

# Pharmacy and Supply Chain Clinical Strategies

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Services

Cone Health

# Topics

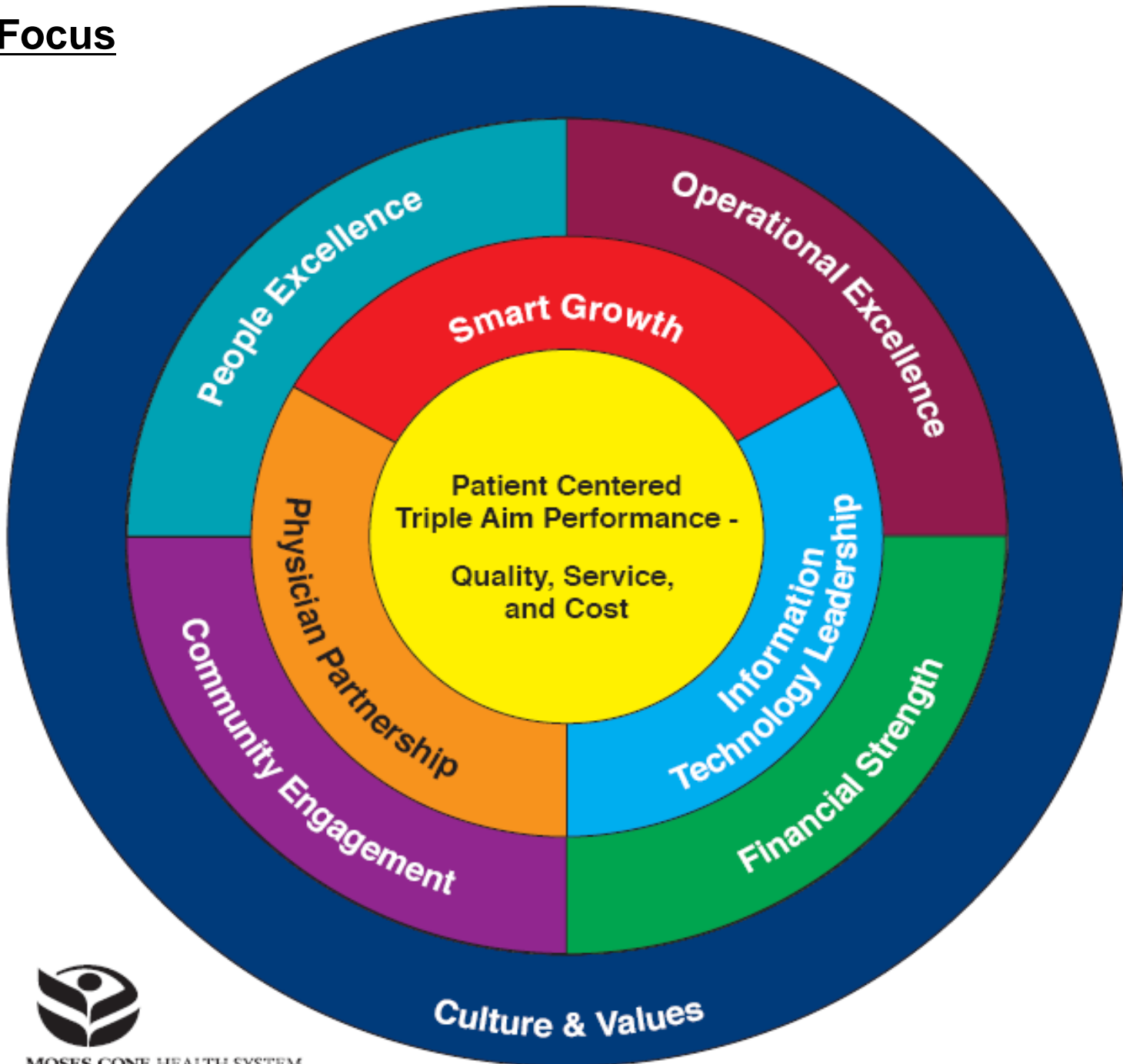
- Clinical Decision Support – Surveillance
- Recombinant human bone morphogenetic protein-2 (rh-BMP-2)
- 340B Contract Pharmacies
  - Increase revenue
  - Improve quality

# Cone Health Vision

“Cone Health will be a National Leader in Delivering Measurably Superior Healthcare”

“Patients at the center of all decisions”

