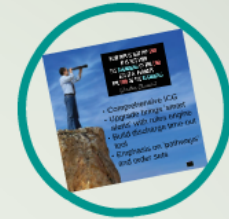


Clinical Decision Support: Finding Our Way

Judi Binderman, MD MBA MHSA
VP-CMIO, St. Francis Medical Center



Clinical Decision Support

...provides clinicians... with knowledge and person-specific information, intelligently filtered or presented at appropriate times, to enhance health and health care. CDS encompasses a variety of tools to enhance decision-making in the clinical workflow... [1]

Clinical guidelines, condition-specific order sets, computerized alerts and reminders, contextually relevant reference information, focused patient data reports and summaries, documentation templates, diagnostic support

Lessons Learned

- CDS comes in many flavors
- Getting to what works is hard work
- Strike a balance between passive and active alerts
- Make sure education about desired outcomes accompanies tools
- Regular audits and feedback reinforce behavior

Core Measures Focus

- Approached to participate in subsequent instrument review
- Extension Analysis of Core Measures 10/16/15
- ED Documentation - 30 or more
- ED Documentation, organizing worksheets, etc.
- Time dependent, organizing worksheets, etc.
- Limits to track all discharge
- ED system provides real time alerts
- Quadrant has difficulty alerting unit and processing

St. Francis Medical Center

- Located in Lynnwood, CA
- One of 5 hospitals in Daughters of Charity Health System
- Licensed for 384 beds, ADC - 240
- 18,853 Inpatient admissions
- 74,899 Emergency visits (now - 80,000)
- EHR: Quadrant inpatient, Pico ED

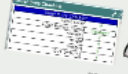
Getting Ready for Stroke Certification



First Steps: VTE

| DATE/TIME | PROVIDER | ORDER | STATUS | REASON |
|----------------|--------------|-----------------|--------|-------------|
| 10/16/15 10:00 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:05 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:10 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:15 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:20 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:25 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:30 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:35 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:40 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:45 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:50 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 10:55 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |
| 10/16/15 11:00 | J. Binderman | VTE Prophylaxis | Active | Prevent VTE |

Second Step: Prevent Blow up



- ED Interface: Highlighting
- Waiting on Alerts to come across
- Alert order and status
- DVT orders-SCD and/or chemoprophylaxis
- On patient home page

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clinical guidelines
condition-specific order sets
computerized alerts and reminders
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touted patient data reports and summaries
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Lessons Learned

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- Strike a balance between passive and active alerts
- Make sure education about desired outcomes accompanies tools
- Regular audits and feedback reinforce behavior

Core Measures Focus

- Approached to participate in national consent review
- Extensive Analysis of Core Measure "falls"
- ED Documentation - all at home
- Time dependent sequencing antibiotics, etc.
- Items to focus on discharge
- ED system specialists evaluate alerts
- Qwikem had difficulty storing until end processing

St. Francis Medical Center

- Located in Lynwood, CA
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- 74,896 Emergency visits (row - 80,000)
- EHR, Quadrant Inpatient, Pico ED

Getting Ready for Stroke Certification

First Steps: VTE

| DATE | TIME | STATUS | REASON | PROVIDER | ORDER |
|------------|-------|--------|--------|------------------|-------|
| 10/15/2014 | 14:00 | ADMIT | ADMIT | DR. J. BINDERMAN | ADMIT |
| 10/15/2014 | 14:00 | ADMIT | ADMIT | DR. J. BINDERMAN | ADMIT |
| 10/15/2014 | 14:00 | ADMIT | ADMIT | DR. J. BINDERMAN | ADMIT |
| 10/15/2014 | 14:00 | ADMIT | ADMIT | DR. J. BINDERMAN | ADMIT |
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| 10/15/2014 | 14:00 | ADMIT | ADMIT | DR. J. BINDERMAN | ADMIT |
| 10/15/2014 | 14:00 | ADMIT | ADMIT | DR. J. BINDERMAN | ADMIT |

