Test Utilization Management: Choosing the Right Test, Removing Quackery

- Michael Astion, MD, PhD
- Medical Director, Department of Laboratories, Seattle Children’s Hospital
- Clinical Professor, University of Washington, Dept. of Laboratory Medicine
Financial Disclosure Statement

• Univ Washington Intellectual Property licensed to
  • EviCore Inc., (Guide to Lab Utilization)
  • Medical Training Solutions

• Dr. Astion is employed by Seattle Children’s Hospital and is here representing Seattle Children’s.
Acknowledgements

• Seattle Children’s / Univ Washington
  • Jane Dickerson
  • Jessie Conta
  • Bonnie Cole
  • Darci Sternen
  • Shannon Stasi
  • John Tait
  • Patrick Mathias
  • Nitasha Kumar
  • Rhona Jack
  • Monica Wellner / Lisa Wick and the Sendouts and CPA Teams
  • Joe Rutledge
  • Mark Del Beccaro
  • Geoff Baird
  • Linda Eckert
  • Kevin O’Brien

• Seattle Children’s Charitable Foundation

• EviCore:
  • Lon Castle
  • Melissa Bennet
  • Denise Needham
  • Michael Graf

• Individual members of PLUGS

• Orchard Software
  • Kim Futrell
Overview

• Utilization Management (UM):
  • Background
    • Value in lab testing. Why is genetics different?
    • Why improve utilization?
    • Trends in healthcare affecting UM
  • Data from insurance claims
  • Interventions to improve test ordering

• Seattle Children’s UM plan / Pediatric Laboratory Utilization Guidance Service (PLUGS)

• Conclusions
What does utilization management seek to eliminate?

- Obsolete tests (T3RU, bleeding time)
- Not useful tests (IgG allergy testing)
- Overbundling of tests into gigantic panels
- Tests not ready for prime time
- Quackery
- Tests that are always positive
- Lack of active controls in genetic testing
- Failure to retrieve test results

“Patient-centered testing is not the same as Patient directed testing.”
Why improve lab utilization?

↓ patient costs  
↓ direct lab costs  
↓ societal costs  
↓ false + results
  • especially with ↓ pretest probability  
  • ↓ worry  
  • ↓ false Dx, associated harms  
↓ unnecessary work

Value = Quality /Cost

Kim JY et al. Utilization management in a large urban academic medical center. AJCP. 2011;135:108-118
Competing Healthcare Trends influencing Test Utilization Management

- Capitation is a healthcare reform theme that tends to decrease testing.
- Googlification of healthcare increases testing.
- Growth of quackery and nonstandard tests.
- “Molecular” testing is 15% of lab testing but is expensive and growing at 22% annual upward trend.
- 3rd party payers (government and insurance companies) are increasing management of lab testing. Molecular testing was the trigger that released this endless trend.
Examples of Nonstandard Tests

- Dysbiosis / Comprehensive stool analysis
- Parasitology profile
- Nonstandard organisms
  - Stealth virus testing
- Alternative Lyme testing
- Hair analysis for anything besides arsenic
- Trace minerals / metals without history of findings
- Trace nutrient deficiency without history or findings
- Anti-malignin antibodies
- Salivary hormones
- Adrenal stress panel
- Genetic risk panels
- Detoxification capacity
- Urine neurotransmitters
- Chemical antibodies profile (e.g. anti-benzene)
- And many more….
Overutilization is gaining increased attention....
Root causes of lab overutilization

Labs
- more is better...
- dissatisfaction...
- $$ incentive...
- $$ incentive...
- gene patents...
- fee for service
- coding system...

Patients
- google...
- wellness movement...
- malpractice fear...
- Patient pressure...
- Mktg pressure...

Care providers
- health system

↑ testing
Univ Washington- EviCore collaboration to study lab utilization in commercially-insured populations in the USA (2008 – present)

- Study of national, regional lab insurance claims databases

- Characteristics of largest insurance dbase we have studied:
  - 1 year of data (2009)
  - 3.5 million covered individuals (members)
  - 8.2 million doctor’s visits in 48 states
  - Total spent on lab was $668 million.

