue

Materials Management Cost Containment
Specific issues with each type of Material or Location

- General supply kept on rolling carts throughout facility.
- Inventory decremented only when charged to patient.
  - How is inventory loss processed and what are its effects?
- Exists in a constant state of excess processing.
- Space Limitations
- Excess handling is a huge concern
- Custom vendor packages that are not counted towards inventory.
- Usage varies by Physician
- Billing only upon use ensuring costs that are difficult to forecast.

Rolling Stock / Time of Service Stock

Distribution & Supply

Consignment Management
Common issue: Excess Inventory

Problem: State of Excess Inventory

Assumptions
- Reorder quantity @ 100 items
- Reorder cap @ 200 items
- Each case holds 100 items
- Only have space for 2 boxes

How do you get to excess inventory?
1. Start @ 200 quantity
2. Week #1 passes using 35 items – 165 count
3. Week #2 passes using 15 items – 140 count
4. Week #3 passes using 45 items – 95 count

At this point Inventory control automation orders to reorder cap. 200-95 = 105. 100 per box and supplier sends 2 boxes. Total count now is 295.

How do you solve the 2 problems of:
Excess Inventory (Storage Space)
Financial Cost of additional quantity
Common issue: Excess Inventory

A few comments & questions…

Show of hands. How many in the audience perform financial forecasting?

For those that do perform forecasting, does the excess value cause issue in determining the needed amounts for payment of supplier invoices?

Some numbers... In a typical 200 bed hospital

Materials Management – OR
Total items – 80,000 – 90,000
Unique Items – 3000
Typical, non-consignment, inventory roughly $920K
Excess Goal – 5% or less – $20K – $80K avg.
How pervasive & complex is the issue?

Types of Admission
- Unscheduled
  - ER/Trauma
  - OP Walk-in
- Scheduled
  - ER Admits
  - Direct Admits
  - OP Procedure needs

Types \ Location of Inventory types of admissions.

Types \ Location of Inventory
- Rolling Stock / Time of Service Stock
- Distribution & Supply
- Consignment Management
Possible indicators of meaningful data might be.

Weather...
- Consider the typical surge in ER admissions on the first nice day in the spring.
- Historical correlations between weather and ER admissions.
- Information gathered from weather forecasts and historical insight on admissions weather at the time of the patient presenting.
Possible indicators of meaningful data might be.

- Successful outcome schedules and notifications
  - HUGE data acquisition possibility.

- Is the data cyclical?

- Are there relationships between seemingly un-related items?
  - Hierarchical clustering would be the first steps in identifying correlations.
Possible indicators of meaningful data would be.

- Successful outcome schedules and notifications
  - HUGE data acquisition possibility.
- Is the data cyclical?
- Significant End of Calendar year pushes with corresponding drop-off of elective procedures at the beginning of a year
To predict revenue efficiently, healthcare organizations need to rely on analytics to...

- Manage excess inventory
  - Reduce the “gaming” of the system.
  - Integrate the analytics engine into the supply chain to ensure automated re-order point / re-order cap modifications.
- Manage the Supplier Consignments
  - Integrate the use of supplier consignments to the successful outcome journey plan.
Questions?

Materials Management Cost Containment
Partnering for Collaboration
InfraScience appreciates the time that you have spent with us today and look forward to partnering with you in the future.