Second Step: Prevent Blow up

- ED Interface: Height/Weight
- Walking on Alarms to come across
- Admit order and Status
- DVT orders-SCD and/or echocardiogram
- On patient home page

St. Francis Medical Center

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Quadramed-QCPR

- Old MUMPS platform
- Minimal dynamic alert functionality
- Major milestone activities scattered through system functionality
- Alerts occur at the back end in processing
- Missing elements 'blow up' order processing
 - Have to remove all items from 'shopping cart'
 - Fix the problem
 - Add orders to shopping cart again

Quadramed-QCPR

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Clinical Decision Support

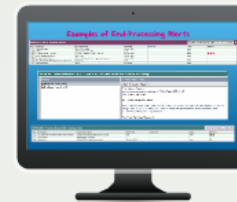
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- clinical guidelines
- condition-specific order sets
- computerized alerts and reminders
- contextually relevant reference information**
- focused patient data reports and summaries
- documentation templates
- diagnostic support



Core Measures Focus

- Approached to participate in outsourced concurrent review
- Extensive Analysis of Core Measure 'fallouts'
 - ED Documentation--all or none
 - Time dependent sequencing-antibiotics, etc.
 - Items to occur at discharge
- ED system provides real-time alerts
- Quadramed has difficulty alerting until end-processing



Examples of End-Processing Alerts

| Admission Orders - Order Summary | | | | | | Direct by Mckenzie, Ricardo E, MD at 16-Jun-14 19:11:19 |
|-------------------------------------|---|--|--------------|-----------|------|---|
| Cp | Procedure | Order Information | Start Time | Order Set | Type | Advisory |
| <input checked="" type="checkbox"/> | Patient Condition | 16Jun 1911 stable | 16-Jun 19:11 | | new | |
| <input checked="" type="checkbox"/> | Activity | continuous As Tolerated | cont | | new | |
| <input checked="" type="checkbox"/> | D5 in NaCl 0.9%, 1,000 mL | 1,000 mL D5 in NaCl 0.9% 125 mL/hr | 16-Jun 19:11 | | new | XXX |
| <input checked="" type="checkbox"/> | IV Procedure (Peripheral) | 16Jun 1911 | 16-Jun 19:11 | | new | |
| <input checked="" type="checkbox"/> | Basic Metabolic Panel | 16Jun 1911 Blood - Li Hep (green) Vacutainer | 16-Jun 19:11 | | new | |
| <input checked="" type="checkbox"/> | SCD (Antiemetic Stockings/Device Application) | continuous | cont | | new | |
| <input checked="" type="checkbox"/> | Echocardiogram | 16Jun | 16-Jun day | | new | |

SFMC/MD - Problem Based OE - TYLENOL #3 (acetaminophen and codeine 300-30 mg)

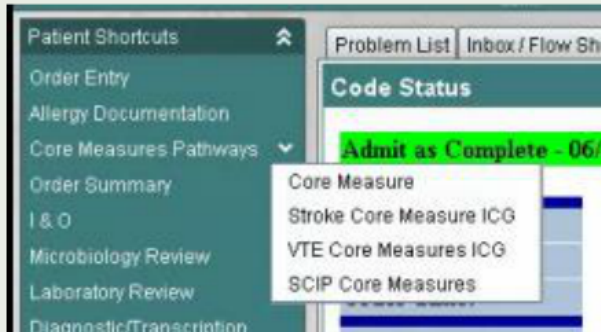
| Advisories | Prior Adverse Reaction |
|--|--|
| <ul style="list-style-type: none"> Prior Adverse Reaction Duplicate Procedure(s) | <p>Action: Comment Required</p> <p>Prior Adverse Reaction Medication: Acetaminophen-Codeine #3 Oral Tablet 300-30 MG Allergy: Morphine Sulfate</p> <p>Morphine and Related - CLASS</p> <p>The use of Acetaminophen-Codeine #3 Oral Tablet 300-30 MG (Morphine and Related) may result in an allergic reaction based on a reported history of allergy to Morphine Sulfate (Morphine and Related) in which other "itching" was experienced.</p> <p>Alert Type: Warning w/Comment</p> |

