

Medication Safety

It's MERP and so much more

Beacon Collaborative Practical and Tactical Meeting

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Outline for Discussion

- Describe actions to take to prepare for a MERP survey
- Review Human Factors and Medication Safety
- Outline findings from Med Safety assessments
- Briefly discuss a culture of safety
- Complete list of action items

Preparing for a MERP survey

- Read the law!! CA HSC 1339.63

<http://law.justia.com/california/codes/hsc/1339.63.html>

- Do what the law requires!
- Be prepared for a survey at all times
 - Have documents ready in a binder(s)
 - Know how to run the reports they will ask for
 - Educate pharmacy and nursing staff

MERP MANIA

MEDICATION ERROR REDUCTION PLAN

December 17, 2009

MEDICATION ADMINISTRATION SAFETY

Use the 2 patient identifiers – medical record number and patient full name

Allergies should be documented on the MAR

Check allergies prior to administration

Patient will have an allergy band when applicable

Use hand hygiene prior to and after administration

Compare the MAR with the actual medication

Use the 7 rights – right drug, right dose, right route, right time, right patient, indication for use, right documentation

Prepare your drugs for one patient at a time

Explain to the patient or family the drug and why the patient is receiving it

Document the drug was given on the MAR immediately after administration

Preparing for a MERP survey

(e)(1) Evaluate, assess, and include a method to address each of the procedures and systems listed under subdivision (d) to identify weaknesses or deficiencies that could contribute to errors in the administration of medication.

What are the required procedures and systems?

Prescribing, prescription order communication, product labeling, packaging and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, use

Preparing for a MERP survey

(e)(1) Points to remember

- Address all of the required elements
- Ensure that identified medication error issues are included
- Identify weaknesses or deficiencies that can contribute to medication errors
- Examine ALL your medication error data to identify problems that need to be addressed

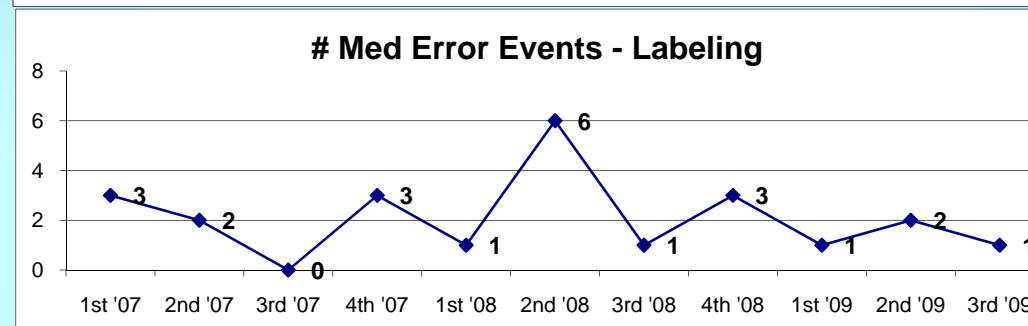
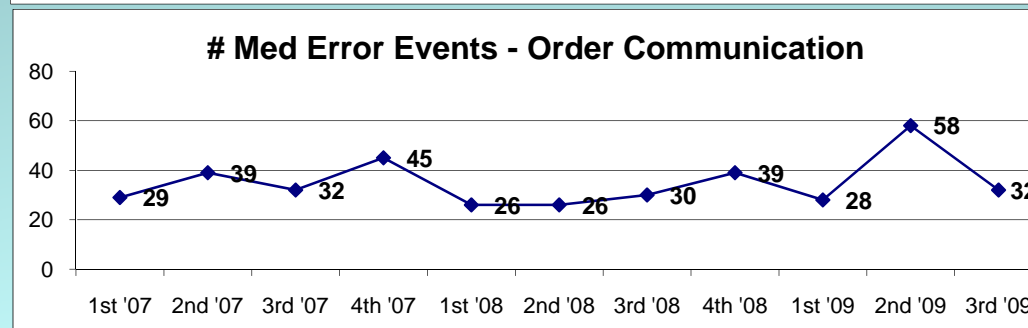
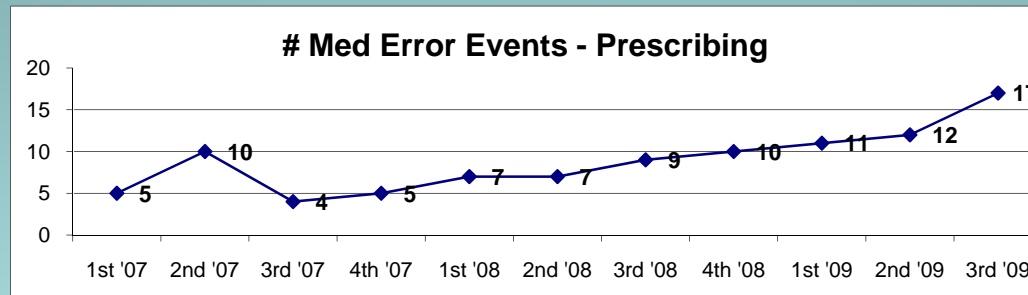
Preparing for a MERP survey

(e)(2) Include an annual review to assess the effectiveness of the implementation of each of the procedures and systems listed under subdivision (d).

