PURDUE PHARMACY

CENTER FOR MEDICATION SAFETY ADVANCEMENT

Preventing Adverse Drug Events: Tools and Updates

In Partnership with the

Indiana Hospital Association

John B. Hertig, PharmD, MS, CPPS
Associate Director
Purdue University College of Pharmacy
Center for Medication Safety Advancement

Objectives

The objectives for today's webinar include:

- Provide an overview of the *Partnership for Patients* and *Coalition for Care* initiative
- Discuss toolkits and resources available through the Purdue University College of Pharmacy Center for Medication Safety Advancement
- Review *Partnership for Patients* ADE aligned measures and strategies for gathering the data

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Partnership for Patients

The 40/20 Goal

Keep patients from getting injured or sicker.

Reduce preventable hospital-acquired conditions by 40%.

1.8 million fewer injuries to patients, with more than **60,000 lives saved** over the next three years.

Help patients heal without complication.

Reduce all hospital readmissions by 20% .

1.6 million patients will recover from illness without suffering a preventable complication requiring re-hospitalization within 30 days of discharge.

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Ten Priority Areas of Focus

Hospital Engagement Network hospitals are required to address ten harms/areas of focus ***(or as many as are relevant to the organization)*:**

- **Adverse Drug Events**
- Catheter-Associated Urinary Tract Infections
- Central Line Associated Blood Stream Infections
- Injuries from Falls and Immobility
- Obstetrical Adverse Events (and EED focus)
- Pressure Ulcers
- Surgical Site Infections
- Venous Thromboembolism
- Ventilator-Associated Pneumonia
- Reducing Readmissions

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Partnership for Patients AIM statement: Four Calls to AHA/HRET Hospitals

- **Reduce harm across the board.** It is a call for hospitals to produce reductions in every type of harm.
- **Take a systemic approach.** It is a call to transform the organization and its practices to eliminate all the causes of harm. "Using every means at our disposal."
- **Make your safety transparent to all.** It is a call for hospitals to define themselves by their safety performance; define themselves to their employees, doctors, patients and the community.
- **Make safety personal & compelling.** Make every incident of harm a personal patient story that propels the institution to higher levels of performance.

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Evaluation

- Webinar funded by CMS through the *Partnership for Patients*
- CMS reviews results and wants 80% of participants to evaluate educational sessions
- Please complete the simple three question evaluation by June 25, 2014. https://www.surveymonkey.com/s/2014_06_17_ADEResourcesCoaching

Indiana Hospital Association

Outline

- Medication Safety Alliance review
  - Measures initiative
- ADE Change Package overview
- Anticoagulation tool-kit
- Standardized IV concentrations
- Medication Safety Essentials continuing education
- Questions and answers

About CMSA

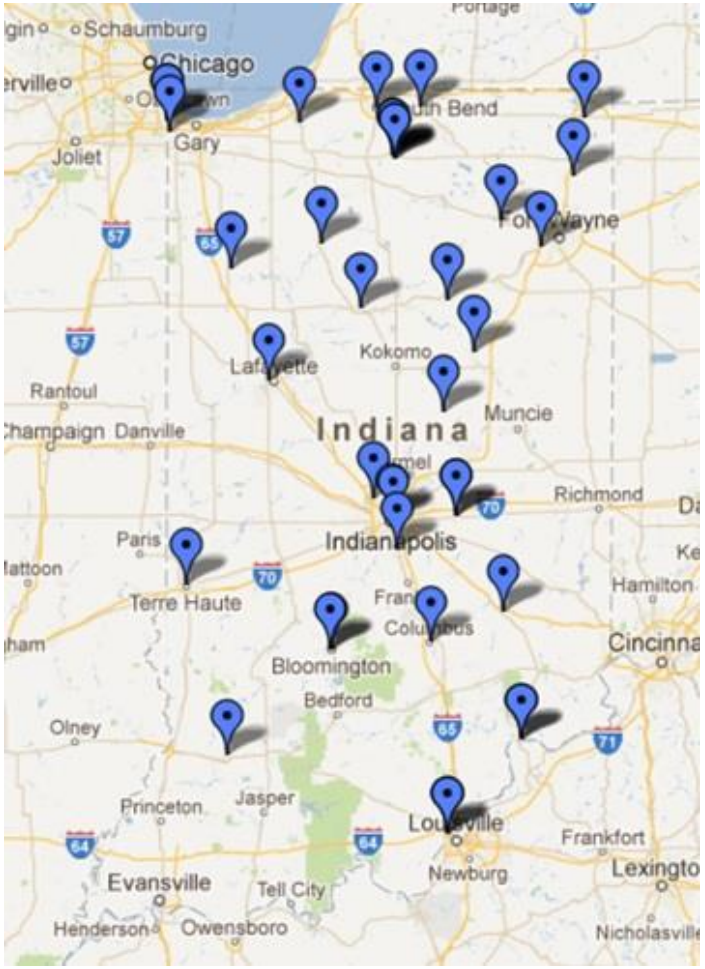
- Center for Medication Safety Advancement
  - Division of Purdue University College of Pharmacy
- Discovery and delivery of safe medication practices
- Innovation and collaboration
  - Healthcare practitioners
  - Faculty and staff
  - Students and learners
  - Patients, families, and caregivers
- Research, education and outreach

