High Alert Medications & Concentrated Electrolytes

Good judgment comes from experience, and often experience comes from bad judgment.

Rita Mae Brown

Learning Objectives

- Define and identify High Alert Medications
- Share our experiences / reporting
- Outline strategies to minimize risks
- Identify strategies to improve
- Reinforce policy & procedures

High Alert Medications

Medications that pose an increased risk of causing significant harm to patients if used in error

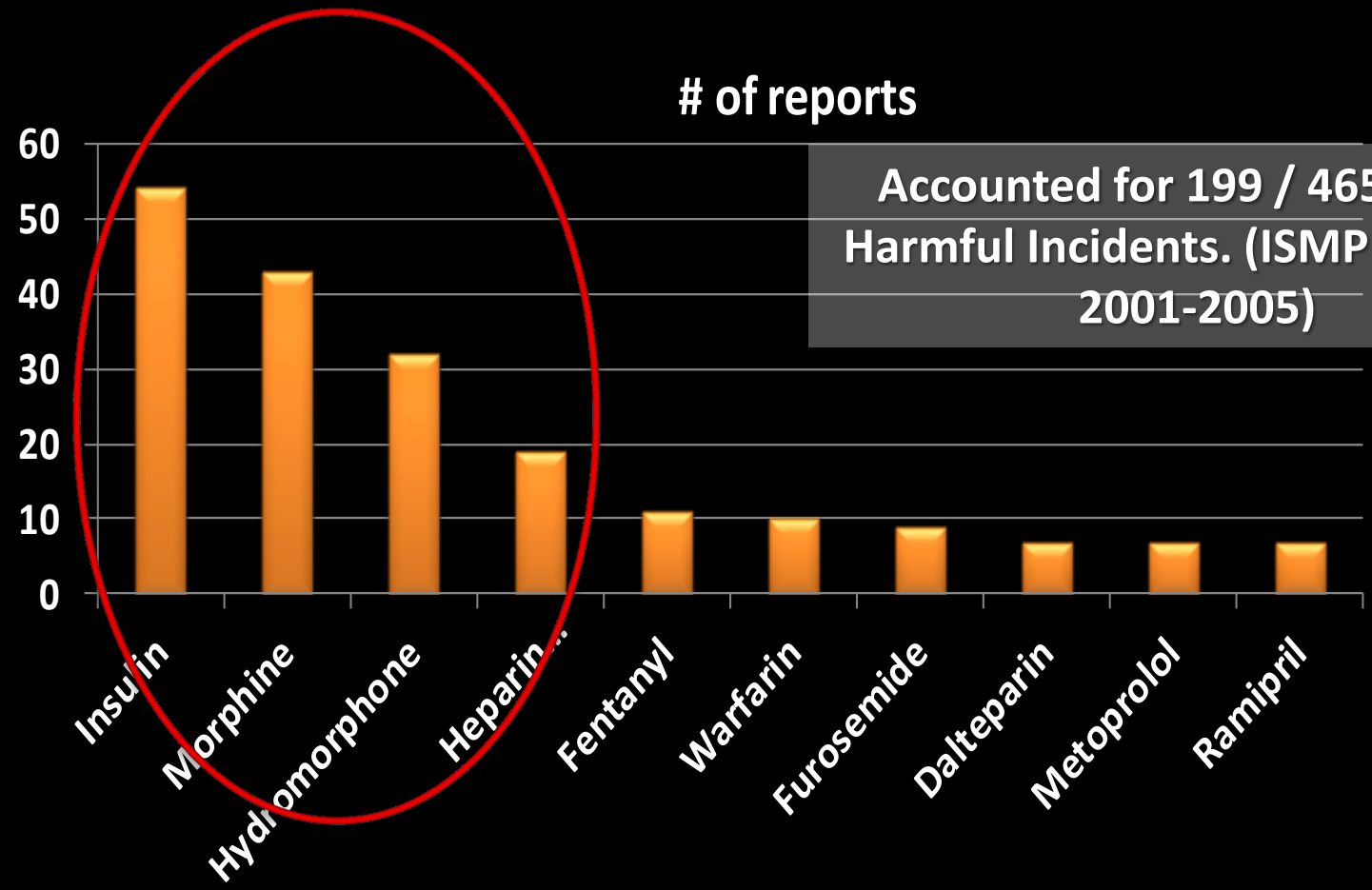
APP 1429-02 Look-Alike, Sound-Alike & High Alert Medication

ISMP Survey on High Alert Medications 2012

	Drugs Considered High Alert Medications	% Site
1	Chemotherapy, oral & parenteral	93
2	Antithrombotic Agents	93
3	Insulin, IV	93
4	Potassium Chloride injection	89
5	Insulin, subcut (including pens & pumps)	84
6	Neuromuscular Blocking Agents	83
7	Epidural or Intrathecal Medications	82
8	Potassium Phosphate Injection	80