# Strategic Focus



# CLINICAL DECISION SUPPORT

# DECISION SUPPORT DEFINITION

Tool that provides clinicians with knowledge and patient specific information, intelligently filtered and presented at appropriate times, to enhance health and health care

# CLINICAL DECISION SUPPORT

a Software Tool

- Gathers data from multiple interfaces
- Complex Rule Based Program
- Pharmacy and Infection Prevention

# CLINICAL DECISION SUPPORT

- Create Clinician Workflows  
Pharmacists, Infectious Disease Pharmacist, Infection Prevention Practitioner
- Create efficiencies previously unavailable  
Moving from a paper based to an electronic workflow
- Help with Core Measure Monitoring
- Uncover dangerous or not ideal clinical situations related to drug therapy (Prevent Adverse Drug Events)
- Help reduce drug cost

# CLINICAL DECISION SUPPORT

## Workflow

### **Acknowledgement Status**

**Not Acknowledged (initial alert status)**

**Acknowledged (I have completed work on this alert)**

**Follow-up ( This alert requires further follow up – either by me or another shift)**

# Clinical Pharmacist Workflow

## 1316: 1 Item(s)

|                 |                     |      |    |  |                    |        |                  |  |   |                    |
|-----------------|---------------------|------|----|--|--------------------|--------|------------------|--|---|--------------------|
| ██████████<br>L | 06/17/2011<br>14:39 | 1316 | 01 | gabapentin/Cre...<br>Clearance AjBW<br>(CG): 32.51 | 06/21/2011<br>4:20 | 168543 | Not Acknowledged |  | Gabapentin<br>>1400 mg/day<br>and CrCl = 30-<br>59 ml/min | Intervene   Status |
|-----------------|---------------------|------|----|--|--------------------|--------|------------------|--|---|--------------------|

## 1339: 1 Item(s)

|                 |                     |      |    |                                 |                     |        |                  |  |   |                    |
|-----------------|---------------------|------|----|---------------------------------|---------------------|--------|------------------|--|---|--------------------|
| ██████████<br>I | 06/18/2011<br>13:52 | 1339 | 01 | fluconazole,<br>sodium chloride | 06/22/2011<br>11:06 | 535627 | Not Acknowledged |  | IV-PO<br>Conversion<br>Protocol<br>Fluconazole (72<br>hrs IV Therapy) | Intervene   Status |
|-----------------|---------------------|------|----|---------------------------------|---------------------|--------|------------------|--|---|--------------------|

## 1340: 1 Item(s)

|                 |                    |      |    |              |                     |        |                  |  |   |                    |
|-----------------|--------------------|------|----|--------------|---------------------|--------|------------------|--|---|--------------------|
| ██████████<br>W | 06/19/2011<br>0:22 | 1340 | 01 | azithromycin | 06/22/2011<br>10:35 | 535573 | Not Acknowledged |  | IV-PO<br>Conversion<br>Opportunity -<br>azithromycin (72<br>hrs IV Therapy) | Intervene   Status |
|-----------------|--------------------|------|----|--------------|---------------------|--------|------------------|--|---|--------------------|

## 1341: 1 Item(s)

|                 |                     |      |    |              |                     |        |                  |  |   |                    |
|-----------------|---------------------|------|----|--------------|---------------------|--------|------------------|--|---|--------------------|
| ██████████<br>U | 06/20/2011<br>11:35 | 1341 | 01 | pantoprazole | 06/21/2011<br>22:03 | 534284 | Not Acknowledged |  | IV-PO<br>Conversion<br>Protocol -<br>pantoprazole | Intervene   Status |
|-----------------|---------------------|------|----|--------------|---------------------|--------|------------------|--|---|--------------------|

## 1412: 1 Item(s)

|                 |                     |      |    |  |                    |        |                  |  |  |                    |
|-----------------|---------------------|------|----|--|--------------------|--------|------------------|--|--|--------------------|
| ██████████<br>J | 06/20/2011<br>14:31 | 1412 | 01 | enoxaparin/Cre...<br>Clearance AjBW<br>(CG): 33.82 | 06/22/2011<br>6:31 | 169047 | Not Acknowledged |  | Enoxaparin 30<br>mg daily AND<br>CrCl CG AjBW<br>>30 ml/min AND<br>weight 45-150<br>kg | Intervene   Status |
|-----------------|---------------------|------|----|--|--------------------|--------|------------------|--|--|--------------------|