Indiana AHA-HRET HEN Summary

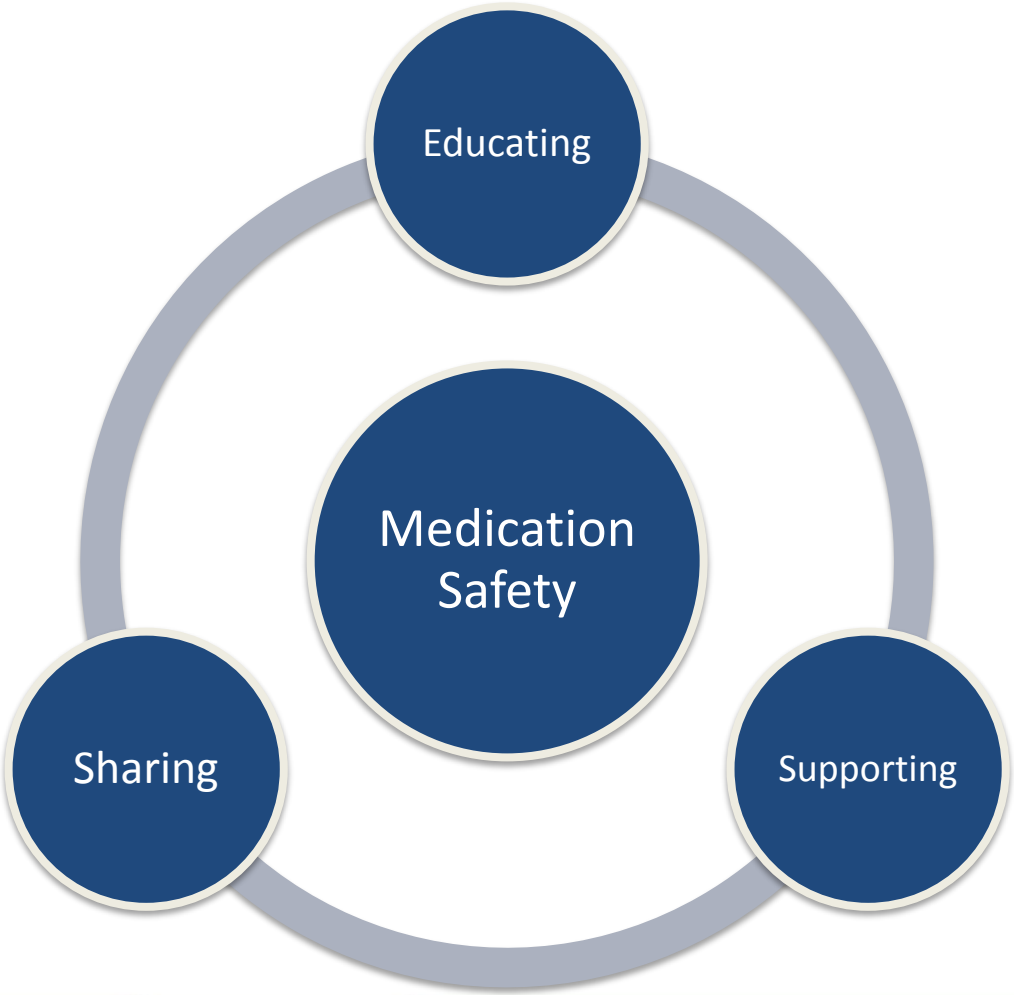
- 119 Indiana hospitals aligned with IHA/HRET
- Includes:
  - 26 critical access hospitals
  - 7 psychiatric hospitals
  - 5 rehabilitation hospitals
  - 4 long term acute hospitals
- Represents opportunities for statewide engagement
  - Leverage state resources, including academic partners

Medication Safety Alliance (MSA)

- Purpose
- Framework
- Partnerships
  - Over 30 hospitals
  - More than 45 health-professionals
- Pharmacist's Role
  - Path for involvement

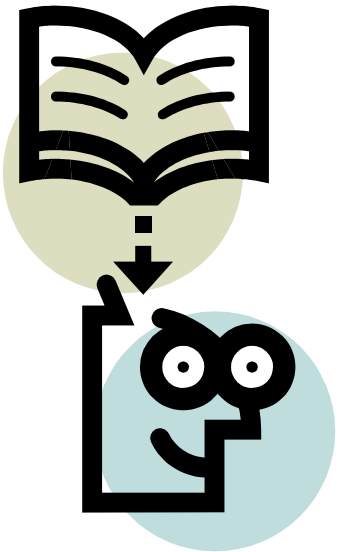


MSA Structure



Educating

- Medication Safety Essentials Courses
  - On-line, on-demand course
  - 15 CE hours for physicians, nurses and pharmacists
- Live lectures
- Coaching calls
- The “road show”
  - Visits to regional coalitions



Sharing

- Nationally and locally
- Today's webinar!
  - Opportunities to learn from others' successes
  - Share best practices
- Create a forum for medication safety-related improvement efforts
- MSA web portal
  - Members only

Supporting

- Self-assessment tool
  - Focused on high-risk medications leading to readmissions
  - Help identify areas for additional research and root-cause analysis
- Coaching calls, and…
- New webinars rolling out in 2014
  - Focus on gaps identified by the Alliance
  - Self-assessment data
- Continued work and alignment with statewide patient safety coalitions

State Measures Initiative

- Nationally, ADE reporting is lowest of all harm categories
- Measures adopted as statewide areas of emphasis for reporting adverse drug events as part of the MSA
  - Focus on outcomes
- Purpose is to identify best practices and share improvement strategies throughout Indiana
- Make it simple to report
  - Provide a pathway
  - Ensure the value proposition is clear for members