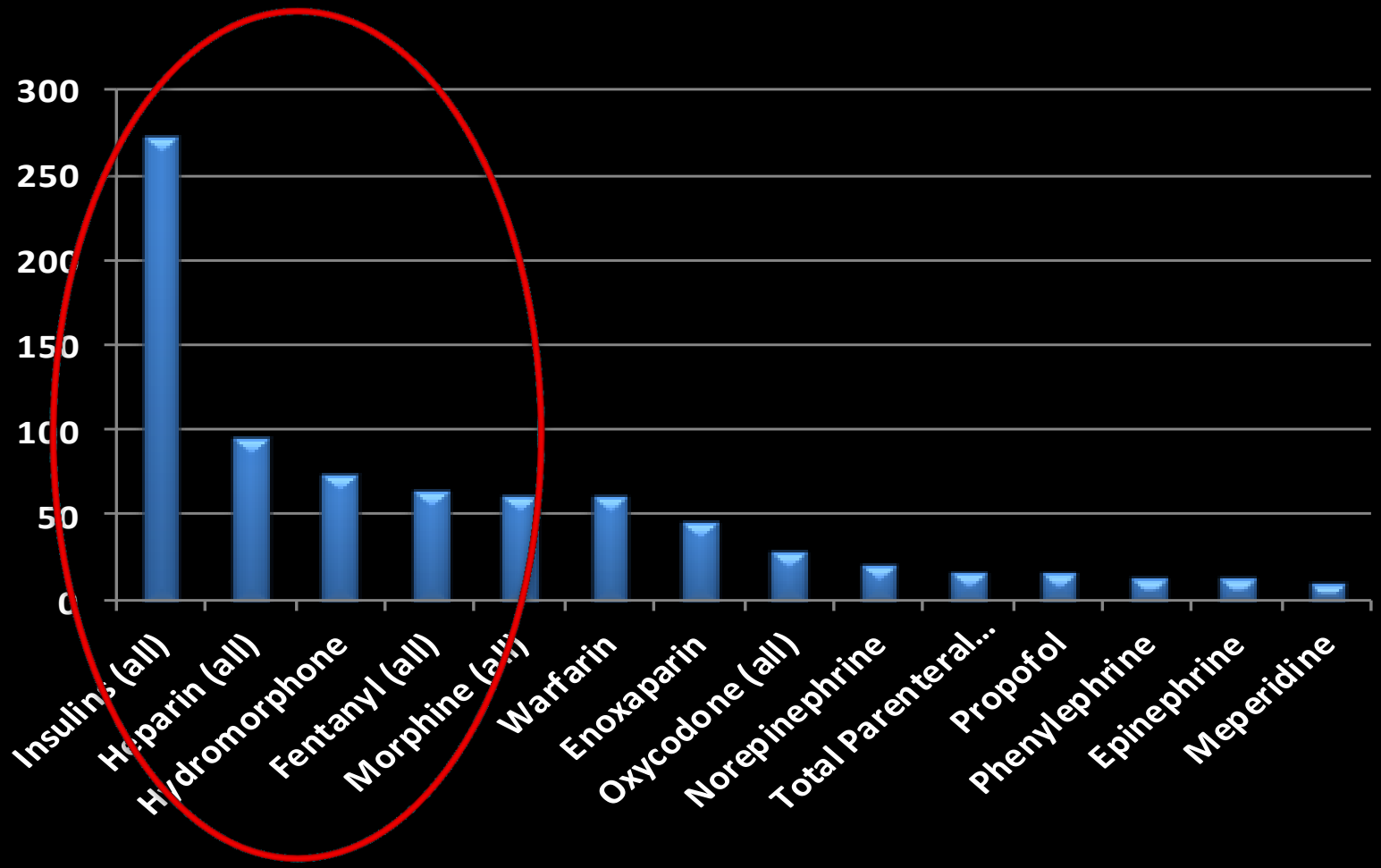
Medication Safety Alert Acute Care; 09 February 2012 vol 17, issue 3