SFMC/MD - Problem Based OE - Adding Order

Direct by Tawadrous, Odette, MD a

| Cp | Procedure | Order Information | Start Time | Order Set | Type | Advisory |
|-------------------------------------|--|--|--------------|-----------|------|----------|
| <input checked="" type="checkbox"/> | TYLENOL #3 (acetaminophen and codeine 300-30 mg) | 1 tab by mouth q6h prn process if pain Instructions: For Pain | prn | | new | |
| <input checked="" type="checkbox"/> | Urinalysis | 16Jun 1921 Urine Clean Catch | 16-Jun 19:21 | | new | |

First Steps: VTE



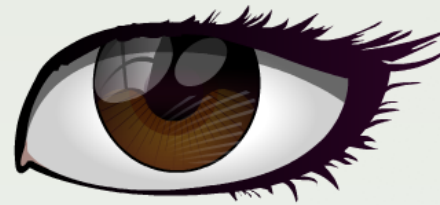
| VTE Core Measures ICG | | October 2, 2013 | October 5, 2013 | October 6, 2013 | October 7, 2013 |
|-----------------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Scale ▾ | Go to ▾ | | | | |
| ▾ Ibcx Summary | | | | | |
| IBEX Summary | ← | | | | |
| ▾ VTE Admission Note | | | | | |
| ▾ Education | | | | | |
| Adverse Reactions | | | | | |
| Compliance | | | | | |
| Dietary | | | | | |
| All Topics | | | | | |
| ▾ Anticoagulants | | | | | |
| Enoxaparin | | | | | |
| Heparin | | | | | |
| Fondaparinux | ← | | | 2.5 mg | 2.5 mg |
| Warfarin | | | | | |
| ▾ Laboratory | | | | | |
| CBC | ← | 02-Oct 04:23 com... | 05-Oct 11:17 com... | 06-Oct 06:53 sup... | 07-Oct 07:12 com... |
| INR | | | | | |
| Prothombin Time | | | | | |
| aPTT | | | | | |
| ▾ Diagnostic Studies | | | | | |
| Angio CT | ← | | | | |
| Doppler US | | | | | |





Second Step: Prevent Blow up


| Order Entry Checklist | |
|-----------------------|-----------|
| Admit Order | ✓ |
| Admit Patient Status | Inpatient |
| Allergies | ✓ |
| Height | ✓ |
| Weight | ✓ |
| DVT Order(s) | ✓ |