## 1413: 1 Item(s)

|                 |                     |      |    |                               |                    |        |                  |  |            |                    |
|-----------------|---------------------|------|----|-------------------------------|--------------------|--------|------------------|--|------------|--------------------|
| ██████████<br>O | 06/18/2011<br>19:09 | 1413 | 01 | B-Type Natriuretic<br>Peptide | 06/21/2011<br>7:06 | 531441 | Not Acknowledged |  | HF Screen. | Intervene   Status |
|-----------------|---------------------|------|----|-------------------------------|--------------------|--------|------------------|--|------------|--------------------|

## 1424: 1 Item(s)

|                 |                    |      |    |             |                     |        |                  |  |                        |                    |
|-----------------|--------------------|------|----|-------------|---------------------|--------|------------------|--|------------------------|--------------------|
| ██████████<br>G | 06/19/2011<br>9:17 | 1424 | 01 | amoxicillin | 06/21/2011<br>16:55 | 533411 | Not Acknowledged |  | Double beta-<br>lactam | Intervene   Status |
|-----------------|--------------------|------|----|-------------|---------------------|--------|------------------|--|------------------------|--------------------|

## 1433: 1 Item(s)

|                 |                     |      |    |                               |                    |        |                  |  |  |                    |
|-----------------|---------------------|------|----|-------------------------------|--------------------|--------|------------------|--|--|--------------------|
| ██████████<br>N | 06/21/2011<br>23:08 | 1433 | 01 | Admit Date:<br>06/21/11 23:08 | 06/22/2011<br>4:43 | 534784 | Not Acknowledged |  | DVT Prophylaxis<br>screening-<br>age>=18 | Intervene   Status |
|-----------------|---------------------|------|----|-------------------------------|--------------------|--------|------------------|--|--|--------------------|

## 1435: 1 Item(s)

# Infection Prevention Clinician Workflow

## Search Results

Isolation Candidates [14] Reportable Diseases [0] HAI [1] MDRO [0] General Surveillance [3]

### Isolation Candidates - Suspected Cases

Drag a column to this area to group by it.

| Act. ID | Created             | MRN | Name          | Unit                   | Room | Bed | Admissio            | Discharg | Initiating Eve   | Assigned Uni | Status           | Categor | Source                   | Event Dat           | Rule   | Note:                               | Options                   |
|---------|---------------------|-----|---------------|------------------------|------|-----|---------------------|----------|--|--------------|------------------|---------|--------------------------|---------------------|--|-------------------------------------|---------------------------|
| 536...  | 06/22/2...<br>16:14 | 184 | M             | BH-500B                | 0502 | 02  | 06/22/2...<br>16:08 |          | Admission  |              | Not Acknowled... |         |                          | 06/22/2...<br>16:12 | INF disease flagged in IDX on previous visit     | <input type="checkbox"/>            | New Note Status Intervene |
| 536...  | 06/22/2...<br>15:05 | 165 | CA...<br>RY J | MCH-3000<br>NSG/NEU    | 3037 | 01  | 06/16/2...<br>19:55 |          | Enterococcus VRE   |              | Not Acknowled... |         | URINE, RANDOM            | 06/18/2...<br>16:34 | Isolation Candid...<br>-<br>Organis...           | <input type="checkbox"/>            | New Note Status Intervene |
| 536...  | 06/22/2...<br>14:54 | 158 | N,<br>D L     | APH-3A<br>NURSING UNIT | A305 | 01  | 06/22/2...<br>10:38 |          | Admission [Staphylococ... aureus MRSA Collected: 12/03/10 11:23] |              | Not Acknowled... |         |                          | 06/22/2...<br>14:53 | Patient Readmi... with Prior Isolation Candidate | <input type="checkbox"/>            | New Note Status Intervene |
| 536...  | 06/22/2...<br>14:44 | 106 | V,<br>M       | MCH-2900<br>2900C      | 2922 | 01  | 06/22/2...<br>4:42  |          | MRSA BY PCR  |              | Not Acknowled... |         |                          | 06/22/2...<br>12:24 | Isolation: MRSA PCR +                            | <input checked="" type="checkbox"/> | New Note Status Intervene |
| 536...  | 06/22/2...<br>14:44 |     | E,            | MCH-2100<br>MICU       | 2111 | 01  | 06/19/2...<br>20:12 |          | AFB CULTURE AND SMEAR REPORT STATUS:                             |              | Not Acknowled... |         | BRONC... ALVEOLAR LAVAGE | 06/21/2...<br>15:14 | AFB  | <input checked="" type="checkbox"/> | New Note Status Intervene |
| 536...  | 06/22/2...<br>14:34 |     | E...          | MCH-3000<br>NSG/NEU    | 3005 | 01  | 06/20/2...<br>20:39 |          | AFB CULTURE AND SMEAR REPORT STATUS:                             |              | Not Acknowled... |         | SPU                      | 06/21/2...<br>5:18  | AFB  | <input checked="" type="checkbox"/> | New Note Status Intervene |
| 536...  | 06/22/2...<br>14:34 | 102 | L,<br>M       | MCH-5100<br>SURGICAL   | 5128 | 01  | 06/22/2...<br>9:05  |          | Admission [Haemophilus influenzae Collected: 03/30/11 01:30]     |              | Not Acknowled... |         |                          | 06/22/2...<br>14:33 | Patient Readmi... with Prior Isolation Candidate | <input type="checkbox"/>            | New Note Status Intervene |