Points to remember

- Review each of the required elements and whether each of your interventions was successful or not
- Use medication error data to determine your success
- Aggregated data not useful; need to review each identified problem

Preparing for a MERP survey



Preparing for a MERP survey

(e)(3) Be modified as warranted when weaknesses or deficiencies are noted to achieve the reduction of medication errors.

Points to remember

- It is difficult to identify weaknesses or deficiencies without annual review
- If a lack of success is determined a new intervention must be implemented

Preparing for a MERP survey

(e)(5) Include a system or process to proactively identify actual or potential medication-related errors. The system or process shall include concurrent and retrospective review of clinical care.

Points to remember

- Are physicians, nurses, pharmacists, radiology staff, respiratory therapists, etc. reporting actual/potential medication errors?
- System must be efficient
- Is there a “just” culture which encourages reporting?
- Must demonstrate both concurrent and retrospective review

Preparing for a MERP survey

(e)(6) Include a multidisciplinary process, including health care professionals responsible for pharmaceuticals, nursing, medical, and administration, to regularly analyze all identified actual or potential medication-related errors and describe how the analysis will be utilized to change current procedures and systems to reduce medication-related errors.

Preparing for a MERP survey

(e)(6) Points to remember

- Must be sure that physicians and administration are included in multidisciplinary process
- Ensure that ALL medication-related errors are reviewed by the entire MERP committee – do not screen out errors of lower severity or only review aggregate data
- Make sure that minutes reflect analysis of errors AND actions taken to change procedures and systems to reduce errors

Preparing for a MERP survey

(e)(7) Include a process to incorporate external medication-related error alerts to modify current processes and systems as appropriate.

Points to remember

- Many sources available including ISMP, FDA and TJC SEA. Consider CDPH Administrative penalties, medication errors from other hospitals (multi-hospital systems)
- For whatever sources you list in your plan – make sure that minutes reflect that these sources are actually reviewed and actions taken

Human Factors and Medication Safety



Human Factors and Medication Safety

Activity (Assume no undue time pressure or stresses)	Rate
Error of commission (e.g., misreading a label)	0.3%
Error of omission without reminders	1%
Error of omission when item is embedded in a procedure	0.3%
Simple arithmetic errors with self checking	3%
Monitor or inspector fails to recognize an error	10%
Personnel on different shifts fail to check the condition of hardware unless directed by a checklist	10%
Error rate under very high stress when dangerous activities are occurring rapidly	25%

Adapted from: Park K. Human error. In: Salvendy G, ed. *Handbook of human factors and ergonomics*. New York: John Wiley & Son, Inc. 1997: 163

Human Factors and Medication Safety

Probability of Performing Perfectly

Probability of Success for Each Step in the Process

Number of Steps	<u>0.95</u>	<u>0.99</u>	<u>0.999</u>	<u>0.999999</u>
1	0.95	0.99	0.999	0.999999
25	0.28	0.78	0.98	0.998
50	0.08	0.61	0.95	0.995
100	0.006	0.37	0.9	0.99

25 steps, 99.9% accurate in every step results in a 2% error rate

100,000 medication doses with a 2% error rate results in 2,000 medication errors

Medication Error Prevention Methods and Their Effectiveness

<i>Method</i>	<i>Effectiveness</i>
Forcing functions and constraints	Most effective
Automation and Computerization	Most effective
Standardization and protocols	Effective
Checklists and double-check systems	Effective
Rules and policies	Least effective
Education and Information	Least effective
Be more careful; be vigilant	Not effective

Adapted from recommendations by the Institute for Safe Medication Practices (ISMP)

Medication Error Prevention Methods and Their Effectiveness

Effectiveness

Method

Most effective

Forcing functions and constraints

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Rules and policies

Least effective

Education and Information

Not effective

Be more careful; be vigilant

Adapted from recommendations by the Institute for Safe Medication Practices (ISMP)

What do you know about medication safety?



