• UnityPoint Health (UPH) has developed Affinity Groups for key service lines, to support the UPH strategy of System Sustainability, e.g. to ensure financial viability through a culture of financial discipline and adoption of best practices in both critical patient care and business processes
• The UPH Laboratory Affinity Group is composed of UPH affiliate members and was created as a governing council for laboratory and pathology services offered at UPH
• Our group reports to the UPH senior leadership team through an executive sponsor
• Test Utilization Management has been identified as one of four critical initiatives to improve the clinical and economic value of patient care

Test Utilization – In the News

• Interest in Test Utilization has grown over recent years, partly due to:
  • The significant increase in the number of new proprietary and genetic tests, with four figure prices
  • A renewed focus on Utilization Management in the inpatient setting
• Knowledge gained from test utilization strategies can be used by the laboratory and shared with physicians to ensure:
  • The right test, for the right patient, at the right time
  • Utilization of the best test methodologies, assuring high test accuracy and quality
  • Reduction of unnecessary testing
  • Appropriate interpretation of test results to drive best patient outcomes
Test Utilization – A Key System Initiative

- Outline key strategies used at UPH to help drive appropriate test utilization at time of order entry, including implementation of Epic Best Practice Alerts, deployment of laboratory driven testing algorithms, and development of appropriate Epic order sets.
- Illustrate the value of partnering with a strong analytics team to enable data driven conversations and decision making, identify actionable opportunities for the removal of waste from care delivery processes, and drive culture forward by bringing forth new opportunities, skillsets and data points.
- Recommend the development of local Laboratory Utilization Committees to provide oversight and guidance on use of laboratory diagnostic services in a manner that improves patient care, optimizes test use and reduces total cost of care.

Test Utilization – Where did we begin?

Sub-Committee: Test Utilization Effort: Test Utilization Sub Group

Description: Test Utilization is a strategy for performing appropriate laboratory and pathology testing with the goal of providing high quality, cost-effective patient care. The knowledge gained from test utilization strategies can be used by the laboratory and shared with physicians to ensure that correct tests are ordered for the correct patients, best test methodologies are utilized, and accuracy and quality remain high, ensuring the best medical care.

Leads: Thom Bollinger, MD (Cedar Rapids), Carol Collingsworth (Cedar Rapids), Kim VonAhsen (Des Moines), Jacob Barnes, MD (Des Moines), Thomas Murphy (Peoria), Kathleen Kneip (Peoria), Andrew Vanderheyden, MD (Dubuque), Maynard Murch (Waterloo), Karen Tower (Sioux City), Bryan Garter (Quad Cities), Tommy Franklin (Quad Cities), Theresa Polasek (Quad Cities)

- Our work began in June 2013
- A Laboratory Affinity Group sub-committee was formed, involving key stakeholders from all senior affiliates – lab administrative leaders and pathologists were invited to participate.
- Initial focus was related to reference laboratory (send out) test utilization.
- Educational materials, including a White Paper and Test Utilization articles, were developed and distributed via laboratory newsletters / presentations at Utilization management meetings.
Test Utilization – Where did we begin?

• Sub-committee activities evolved in 2014:
  • A two day visit to Mayo Medical Laboratories in October 2014
    » Covered topics on Utilization Management (IP, Blood Management, Leveraging Genetic Counselors)
    » Redirected our focus more closely on test utilization opportunities in the inpatient setting
    » Introduced the concept / value of local Laboratory Utilization Committees
  • Decision to remove the “Daily Button” option in Epic to reduce unnecessary daily lab testing
    » Effective December 2014
    » Identified and tracked top 12 IP tests performed at each affiliate
    » Ensured ordering providers were reviewing test results on a daily basis and only repeating testing when indicated
  • Finalization of ongoing Sub-committee Test Utilization strategies:
    » Deployment of laboratory driven testing algorithms
    » Development of appropriate Epic order sets
    » Implementation of Epic Best Practice Alerts