# CLINICAL DECISION SUPPORT

Rules in Place

- ADE Avoidance/Core Screens/IV to PO (356 rules)
- Infectious Disease (32 rules)
- Infection Control (16 rules)

# CLINICAL DECISION SUPPORT

Rules Based Software:

## Rules in Place:

Adverse Drug Event Avoidance /Core Screens/ IV to PO (356 rules)

- Drug – Renal Function
- Drug-Lab
- Drug Interaction
- Drug Duration of therapy
- New Drug Ordered
- DVT Screen
- HF Screen
- IV to PO conversion

# NEW FDA RESTRICTIONS ON ZOCOR JUNE 8, 2011

Rule name

Rule Description

**Simvastatin 20 mg daily and amiodarone - rhabdomyolysis risk**

Patients on amiodarone and simvastatin >10 mg/day have reported cases of rhabdomyolysis. Assess simvastatin dose. If >10 mg, substitute rosuvastatin (Crestor) 1mg for each 4mg simvastatin and leave communication form advising MD of change.

# DVT PROPHYLAXIS SCREENING

- Patients at 12 hours post admission that are not on an anticoagulant, mechanical DVT prophylaxis or have a DVT check . Re-checks criteria at 2,4 and 6 days post admission.
- April 1-May 31 – pharmacy screened 1495 patients
- Action taken on 432 patients - 28%

# IV TO PO CONVERSION

- Why?
  - The oral form of the drug is equivalent
  - The IV form is likely more expensive
  - The patient gets off IV therapy sooner
  - Impact LOS
- Studies show 24 hours less IV therapy with pharmacist intervention
- April 1-May 31 Pharmacists screened 1589 activations
- Drugs Costs:
  - Average cost of one day of IV therapy = 23\$
  - Average cost of one day of PO therapy= 8\$
  - Average monthly savings = 3600\$ or 43,500\$ per year



**From April 1 2011 to May 31 2011 (Two Months) this rule has fired 170 times – Pharmacist making some form of intervention in 33/170 cases (20%)**

● Key Drug-Potassium Chloride(MEQ)    × Key Lab-Potassium Serum

24-hour Dosage     Point-in-Time Dosage

Patient Information    Activation Detail    Acknowledgment Status    Case Review

**Acknowledgement**

Save    Save and Close    Save and Create New Intervention

Rule Name: Potassium chloride and K > 5  
 Rule Description: Alerts to a patient on potassium chloride and K > 5.  
 Acknowledgement Status: Acknowledged (A) [v]  
 Acknowledgement Date/Time: 06/13/11 05:40  
 Acknowledgement Code: Ack Action Taken from rule suggestion [v]  
 Did this activation alert you to this condition?:  NA  Yes  No  
 Time Allocated(minutes): 5

Comments:

6/13 0530 - Rn calling MD to see if po and MIVF with K should be stopped or changed.  
 Md d/c po KCL and KCL in ivf

Add comments to patient chart notes:

# CLINICAL DECISION SUPPORT

Rules Based Software:

## Rules in Place:

Infectious Disease (32 rules)

- **Antibiotic Duration of Therapy**
- **New High Cost Antibiotic Started**
- **New Restricted Antibiotic Started**
- **Drug – Bug Mismatch**
- **Positive Blood Culture**
- **New HIV Therapy**
- **Positive C Diff Toxin**
- **Duplicate Antibiotic Therapy**

