Clinical Safety & Effectiveness
Cohort # 8

Decreasing Wasteful CBC Orders on Medicine Inpatients

CENTER FOR PATIENT SAFETY & HEALTH POLICY
UT Health Science Center
SAN ANTONIO

Educating for Quality Improvement & Patient Safety
FINANCIAL DISCLOSURE

Gabriela Brzankalski, MD has no relevant financial relationships with commercial interests to disclose.

Hope Nora’s, PhD financial relationships with commercial interests will be disclosed prior to her presentation.
The Team

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AIM STATEMENT

To decrease unnecessary CBCs ordered by residents on the UHS medicine ward services by 10% over 3 months.
Project Milestones

• Team Created .................................................. May 2011
• AIM statement created ................................. May 2011
• Team Meetings .................................................. Sporadic
• Background Data, Brainstorm Sessions ............. Emails
• Workflow and Fishbone Analyses ........................ June 2011
• Interventions Implemented ............................... July – Aug 2011
• Data Analysis .................................................. Early Sept 2011
• CS&E Presentation ............................................... Sept 16, 2011
Background

• Overutilization labs common across both private and medical training institutions.

Some Reasons:
- No guidelines
- Level of experience
- Fear malpractice
- Fear repercussion by attending
- Time saver to order lots of labs
Was this an issue at UHS?

- **Manual review 20 charts** on inpatient medicine wards
- Most had CBCs every day during the admission
- 7 of 20 charts had a normal CBC on admission.

- **Survey 32 medicine residents:**
  > 1/3 admit to daily CBCs regardless of + indication.
Medicine Resident Survey

Contributors to over-ordering CBCs

- Fear repercussion if miss lab values on rounds (31%)
- Time constraints - save time by not thinking (50%)
- Computer viewing - no easy way to see CBC trend (12%)
- CBC is relatively inexpensive (12%)
- I don't know what a CBC costs hospital (9%)

- 56%
Detriment of Indiscriminant Lab Orders

- Patient discomfort
- Waste pt blood and equipment for draw.
- Waste nursing or phlebotomy time for services.
- Further w/u incidentals
Literature Review

Prior interventions to decrease lab ordering

• Computerized display of charges
• Assessing attending influence on resident ordering
• Education
• Creating unit specific guidelines
• Unbundling of panels
• Computer restricting repeat lab orders
• Frequent feedback to resident teams regarding costs of their lab ordering.
Fish Bone

Residents Ordering Tests:
- Cost/pain w/u incidentalomas
- Cost to hospital
- Cost to pts
- Pain to pt
- Disturb pt sleep-wake cycle
- Unaware of any detriment to overordering
- Fear repercussion of supervisor
- Embarrassment not knowing ALL pt data
- Fear "missed" clinical finding
- No training lab utilization
- Unaware of detriment to hospital/patient
- Varying expectations for residents regarding CBC orders
- No UHS hospital policy for overutilization
- No formal repercussion overutil
- No recognition for proper utilization
- Difficult to view a trend
- Sunrise computer ordering system allows repeat CBC w/o indication
- Hospital paid for labs ordered regardless of indication
- Cumulative cost to hosp/pt not shown

Process/Education:
- Rounds run past 11
- Time constraints
- Resident inefficient
- Need to leave for clinic
- No clear expectations set at start wards
- Doctors not trained in cost effectiveness
- No formal group or 1:1 feedback regarding ordering patterns
- No universal system for ordering CBCs
- No formal repercussion overutil
- No recognition for proper utilization
- Complex pts
- Need to leave for clinic
- No data how CBC results impact clinical mgmt decisions

Environment:
- Sunrise computer ordering system
- Nurses/lab not expected to help review indications
- Plenty of nursing staff available to draw labs
- Hospital paid for labs ordered regardless of indication

Data:
- Reimbursement climate
- Available to draw labs
- Hospital paid for labs ordered regardless of indication

Unnecessary overutilization of CBC orders for inpatients on UHS medicine wards.
Force Field Analysis

Some attgs DO set expectations
No attg expectations regarding lab draws set at beginning of ward month