- Lots of overutilization.
  - Example: 2.3% of members had ANA test (about $1 million spent).

Prevalence of Lupus in population is 0.2 – 1.5 per 1000

---


---
Major domains of overutilization
Bundling and nonstandard tests are drivers in all domains.

- Wellness
- CVD risk
- Pain
- Woman’s health (cervicitis, vaginitis)
- Nutrition and metals
- Flow cytometry
- Allergy
- Autoantibodies (e.g. celiac test bundles)
- Inpatients: Daily labs
- Genetic testing, especially by non-geneticists

Eckert LO, Astion ML, Tait JF, et al. 2011. *Infectious Disease Society for Obstetrics and Gynecology*
Nonstandard Tests during 1st eval of vaginal / cervical infections:
1 year of results from an insurance database
(Eckert LO et al. 2010. Am College Obstet Gyn Ann Meeting)

- Used our largest annual database of 3.5 million covered individuals
- 26% of 82,400 visits for eval of vaginal /cervical infections had unnecessary molecular testing.
  - Recommended: C. trachomatis, N. gonorrheae, T. vaginalis, herpes simplex
  - Not recommended: Candida species and subspecies, G. vaginalis, staphylococcus, streptococcus, enterococcus, and cytomegalovirus
- 22% ( > $1,400,000) of molecular spend on these evals is waste.
- One lab responsible for 50% of unnecessary testing.

2Eckert LO, NEJM 2006;355:1244-52
Overuse/ Misuse of Allergen-specific tests
Novel biomarkers are overused (4.4% waste of $)

<table>
<thead>
<tr>
<th>Allergen specific test</th>
<th># visits (Dates of Service)</th>
<th>$ spent (% of total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IgE allergy test</td>
<td>18553</td>
<td>$2,315,447 (95.7%)</td>
</tr>
<tr>
<td>IgG-IgG4 allergy test</td>
<td>28</td>
<td>$71,420 (3.0%)</td>
</tr>
<tr>
<td>ALC antibody</td>
<td>48</td>
<td>$33,267 (1.4%)</td>
</tr>
</tbody>
</table>

• Aston M, Tait J, et al. CareCore collaboration, unpublished data
• Used our largest annual database of 3.5 million covered individuals
• >500 clinical labs represented in the >18,000 dates of service
For allergen-specific IgE testing, 28 tests per doctor’s visit is the norm! (N = 18,553 doctor’s visits)

- Ave units of allergen specific IgE : 28 (SD:13, Range: 12 – 71)
- 54% of workups are associated with testing > 21 allergens
Overbundling and Nonstandard Testing for Cardiovascular Disease Risk

- Standard test panel for screening consists of cholesterol, HDL chol, LDL chol, and triglycerides and gets reimbursed about $20.

- Some labs claim expanded panels improve risk assessment and choice of Rx.

- CRP is minor part of this debate

From a Niche lab ($500):

- Panel = traditional panel plus ~16 tests:
  - Proprietary tests
    - LDL particle size assay
    - HDL particle size
  - Genetic risk markers
  - Lp-PLA2, Homocysteine, Vit D, BNP…
  - CRP, Lipoprotein (a), others

- Evidence lacking for added value (when used in screening)

- Tests not in guidelines (USPSTF, NCEP)

### Annual payment by 1 insurance company to the niche lab offering the **expanded** CVD risk panel

<table>
<thead>
<tr>
<th>Payment detail</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time period</strong></td>
<td>1 year (2008)</td>
</tr>
<tr>
<td><strong>Geographic area</strong></td>
<td>1 eastern state plus part of another eastern state</td>
</tr>
<tr>
<td><strong># of unique patients who had the panel</strong></td>
<td>1946</td>
</tr>
<tr>
<td><strong>Total $ spent</strong></td>
<td>$1,091,294</td>
</tr>
<tr>
<td><strong>$ per patient</strong></td>
<td>$561</td>
</tr>
</tbody>
</table>