Top 10 Medications Reported as Causing Harm

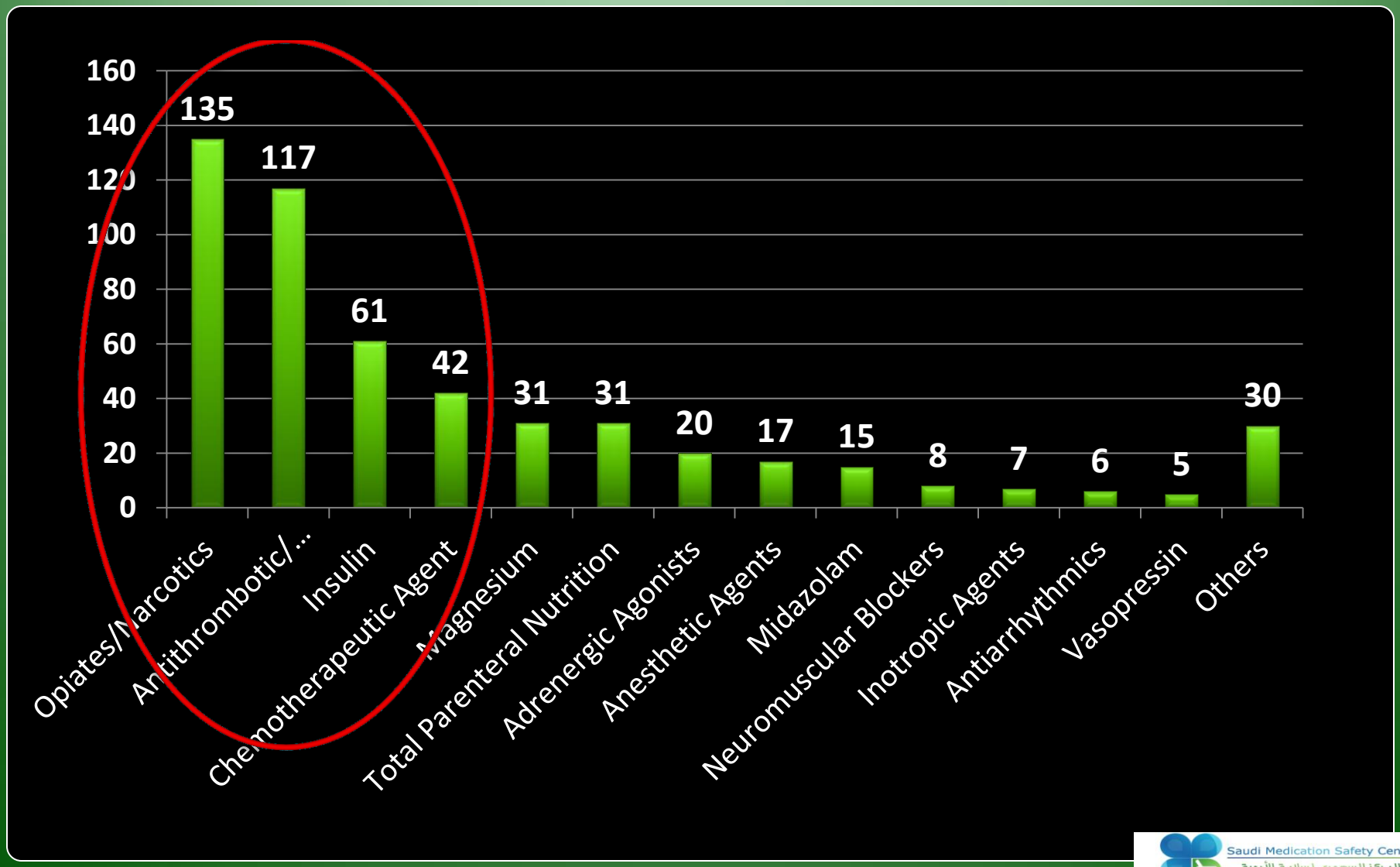


Accounted for 199 / 465 (43%) Harmful Incidents. (ISMP Canada; 2001-2005)

