

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

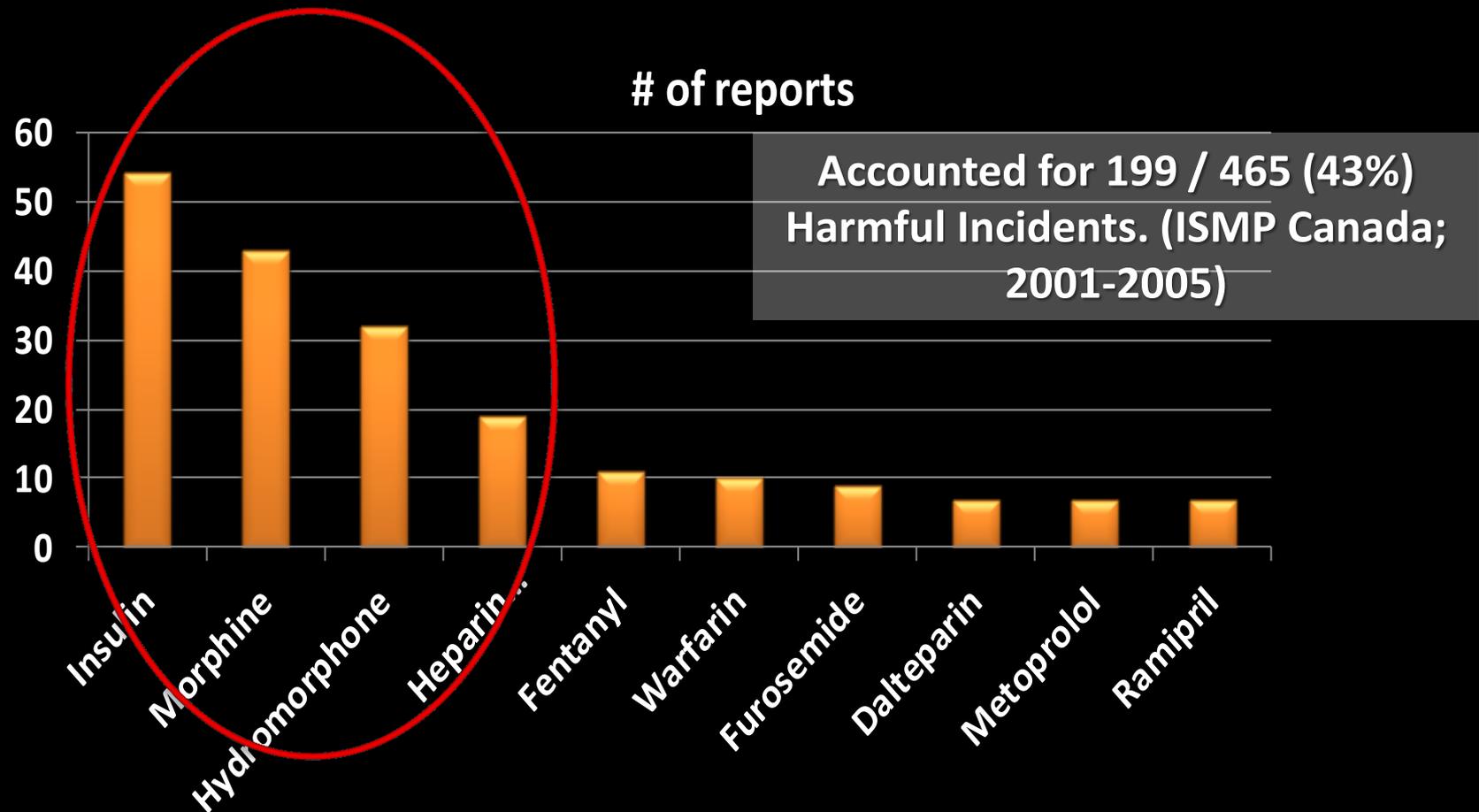
Medications that pose an increased risk of causing significant harm to patients if used in error

