Drug Delivery Delay
June 24, 2011

Clinical Safety & Effectiveness
Cohort # 7

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

Educating for Quality Improvement & Patient Safety
DISCLOSURE
The Team

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  - Luci Leykum, MD, MBA, MSc
    • Division Chief, Hospital Medicine, UTHSCSA
The Team
Aim

- Decrease the order to administration time for Stat, Now and Once antibiotics by 25 percent by May 30, 2011.
# Project Milestones

- **Team Created** January 2011
- **AIM statement created** February 2011
- **Twice Weekly Meetings** 1/25-2/24/2011
  - Background Data, Brainstorm Sessions
- **Flow and Causation** 2/18/2011
- **Interventions Implemented**
  - Red Dot – Additional runner 3/10/2011
  - Common Antibiotics Stocked 4/12/2011
  - Nurse Education 5/11/2011
- **Data Analysis** 6/13/2011
- **CS&E Presentation** 6/24/2011
Background

- ePIR data (electronic Patient Incident Report)
  Q1FY11 (Oct-Dec 2011)
  - 173 medication errors reported
    - MD Orders 108
    - Administration 34
    - Dose 33
    - Dispensing 23
    - Delivery 23
Delivery

- 19 of 23 or 83% of incidents citing delayed delivery to the nursing units from the pharmacy
- Under reported by nurses
- High potential for harm to the patient, especially in the area of timely antibiotic administration
  - Mortality is significantly increased in patients who receive initial antibiotics after recognition of shock. \(^1\)\(^{-2}\)
  - Early antibiotic administration (within 4 hours) reduces the risks of mortality in patients with bacteremic pneumococcal pneumonia. \(^3\)
- Antibiotic administration is High risk in nature & occurs very frequently
D³ - Drug Delivery Delays
Pre-Intervention Flow Diagram

MD Orders Stat Now Once Medication in CPRS/VISTA

- VISTA sends order to Pharmacist computer for verification
- Pharmacist assesses priority for Stat, Once & Now orders via VISTA
- Pharmacist sets 24 hour expiration on Stat, Once & Now orders
- Pharmacist sends Label request to Pharmacy printer

- Label picked up by med Tech or Pharmacist
- Drug Compounded
- Label placed
- Compounded by Pharmacist?
  - YES
  - NO
    - Compounded by Pharmacist?
      - YES
      - NO
        - No priority on compounding of Stat, Now, Once drugs
        - No dedicated runner for Stat, Now, Once medications

- Runner places medication bag in med room
- RN/LVN sift through Scheduled, Once, Now meds
- RN/LVN verification: 1) patient 2) patient 3) medicaition
- RN/LVN verification: NO
- Patient & Drug scan agree?
  - YES
  - NO
    - STOP - DO NOT ADMINISTER DRUG
    - Antibiotics not available on nursing units

- Drugs placed in bags on cart by location
- Hourly Runner delivery: 1) critical care 2) other units.
- Drugs placed in bags on cart by location
- Hourly Runner delivery: 1) critical care 2) other units.

- No handoff from runner to RN/LVN
- Stat, Now, Once drugs don’t stand out
- No handoff from runner to RN/LVN
- Stat, Now, Once drugs don’t stand out

- Drug Administered to patient
Interventions

• **Red Dot**
  ◦ on all Stat, Now, Once meds

• **Additional Dedicated Runner**
  ◦ for Stat, Now, Once meds

• **Common Antibiotics Stocked**
  ◦ on nursing units

• **Nurse Education**
  ◦ on med administration expectation
Interventions

- **Red Dot** 3/10/11
  - on all Stat, Now, Once meds

- **Additional Dedicated Runner** 3/10/11
  - for Stat, Now, Once meds

- **Common Antibiotics Stocked** 4/12/11
  - on nursing units

- **Nurse Education** 5/11/11
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- Pharmacist sends Label request to Pharmacy printer

- Label picked up by med Tech or Pharmacist
- Drug Compounded
- Label placed
- Compounded by Pharmacist?
- YES
- NO
- Pharmacist confirms compounded drug

- No priority on compounding of Stat, Now, Once drugs
- No dedicated runner for Stat, Now, Once medications
- No handoff from runner to RN/LVN

- Runner places medication bag in med room
- RN/LVN sift through Scheduled, Once, Now meds
- RN/LVN verification: 1) patient 2) patient 3) medication

- Patient & Drug scan agree?
- YES
- NO
- STOP - DO NOT ADMINISTER DRUG

- Drugs placed in bags on cart by location
- Hourly Runner delivery: 1) critical care 2) other units.

- NO
- Drugs placed in delivery bin by location
- Stat, Now, Once drugs don’t stand out

- Antibiotics not available on nursing units

- Drug Administered to patient
MD Orders Stat Now Once Medication in CPRS/VISTA

VISTA sends order to Pharmacist computer for verification

Pharmacist assesses priority for Stat, Once & Now orders via VISTA

Pharmacist sets 24 hour expiration on Stat, Once & Now orders

Medication in Omnicel?

Pharmacist sends Label request to Pharmacy printer

Pharmacist

sends order to
Pharmacist
computer for
verification

Pharmacist
assesses
priority for
Stat, Once &
Now orders via
VISTA

Pharmacist
sets 24 hour
expiration on
Stat, Once &
Now orders

Red Dot
Drugs
Compounded
first

Label placed

Compounded by
Pharmacist?

YES

Compounded by
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ALERT: Process Change

A red dot priority system for processing 1st Dose of Antibiotics, STAT, NOW & ASAP medications was developed to ensure timely drug administration at the bedside.

The red dot indicates the highest priority for medication administration.

Medications with a red dot should be administered IMMEDIATELY upon receipt on the nursing units.

Created by: Kaye Alford for the Medication ARCA Team 2011
Data

- 991 Total antibiotics
  - 301 baseline data 12/1/10-3/10/11
  - 292 first intervention 3/10/11-4/12/11
  - 232 second intervention 4/13/11-5/10/11
  - 166 third intervention 5/11/11-5/30/11
Return on Investment

- Future Data collection
  - LOS
  - Mortality rates

- Value added
  - Pharmacist efficiency
  - Patient/Nurse satisfaction
Spread

- Stocking of Antibiotics on all units
- Stocking of other essential medications
- Rollout at Kerrville campus
- Transparency in Turnaround Times
  ◦ Quarterly reporting to senior leadership

Future

- Nurse alert for Stat Now Once orders
- Expected administration time
  ◦ On provider order
  ◦ On medication label
Barriers

- New tasks for nursing
  - Compounding antibiotics
- Data collection
  - Multiple sources
  - Duplication of data

Lessons Learned

- Physicians/Nurses/Pharmacists have different expectations
- Data is essential
Conclusion

- Small changes = big impact
- Communication is essential
- Don’t forget Education of staff
References


2. Impact of time to antibiotics on survival in patients with severe sepsis or septic shock in whom early goal-directed therapy was initiated in the emergency department. Gaieski DF, Mikkelsen ME, Band RA, Pines JM, Massone R, Furia FF, Shofer FS, Goyal M. *Crit Care Med.* 2010 Apr; 38(4):1045-53.

questions