Cost impact of overbundled, unnecessarily broad CVD risk screening

- 5% of all lab testing is on CVD risk testing
- About 13% of CVD risk testing is of limited or no added value relative to conventional markers

| Routine Cardiovascular lab testing: 13% of the bill is on testing of limited value |
|-------------------------------|----------------|
| Proven Tests                   | 87%            |
| Unproven Tests                 | 13%            |

Source: Commercial payer data
Insurers reduce lab payments using 2 methods:...

- Medical necessity rules
- Administrative rules
  - Fee sheet
  - Lab Networks
  - Documentation rules
  - Co-payments

Companies offering lab test management products to the insurance industry:

- EviCore
- McKesson
- DNA Direct
- Avalon
- Beacon/LabCorp
- Others…
INTERVENTIONS to improve utilization require backbone and energy

I’m revitalized and ready to decrease Vitamin D testing
Many healthcare systems have active test utilization management systems and have published their methods.

- Cleveland Clinic
- University of Michigan
- Harvard
- University of Utah/ARUP
- Univ Washington / Seattle Children’s
Where should health systems focus interventions? It is most realistic to focus on care providers.

Common weaker interventions to improve lab utilization

- Memos
- Call for enhanced vigilance
- Training
  - Distribution of materials
  - Formal continuing education

MEMO 10/07/10
To: All Providers in Clinic X
From: Dr. BigEgo, Clinic Chief
Re: Lab test utilization

Stop ordering the wrong tests, and start ordering the right tests. Please, don’t order too many tests. Be more careful. You all don’t know what you are doing.
Utilization Management – Overview of Interventions

**Gentle**
- Posting of guidelines on the requisition
- Computerized reminders regarding utilization guidelines

**Medium**
- Utilization report cards with peer review
- Changes to manual requisition
- CPOE templates
- LIS flagging of duplicate orders
- EMR hard and soft stops.

**Strong**
- Privileging
- Sendouts formulary
- Forbidding tests
- Requirement for higher level collaboration or approval (e.g. Pathologist or genetic counselor consultation)

---


“One useful tactic under this approach is nudging, i.e. steering physicians in the direction that we know is usually right, while still giving them freedom to deviate where appropriate. This requires engineering the information environment in which they act, such that usually correct actions become the default, and deviation requires a conscious choice.”

Dr. Brian Jackson, ARUP/Univ Utah

Computerized Reminders: Less is More

“Would you like to discontinue standing order for electrolytes? Y / N”

“Recommended screening test for thyroid disease is TSH.”

“I wouldn’t have ordered that! Do you know what you are doing;!? Y / N”

Changes to manual requisitions…

• Should send obsolete tests into the sunset

• Need to be supported by a policy and procedure to destroy old requisitions
Changes to manual requisitions or to CPOE templates...

- Eliminate esoteric tests (e.g., neurogenetic testing) from requisitions /templates used in primary care.

- For each specialty: Make their common tests and small panels easy to order and uncommon tests hard to order.

- Don’t open the CPOE-all-you-can eat buffet.

- Make standing orders easy to turn off

<table>
<thead>
<tr>
<th>Check Test Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Alpha Thalassemia (deletions)</td>
</tr>
<tr>
<td>□ Alpha - Hemoglobin DNA Sequence</td>
</tr>
<tr>
<td>□ Beta - Hemoglobin DNA Sequence</td>
</tr>
<tr>
<td>□ Cystic Fibrosis</td>
</tr>
<tr>
<td>□ 5T Allele (for CBAVD)</td>
</tr>
<tr>
<td>□ Deafness/Hearing Loss (Connexins 26 &amp; 30)</td>
</tr>
<tr>
<td>□ DNA Preparation Only</td>
</tr>
<tr>
<td>□ Factor V Leiden (APC Resistance)</td>
</tr>
</tbody>
</table>

Portion of a requisition for genetics tests
Effect of removing ionized Ca\(^{+2}\) from requisition and replacing it with reflexive Ca\(^{+2}\) panel, which is a total Ca\(^{+2}\), and ionized Ca\(^{+2}\) if total Ca\(^{+2}\) < 8.0 mg/dL

Seattle Children’s Hospital approach to utilization management (UM) is typical and illustrative...

