Presenting Clinical Laboratory Services as a Value Added Service to Improve Patient Care

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Objectives

- Discuss opportunities for the Clinical Laboratory to impact chronic disease management
- Provide examples of improved services to prevent re-admissions
- Outline the changes in utilization management opportunities
- Updates in infectious disease testing
Clinical Provider Decision

Enhanced value-based support
• Study at Boston’s Beth Israel Deaconess Medical Center determined that 30% of all clinical laboratory tests are overused or medically unnecessary

• IOM Reports $210 billion annually of wasted care

References: Dark Daily, 2/28/14
Cleveland Clinic Journal of Medicine, July 2014
### Example of data assessment for diabetes

- Identify diabetes population
- HbA1c practice/provider report card
- HbA1c outlier patient tracker
- LDL practice/provider report card
- LDL outlier patient tracker
- Microalbumin practice/provider report card
- Microalbumin outlier patient tracker
- Eye exam practice report card
- Eye exam patient tracker
- Foot exam practice report card
- Foot exam patient tracker
- Prophylactic Aspirin Therapy eligible patients
- Consolidated diabetes population management patient tracker

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Practice and Provider Report Cards

SMLB Family Medical Center
Total Diabetics: 1,936
Past 12 month HbA1c:
- HbA1c <7.0: 27.40%
- HbA1c >7.0 and <9.0: 22.00%
- HbA1c >9.0: 19.10%
- No HbA1c: 30.30%

Example of Data

- ICD-9-CM: 250.00-250.93, 357.2, 362.01-362.07, 366.41, 648.00-648.04
- HBA1c >= 6.5
- Fasting Glucose >125
- Any Glucose >=200

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Total Diabetics: 123
Past 12 month HbA1c:
- HbA1c <7.0: 12%
- HbA1c >7.0 and <9.0: 18%
- HbA1c >9.0: 15%
- No HbA1c: 55%
Figure 1. Total of 5,504 patient records searched for diabetic statistics.

Diabetics – based on Johns Hopkins’ definition including ICD-9, ICD-10, Glucose and Hgb A1C data

Lacked Diagnosis – based on Johns Hopkins’ definition of glucose and/or Hgb A1C but no diagnosis was identified from the Electronic Health Record
• First year resident (his first presentation)
Every resident in the room wrote, check G6PD deficiency in their notes
For the following month, the level of G6PD’s increased from one a week, to as many as ten a day

- Clinically relevant, cost effective testing
- Don’t look for zebras when it is clearly a chicken
Example of Data

- Utilization is key
- Most common diagnosis of readmits reported by CMS—Congestive Heart Failure
- Use IT support to identify patient who has CHF that are unrelated to current hospitalization
- Define mechanisms to identify need for testing prior to discharge
• Set up Medical Review Committees for hospital, made up of key physicians
• The MRC can determine the top key high cost esoteric tests to assure the appropriateness of the tests
• Use IT support to set up either algorithms or formularies to address these tests
• MRC determines the process for approval or denial of ordering the tests
MRC Function

• Going through the CMO or Pathologists, identify key physicians
• Brief them on the intent of using the esoteric tests and high risk tests
• Establish the criteria for algorithms or formularies
• Limit to a targeted tests during the initial MRC
• Once it has been functional, expand the menu of tests that should be monitored or approved
• Laboratories must be partners in better testing
• Right test, at the right time, on the right patient
• MALDI-TOF
• 24/7 operations
• Automation
• Future Molecular targeting
Matrix-assisted laser desorption/ionization time-of-flight
MALDI-TOF Studies

• Studies of bacterial sepsis show that rapid identification by MS:
  - Estimated savings around $19,000 per case in directed antibiotic therapy
  - Length of Stay decreased by 2 days
The accurate identification and antimicrobial susceptibility testing of pathogens is critical for an appropriate and effective clinical response to infection. Rapid testing have much to offer... This swiftness in turn reduces the time it takes to switch from empiric to targeted therapy, improving patient outcomes and minimizing the overuse of ineffective antibiotics and the chance for resistance to develop.
Operations

- Consider reading cultures at minimum time 24/7
- Based on optimum time rather than daily
- Develop a single report system back to Infection Control and one report to respective Health Dept, fully automated
Hospital Opportunity

• Establishes a new standard of care for infections treated by medical staff
• Establishes a value-based approach to infections that improves patient care
• Develop a work plan for medical staff and pharmacy staff for earliest intervention based on early culture results
• Model for the community
What does this mean for your hospital?

• Look at automation to bring microbiology into the 21st century
• Hospital will save personnel costs for Bacteriology, use staff in other parts of Lab
• Hospital will get results quicker, that saves money with directed treatments and more rapid discharge
Urine, Blood, Wound & Throat cultures make up 86% of total volume
• Only 61% of volume is received between 11:00-19:00, meaning 39% of volume should be read on a shift other than 1st (based on 18 hours of incubation)
• 80% of volume is received Mon-Fri, driving heavy read times from Tue-Sat
Do we get quality culture collections

Urine Results

46%
33%
22%

Positive  Mixed  No Growth
Do we really know the impact of rapid ID in sepsis

- Positive Blood Culture from received in Lab to report of detection
- Median – 66 hours (fairly common level of detection)
- Positive Blood Detect to report
- Median = 51 hours, Ranging to 58 hours (3rd quartile)
  - This means 25% of the positive cultures are reported more than 58 hours from initial detection

- **Recommendation for Future:** Upon detection, Gram Stain, sub cultures; Use the MALDI so within two hours of receipt in Lab, ID completed and called. Opportunity to move to directed antibiotics.
- Studies have shown a patient can be discharged 1-2 days earlier due to directed antibiotics
Antibiotic Stewardship

• Partnering with an up-to-date process, the opportunity is to move to directed antibiotics sooner
• Use the correct antibiotics
• Improved patient outcomes
• Discharge patients sooner with cost-effective treatment
Next Steps in Antibiotic Stewardship

• Work with Pharmacy, Infection Prevention, Nursing Staff, Laboratory Staff, and Medical Staff to define the process changes

• Establishing dashboards for antibiotic usage
  – Antibiograms based on one year data
  – Updated prospectively each month
  – Advantage to identify resistance changes
Antibiotic Stewardship

• Establish protocols for action, when actionable data are present
  – Correct, directed or targeted antibiotics
  – Elimination of unnecessary antibiotics
  – Stop exposure to ineffective antibiotics, allowing further resistance mutations
Molecular Techniques

- CSF – Meningitis panels with as many as 14 etiologic agents with an hour analytic time

- Respiratory Viral Panel – up to 15 different viruses, including RSV and Influenza A & B; analytics as short as 1 ½ hours
  - In a hospital surveillance study, we found in 2010 the #1 hospitalized case was H1N1, #2 Rhinovirus

- Stool Panel – now up to 22 agents including Norovirus in about an hour and half
  - Huge cost savings in hospital stay
  - More costly than bacterial cultures but #1 cause in our area continues to be Norovirus
Summary

• The laboratories must be more efficient in tests, test utilization and cost
• New technologies are making the laboratory even more important
• Do more with less but make sure that the data are on target
QUESTIONS