Order Source Misattribution: The Impact on CPOE Metrics

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Co-authors and Conflict of Interest

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Have no real or apparent conflicts of interest to report.
Agenda

• Benefits realized for the value of Health IT
• What is Order Source Misattribution?
• Common misuse of order source
• Impact to CPOE metrics and adoption
• Awareness to misattributions
• Root cause analysis
• Misattributions identified by groups
• Data analysis of written orders
• Order source analysis
• Impact of Misattribution on Physician Contract Management and Fulfillment
• Actionable steps to prevent/reduce misattribution
• Conclusion
• Questions
Learning Objectives

1. Identify the negative impact and magnitude of misattribution of order source on physician Computerized Provider Order Entry (CPOE) performance metrics, including its negative potential impact on physicians' confidence in use rate reporting and how it complicates physician contract fulfillment.

2. Evaluate and correct order source misattribution for a defined, limited period (e.g., 1 month) among key physician CPOE adopters (e.g., hospitalists), in order to accurately report individual physician and overall facility CPOE use rates.

3. Identify solutions, including preventive education across departments, to help mitigate the cause and effects of order source misattribution on physician CPOE use rate and compliance reporting.
Benefits Realized for the Value of Health IT

S = Physicians endeavoring to adopt CPOE are deeply troubled by misattribution of orders to them. Reducing misattribution increases their confidence and satisfaction with individual CPOE use rate reporting.

T = CPOE increases the safety of care delivery to patients, and so strong adoption by physicians is essential. Physicians who are dubious of their reported CPOE use due to order misattribution will be less willing to adopt CPOE.

E = Order source attribution validation should eventually be automated within the EHR or enterprise data warehouse. This presentation will increase EHR and Business Intelligence vendors awareness of the significant negative impact of misattribution.

P = CPOE facilitates provider engagement in care and population health. CPOE via evidence based clinical decision support improves clinical outcomes/quality and reduces error.

S = Insofar as CPOE adoption reduces unnecessary diagnostic procedures, drug and other therapeutic use, it can yield savings in total care delivery.
What is Order Source Misattribution?

Order Source Misattribution is the misuse of order source selection/attribution by nursing and ancillary departments which deflates physician CPOE use rates.
Polling Question

State your organization’s **assessment** of CPOE misattribution

1. Unaware
2. Aware but not assessed
3. Assessed, not yet mitigated
4. Implementing solutions
CPOE Metric Calculation

\[
CPOE \text{ Metric} = \frac{N \text{ Provider CPOE Orders}}{N \text{ Total Orders (CPOE, Written, Verbal & Telephone)}}
\]
Order Source Selection for CPOE

• Computerized Provider Order Entry (CPOE) Meaningful Use was defined as direct order entry of laboratory, radiology, and pharmacy orders by physicians, nurse practitioners, physician assistants and residents.

• Prior to CPOE, the most commonly used order source was written.

• Implementation of CPOE required the creation of additional order source options in Electronic Health Record (EHR) systems.
Order Source Selection for CPOE

• Additional order source options created unprecedented opportunities for misattribution of CPOE issued patient orders

• Each misattribution required analysis in order to determine its negative impact on CPOE metrics and individual physician use rate assessment
Neutral Order Sources

Neutral order sources* are operational order sources not counted in either the numerator or denominator for determining CPOE use rates:

- **Medication Therapy Management:** used by Pharmacist when entering medication or laboratory orders as a result of a physician consult to dose and monitor therapy not outlined in a protocol

- **Order Management:** used when revising or entering new orders needed to complete or process an existing order

* Caveat: Recommend policy documentation be in place for CPOE order sources
Neutral Order Sources

Neutral order sources* are operational order sources not counted in either the numerator or denominator for determining CPOE use rates:

• **Protocol**: used when entering orders authorized as part of a physician order treatment or hospital **protocol**

• **Standing Delegated Orders**: used for orders/order sets approved by the medical staff for direct entry and implementation by nursing

* Caveat: Recommend policy documentation be in place for CPOE order sources
Overview of Neutral Order Source

- **Medication Therapy Management** (Utilized by Pharmacy)
  - Allow pharmacists to manage medications and related laboratory orders

- **Order Management** (Utilized by nurse/ancillary acting off existing orders)
  - Allows nurses to manage and refine orders

- **Protocol** (Nurses acting on authorized order treatment)
  - Allows nurses to enter orders based on hospital protocol

- **Standing Delegated Orders** (Nurses acting on approved orders for direct entry)
  - Permits nurses to enter initial orders based on assessment according to policy
Example of Neutral Order Source Workflow