**“The software helps identify suboptimal drug/bug combinations by immediately alerting me when the culture results are finalized. This allows me and the other pharmacists to evaluate the antibiotic therapy and recommend narrowing the antibiotic spectrum or changing antibiotics if a resistant organism is identified much sooner”**    **Jeremy Frens**

# CLINICAL DECISION SUPPORT

Rules Based Software:

## Rules in Place:

Infection Prevention (16 rules)

- **Positive MRSA PCR test**
  - PCR not done in 12 hours
  - +PCR not treated with mupirocin within 24 hrs
- **Patient isolated on previous admission**
- **Isolation candidate based on organism resulted**
- **Reportable Test (Rocky Mt Spotted Fever, Malaria etc)**
- **Test ordered (AFB, C Diff Toxin etc)**

# ACKNOWLEDGED ACTIVATIONS

| Clinician Type                 | April 1 to May 31 | Extrapolated Yearly |
|--------------------------------|-------------------|---------------------|
| Clinical Pharmacist            | 5541              | 33246               |
| Infectious Disease Pharmacist  | 1851              | 11106               |
| Infection Prevention Clinician | 1747              | 10482               |
| Total                          | 9139              | 54834               |

# New Rule Requests

- “ I was alerted on a patient who's Scr went from 0.62 to 1.38 post OR, and I reviewed their med-list, and set the rule to off unless the Scr went up by 25% to avoid another alert on Sunday. The alert occurred again, and this time, their Scr was > 7!! This allowed me to revisit their profile and I found a serum K of 5.5 (another vigi alert), and noted they were on KCL, spironolactone and Losartan. The silver lining to this story is that the MD had seen the patient for the day, and not made any changes. So when I called the MD on call, to get verbal orders to d/c the meds that would increase K further, he was very appreciative of our follow-up.”

# New Rule Requests

- “Just FYI, the FDA issued a new warning regarding Celexa stating that the max dose is 40mg daily. Doses higher than this have been linked to QT prolongation. Max dose for patients >60 y/o or hepatic impairment is 20mg daily. Can we add this warning?”

# The Perfect Storm

Getting the tools Infection Prevention needs  
to effect change

Melissa Morgan, BSN, RN  
Infection Prevention Data Analyst  
Cone Health  
June 27, 2011

# MELISSA MORGAN IP

“VigiLanz has moved IP into the 20th century. We have moved the work of an IP from manually extracting data from printed lab reports, multiple systems, and phone calls to the bedside to rounding each day on patients identified with potential infectious organisms engaging the patient, family, and bedside caregivers. This happens much sooner and allows us multiple opportunities each day to educate the staff on protecting the patient and preventing infection in real time versus 1,2, or multiple days later. I believe this has and will greatly impact the safety of our patients.”

# INFUSE

- Product: Infuse Bone Graft
- Manufacturer: Wyeth Pharmaceuticals
- FDA approval as Medical Device
  - Genetically engineered human protein (rhBMP-2) to simulate bone healing
  - Absorbable sponge made from cow (bovine) collagen that is soaked with the protein

# Post-launch Safety Reports

- The Spine Journal – June 2011
  - Off-label use
    - Cervical Spine – serious adverse events
  - Accusations of under-reporting of serious complications
  - Ethics issues
    - Financial payments
- Senate investigation
- Yale Study

# Cone Health Response

- Patient-centered
  - Pause
  - Affirm Safety
  - Learn
    - Requested feedback from our Surgeons
    - Survey peer organizations
    - Literature review
  - Partner
  - Re-implement safe and appropriate use

# Guideline-based Approach

- Efficacy
  - FDA Indications
  - Peer-reviewed evidence for other uses
- Safety
  - Pre and post launch
- Cost
  - Payor considerations
- Benefits > Risks

# Survey Questions

- How is your hospital responding to the clinical alert?
- What is your hospital doing with the product INFUSE in your OR's?
- Are your surgeons signing an acknowledgement?
- Are you getting patient consent?

# Survey Responses

“Many managed care payors are rejecting claims where infuse is used. We are receiving prior authorization before used.”

“We do not use this product in our facility.”

# Survey Responses

“Discussed in depth with spine surgeons, established guidelines for use, temporary moratorium on use (iliac crest harvest instead), ultimately created patient consent form and associated processes. Awaiting better data on the clinical trial.”