- Utilization management committee, meets weekly
  - 3 genetic counselors
  - 4 - 6 doctoral level staff including pathologists, medical geneticists, and clinical chemists
  - 2 lab managers
  - Subcommittees for special topics (e.g. exome testing)
- 1 GC, 1 doctor on call for UM each week.
- All UM cases recorded in database. Dbase allows case tracking, consistency in case resolution, and enables research and QI
- Emphasis is on sendout tests, but all aspects of UM are covered.

Typical UM committee work

- Policy and Procedures
- Review of subcommittees / ad hoc groups
- Periodic review of sendouts / send-ins
- Research / Academic progress
- Case review
Seattle Children’s Hospital: What test requests are placed under active management with review?

- Tests > $700
- Tests ordered for multiple genes
- Requests to use alternate labs
- Requests for **banned** tests or labs
- Request for test labeled in lab system as “Under Management” (e.g., reverse T3)


Examples of Banned Tests

- IgG Allergy
- IgM Helicobacter
- Genetic scoliosis prognosis
- Lab asked to draw blood and mail “special” kit to “special” lab.
  - Autism spectrum
  - Fibromyalgia panel
- Hair testing that is not arsenic
Example of a typical intervention: 1,25 Dihydroxyvitamin D

Problem:

• 1,25 Dihydroxyvit D is common send-out with > 300 tests/yr

• Retrospective chart review found 68% of 1,25 Vit D were ordered in error and 25 Vit D was intended.

Intervention

• Email describing use of the two Vit D tests, and asking if provider wants to change to 25 Vit D.

• Email managed by front-line sendouts staff.

**1,25 Vitamin D Intervention**

The lab received a request for 1,25 dihydroxy vitamin D on your patient. In our lab, we found that this is ordered accidentally 68% of the time.

**Utility of 25- Vit D vs. 1,25 Vit D**

Two options:
1. Cancel and add-on 25-OH Vit D
2. Proceed with original order

---

Effect of an email to doctors on Vitamin 1,25 D orders (2012-2013, 7 months)

After intervention:

- 58% (n=134) of the 1,25 Vit D orders were changed to 25 Vit D.
- 1,25 Vit D now <10/mo

Doctors Love the 1,25 Vitamin D Intervention

“Thank you so much for the email. You are correct I wanted 25-hydroxy. I will cancel and reorder.”

“Thanks so much for your help (and education.) You are exactly right—please cancel the order of 1,25 and I’ll add on for 25 hydroxy.”

I am not making these up.
"Dear Send-out Team,
I’ve created a list of our privileged providers who do not need to be contacted regarding ______ orders. Simply, send these tests out. ”
Genetic Counselors as a form of enhanced supervision

- In this study: 1/3 of genetic test orders were in error and correcting the order improved patient care and saved $ for patients and hospitals.

Email template to physicians who are not Medical Geneticists but who are ordering expensive genetic tests

Lab received expensive, unusual request on your patient:

You have 3 options:

1. Involve genetics or lab GC
2. Hold for pre-authorization
3. Proceed after telling $cost to patient

Info on completing insurance pre-auth
A day in the UM life at SCH... 32% of genetic test requests are canceled or decreased

Financial Implications of UM (N=2908 cases)

$6,033,371*
Total genetic requests

32% order modification

$980,953 savings

$5,052,418 Actual

~$340 saved per request

*Data collected Sept 2011 – Feb 2016
N=2908 genetic cases
Seattle Children’s Hospital
Utilization Management: Provider Satisfaction Survey
Providers like the service

10 questions on a semi-quantitative sliding scale
“Not at all satisfied” to “Couldn’t be better”

Examples of items that physicians rate on a 1-5 scale.