Efficient Residents - More time to review lab trends
Reimbursement climate - hospital paid for ALL cbcs ordered

Sunrise system highlights abnormal lab values
No feedback on performance

Occasionally nurse/lab cancels duplicates
Attgs/residents unaware of costs of CBcs to patients or hospital

No formal training of attgs/residents regarding systematic lab draws on inpts
Residents fear bad grade/embarrassment by attg if they don't know pt data on rounds

No repercussion for ordering unnecessary CBcs
No recognition for ordering CBcs only with indications

Resident time constraints
Trend of WC, hgb, and plts not easy to discern in the mire of values that comprise the "whole CBC" on Sunrise system
Our Plan

- **Educate** 1 (out of 5 total) ward teams regarding mindful CBC ordering on a weekly basis.
- To intervention team only, provide **weekly feedback** regarding #CBCs ordered over # patients on each of the 5 ward teams.
- Run intervention for **12 weeks total**.
What Was Actually Done

Sunrise programmer delayed

Decide to start intervention on 1/5 med ward teams. Education only

Lose Sunrise programmer

Meet with Cerner programmer

Finally implement intervention both education and feedback on 2/5 tms

May

June

Early July

Mid July

Late July

August

Sept

Literature Review

Plan to start education and feedback interventions.

Meet with Sunrise Programmer

Run results, form charts and complete presentation
Change Ordering Patterns Pre/Post Intervention Teams Only

Baseline | Educ | Education + FB

- Intervention Tm 1
- Intervention Tm 2
Weekly CBCs Ordered
Control Tms and Intervention Tms

Ave #Wkly CBCs by Control tms
Ave #Wkly CBCS by Intervention tms

Baseline Weeks 1-5
Educ only Weeks 6-8
Educ + FB Weeks 9-13
Controls and Intervention Tms
CBCs Ordered/#Pts

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Estimated Return on Investment

After 8 weeks intervention:

- Tc - average #CBCs/tm/week = 72.8
- Ti - average #CBCs/tm/week with education only = 29.3
- Difference weekly average Tc-Ti $\rightarrow$ 72.8-29.3 = 43.5
- UHS cost is $3.90 for each CBC ordered.
- 43.5 x $3.90 = $169.65 savings weekly
- $169.65 x 3 weeks of intervention = $508.95

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- Tc - average #CBCs tm/week = 75.3
- Ti - #CBCs/tm/week with education + feedback = 53.7
- Difference weekly average Tc-Ti $\rightarrow$ 75.3-53.7 = 21.6
- UHS cost is $3.90 for each CBC ordered.
- 21.6 x 3.90 = $84.24 savings weekly
- $84.24 x 5 weeks of intervention = $421.20

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- Total estimated savings 8 weeks intervention: $930.15
Theorized Cost Savings with Expansion

• All 5 ward medicine ward teams:
  8 weeks → approx $4185 savings
  1 yr → approx $25,110 savings

Add approx cost nursing time:
  $7 per one peripheral stick (7 min)
  $12 per one central line draw (15 min)
  $36 per one complicated draw (45 min)
Considerations for Expansion of Intervention

- Heavy reliance on computer programmer and resident to run the numbers on a weekly basis.
- Frequent change of housestaff made education difficult on the intervention teams.
- Need data on pt comorbidities that influence CBC orders.
- Specific attendings or residents may influence the ordering patterns of housestaff.
- Cross contamination (ie, unblinding) of non-intervention teams may have influenced the ordering patterns of these teams.
- Add counterbalance – effect on #readmissions, ICU transfers.
Conclusion

Providing education and weekly feedback to specific medicine ward teams regarding CBC ordering patterns appears to impact number of CBCs ordered by these housestaff.
What Next?

• Consider expansion of intervention to include chemistries, CBCs, and other redundant lab orders for medicine and other hospital ward services.

• With more IT support, can consider expansion to other services besides medicine (gen surgery, family practice).

• Would benefit from other IT solutions such as blocking of recently ordered tests.

• Future lab/study ordering feedback and continual cost conciousness education should be worked into housestaff conferences.