“We have communicated the clinical alert to all physicians that use this product. We have created a utilization report to monitor usage of the product. We are not getting patient consent. We are leaving the usage up to the physicians.”

# Infuse Contraindications

- Pregnant or who suspect they may be pregnant
- Allergic to any materials contained in the device
- Infection near the area of the surgical incision
- Tumor removed from the implementation site
- Tumor currently in the area
- Skeletally immature

# BCBSNC Coverage Policy

- Coverage for FDA-approved indications when it is determined to be medically necessary when medical criteria and guidelines are met
  - Adjunct to anterior lumbar spinal fusion at one or more levels in skeletally mature patients with approved indications for lumbar spine fusion surgery
  - Treatment of acute, open fracture of the tibial shaft
- Coverage not provided for non FDA use because they are considered investigational

# Recommendation

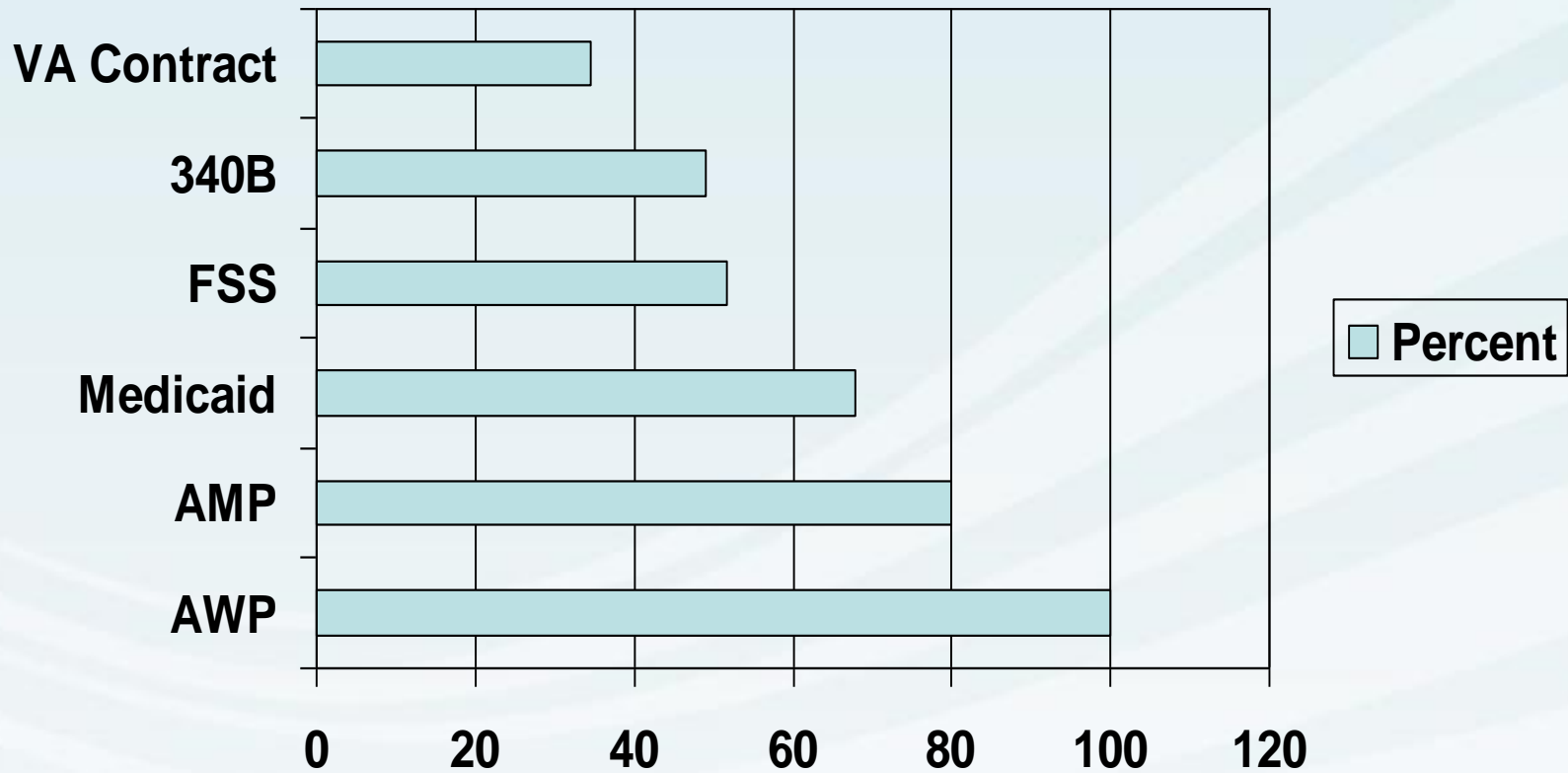
- Allow use for FDA approved indications in patients who are believed to have trouble healing where contraindications are not present
- Educate all prescribers about safety
- Require consent for off-label use
- Monitor utilization
- Establish process / advisory group for monitoring utilization and other potential indications
- Establish process for post-approval safety alerts for non-pharmaceuticals