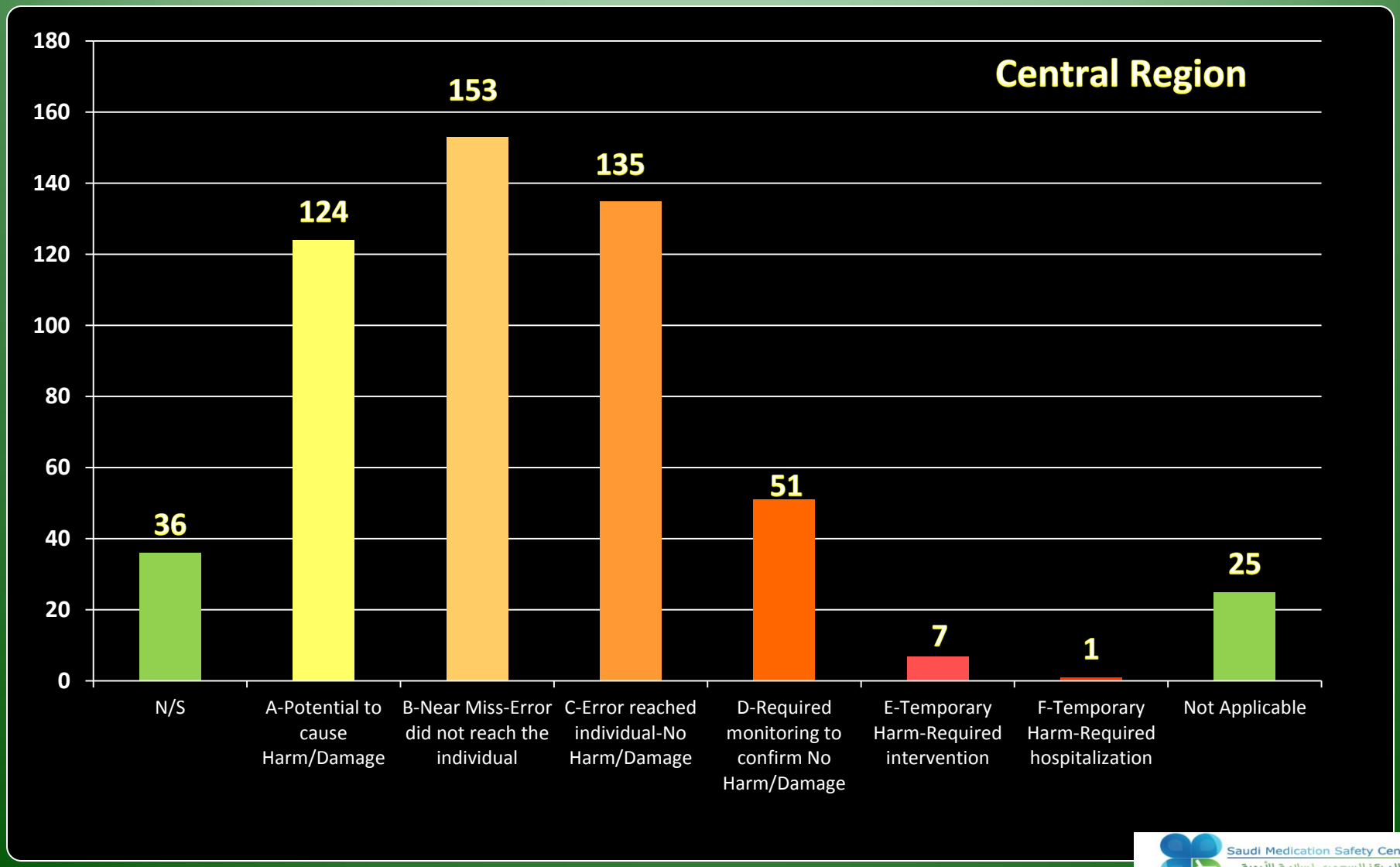
MedMarx 2008 High Alert Meds with Harm Score E and Above



High Alert Medications: SRS Reports
Central Region: January - December 2014



Harm Category for High Alert Medication Reported Errors January – December 2014



Half of Preventable ADEs involve:

DRUG:		TOO MUCH LEADS TO:
1. Opiates	→	Respiratory depression
2. Insulin	→	Hypoglycemia
3. Anticoagulants	→	Bleeding

U$3.5 billion is spent annually on extra medical costs of ADEs

Winterstein, A., Hatton, R., Gonzalez-Rothi, R., Johns, T., & Segal, R. (2002). Identifying clinically significant preventable adverse drug events through a hospital's database of adverse drug reaction reports. *Am. J. Health Syst. Pharm.*, *59*(18), 1742–1749. Retrieved from

Institute of Medicine. Committee on Identifying and Preventing Medication Errors. Preventing Medication Errors, Washington, DC: The National Academies Press 2006.