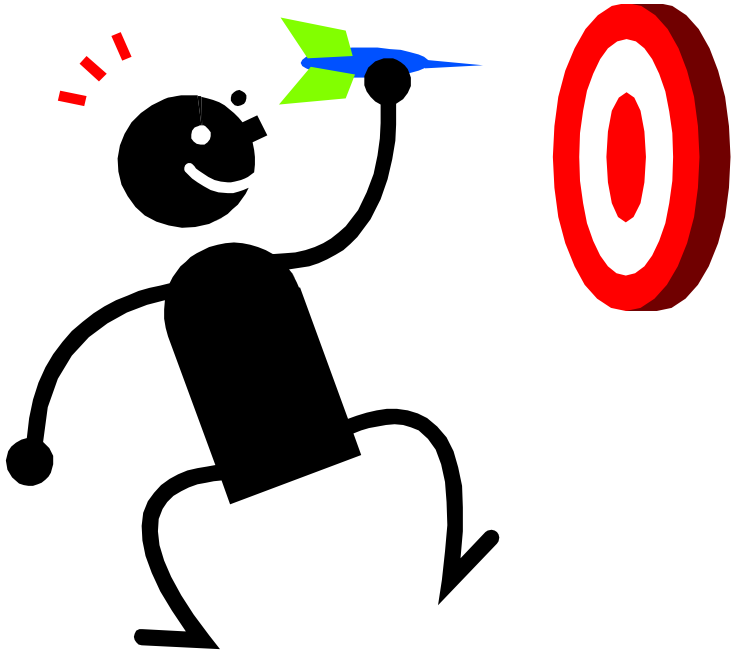
Outcome Measures

Indicator Name	Definition	Numerator	Denominator	Sources	EOM
Excessive Anticoagulation with Warfarin - Inpatients	All inpatients who had excessive anticoagulation with warfarin	Inpatients experiencing excessive anti-coagulation with warfarin (INR greater than 6)	Inpatients receiving warfarin anti-coagulation therapy	AHA/HRET EOM; CMS ISMP Trigger Alert List	ADE 12
Manifestations of Poor Glycemic Control	Inpatients who experienced manifestations of poor glycemic control during hospitalization	Patients experiencing the following CC/MCC codes as a secondary diagnosis: 250.10-250.13 250.20-250.23 251.0 (CC) 249.10-249.11 249.20-249.21	All acute care inpatient discharges	AHA/HRET EOM; CMS Hospital Acquired Conditions	ADE 110

Process Measures

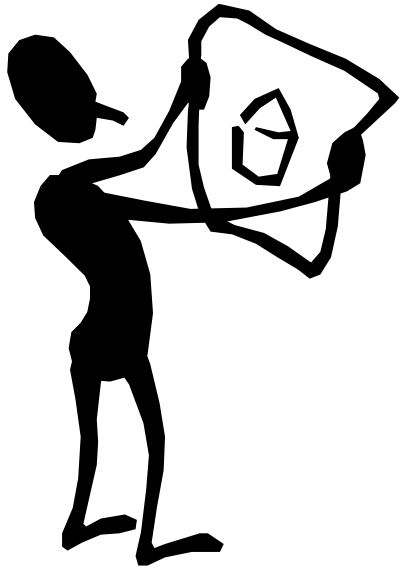
Heart Failure Discharge Instruction (HF-1)	Heart failure patients discharged home with written instructions or education material given to patient or caregiver at discharge or during the hospital stay	HF patients with documented D/C instructions, addressing: activity level, diet, weight monitoring, medications, appointments, and other relevant info	HF patients discharged home	AHA/HRET EOM; National Hospital Quality Measures; The Joint Commission	ADE 9
Maintenance of Active Medication Allergy List (CMS MU)	Number of patients with a medication allergy or indication of No Known Allergies (NKA) recorded	Number of patients with at least one entry or an indication of NKA recorded on a medication allergy list	Number of unique patients admitted to the hospital	AHA/HRET EOM; CMS Meaningful Use	ADE 7
Automated Dispensing Cabinets Override Rates	Automated dispensing cabinets (ADC) medication withdrawals occurring without review	Number of medication withdrawals from an ADC that were removed by "override"	All medication removal activity from ADCs	ASHP Best Practices	Indiana specific

Targeting Anticoagulation Harm



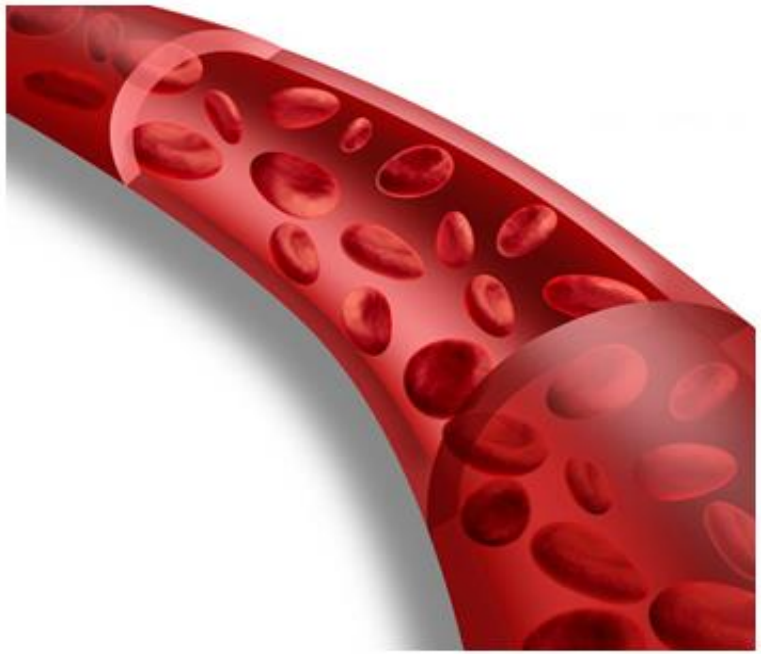
The Plan

- Leverage Medication Safety Alliance
  - Communication
  - Best practice sharing/storytelling
  - Coaching/webinars
- Resource development
  - Toolkit
  - Checklists
  - Tip sheets
- Deliberate focus on data tracking and transparency