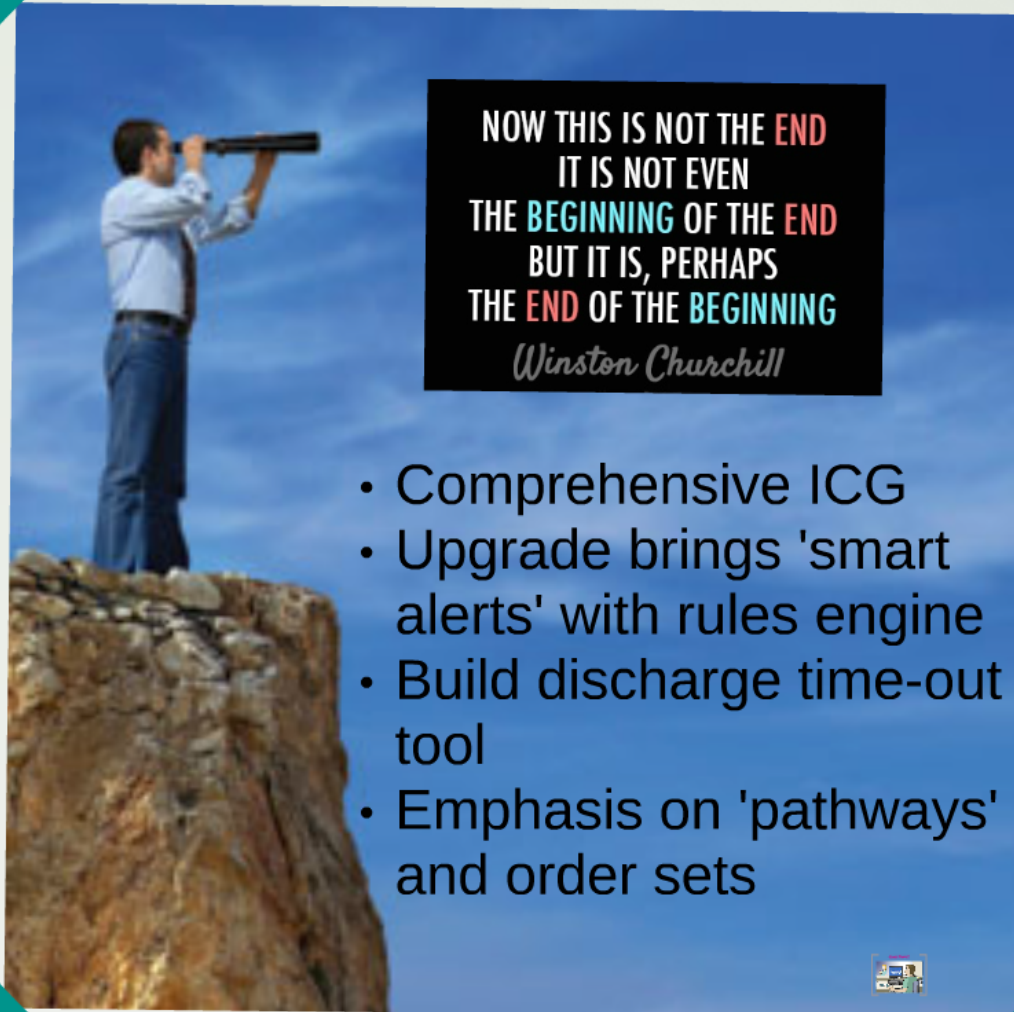


- ED Interface: Height/Weight
- Waiting on Allergies to come across
- Admit order and Status
- DVT orders-SCD and/or chemoprophylaxis
- On patient home page