Opiates

26% of incidents reported during 2014 at KAMC - Riyadh

Morphine

HYDROmorphone

Common Risks: Opiates

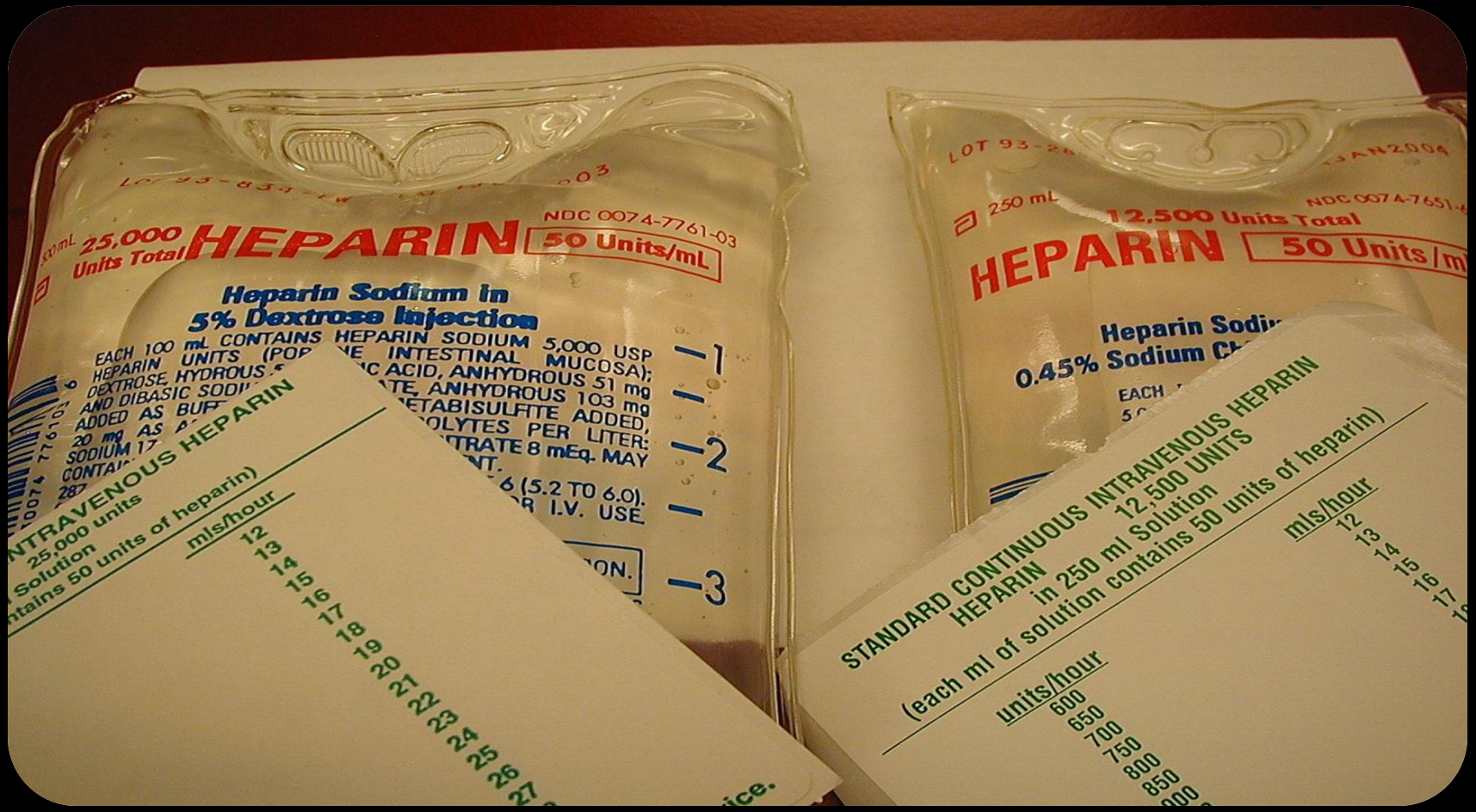
- Lack of leading zero
  - Ordered **.8 mg**, patient received 8 mg Morphine
- Improper disposable of Transdermal Patches
- Bolus dose, failing to re-program maintenance dose
- Different rates and concentrations

Common Strategies: Opiates

- Develop a quick reference sheet on PCA
- Differentiate products
- Use **TALL** man lettering
- Employ Independent Double-Checks
- Implement protocols for the use of PCA and other opioids
- Proper patient education
- Use conversion tables
- Education for staff regarding PCA

Anticoagulants

22% of incidents reported during 2014 at KAMC-Riyadh



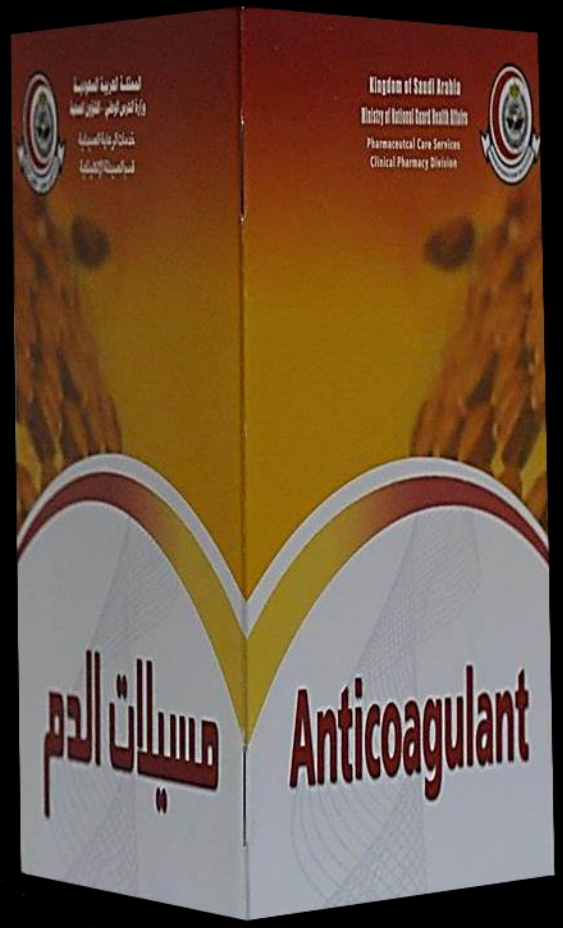
Common Risks: Anticoagulants

- Lack of standardization in names and packs
- Complicated dosing regimens
- Low Molecular Weight Heparin (LMWH) syringe designed for adults only

Common Strategies: Anticoagulants

- Standardize labels, packaging
- Protected Standard Concentration
- Anticoagulation Services
- Counseling
- Use protocols / smart pumps
- Individualized monitoring and handoffs
- Medication Reconciliation