Anticoagulation Toolkit

Anticoagulation Safety Toolkit



Improving Safety through Anticoagulation Therapy Management

Coalition for Care · Indiana Hospital Association · Indiana Patient Safety Center

PURDUE PHARMACY · CENTER FOR MEDICATION SAFETY ADVANCEMENT

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Tip Sheets

Coalition for Care
IHA's Hospital Engagement Network
Indiana Hospital Association
INDIANA PATIENT SAFETY CENTER

Indiana Adverse Drug Event (ADE) Measures

Indicator Name: Excessive Anticoagulation with Warfarin (Inpatients)

Type: Outcome

Definition: All inpatients experiencing excessive anticoagulation with warfarin. Excessive anticoagulation is determined when the International Normalized Ratio (INR) is greater than 6. Patients are in greater risk for bleeding complications.

Inclusion Criteria: Inpatients experiencing excessive anticoagulation with warfarin. Patients must have received at least one dose of warfarin while admitted.

Exclusion Criteria: Patients admitted from the Emergency Department (ED) and observation patients (less than 24 hours).

Calculation:

Numerator: Inpatients experiencing excessive anti-coagulation with warfarin (INR>6)

Denominator: Inpatients receiving warfarin anti-coagulation therapy

Related Articles:

1. Denas G, Marzot F, Offelli P, et al. Effectiveness and safety of a management protocol to correct over-anticoagulation with oral vitamin K: a retrospective study of 1,043 cases. *J Thromb Thrombolysis* 2009 ;(3):340-7.
2. Hylek EM, Regan S, Go AS, et al. Clinical predictors of prolonged delay in return of the international normalized ratio to within the therapeutic range after excessive anticoagulation with warfarin. *Ann Intern Med* 2001; 135(6):393-400.
3. Hanslik T, Prinseau J. The use of vitamin K in patients on anticoagulant therapy: a practical guide. *Am J Cardiovasc Drugs* 2004; 4(1):43-55.

Continued Focus: Anticoagulation

- Toolkit
- Previously recorded webinars on IHA website
- Ongoing support

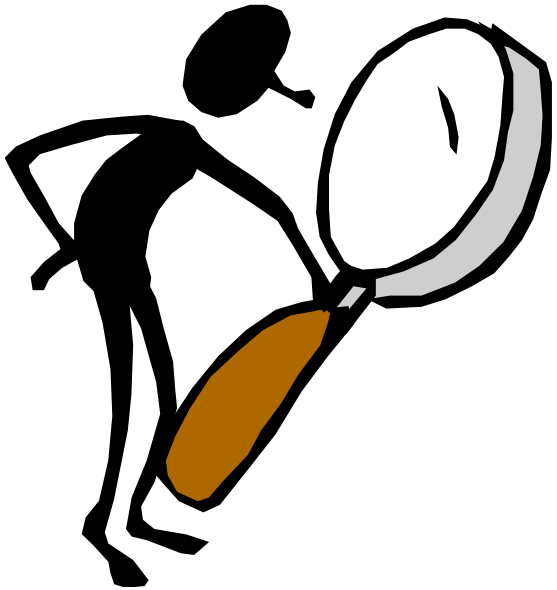
Anticoagulants

Indicator Name: **Excessive Anticoagulation with Warfarin – Inpatients** (ADE-12)

Numerator: All patients experiencing excessive anticoagulation with warfarin ("excessive" is organization-defined).

Denominator: Inpatients receiving warfarin anticoagulation therapy.

Next Focus:
Hypoglycemia and Opioids



ADE Change Package

- New, narrower focus on warfarin, opioids, and insulin
- Incorporates 2013 ADA standards of diabetes care
- Provides expanded change ideas, especially regarding opioids
- Tools and updated references
  - **CMSA will provide additional resources!**

Next Focus: Hypoglycemia

Insulin

Indicator Name:	**Hypoglycemia in Inpatients Receiving Insulin** (ADE-13)
Numerator:	Hypoglycemia in inpatients receiving insulin or other hypoglycemic agents (e.g. hypoglycemia defined as plasma glucose concentration of 50 mg per dl or less).
Denominator:	Inpatients receiving insulin or other hypoglycemic agent.

Next Focus: Opioids

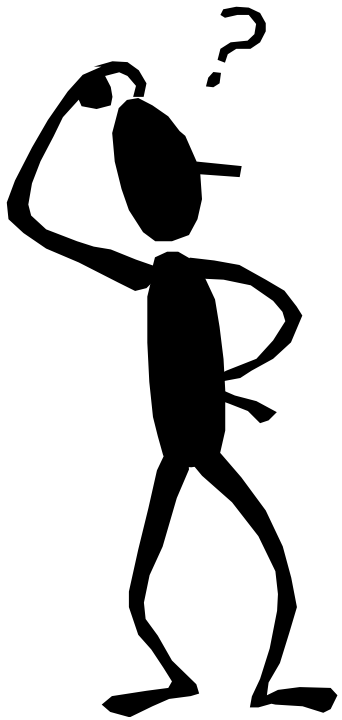
Oplolds

Indicator Name: **ADE's due to Oplolds** (ADE-11) **= EOM ADE - 111**

Numerator: Number of patients treated with opioids who received naloxone during the review period.

Denominator: Number of inpatients and patients in hospital outpatient departments who received an opioid agent during the review period. Exclusion: ED patients; naloxone use for nausea or pruritus.

Measurement Questions?