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

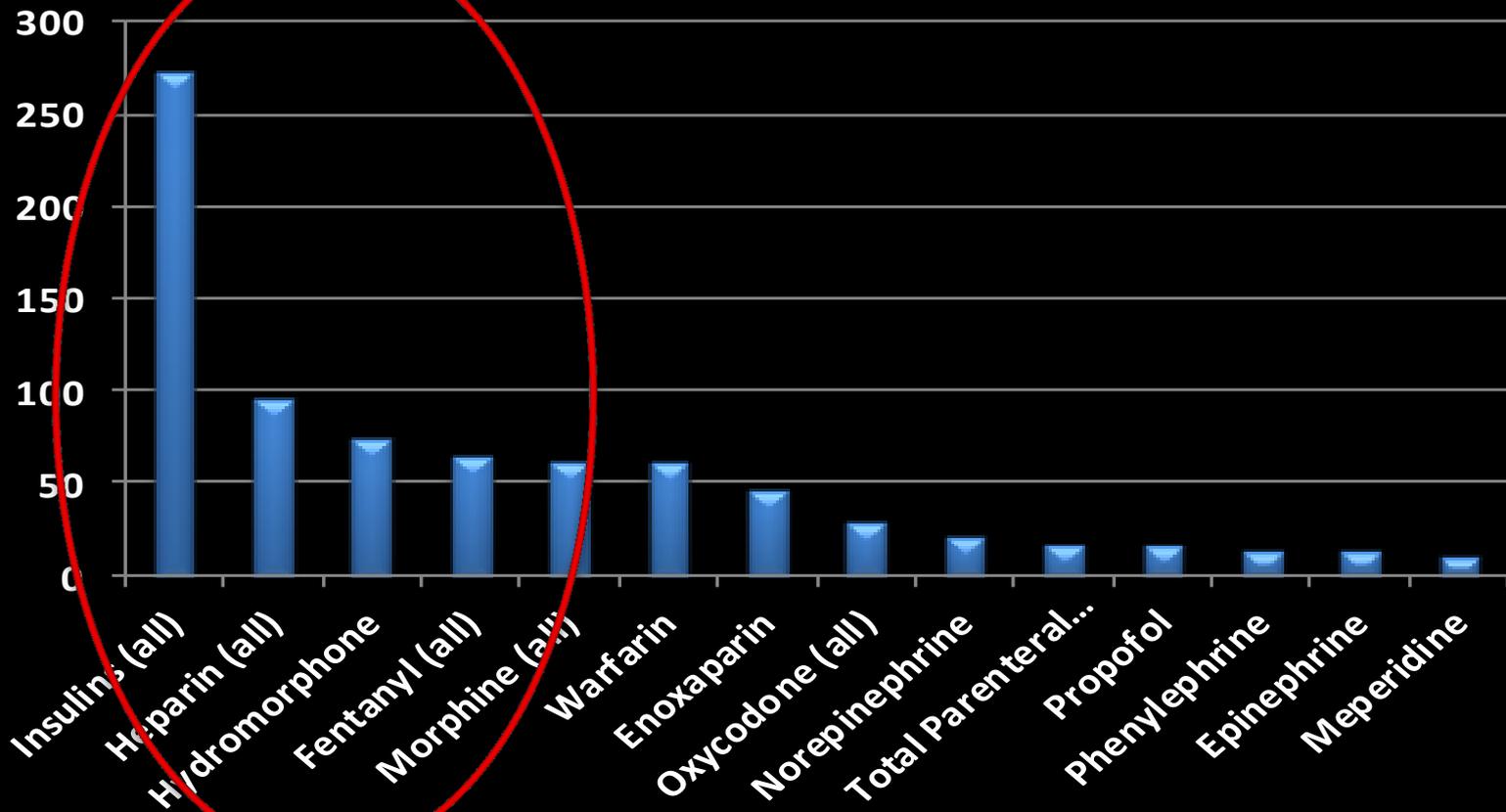
ISMP Survey on High Alert Medications 2012