**PROVIDER** enters orders for Electrolyte Protocol

Order calculated towards provider’s CPOE use rate

Patient care requires several orders from the Protocol

Nurse enters 1 lab and 1 medication order in CPOE

Correct Order Source Selected

No

2 orders negatively impact provider’s CPOE use rate

Yes

Order source of Protocol

Orders have no impact on CPOE Metrics
Common Misuse of Order Source

- Order is part of a hospital practice or specialty protocol
- Subsequent orders generated by the protocol were entered as written by nursing or ancillary groups
- **Example:**
  - Protocol to give Potassium if < 3.5
  - Nurse enters medication order for Potassium and does not select protocol as the order source
Common Misuse of Order Source

• Order is part of a conditional order

• **Example:**
  – Order is part of a conditional order to draw blood cultures if temperature > 101 F
  – Several days later, patient gets a temperature > 101 F
  – Nurse selects written as the order source when entering order for blood cultures
  – Nurse should have selected **order management** as the order source
Negative Impact on CPOE Metrics

- Identified early in CPOE use rate reports (distributed monthly to drive adoption)
- Identified number of orders, number orders by Provider, and CPOE %

<table>
<thead>
<tr>
<th>Ordering Physician</th>
<th># of Orders</th>
<th># Orders by Provider</th>
<th>% CPOE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST, MD</td>
<td>2222</td>
<td>2028</td>
<td>91.3%</td>
</tr>
</tbody>
</table>

- Caused clinicians to challenge the accuracy/credibility of use rates
- Required a detail breakdown of order source totals
- Contributed to physician dissatisfaction/distrust of reported use rates
- Affected contracted physician performance metrics
Informatics Involvement

- High volume order entry physicians (e.g., hospitalists) are required to achieve established CPOE use rates
- Hospitalist group was willing to work with Informatics to determine the accuracy of use rate reporting
- CPOE use rate reports had to be broken down by order source:
  - Telephone
  - Verbal
  - Written
  - Provider
# Informatics Involvement

<table>
<thead>
<tr>
<th>Ordering Physician</th>
<th>Orders by Telephone</th>
<th>Orders by Verbal</th>
<th>Orders by Written</th>
<th>Orders By Provider</th>
<th>Total Orders</th>
<th>% CPOE</th>
<th>Opportunity</th>
<th>Opportunity % of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST, MD</td>
<td>14</td>
<td>0</td>
<td>180</td>
<td>2028</td>
<td>2222</td>
<td>91.3%</td>
<td>194</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
Informatics Involvement

• CPOE usage report distributed monthly to include Order Source

• Hospitalist group questioned the overall number of written orders listed

• Charts randomly audited to determine usage of written orders by Hospitalist group

• Audit findings were that written orders generated by the hospitalist group were minimal to non-existent
Informatics Involvement

• Hospitalist group concerned with artificial deflation or negative bias on CPOE use rate metrics

• Requested that a systematic root cause analysis be conducted on order sources

• Analyses into the cause of order source misattribution determined that misuse of order source by nursing and ancillary were leading contributors to misattribution
Method to Complete Root Cause Analysis

- **Focus on written orders exclusively** attributed to Hospitalist group
- Written orders undetected by clinicians
- Hospitalists are unable to reject written orders misattributed to them
- Assessed for incorrect order source for a 1 month period
Method to Complete Root Cause Analysis

• Samples of selected month’s orders were processed using analytical software and CPOE system data warehouse tool

• Each order was assessed and the order source attribution validated

• Orders validated by reviewing medical records or by the use of electronic audit trail

• Responsible parties for misattributed written orders were identified
Misattribution Sources Identified by Group

- Pharmacy: 38%
- Nursing: 42%
- Laboratory: 15%
- Unit Clerk: 3%
- Radiology: 2%
Data Analysis

Initial analysis identified **525 possible written orders that were attributed inaccurately** to the sample providers group during the 1 month analysis period:
Reasons for CPOE Misattribution

• **Illegible Signature:** Pharmacy unable to determine signature on written order and used attending provider’s name to process order

• **Incorrect Provider:** wrong provider entered at time of order

• **Order Edited:** original order placed by provider, then end user edited the order

• **Telephone Order:** end-user took telephone order and wrote the order on paper (orders written and scanned to Pharmacy are considered written)
Reasons for CPOE Misattribution

• **Stat Order Edit**: provider ordered procedure STAT, end-user edited and changed order

• **Entry Error**: error caused by duplicates entered by end-user

• **No Electronic Order**: select orders remain on paper, such as TPN

• **No Order**: no electronic or written order shown

• **UTD**: unable to determine source or cause of misattribution
Analysis for Incorrect Order Source