Anticoagulation Toolkit

Katelyn Brown, PharmD
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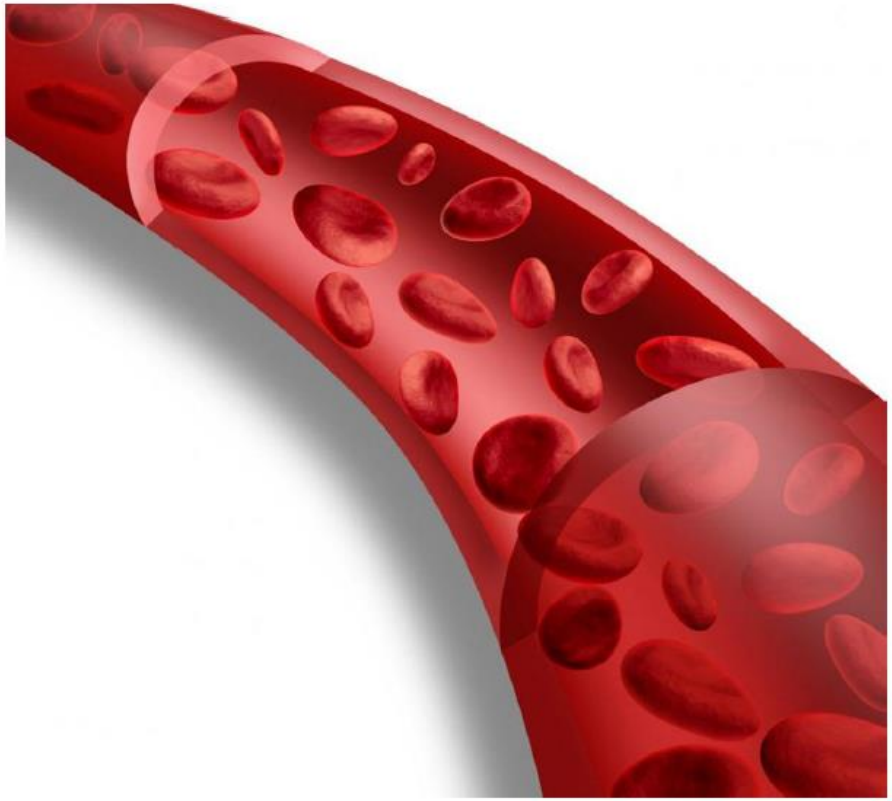
Purdue University College of Pharmacy
Center for Medication Safety Advancement

Anticoagulation ADE Webinar

- October 2013
  - Pharmacists Role in Anticoagulation
  - Best Practices in Care of Transitions of Anticoagulation
  - Medication Reconciliation and Health Literacy

Anticoagulation Safety Toolkit



Improving Safety through Anticoagulation Therapy Management

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Chapter 1: Self Assessments

- Warfarin Management
- Health Literacy

Self-Assessment – Warfarin Mgmt

Warfarin Management Self-assessment				
Element of Performance	Safe Practices	Tool	Self-assessment Score*	Level of Implementation Difficulty**
Use approved protocols for the initiation and maintenance of anticoagulant therapy	- Warfarin Dosing protocol	A, B, C	3	I
	- Tracking form for managing patients on warfarin is used and provided to patient and patient's outpatient provider	C,D	4	L

***Self-Assessment of Safe Practices Self-scoring Scale**

1. There is no discussion around this activity
2. This activity is under discussion, but there is no implementation plan
3. This activity is partially implemented in some or all areas of the organization
4. This activity is fully implemented in some areas of the organization
5. This activity is implemented in all areas of the organization

N/A This activity is not applicable

****Level of Implementation Difficulty**

Low (L)= Safe practice recommendation is in place with few adjustments needed to meet expectation.
Intermediate (I)= Safe practice recommendation may or may not be in place.
High (H)= Safe practice recommendation is not in place.

Self-Assessment- Health Literacy

1.Improve Spoken Communication	Doing Well	Needs Improvement	Not Doing	Not Sure or N/A	Importance	Tools to Help*
1. Staff members have received awareness and sensitivity training about health literacy issues.	□	□	□	□	***	1-Form Team 3-Raise Awareness
2. All levels of practice staff have agreed to support changes to improve patient understanding.	□	□	□	□	***	1-Form Team 3-Raise Awareness

Please select one answer that most accurately describes your practice:	
Doing Well	Our practice is doing this well
Needs Improvement	Our practice is doing this, but could do it better
Not Doing	Our practice is not doing this
Not Sure	I don't know the answer to this question
N/A	This is not applicable to our practice

Importance: * Beneficial ** More Beneficial *** Most Beneficial

Adapted from AHRQ Universal Precautions Health Literacy Toolkit

Chapter 2: Improving Anticoagulation Processes

- Project Plan
- Developing AIM Statements
- Model for Improvement

Project Plan

Project Timeline-Activity	Month 1	Month 2	Month 3	Month 4	Month 5
Review Toolkit					
Understand Anticoagulant Safe Practices					
Conduct Self-assessment of Current Practices					
Assess your current practices (Self-assessment) Validate assessment results by observation and/or interview Review baseline data if available	• • •				
Improving Anticoagulant Process					
Select Project Team Members		•			
Develop Project Plan		•			
Develop Communication Plan for project milestones		•			
Formulate AIMs statements for identified gaps in performance		•			
Determine ongoing measures to support the AIMs statements		•			
Develop ideas to create new processes		•	→	→	→
Run tests of change using Plan, Do Study, Act worksheets		•	→	→	→
Measuring Performance (Chapter 3)					
Collect and display data/results for self-assessments, FMEAs, Tests of Changes tired, overall AIMs for improvement			•	→	→
Use tool for measuring harm from ADE's and display results			•	→	→
Spreading and Sustaining Improvement					
Determine plan for spreading improvement				•	→
Determine plan for sustaining improvemtn				•	→

Developing AIM Statements

- **State the Team AIMS**
  - Be clear, concise, targeted. The team will make better progress if the AIM is specific.