Strategy #1: Deployment of Laboratory Driven Testing Algorithms

• Laboratory Newsletters have been utilized to deploy Test Algorithm education to providers and clinicians
• Education has been distributed, outlining appropriate test selection for Thyroid Disease, Monoclonal Gammopathy and Celiac Disease

Strategy #1: Deployment of Laboratory Driven Testing Algorithms

• Our UPH colleagues at UnityPoint Health | Peoria, led by Robert Benirschke, Ph.D., DABCC, evaluated celiac disease related testing patterns within the system
• Yearly send-out testing was pulled for all labs in the UnityPoint Health system and their team identified that many tests were being ordered, in several different combinations:
  » Endomysial Antibody by Immunofluorescence Assay (EMA)
  » Tissue Transglutaminase IgA and IgG (TTG)
  » Deamidated Gliadin IgA and IgG (DGP)
  » Anti-Reticulin Antibody (ARA)
• 2013 ACG Screening Guidelines were reviewed:
  » TTG IgA with Total IgA is the recommended testing for the detection of celiac disease for patients >2 years old
  » Endomysial Antibody by IFA is generally not needed
  » Anti-reticulin antibody is obsolete
Strategy #1: Deployment of Laboratory Driven Testing Algorithms

- Further investigation revealed
  - Lack of standardization amongst providers
  - LOTs of waste (~50%)
  - Most testing combinations ordered did not follow best practice guidelines and were diagnostically inferior
  - Specialists always ordered the correct tests
- This study prompted the decision to publish the Celiac Disease education / test algorithm for providers and clinicians
- Illustrates the importance and value of utilizing Evidence based practice to support provider / clinician education and drive ordering practice changes

Strategy #2: Development of Appropriate Epic Order Sets

- Epic order sets have been reviewed to evaluate appropriateness of lab orders
  - Obsolete tests have been removed as indicated (CKMB, MTHFR)
  - Moved 25-Hydroxy Vitamin D to the top of the drop down order window (above 1,25-Dihydroxy Vitamin D) to prevent inadvertent / inappropriate 1,25-Dihydroxy orders
  - Identified order sets including related / duplicative tests, e.g. Comprehensive Metabolic Panel and Basic Metabolic Panel (or other combination thereof), Total T4 and Free T4, ESR/CRP/Procalcitonin
- Reviewed tests ordered on day of discharge for appropriateness
  - Does test result lead to a change in the patient's management plan or outcome while admitted?
  - Does test result impact current patient stay?
  - Will test result be available prior to discharge?
- Have evaluated developing IP test frequency limits for tests commonly ordered during an inpatient stay

Strategy #3: Implementation of Epic Best Practice Alerts

- Development and use of Epic Best Practice Alerts (BPAs) has been one of the more successful strategies to date
- BPAs were developed by our laboratory colleagues working on Blood Management initiatives – seeing their success, we evaluated the opportunity to utilize the same tool for Test Utilization
- Upon evaluation of test ordering patterns at one of our affiliates, UnityPoint Health | Allen Waterloo, it was determined that four commonly ordered tests were being requested several times during an inpatient stay, sometimes more than once per day
  - Lipid Panel
  - Hemoglobin A1C
  - Free T4
  - TSH
- Working closely with our IT colleagues, we developed a Duplicate Test BPA for these assays
Strategy #3: Implementation of Epic Best Practice Alerts

Duplicate Lab BPAs

Best Practice Advisories for Labs Resulted in the Past 90 Days (Hemoglobin A1C, Lipid Panel, Free T4, and TSH)

To assist with coordination of patient care, a series of new best practice advisories (BPAs) will be added to Epic on Tuesday, May 12th. These new BPAs will be added to the following lab orders: Hemoglobin A1C, Lipid Panel, Free T4, and TSH. The best practice advisory will fire upon ordering one of these labs if the patient has had one results in the past 90 days. The BPA will give you the most recent result to help you determine if you would like to proceed with the order. (Please note: These BPAs will not impact Epic Ambulatory at this time.)