• “I have experienced testing delays that have impacted patient care because of the UM process (not including insurance pre-authorization).”

• “I appreciated knowing the cost of the test(s) before they were sent.”

• “The information provided by the UM team regarding sample holding and DNA banking was useful.”

“Our interaction in hem/onc with the UM program has been overwhelmingly positive...This program is definitely appreciated.”

“I LOVE the UM team and what they do to improve patients' care.”

“I love this program. It should be expanded. When I hear from patients how much they have had to pay out of pocket, I reconsider ordering tests... Can we see the cost of every test we order in real time? Or even afterwards?”
Survey completed by ~100 providers annually

**Mission/Vision**

- Significantly reduce pediatric send-out testing expenses while increasing the value of testing to patients.

- Be the #1 provider of services that promote pediatric test utilization management (UM) programs in hospitals and health systems.

**Goal**

- Help hospitals implement/strengthen their own UM programs.

**Outcomes**

- Decrease ordering errors

- Decrease send-out bill for genetic tests by 20-40%

- Decrease send-out bill for non-genetic tests by 10%

- Decrease patient complaints by reducing out of pocket expenses and unnecessary testing.
THANK YOU TO OUR SPONSORS & PARTNERS:

Intermountain/Primary Children’s Hospital
Invitae
Le Bonheur Children’s Hospital
Lurie Children’s Hospital Chicago
Mayo Medical Laboratories
Mercy Children’s Hospital – St. Louis
Meriter- Unity Point Health
Medical Neurogenetics (MNG) Laboratories
MultiCare Tacoma General
Nationwide Children's Hospital
Nemours/Alfred I. duPont Hospital for Children
Oregon Health Sciences University
Phoenix Children’s Hospital
PreventionGenetics
Quest Diagnostic Laboratory
Stanford Health Care
St. Louis Children’s Hospital
Tricore Reference Lab
University of Michigan
University of Washington
Wake Forest Baptist Health
York Hospital (WellSpan Health System)

54 MEMBERS, AND COUNTING...
PLUGS provides...

**UM Tools**
- Needs assessment and 1 year plan.
- Policies, procedures & communication templates that help providers reduce unnecessary testing & correct test orders.
- Database for collecting, tracking, & analyzing UM cases.
- Tool to assess risk of errors in send-outs.
- Provider-satisfaction survey.

**Communication**
- Office Hours/Call Center.
- Weekly Newsletter.
- Member teleconferences with presentations by SCH team & members.
- Website: [www.seattlechildrensrlab.org](http://www.seattlechildrensrlab.org).
- Discussion Forum.

**Education**
- Tips & Tricks from PLUGS experts.
- UM Learning Modules.
- UM Webinars.
- Case of the Week.
- Extensive materials on how to get a UM program started in a lab or hospital.
- PLUGS Summit.
PLUGS Summit (June 2017)

• 10 hours, CME/CEU
• Sharing best practices
• Debates / Roundtables
• Posters
• Networking (nice party)
• Largest lab utilization management gathering
  • >175 participants
  • Labs
  • IT companies
  • Insurance companies
Goals for the PLUGS Network

Research

* Clinical Service

Website and Print media

Education:
Webinars, software

National policy
Conclusions and Thanks!

- Lab test utilization management improves value to patients.
- It is here to stay.
- Over the next 10 years, most testing will be actively managed by insurers and hospital systems.
- Stronger UM interventions are structural.

- From our lab UM experience, we helped create a UM product for insurance companies and Seattle Children's launched PLUGS, a nonprofit outreach to hospitals with components of service, research, and teaching.

\[ \text{Value} = \frac{\text{Quality}}{\text{Cost}} \]