	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

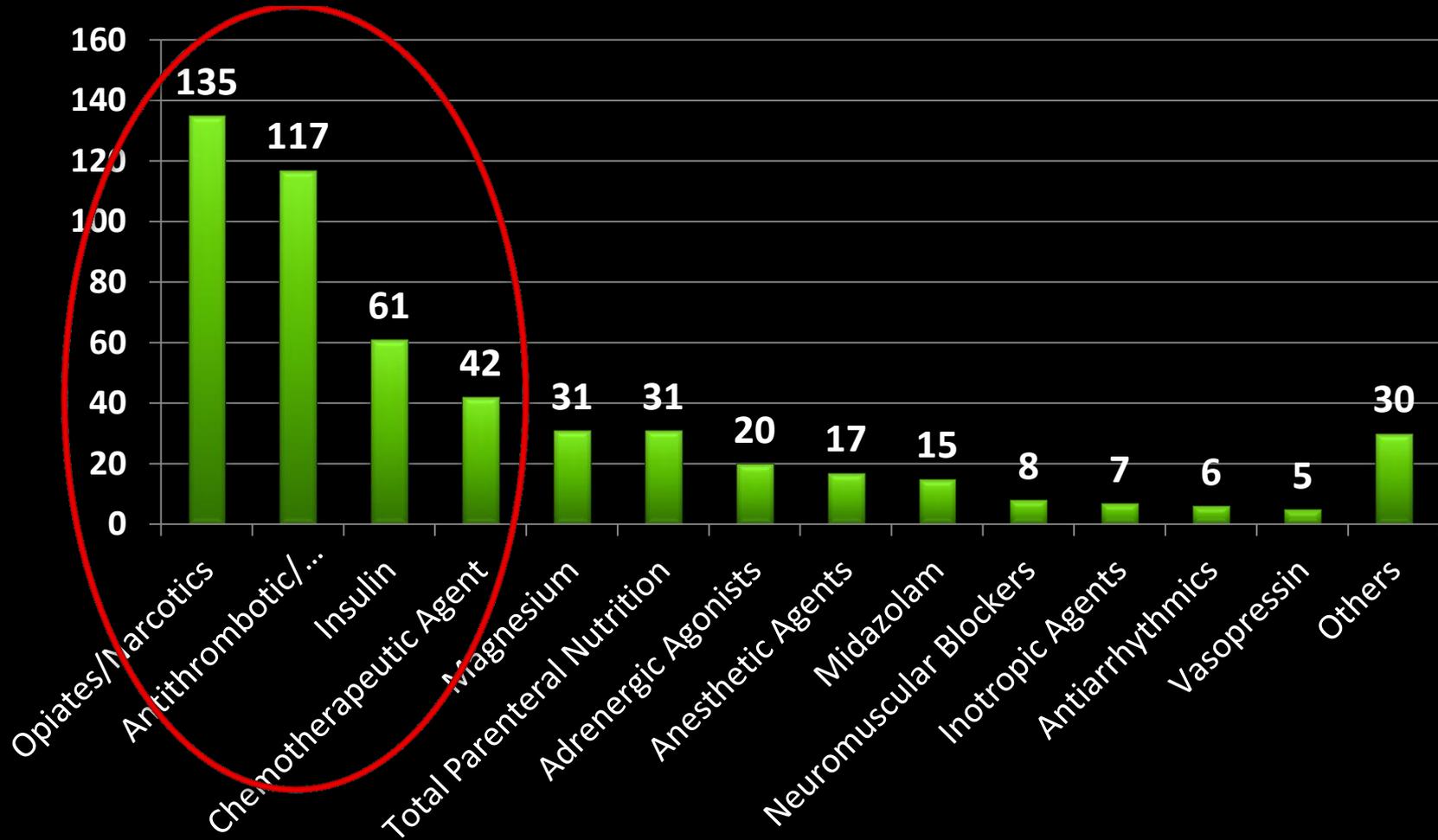
Top 10 Medications Reported as Causing Harm