- **Include Numerical Goals**
  - A numerical goal will help the team measure improvement and progress. Quantify the aim by marrying the AIM to a Baseline Measure, which over time will indicate improvement and with planning rapid tests of change using the PLAN-DO-STUDY-ACT cycle.
  - Do not accept minimal improvement- strive for success.
  - Maintain focus on the goal
  - Fifty-percent improvement can easily slip to 40% or 30%, but only if the team choses to accept less.

- **Example:**
  - Reduce the number of ADE associated with warfarin by x% Unit A within 6 months

Model for Improvement

Cycle for Learning and Improvement	
PLAN **Ask Questions:** • Will protocol be acceptable for use at this hospital? **Make Predictions:** • MDs will find it easy to use? *=(Y or N) **Plan for collection of Data:** • Who? When? Where?	**DO** • **Carry out the change or test, collect data and begin analysis** • Ex: Team asks one MD, RN, PharmD to stimulate use of protocol on one pt by next Tuesday. Group meets to review pt chart and list recommended modifications
STUDY • **Complete analysis of data** • **Summarize what was learned**	**ACT** • **Determine if you are ready to make the change** • Ex: modify protocol based on test of change

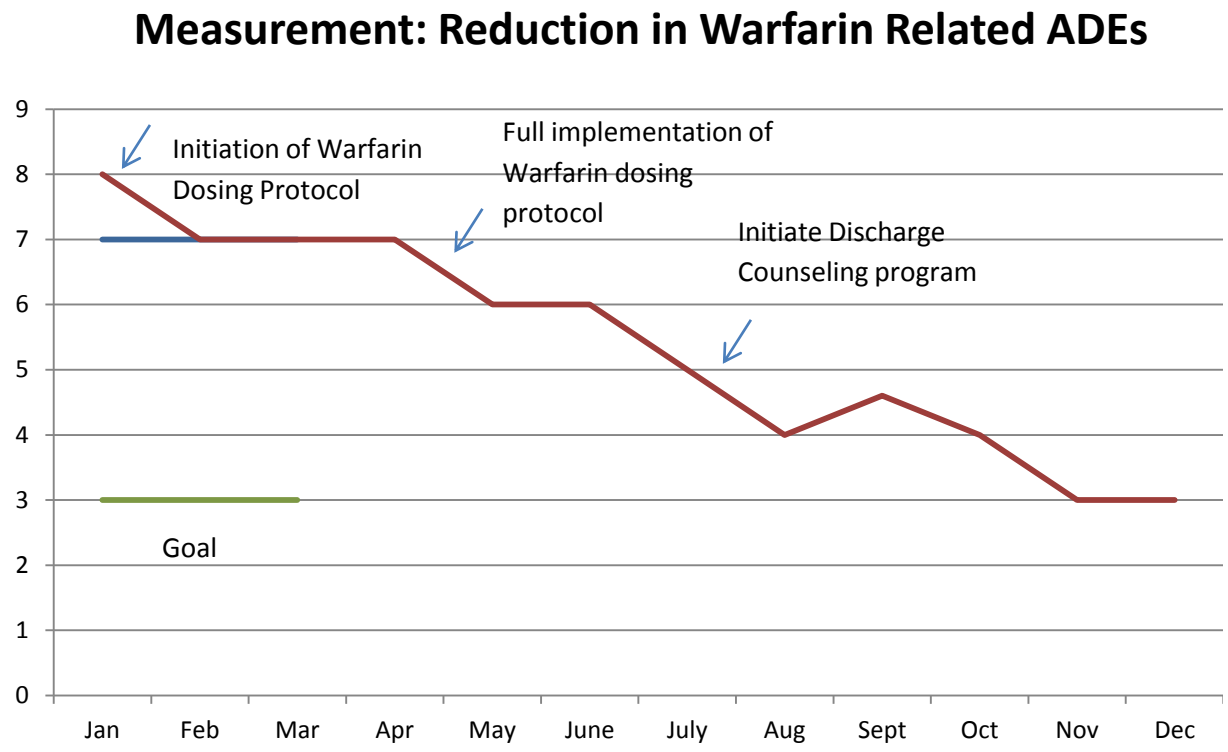
Chapter 3: Measuring Performance

- Process Measures
- Outcome Measures

Process Measure

- Examples of Process Measures
  - Percentage of Warfarin patients receiving correct meal plan (to assure that Nutrition Services are informed of all patients on Warfarin therapy)
  - Time frame for receipt of lab results by care providers over time.
  - Time to therapeutic levels
  - Percentage of patients receiving warfarin with INR outside protocol limits

Outcome Measures



Outcome Measures

Goal	Recent Activity	Status	Stakeholder	Projected Completion Date
Reduce percent of patients with INR >5 by 20%	Updated warfarin dosing protocol(10/4/13)		KEB	12/31/13

Factors used to determine current status: Goal clarity (are there clear objectives and direction) and goal timeline. If a goal is on time and on target then it should be **green**. If the goal timeline is at risk or if there are some questions as to objective, the goal should be **yellow**. If the project is past the goal completion date or if progress has ceased due to a roadblock, the project is **red**.