# 340B Pharmacy Opportunities

# 340B Phase-In Process Journey Started 2006

- Phase 1: All outpatient oncology centers
- Phase 2: All eligible hospital-based outpatients (day surg; ED; etc.)
- Phase 3: New eligible patients or new clinical/business strategies that evolve because of 340B
  - Contract Pharmacy
  - Employees if eligible

# Estimated Prices for Selected Public Purchasers



# Plan Cost Projection

|                    | 2005        | 2006        | 2007        |
|--------------------|-------------|-------------|-------------|
| Rx's               | 124,156     | 128,280     | 132,385     |
| Ingredient Cost/Rx | \$72.69     | \$77.99     | \$83.68     |
| Member Cost/Rx     | \$25.74     | \$26.63     | \$27.55     |
| Plan Cost/Rx       | \$47.62     | \$52.90     | \$58.72     |
| Plan Cost          | \$5,904,069 | \$6,786,482 | \$7,773,515 |

# Employee Prescription Journey

- Cone Health Employee Prescriptions
  - Dec 2006 => Eligible High Cost Injectables
  - Feb 2009 => Opened MC OP Pharmacy
- Focus
  - High Cost/Specialty
  - Brand name
  - Maintenance
  - Disease Management

# Recent Employee Rx Trends

| Calendar Year | Medco Payments | Medco Rx's | Medco Cost/Rx | OP RX Cost   | OP RX Rx's | OP RX Cost/Rx | Cost To MCHS With OP Rx Open | Total Rx's | Total Cost/RX |
|---------------|----------------|------------|---------------|--------------|------------|---------------|------------------------------|------------|---------------|
| CY 9          | \$ 5,364,638   | 93,346     | \$ 57.47      | \$ 2,153,157 | 28,899     | \$74.51       | \$ 7,517,795                 | 122,245    | \$ 61.50      |
| CY 10         | \$ 4,576,725   | 78,408     | \$ 58.37      | \$ 3,439,439 | 50,474     | \$68.14       | \$ 8,016,164                 | 128,882    | \$ 62.20      |
| CY 11 Proj    | \$ 3,651,873   | 74,676     | \$ 48.90      | \$ 4,351,500 | 65,546     | \$66.39       | \$ 8,003,373                 | 140,222    | \$ 57.08      |
| CY 12 Budget  |                | 66,255     |               |              | 80,978     |               | \$ 8,907,754                 | 147,233    | \$ 60.50      |

# Open New Pharmacy

| Calendar Year | Medco Payments | Medco Rx's | Medco Cost/Rx | OP RX Cost   | OP RX Rx's | OP RX Cost/Rx | Cost To MCHS With OP Rx Open | Total Rx's | Total Cost/RX |
|---------------|----------------|------------|---------------|--------------|------------|---------------|------------------------------|------------|---------------|
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| CY 12 Budget  | \$ 3,434,453   | 66,255     | \$ 51.84      | \$ 4,964,793 | 80,978     | \$61.31       | \$ 8,399,246                 | 147,233    | \$ 57.05      |

# 2012 OP Rx Goals

- Expand Phase III
  - Capture Cancer Center Specialty Rx's
  - Capture 55% Ee Rx's
  - Start Contract Pharmacies
  - Capture MCHP Ee and Non-Ee Rx's

# Multiple Contract Pharmacy Plan

- Non-traditional Homecare
  - \$2 Million
- Traditional Retail
  - \$7 Million

# Summary

- Employee Pharmacy Has SAVED:
  - Cone Health Plan > \$5 Million
- Employee Pharmacy Has Improved:
  - Diabetes care management
  - Hypertension and Lipids in 2012
- Contract Pharmacies have offered new revenue

Thank You!