Lessons Learned

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- 



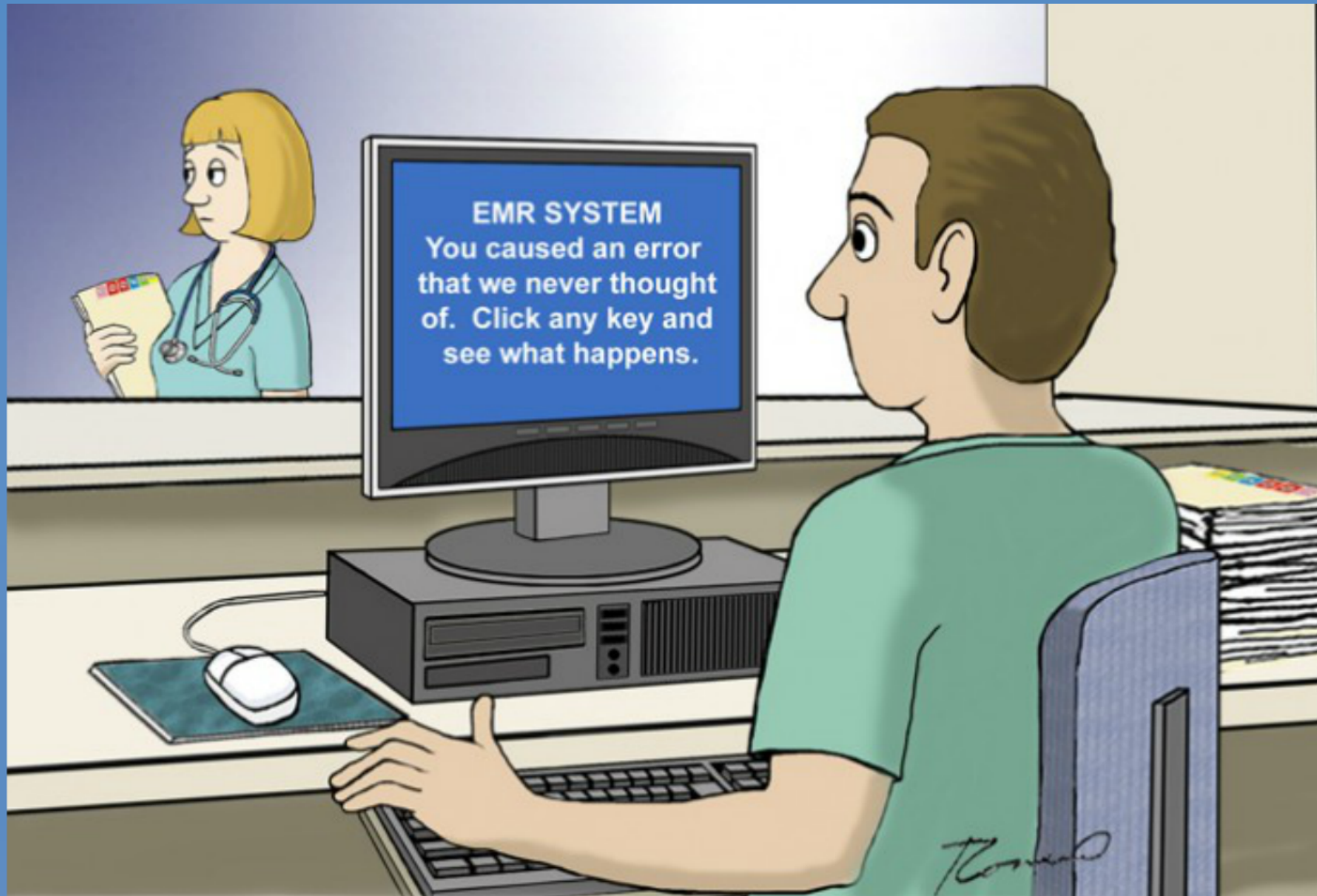
NOW THIS IS NOT THE **END**
IT IS NOT EVEN
THE **BEGINNING** OF THE **END**
BUT IT IS, PERHAPS
THE **END** OF THE **BEGINNING**

Winston Churchill

- Comprehensive ICG
- Upgrade brings 'smart alerts' with rules engine
- Build discharge time-out tool
- Emphasis on 'pathways' and order sets



Questions?



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First Steps: VTE

| DATE | TIME | STATUS | LOCATION | ADMIT | DISCH | ADMIT | DISCH |
|----------|-------|----------|----------|----------|----------|----------|----------|
| 10/15/14 | 14:00 | Admitted | ED | 10/15/14 | 10/15/14 | 10/15/14 | 10/15/14 |
| 10/15/14 | 14:00 | Admitted | ED | 10/15/14 | 10/15/14 | 10/15/14 | 10/15/14 |
| 10/15/14 | 14:00 | Admitted | ED | 10/15/14 | 10/15/14 | 10/15/14 | 10/15/14 |
| 10/15/14 | 14:00 | Admitted | ED | 10/15/14 | 10/15/14 | 10/15/14 | 10/15/14 |
| 10/15/14 | 14:00 | Admitted | ED | 10/15/14 | 10/15/14 | 10/15/14 | 10/15/14 |

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