Improved Information and Counselling for Patients



- At start of therapy (prescription)
- On hospital discharge
- At the first anticoagulant clinic appointment
- When necessary throughout course of therapy

INSULIN

12% of incidents reported during 2014 at KAMC Riyadh

Common Risks: Insulin

- Look-Alike Vials
- Use of “U” or “IU”
- Incorrect dose / rate
- Lack of dose checking

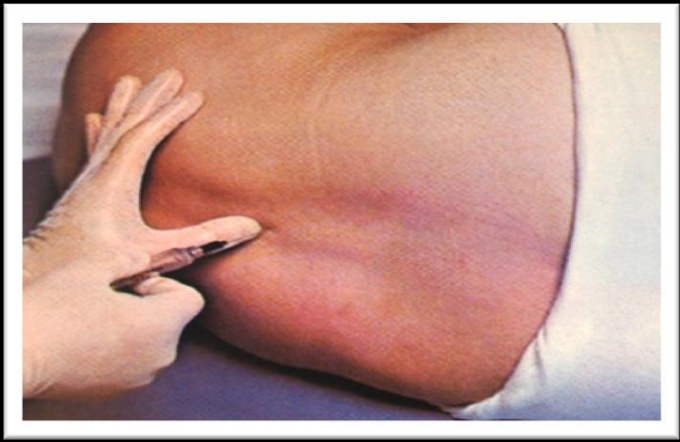
Common Strategies: Insulin

- Spell out “Units” and “Numbers”
- Smart pump / double-check
- Protected Standard Concentration
- Independent double checks
- Store separately / labels

Storage: Separate High Alert Medication (Look-Alike)

Chemotherapy Risks

Drug	Error and Outcome
Methotrexate	Administering daily instead of weekly (approximately 25 fatalities reported)
Vin**CRIS**tine	Accidental Intrathecal administration - Fatal
Lomustine	Oral agent administered daily instead of every 6 weeks, hospitalization and death
CARBOplatin and **CIS**platin	**CIS**platin administered at dose intensity appropriate for **CARBO**platin, fatal outcome



Common Risks: Chemotherapy

- Miscommunication
- Total course (or cycle) dose given every day
- Substantial distance between Pharmacy and patient treatment area (lack of communication)
- Lack of health care information (labs, BSA)
- Excessive interruptions
- LASA / packaging
- Lack of protocols and education

Common Strategies: Chemotherapy

- Double check against actual order / protocol
- Generic names / legible handwriting
- No abbreviations / error-prone abbreviations
- Avoid excessive precision (round off 919.57)
- Date and time of prescriptions (for cycles)

Common Strategies: Chemotherapy

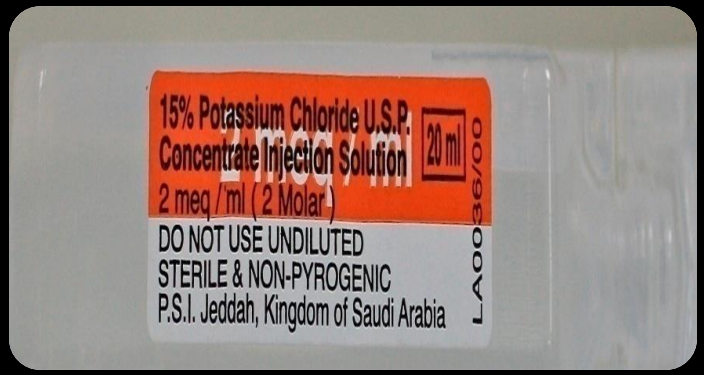
- BSA dosing (mg / m^2), when applicable mg / kg
- Use updated lab information
- Use ‘Time Out’ for intrathecal administration
- Patient / caregiver education
- Communication,

communication,

communication

‘Contains High Alert Medication / Concentrated Electrolytes’

Injury / Death



APP 1433-18: Concentrated Electrolytes

- **MUST** be diluted, and admixed by Pharmacy
  - (if diluted, NOT a concentrated electrolyte)
- **INDEPENDENT** double-check
- **MEDICATION** segregation

APP 1433-18: Concentrated Electrolytes

- Red Bins **with Lids**
  - Patient care areas: Stored in locked cabinets
- Crash Cart / Black Box (as applicable)
  - Auxiliary label "Contains High Alert Medication / Concentrated Electrolytes"

Standardize – Standardize – Standardize

Storage - Red Bins with Lid

32762

Magnesium sulfate 50% (200 mEq / 50 mL) injection

HIGH ALERT / CONC. ELECTROLYTE: MUST BE DILUTED

Standardized Labels

Storage of Concentrated Electrolytes Outside of Pharmacy is Limited to (as applicable):