• Develop our own lab ordering guidelines?
References


References


References


References

Thank you!
APPENDIX A

Applying the Improvement Model

1. What you are trying to accomplish
   Focus on the aim of the project, consider the boundaries of the process, confirm rationale for why the process is important to improve

2. How we will know a change is an improvement
   Determine how the process will be measured, identify the type of metric(s) you will use (process/outcome measure), target a realistic magnitude of change

3. What changes we can make that will result in an improvement
   Analyze the process and identify which changes to make using tools that are appropriate for your process and consult textbook, Improvement Tools, for a comprehensive list of process analysis and decision-making tools
APPENDIX B
Writing an AIM Statement

Tips for Setting Aims

• **State the aim clearly**
  Teams make better progress when they are very specific about their aims. Make sure that the aim statement describes the system to be improved, the patient population and the approach to improvement.

• **Include numerical goals that require fundamental change to the system**
  Setting numerical goals clarifies the aim, helps to create tension for change, directs measurement, and focuses initial changes.

• **Set stretch goals**
  A "stretch" goal is one to reach for within a certain time. Effective leaders make it clear that the goal cannot be met by tweaking the existing system.

• **Avoid AIM drift**
  Once the aim has been set, the team needs to be careful not to back away from it deliberately or "drift" away from it unconsciously.

• **Be prepared to refocus the aim**
  Every team needs to recognize when refocus its aim. Don’t confuse aim drift, or backing away from a stretch goal (usually not a good tactic), with consciously deciding to work on a smaller part of the system (often is a good tactic).

(Source: Institute for Healthcare Improvement)
Appendix B

Writing an AIM Statement (continued)

Format
The aim of this project is to _______ (the change: improve, increase, decrease) the process of ______________ by _____ (the targeted quantitative goal) during ______(the timeframe). The process begins __________ and ends _____(the process boundaries). This is important to improve because_________ (the rationale: it is a strategic goal, it is a safety concern, causes delays for patients or clinicians, is not effective, is not efficient, is not equitable, is not patient-centered, affects the staff, etc.)

Example
The aim of this project is to increase the percent of our diabetic patients that received an eye exam from 80% to 100% during the period, January 1 – June 30, 2009. The process begins when patients schedule an appointment and ends when the patient completes the exam. This is important to improve because it aligns with our strategic goal to improve the care of diabetic patients.
APPENDIX C

PDA Cycle - Trial of Improvement

• **Plan**
  The action plan for the project; i.e., Who? What? When? Where? How?

• **Do**
  Actual implementation of change (date, documentation of implementation issues, and lessons learned)

• **Check**
  What were the results? (Measures on run/control chart, other. If run charts used, please annotate to show when improvement was initiated.)

• **Act**
  Will this change be implemented elsewhere (spread) or will it be abandoned because it did not result in an improvement?
APPENDIX D

Approach to Calculating ROI

• ROI is a simple concept. It’s the total dollar/time return your organization will receive in exchange for undertaking a project or initiative of some sort.

• To accurately calculate the Return on Investment of your projects, you need to understand the two dimensions of ROI:

Reduced Costs

The first way a project produces returns is in the form of reduced costs. In this situation you calculate ROI using this formula:

ROI = Change in Operations Cost / Costs of Project

Increased Revenues

The second way a project produces returns is in the form of increased revenues to the organization. If a company decides to invest in developing a new process, the ROI for that new process will be the additional revenue that the process generates less the costs taken to produce and implement it. You calculate the formula like this:

ROI = Change in Revenue / Costs of Process Development and Implementation
APPENDIX D (continued)

1. Propose a new project
2. Determine amount of work needed to complete the project
3. Determine the cost of the required work
4. Calculate the returns

Source of Returns?
- Lower Costs
  - Determine how much work would be eliminated by the project
- New Revenue
  - Determine cost of the work eliminated by the project
  - Determine the targeted source of new revenue
  - Estimate low, middle and high cases for revenue from targeted source
  - Decide as team the most reasonable case. Use that estimate for "revenue"

ROI = \[
\frac{\text{Change in Revenue}}{\text{Total Project Cost}}
\]