- Data analysis revealed **49% of misattributions were caused by incorrect order source selection**
- Each was investigated to determine **the correct order source**
Use Rate Reporting Impact for Sample Group

- Sampled provider group’s adjusted CPOE percentage --
- By removing inaccurate written orders, group’s CPOE monthly use rate increased by 4.1%
- A significant improvement in rate performance accuracy:

<table>
<thead>
<tr>
<th>Misattributions Included</th>
<th>Number of Written Orders</th>
<th>Number of Electronic Orders</th>
<th>Total Number of Orders</th>
<th>CPOE Percentage for Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Misattributions Removed</td>
<td>525</td>
<td>10988</td>
<td>11861</td>
<td>92.6%</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>10988</td>
<td>11365</td>
<td>96.7%</td>
</tr>
</tbody>
</table>
Impact of Misattribution on Physician Contract Management and Fulfillment

Case Illustration: Hospitalist group had minimum acceptable CPOE use rates defined in group contract (e.g., 85% minimum)

• Incentive payments were to be paid for “stretch” performance objectives, for e.g., > 90% use rates for entire facility hospitalist group

• Group achieved 87% monthly reported use rates, but suspected misattribution, primarily from paper orders (unit clerks/nurses will attribute to a hospitalist when physician signature illegible due to their high order volume)
Impact of Misattribution on Physician Contract Management and Fulfillment

- Significant risk of hospitalists becoming demoralized due to inability to achieve payment incentives for actual 90+% CPOE performance
- A major political and operational liability given group’s critical care role
- Once actual misattribution level was quantified (4% month over month), we were able to adjust performance expectations accordingly
Impact of Misattribution on Physician Contract Management and Fulfillment

• When hospitalists achieved 86% group CPOE use rate for a month, a 4% misattribution margin was added so their net performance was 90%+

• Hospitalists could earn the group payment incentives they actually deserved
Actions to Prevent Misattribution

• End-users instructed to *file and exit CPOE system* when entering orders

• **Daily monitoring** of order entry by nursing and ancillary leadership

• **Order Source Job Aid revamp** to highlight examples of correct source and consequences when using the incorrect order source
Job Aid to Prevent Misattribution

You can help by:
- Ensuring the correct Provider is selected
- Being aware of the available order sources and their intended uses
- Exiting the Order Screen between ordering sessions (use the File and Exit button to be sure you receive the prompt to select the correct Ordering Provider and Order Source information)
- Selecting a new order source when appropriate or when prompted
- Correctly attributing the right order source to each order or order-set entered by non providers
- Contacting your leadership, super users, or Health Informatics with questions or concerns
Job Aid to Prevent Misattribution

Using the wrong order sources results in:

- Inaccurate clinical documentation
- Unnecessary e-sign tasks for providers
- Delays in Medical Records processing
- Inaccurate hospital / provider compliance statistics
- Orders that need to be signed not going to the provider’s e-sign queue
Actions to Prevent Misattribution

- **Order Source Job Aid** used for recurrent periodic education of nursing and ancillary staff, focusing on the importance of preventing misattribution

- Correct use of **Electronic Health Record data filters** in the business intelligence software that generates CPOE use rates
Actions to Prevent Misattribution

• **Review** of additional workflows and **processes with each department** to identify source and magnitude of order misattributions

• Establishment of additional **neutral order sources** for operational orders, as well as conditional orders that could result in new orders
Conclusions

• Significant CPOE order misattribution may occur in a typical community general hospital

• Magnitude of order misattribution can be substantial, and important when performance metrics and payment incentives include CPOE performance

• Initial analysis identified 525 possible written orders were attributed inaccurately during a 1 month analysis period

• We uncovered a 4.1% misattribution rate among a sample group of important, high volume providers (e.g., hospitalists)
Conclusions

• Multiple departments may be the source of misattributions including nursing, pharmacy, ancillary and other non-providers

• Misattribution complicates the measurement of physician compliance with CPOE, particularly where minimum performance targets or objectives have been established in physician contracts

• Can also cause troubling frustrations among key physician groups incented to achieve stretch performance objectives but unable to due to misattribution
Conclusions

• Order source misattribution needs to be evaluated periodically in order to confirm validity and ensure physician end user trust of reported CPOE use rates

• Useful for facilities to conduct misattribution assessments periodically especially among high volume/high frequency CPOE using physicians

• Continuous ongoing efforts to prevent misattribution through education of source department personnel are imperative and needs to be supported by facility administrative and clinical leadership
Benefits Realized for the Value of Health IT

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Questions

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