Concentrated Electrolyte	Clinical Justification for Concentrated Electrolyte	Location by Clinical Care Area	Quantity
Magnesium sulfate 50% or higher concentration	• Cardioplegia • Eclampsia • Torsades de pointes	• Crash Carts • Cardiac / Liver OR • Emergency Medical Services (EMS) • Main OR • Surgical Tower OR	Determined by Region
Potassium chloride 2 mEq / mL or higher concentration	• Cardioplegia	• Cardiac / Liver OR • Main OR	Determined by Region

APP 1433-18; Appendix B

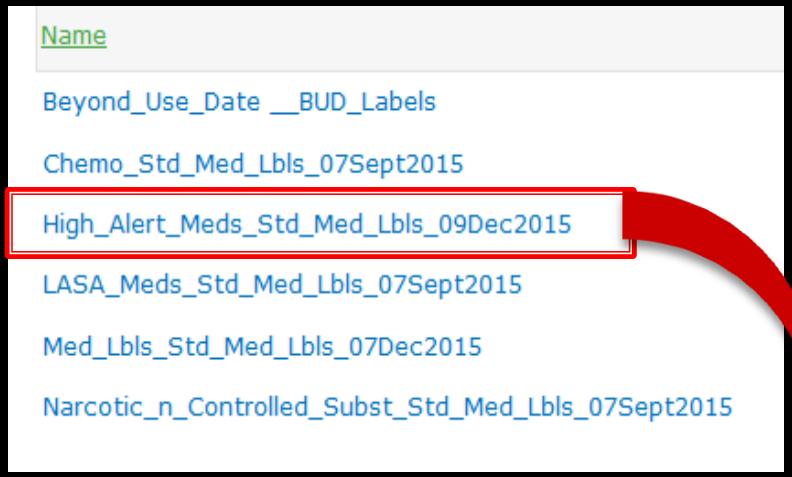
Independent Double-Check

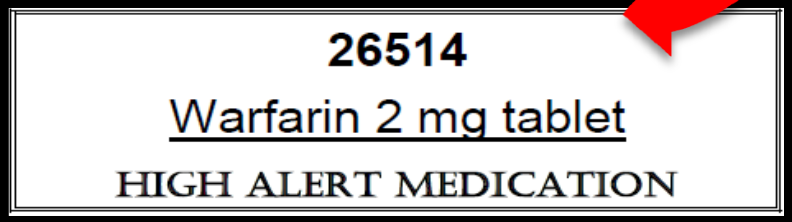
Procedure in which two healthcare professionals **separately** check (alone and apart from each other, then compare results) each component of prescribing, transcribing, dispensing and verifying the medication before administering to the patient.

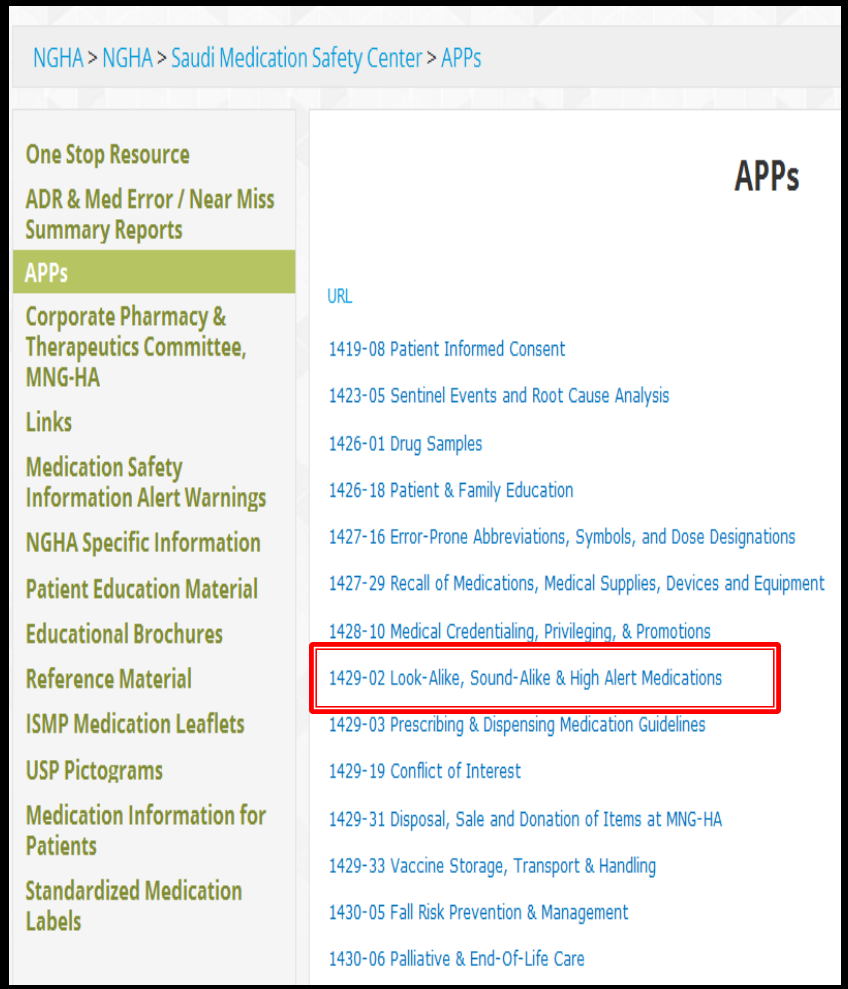
- Dispensing
- Verifying at time of administration