You can click on [Alert] if you would like to continue with placing the order or [Cancel] if you feel the order is no longer needed. If canceling, you will then have to remove the order from your [New Orders] screen so stop the BPA from firing.

Strategy #3: Implementation of Epic Best Practice Alerts

Hemoglobin A1C

• Provider education was developed outlining the functionality of the Duplicate Test BPA and distributed accordingly
• BPA was trialed at Allen starting in May 2015
• Was put into production system wide at the end of June 2015

Strategy #3: Implementation of Epic Best Practice Alerts

2015 YTD BPA Results:
A Total of 8149 BPAs fired (including May/June trial at Allen)
Strategy #3: Implementation of Epic Best Practice Alerts

- **2015 YTD BPA Results:**
  - Total # tests cancelled as a result of the BPA = 5451 (67% of total)

- **July**:
  - TSH: 80
  - Lipid Panel: 60
  - Free T4: 40
  - HGB AIC: 20

- **Aug**:
  - TSH: 80
  - Lipid Panel: 60
  - Free T4: 40
  - HGB AIC: 20

- **Sept**:
  - TSH: 80
  - Lipid Panel: 60
  - Free T4: 40
  - HGB AIC: 20

- **Oct**:
  - TSH: 80
  - Lipid Panel: 60
  - Free T4: 40
  - HGB AIC: 20

- **Nov**:
  - TSH: 80
  - Lipid Panel: 60
  - Free T4: 40
  - HGB AIC: 20

- **Dec**:
  - TSH: 80
  - Lipid Panel: 60
  - Free T4: 40
  - HGB AIC: 20

---

**Strategy #3: Implementation of Epic Best Practice Alerts**

- **Hot off the Press!!**

- **Cost avoidance (Savings) through mid January 2016:**
  - $48,790 saved over 7 months (out of total potential cost of $71,562)
  - Annualized potential savings = $83,640

- **2015 YTD BPA Results:**
  - Total # tests cancelled as a result of the BPA = 5451 (67% of total)

- **July**:
  - TSH: 80
  - Lipid Panel: 60
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- **Dec**:
  - TSH: 80
  - Lipid Panel: 60
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  - HGB AIC: 20

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**Next steps include:**

- Focus on developing automated reporting to enable real time analysis of success
- Define Report Distribution Methods to share information with key stakeholders
- Expand the Duplicate Test BPA:
  - Enable BPA to fire in the Ambulatory setting
  - Add other laboratory tests as appropriate
  - Develop for Imaging studies
- Consider development of new BPAs for:
  - Once in a Lifetime tests
  - Previously positive tests
  - Expensive tests
  - Restricted tests (lab formulary approach)
Value of Partnering with an Analytics Team

- Our Test Utilization Sub-Committee has had the privilege of working closely with our new UPH Analytics department.
- Our Analytics department provides insight to:
  - Proactively take action to manage and mitigate risk.
  - Provide standard system wide measurements for internal and external benchmarking.
  - Enable data-driven conversations and decision making.
  - Identify actionable opportunities for the removal of waste from care delivery processes.

---

### Value of Partnering with an Analytics Team

- Spreadsheets / tools have been developed by the Analytics department which enable capture of key data points relating to our Test Utilization initiatives.
- The spreadsheet below illustrates the raw data captured from our Duplicate Test Best Practice Alert, which enables us to evaluate how the BPA is performing.