Additional Resources

Source	Website	Information Provided
Warfarin Management		
Warfarin Dosing	www.warfarindosing.org	- Dose Calculator o Considers many factors such as genetics and medications
My Blood Thinner	www.mybloodthinner.org	- Resources for patients, providers, and caregivers - Information in Spanish is available
America's Anticoagulation Resource	www.ptinr.com	- Patient education - Great for at home INR testing`
University of Michigan	http://www.med.umich.edu/cvc/prof/anticoag/dose.htm	- Guidance on dose adjustment
CHEST Guidelines	http://www.chestnet.org/Guidelines-and-Resources/Guidelines-and-Consensus-Statements/Antithrombotic-Guidelines-9th-Ed	- Recommended guidelines for warfarin management
Spectrum Health	http://www.spectrumhealth.org/anticoagulationtoolkit Plot Area	- Patient education - Dosing algorithms - Point-of-Care Testing - Documentation - Anticoagulation competency
Pharmacist Run Clinic		
AZCERT, INC	http://www.crediblemeds.org/files/2113/7961/4352/Patient_Agreement.pdf	- Patient Contract
St. Luke's	http://www.stlukesonline.org/for_physicians/orders_and_for	- Example of collaborative practice agreement

Development of a Statewide Standardized List of Drug Concentrations

Indiana Hospital Association

Patient Safety Coalitions

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Standard IV Concentrations

- San Diego Council for Patient Safety
  - Work published as toolkit in 2009
  - Replicated by others in Indiana

- 3 of 11 Patient Safety Coalitions
  - Developed standardized list of concentrations
  - Southwest, Northeast and Indianapolis
  - Interest in expanding work
    - Standardization among coalitions recommended
    - Why not a Statewide list?

The Need to Standardize

- Improved safety as a result of reduced variation and complexity
- Elevated risk awareness among healthcare clinicians
  - Patients and healthcare professionals move across settings
  - Some hospital nursing staff turnover rate can be as high as 28%
- Enhanced ability to benchmark and compare med related technology (BCMA, Smart Pumps, etc)
- Enhanced compliance with external accrediting bodies
  - Thoughtful process vs. Traditional methods

J Nurs Adm. 1990;20(5):27–32

Process to Develop the List

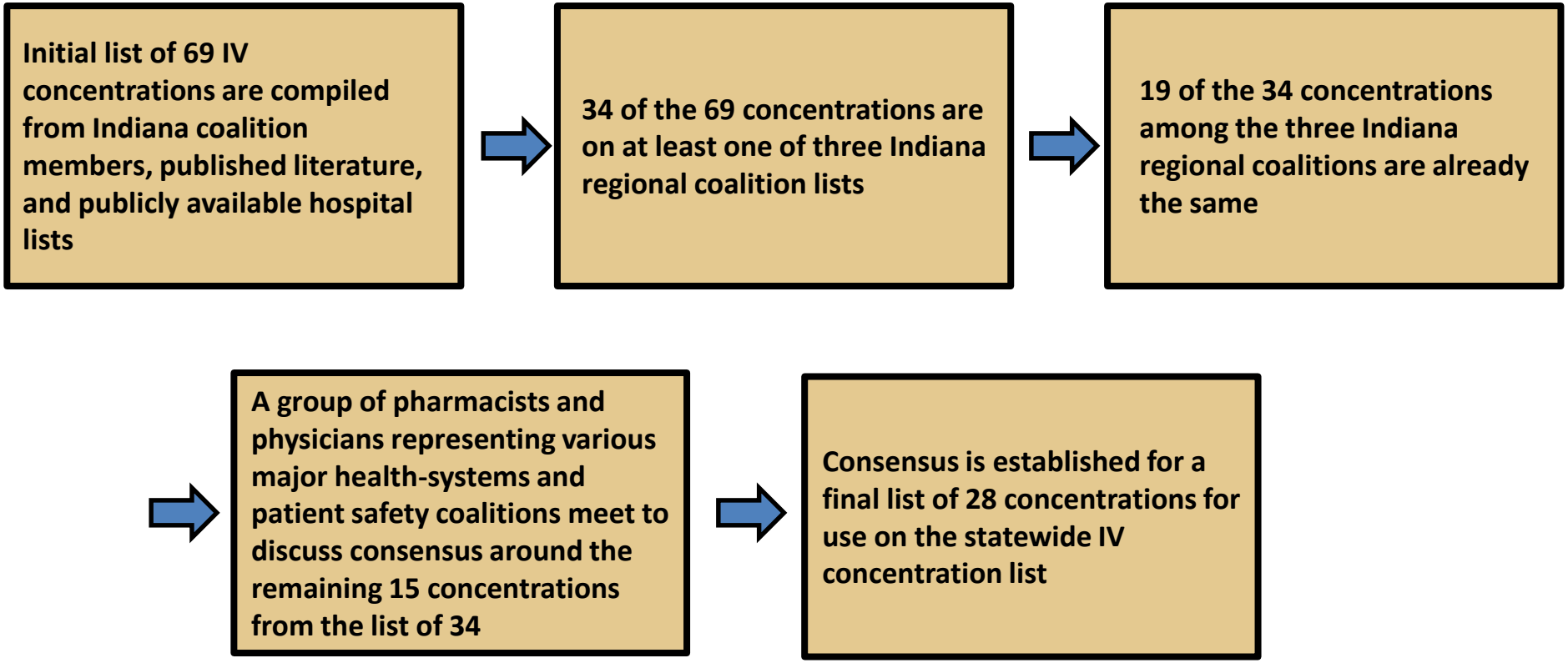
- Comparison of lists of standard IV concentrations
  - Northeast, Southwest and Indianapolis coalition lists
  - Published literature
    - Work from San Diego Patient Safety Council
    - Published survey results from USP expert committee on medication safety
  - Publicly available IV concentration lists
    - Organizations with concentration lists identified through an internet search engine
    - Non-pediatric hospitals were included
- Initial compiled list contained 69 concentrations
  - Represented 37 different medications