Dan's Top 10 findings

- Allergies – process is almost always broken
- Emergency Medications – peds crash cart
- Medication Reconciliation – reconciliation process not tight
- Black Box Warning drugs – most have policies, few follow them
- Drugs not stored safely – accidents waiting to happen
- Administer prn meds without following order
- MAR discrepancies – errors or omissions don't get corrected
- Human factors not being taken into consideration
- Failure to use systems thinking
- Don't have a “Just Culture”

Prescribing

Problems identified:

- Fentanyl patches stocked in ED ADC. Orders in ED not reviewed by pharmacy
- Pharmacy Director not aware that fentanyl patches were stocked in ED Pyxis
- 14 patches dispensed in 9 month period

Prescribing – Pre-Printed Orders

Best Practice: Fentanyl patch - found in three different hospitals

ALL fentanyl patch orders must be written on pre-printed order form. Form includes appropriate criteria for use and physician must address each specific criteria.

Honorable mention:

Hospital using remote order entry after hours – remote pharmacy is prohibited from processing fentanyl patch orders. They wait until hospital pharmacists can verify safety of dispensing the next morning.

Problems identified: PCA order

Allergies: _____

Date **Start PCA (patient controlled analgesia) via hospital-managed controlled substance pump.**

----- **Medication** (Please check):

Time Morphine 1mg/ml Bupivacaine 0.125%/Fentanyl 10mcg/ml
----- Hydromorphone 1mg/ml Bupivacaine 0.25%/Fentanyl 10mcg/ml
Fentanyl 25mcg/ml Bupivacaine 0.25%/Fentanyl 25mcg/ml
Meprobamate .00mg/ml Other: _____

Route: Epidural Intravenous Subcutaneous

Dosing: Initial loading dose: _____

Basal/Continuous rate: _____

Intermittent boluses: _____ every _____

May increase by _____ / _____ until pain level of _____ is reached to a
(DOSE) (TIME INTERVAL)
maximum of _____

May decrease by _____ / _____ μ m
(DOSE) (TIME INTERVAL) (INHIBITION)

Discontinue all other pain medications (Please check if applicable)

Adjunct medications for pain: _____

Naloxone hydrochloride (Narcan) _____ mg IV/ _____ every _____ min. for

respiratory rate < _____ /min. or drowsiness or _____

Diphenhydramine hydrochloride (Benadryl) _____

Antiemetic: _____

Stool softener/laxative: _____

Please mark through any orders below that are **not** applicable.

If respiratory rate falls below _____ /min., turn PCA pump off and notify physician or
anesthesiologist immediately.

Pulse oximeter. Maintain O₂ saturation at _____ % or above.

If O₂ saturation is less than _____ and no other O₂ is ordered, start O₂ at _____ liter(s)/min.
via nasal cannula. If unable to maintain O₂ saturation above _____ %, notify physician.

ORDER READ BACK AND VERIFIED INIT. _____ / DATE _____

PHYSICIAN'S SIGNATURE _____ DATE _____ TIME _____

Prescription Order Communication

Best Practice:

- Scanning technology in place for order communication to pharmacy

Problems identified:

- Transcription errors onto MAR by clerks are common
- Nursing verification process often weak

Product Labeling

Best practice for pharmacy computer generated labels:
Following ISMP recommendations – only a few hospitals
visited had this in place

Example of recommended practice:

Atenolol (Tenormin) 100 mg

Dose = 2 x 50 mg tablet

Frequency: BID

Example of what is seen with most pharmacy systems:

Atenolol (Tenormin) 50 mg tablet

Dose = 100 mg = 2 tabs

Frequency: BID

Product Labeling

Another example of poor labeling:

Dilantin Suspension 125 mg/5ml

200 mg q 12h

$1.6 \times 125 \text{ mg} = 200 \text{ mg}$

Product Labeling

Problems identified (cont):

- Unlabeled syringes on bedside table in PACU – seen at more than one hospital
- Unlabeled syringe in anesthesiologist's pocket
- Neuromuscular blockers stored in refrigerators or automated dispensing cabinets (ADCs) without auxiliary “caution paralytic agent” labels – multiple hospitals
- Pitocin bags without auxiliary labels
- Epidural bags without auxiliary labels

Packaging and nomenclature

Best Practice:

- Pharmacy packages all doses – including pediatric injections and oral doses in patient specific syringes
- Only saw this practice, in its' entirety at one hospital
- Pharmacy packages partial tablets
- “Tall Man” letters used throughout the hospital – on the MAR, in the ADC, on pre-printed orders

Packaging and nomenclature

Problems Identified:

- Nurses using injectable syringes to administer oral meds and feedings
- LASA drugs not stored or labeled appropriately

Compounding

Best Practice:

Pharmacist dedicated to IV room all day – not always practical in smaller hospitals

Honorable mention:

Pharmacist work station just outside of IV room. Processes orders, but readily available and watches process much more closely than in many other facilities

Problems identified:

Pharmacist reviews empty syringes after technician has already mixed. More common than you may think

Vincristine dispensed in syringes – multiple hospitals

ISMP

Medication Safety Alert August 27, 2009

On August 14, 2009, Ohio pharmacist Eric Cropp was sentenced to 6 months in prison, 6 months of home confinement with electronic monitoring, 3 years of probation, 400 hours of community service, a \$5,000 fine, and payment of court costs, for his role in a fatal medication error. Eric made a human error that tragically led to the death of a child.

Dispensing

Problems identified:

- Often find matrix drawers in ADCs with multiple strengths of same drug
 - Lovenox 4 strengths in the same drawer!
 - Ketorolac 30 mg and 60 mg vials
 - Solu-Medrol 40 mg and 125 mg mix-o-vials
- Heparin – too many strengths available
 - Two different hospitals had 50,000 unit heparin vials (10,000 unit/ml 5 ml and 5,000 units/ml 10 ml) stored in the pharmacy. Neither director could identify why they had it.
 - One hospital – 10 different heparin products in the pharmacy

Distribution

Best practices:

All warfarin doses dispensed by pharmacy after pharmacist reviews INR. None stocked in ADC

After hours pharmacist order review

Problems identified:

KCl vials stored outside of pharmacy – **No!**

Insufficient ADC capacity to avoid nurses queuing up

High alert drugs available without safeguards – 3% NaCl

Administration

Best Practice:

Wireless Smart Pumps in place, library reviewed/updated regularly, data downloaded for review on set schedule plus PRN, audits done to assure being used according to policy

Problems identified:

- Most hospitals with Smart Pumps have little knowledge of how they are being used
- Without wireless – missing out on necessary functionality
- About 70% of hospitals visited did not have Smart Pumps

Administration

Best Practice:

Bar code scanning used for medication administration

Problems identified:

- 5 rights not followed
- Nurses charting meds as given while still in med room
- Epidural infusion without all of hospital defined precautions in place
- Promethazine IV without any of recommended practices in place
- Anesthetic agents being administered by person performing procedure – happens in ED

Education

Best Practices:

- On-line drug information available AND nursing knows how to access.
- Pharmacy routinely provides nursing in-services on new medications, policies, etc.

Problems identified:

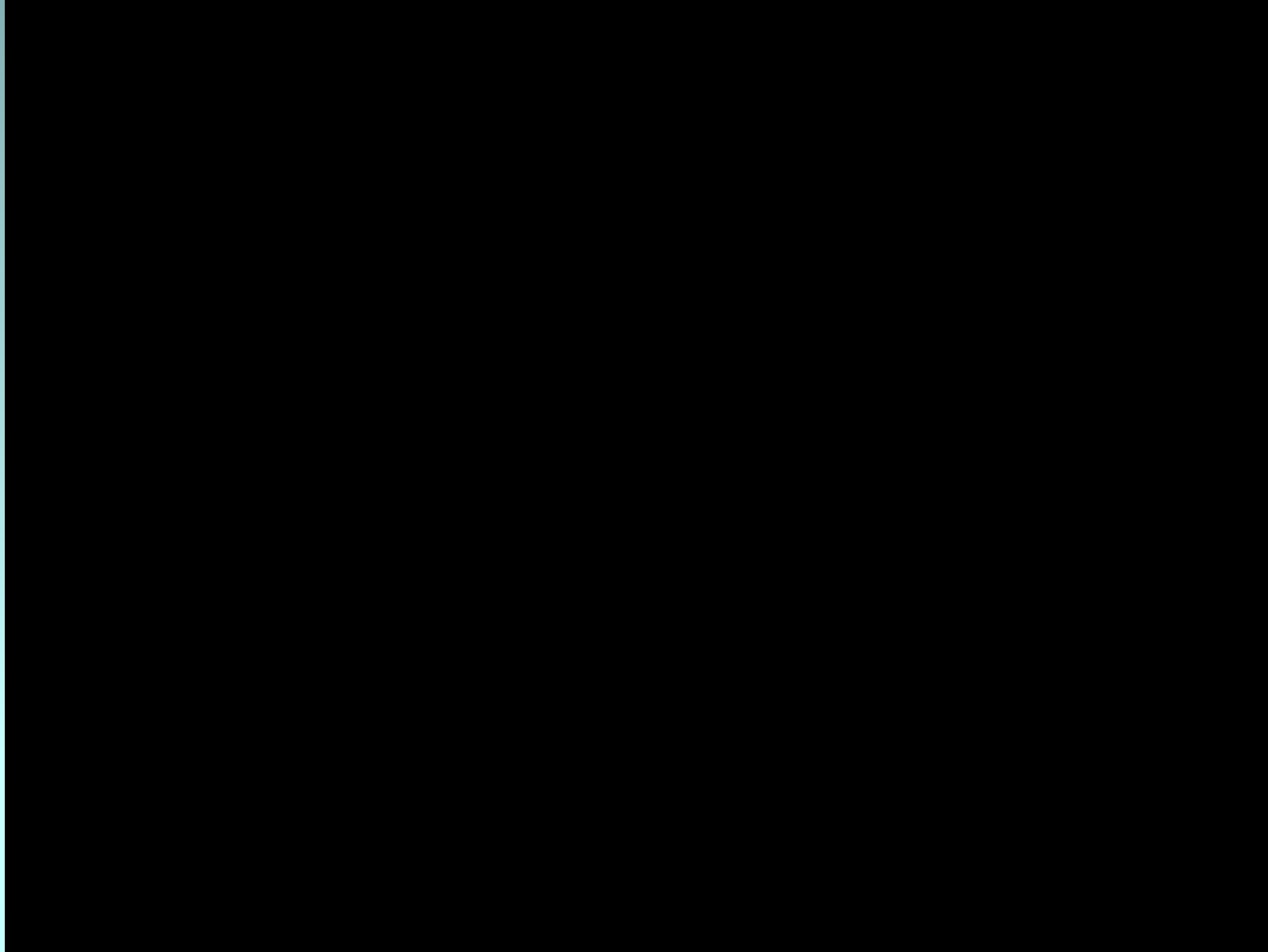
- Micromedex or Clinical Pharmacology available on intranet, nurses not knowing how to access or even that it is there
- Out of date reference books are a frequent finding
- Pharmacy is not providing nursing in-services or any input into nursing orientation

Education

Problems identified (cont):

- Patient receiving an investigational drug and nursing, pharmacists and physicians don't know anything about pharmacology, side effects, drug interactions, etc.
- No mock pediatric codes performed – staff unfamiliar on how to use Broselow tape, appropriate dosing, different strengths of drugs and when to use each, etc.
- Patients are not educated about the medications they are being given while in the hospital

Are patients monitored closely?



Monitoring

Best Practices:

- Pharmacy monitors high risk medications whether or not an order for dosing per pharmacy
- Pharmacy monitors renal function and adjusts drug therapy if needed (one hospital has computer system screening for this for 24 drugs)
- Pharmacy reviews all antibiotic use for appropriate therapy, duration, etc.
- Pharmacy monitors all overrides from ADCs.

Monitoring

Best Practices (cont):

- Pharmacy audits all control substance use in OR
- Pharmacy performs medication pass audits on a regular basis
- Nursing reviews MAR for discrepancies daily for every patient and documentation trail exists for auditing
- Good documentation of actions taken when medication errors identified

Monitoring

Problems identified:

- Allergy process is usually a mess
- Pharmacy not monitoring INRs of all patients on Coumadin
- Pharmacy not familiar with medication administration process on the floor
- Pharmacy not reviewing ANY ADC overrides
- Pharmacy not monitoring chemotherapy orders for appropriateness of dose
- Medication errors and ADRs are severely underreported
- No good evidence of what is being done when ADEs identified

Use

Best Practices:

- Review of therapy in problem prone areas is done on a regular basis
- Several hospitals review every case of procedural sedation
- Others review every use of specific antidotes – naloxone and flumazenil (whether related to procedural sedation or not)

Problems identified:

- Nurses think lots of problems with DepoDur, pharmacy unaware of any issues

Use

Problems identified (cont):

- Pharmacy not auditing use or performing MUEs of high risk drugs – fentanyl patch, anticoagulants, insulins
- Drugs being used off-label without any policies, precautions, education – haloperidol IV

Culture of Safety

Do you have a non-punitive environment?



Culture of Safety

Best Practices:

- Just Culture training completed for administration and all managers
- Everybody is saying, AND DOING, the right things
- High rate of medication error reporting

Problems identified:

- Wireless pumps purchased, no wireless server
- No medication safety committee
- Hospital has intensivist that is a self-proclaimed AH
- Hospital deciding repeated errors are personnel issues and not system issues



Action Items