<table>
<thead>
<tr>
<th>Facility (All)</th>
<th>User (All)</th>
<th>Count of Patient ID</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>2016</td>
<td>Grand Total</td>
</tr>
<tr>
<td>May</td>
<td>Jun</td>
<td>Jul</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPH BASE FREE T4 DUPLICATE CHECK</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>No Action Taken Accept BPA (No Action Taken)</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>No Action Taken Cancel BPA</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Remove EAP single order</td>
<td>12</td>
<td>45</td>
</tr>
<tr>
<td>(blank)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>UPH BASE HGB A1C DUPLICATE CHECK</td>
<td>24</td>
<td>41</td>
</tr>
<tr>
<td>No Action Taken Accept BPA (No Action Taken)</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td>No Action Taken Cancel BPA</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Remove EAP single order</td>
<td>59</td>
<td>133</td>
</tr>
<tr>
<td>(blank)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>UPH BASE LIPID DUPLICATE CHECK</td>
<td>24</td>
<td>53</td>
</tr>
<tr>
<td>No Action Taken Accept BPA (No Action Taken)</td>
<td>18</td>
<td>38</td>
</tr>
<tr>
<td>No Action Taken Cancel BPA</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Remove EAP single order</td>
<td>53</td>
<td>111</td>
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<tr>
<td>(blank)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>UPH BASE TSH DUPLICATE CHECK</td>
<td>33</td>
<td>78</td>
</tr>
<tr>
<td>No Action Taken Accept BPA (No Action Taken)</td>
<td>20</td>
<td>53</td>
</tr>
<tr>
<td>No Action Taken Cancel BPA</td>
<td>13</td>
<td>25</td>
</tr>
<tr>
<td>Remove EAP single order</td>
<td>151</td>
<td>450</td>
</tr>
<tr>
<td>(blank)</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
Another tool developed by our Analytics department is the **EOPS IP Tracker Dashboard** (EOPS – Efficiency of Patient Stay).

This is an interactive Tableau® tool that enables users to view data using different filters, e.g. by test, by affiliate, by APR-DRGs, by specific timeframe.

This tool captures test data on inpatients (excluding behavioral and observation patients) – tests tracked were identified as the most frequently ordered tests during an inpatient stay (CRP, CBC with diff, Hemogram, CMP, BMP, HgbA1C, lipid panel, MG, Protime, TSH and Troponin).

Data is updated monthly, with a 45 day lag built into the data to allow for proper coding of the APR-DRGs.

There are three primary views: Tests per Inpatient Day, Tests per Inpatient receiving the test, and % of Inpatients receiving the test.

This tool was specifically developed to track reduction in test utilization after the removal of the **Daily Button** option in Epic which went into effect December 2014.

The tool also has enabled us to evaluate the effectiveness of the **Duplicate Test BPA** from a different perspective.

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**Value of Partnering with an Analytics Team**

- **Tests per Inpatient Day**: Measures the sum of the selected test, per total inpatient days, for the selected filters – this measures utilization normalized for inpatient LOS.

- The screenshot below shows overall reduction in TSH utilization at our Waterloo affiliate after removal of the Daily Button (0.012545 to 0.008486).

- **% of Inpatients receiving test**: Measures the total number of patients receiving the test at all, during their inpatient stay.

- The screenshot below shows overall reduction in TSH utilization at our Waterloo affiliate after removal of the Daily Button (19.51% to 11.82%).
Value of Partnering with an Analytics Team

- The tool also estimates potential cost avoidance relating to the reduction in test utilization for these commonly ordered tests.
- For our Cedar Rapids affiliate alone, 2015 YTD Cost avoidance relating test utilization efforts (removal of the Daily Button and implementation of the Duplicate Test BPA), is shown below:

<table>
<thead>
<tr>
<th>Test</th>
<th>Cost Avoided</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRP</td>
<td>$608</td>
</tr>
<tr>
<td>Hemogram</td>
<td>$12,200</td>
</tr>
<tr>
<td>CBC with Diff</td>
<td>$20,843</td>
</tr>
<tr>
<td>BMP</td>
<td>$20,756</td>
</tr>
<tr>
<td>HgbA1C</td>
<td>$3,967</td>
</tr>
<tr>
<td>Lipid</td>
<td>$1,451</td>
</tr>
<tr>
<td>Mg</td>
<td>$1,129</td>
</tr>
<tr>
<td>Protime</td>
<td>$15,736</td>
</tr>
<tr>
<td>TSH</td>
<td>$4,192</td>
</tr>
<tr>
<td>Troponin</td>
<td>$2,819</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$89,836</strong></td>
</tr>
</tbody>
</table>

A final step our UPH Test Utilization Sub-Committee has undertaken, has been to develop local Laboratory Utilization Committees at each affiliate.