Hosp Pharm – 2009;44:150-158
Am J Health Syst Pharm – 2011 68:2176-2182

Process to Develop the List

- Initial list of 69 concentrations pared down to 34 concentrations
  - Based on existing coalition lists
  - Consensus existed around 19 concentrations
- Meeting of statewide panel of physicians and pharmacists
  - Represented regional coalitions and major health-systems
  - Consensus developed around 9 additional concentrations
- Final statewide list contains 28 IV concentrations

Process to Develop the List



Recommended list of IV concentrations for the State of Indiana

Alternate concentrations of dobutamine may be required in procedural areas of healthcare facilities for short term diagnostic purposes

The standardized concentration of magnesium sulfate is intended to describe the use of the medication for obstetric patients. Other concentrations may be used for electrolyte imbalance

Drug and Concentration
Amiodarone Bolus 1.5 mg/mL
Amiodarone Drip 1.8 mg/mL
Argatroban 1 mg/mL
Bumetanide 0.25 mg/mL
Cisatricurium 0.4 mg/ml
Dexmedetomidine 4 mcg/mL
Dobutamine 4000 mcg/mL (non-procedural) *
Eptifibatide 750 mcg/mL
Esmolol 10 mg/mL
Fentanyl 10 mcg/mL
Furosemide 10 mg/mL
Heparin 100 units/mL
Isoproterenol 4 mcg/mL
Insulin 1 unit/mL
Labetalol 2 mg/mL
Lidocaine 4 mg/mL
MgSO4 (Obstetric) 0.04 gm/mL**
Morphine Drip 1 mg/mL
Morphine PCA 1 mg/mL
Midazolam 1 mg/mL
Milrinone 200 mcg/mL
Nitroglycerin 200 mcg/mL
Nitroprusside 200 mcg/mL
Norepinephrine 32 mcg/ml
Procainamide 4 mg/mL
Propofol 10 mg/mL
Vasopressin 0.4 units/ml
Vecuronium 1 mg/mL

Next Steps

- Adding additional drugs to the list
  - hydromorphone, nicardipine, norepinephrine, epinephrine, dopamine are next to be reviewed
- Evaluating units of measure for each concentration
  - Several issues identified by participants
- Add members to group
  - Expertise, geography and organization represented
- Publish work within Indiana

Current Participants

Gary Brazel, St. Vincent

Tara Jellison, Parkview

EJ Last, IU Health

Jen Reddan, IU Health

Jim Fuller, Indy Safety Coalition

Heather Jackson, Eskenazi

Sonja Damjanoski, Fransican

Vernon Mass, St. Mary's

Don Julian, St. Mary's

Todd Walroth, Eskenazi

John Hertig, Purdue

Betsy Lee, IHA

Laura Stock, Deaconness

Amy Hyduk, Lutheran

If you are interested in participating in the development process moving forward, please contact Dan Degnan at ddegnan@purdue.edu or 317-275-6087

Other Offerings through Purdue/IHA

- Medication Safety Essentials (MSE) 1.0 and 2.0
  - Online CE webinars targeting healthcare staff
  - Up to 15 hours of accredited medication safety continuing education available for physicians, pharmacists and nurses

- Medication Safety Certificate
  - Anticipated to be available late 2014
  - Will incorporate CE hours from MSE and case based project completion

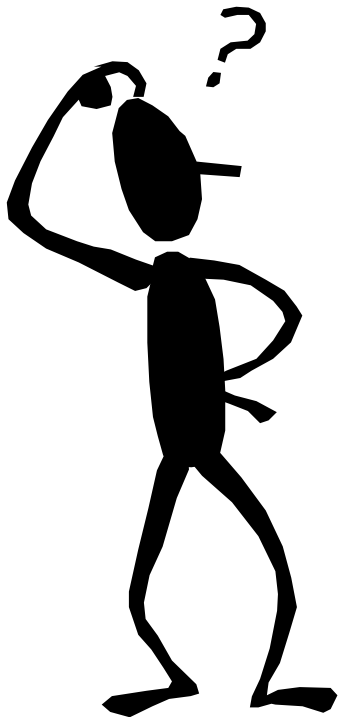
Other Offerings through Purdue/IHA

MSE 1.0 Topics	MSE 2.0 Topics
• Medication Errors and Safety Practices • Errors in Prescribing and Transcribing • Errors in Dispensing • Errors in Administration and Monitoring • Continuous Quality Improvement • Metrics, Scorecards and Dashboards • Leading for Safety	• Effective Interpersonal Communication • Establishing a Culture of Safety • Technology • Medication Transitions of Care and Medication Reconciliation • Storytelling • Anticoagulation • Medication Safety of Antihyperglycemics • Management of Opioids (coming soon)

Other Offerings through Purdue/IHA

- Medication Safety Portal (i.e. enhanced website)
  - Published toolkits
  - Medication Safety News
  - Sample policies and procedures
  - Relevant journal club reviews
  - Regular medication safety blog entries
  - Difficult to find medication safety resources
    - Official FDA Tall Man lettering list
    - All 52 TJC sentinel event alerts
    - Official REMs transcript approvals

Questions?



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Preventing Adverse Drug Events: Tools and Updates

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Center for Medication Safety Advancement

Save the Date: July 30

- ADE Mini-Collaborative
  - HRET/Cynosure/IHA/CMSA
  - Morning session
  - Prior to the in-person Improvement Leader Fellowship in Indianapolis
  - Location TBD

Indiana Hospital Association

Evaluation

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Thank you