Done without distractions

One Stop Resource







HIS-CPR Enhancements

TALL Man Letters & High Alert


KASCH - Pharmaceutical care services

PICU8-15 AlHarbi Khalid Abdulmuhsen 2183298

TraMADol Injection 40mg

STAT, 40mg

IV Push

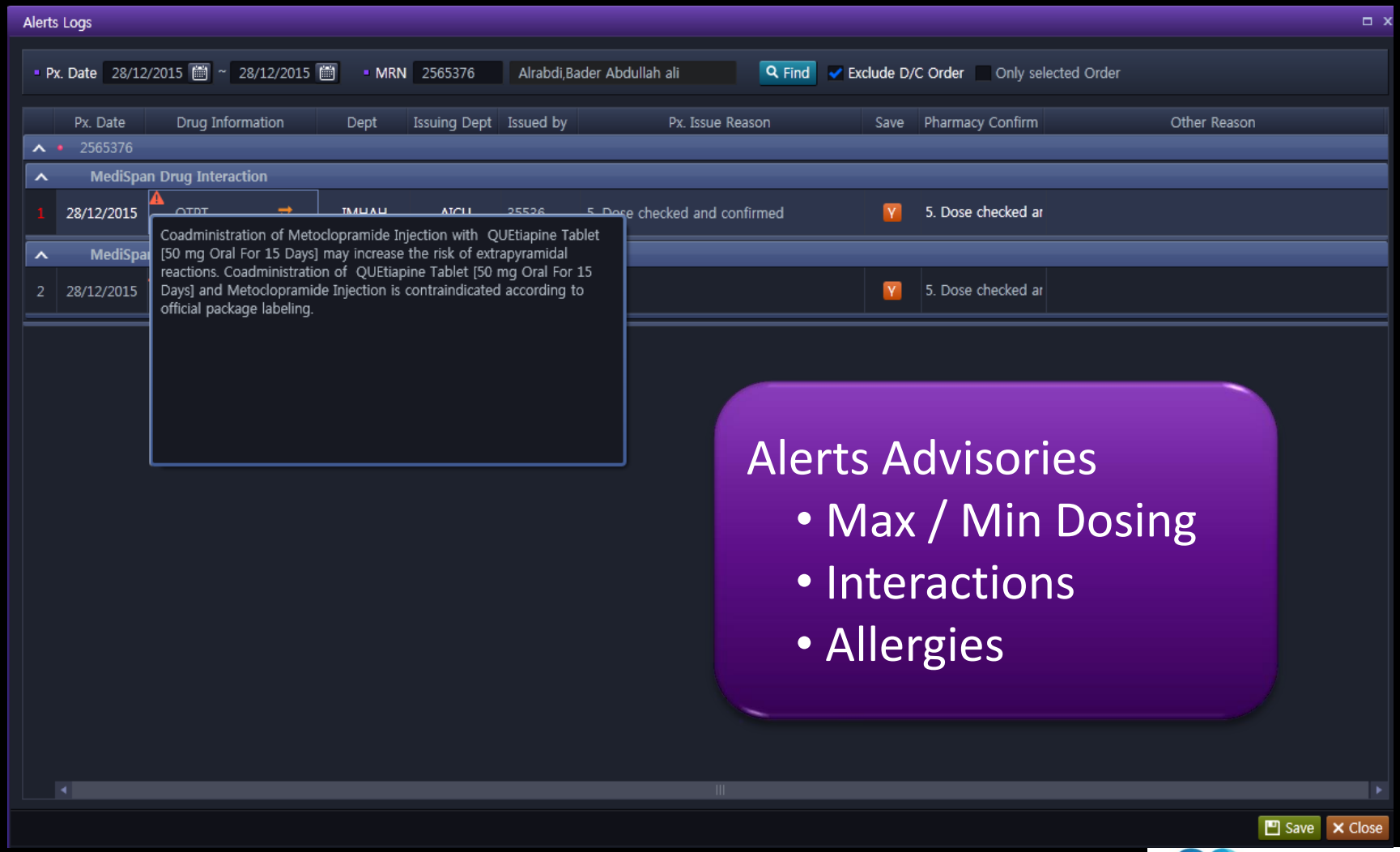
High Alert Med

Re-print

27/12/15

28/12 09:09:02 Printed by: 69814

HIS-CPR Enhancements (con't)



Alerts Advisories

- Max / Min Dosing
- Interactions
- Allergies

Safe Patient Care Is Our Goal