A Lab Utilization Committee Charter was developed by Meritor, our affiliate in Wisconsin – the primary function was defined to:

- Provide oversight and guidance on use of laboratory diagnostic services in a manner that improves patient care, optimizes test use and reduces total cost of care. This includes design, implementation and/or maintenance of:
  - Vetting process
  - Algorithms, guidelines and knowledge
  - Test send out formularies
  - Test order sets
  - Point-of-Care testing standards
  - Input to Care Process Models
  - Critical value list and related policies for reporting
  - Oversight of "best laboratory practices"
  - Test use report to ordering clinicians and departments

Development of Local Laboratory Utilization Committees
Development of Local Laboratory Utilization Committees

Approval Responsibilities were defined:
- The Laboratory Utilization Committee is responsible for providing:
  - Laboratory testing usage review, feedback and suggestions
  - Selected metrics for monitoring laboratory test utilization
  - Education strategies and tools to promote best practice
  - Cost effective methods for delivering the best outcome for every patient, every time

Committee membership includes:
- CMO
- Pathologists
- Genetic Counselors
- Clinicians (Hospitalists, Family Medicine, Internal Medicine)
- Laboratory Leaders (Director, Client Relations, IT, Technical Specialists)
- Specialists (Cardiology, Endocrinology, Neurology, Gastroenterology)

Role of a LaboratoryUtilization Committee member was defined:
- Review materials provided through the committee
- Remain active participants on the committee including but not limited to consistent meeting attendance
- Help balance conflicting priorities and resources
- Provide alignment with other organizational committees (Medical Executive Committee, Nursing Practice Council, Hospital Clinical Council, Patient Safety Committee, Medical Staff Peer Review Committees and others as appropriate)
- Check adherence of committee activities to standards of best practice both within the organization and in a wider context
- Foster positive communication outside of the committee regarding the progress and outcomes

Meritor has progressed the furthest with implementation of their Laboratory Utilization Committee
Several other UPH Affiliates have moved in the direction of placing Laboratory leaders on the affiliate Efficiency of Patient Stay or Utilization Management teams
Most importantly, regardless of the venue, the Laboratory must have a voice as decisions are made regarding test utilization, order set development, and care pathways
Involving all key stakeholders and defining a physician champion is also extremely important and valuable to the success of any test utilization initiative
In Summary . . .

• Every great Test Utilization Team:
  • Identifies and develops key strategies to drive appropriate test utilization at time of order entry
  • Gains support from IT partners and Analytics teams to capture real time data, for improved decision making and identification of ongoing opportunities
  • Involves all key stakeholders in Laboratory Test Utilization discussions to assure buy in and desired outcomes

Acknowledgements

• I would like to acknowledge my Test Utilization Team members and their great work:

<table>
<thead>
<tr>
<th>Thom Bollinger, MD</th>
<th>Amy Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael Kafka, MD</td>
<td>Adam Kirking</td>
</tr>
<tr>
<td>Jacob Sramek, MD</td>
<td>Sheila Dunn</td>
</tr>
<tr>
<td>Devendra Trivedi, MD</td>
<td>Maynard Murch</td>
</tr>
<tr>
<td>Lori Racsa, PhD</td>
<td>Autumn Reynoldson</td>
</tr>
<tr>
<td>Andrew Vanderheyden, MD</td>
<td>Mike Martin</td>
</tr>
<tr>
<td>Karen Stiles</td>
<td>Karla Tower</td>
</tr>
<tr>
<td>Kimberly VonAhsen</td>
<td></td>
</tr>
</tbody>
</table>
Thank you for your time and attention.
I would be happy to answer any questions!
Carol.collingsworth@unitypoint.org
#319-369-7310