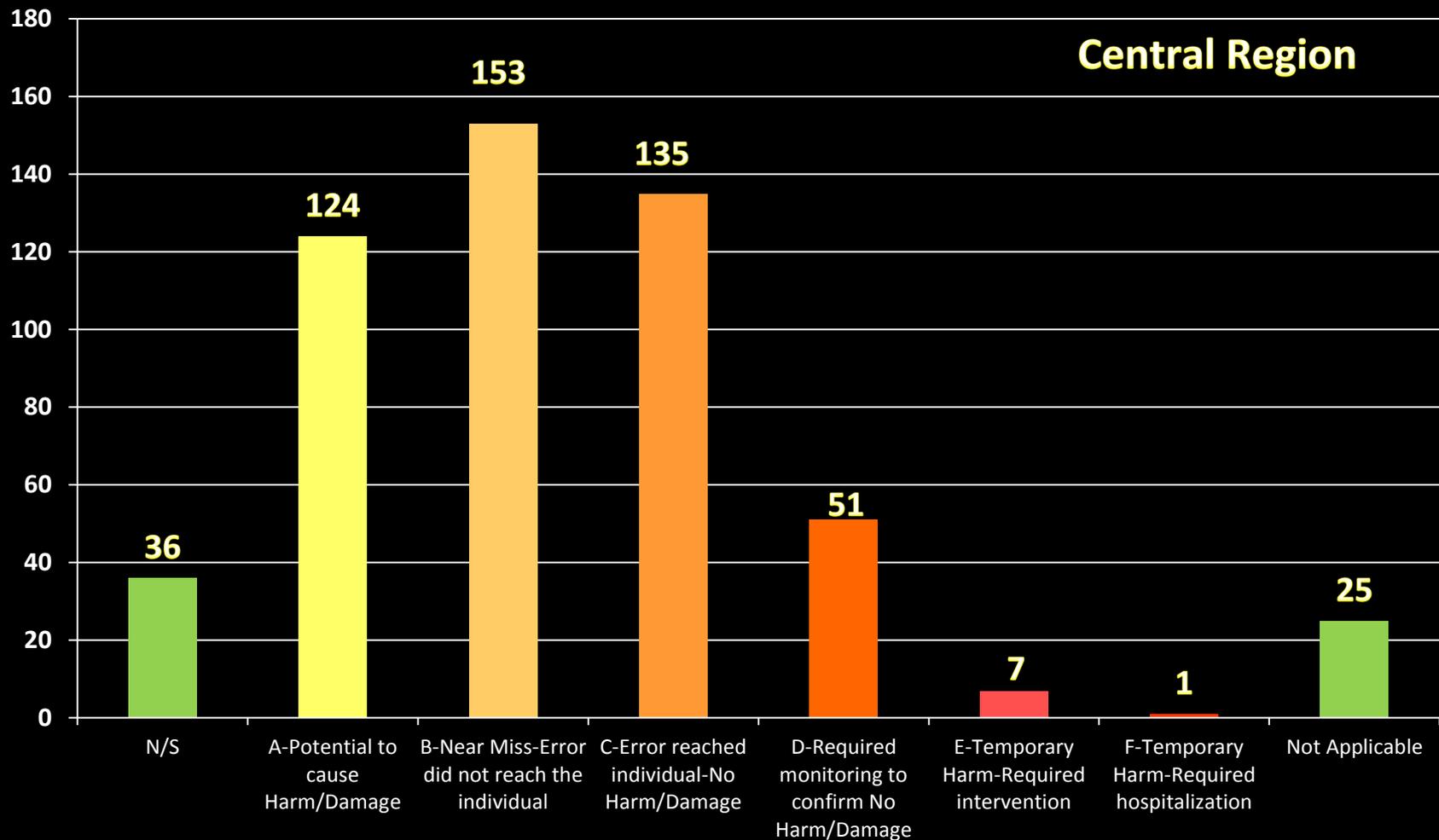
MedMarx 2008 High Alert Meds with Harm Score E and Above



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:

1. Opiates



TOO MUCH LEADS TO:

Respiratory depression

2. Insulin



Hypoglycemia

3. Anticoagulants



Bleeding

US\$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
HYDROmorphine

Common Risks: Opiates

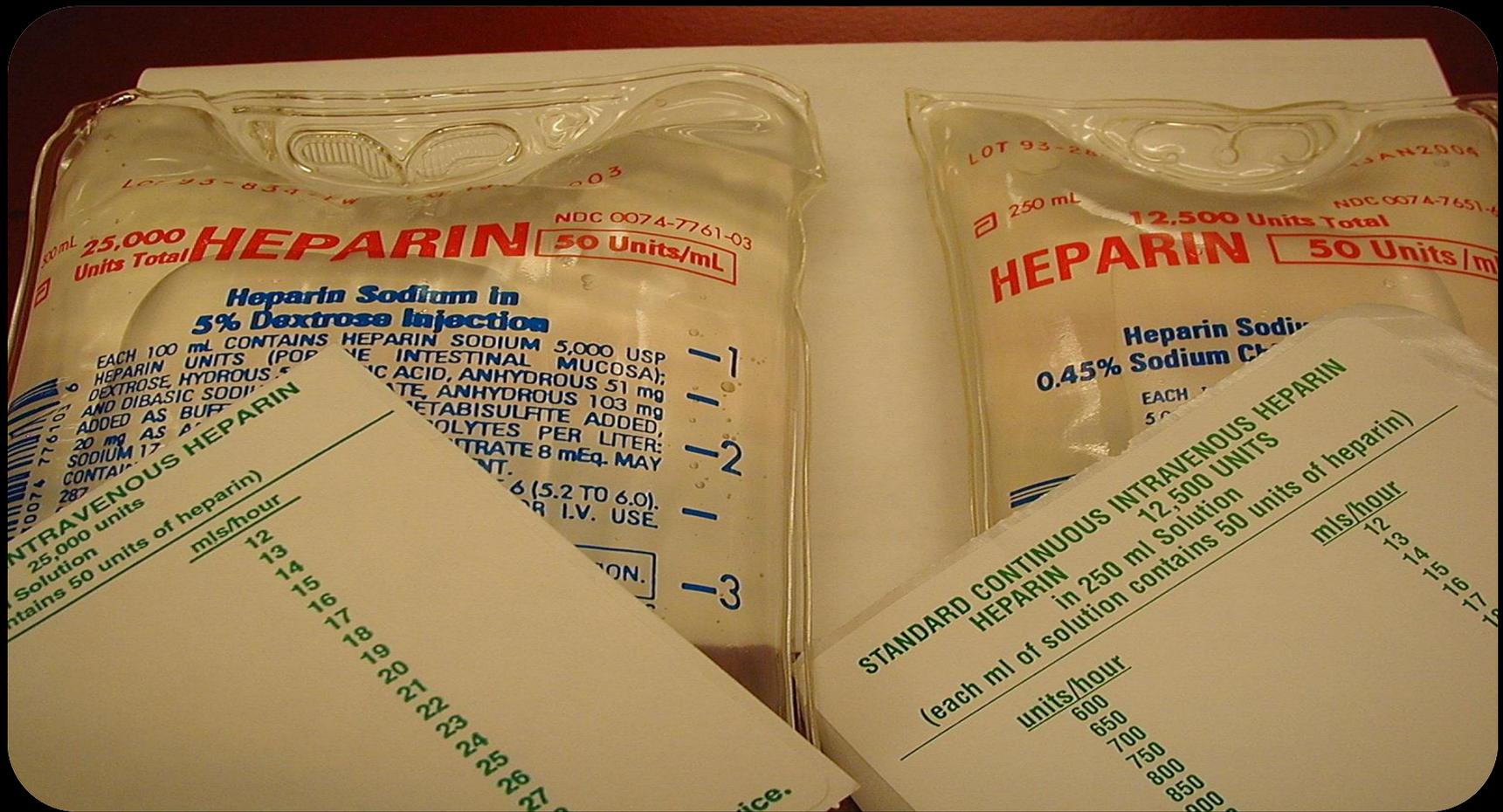
- Lack of leading zero
 - Ordered **.8 mg**, patient received 8 mg Morphine
- Improper disposal of Transdermal Patches
- Bolus dose, failing to re-program maintenance dose
- Different rates and concentrations

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



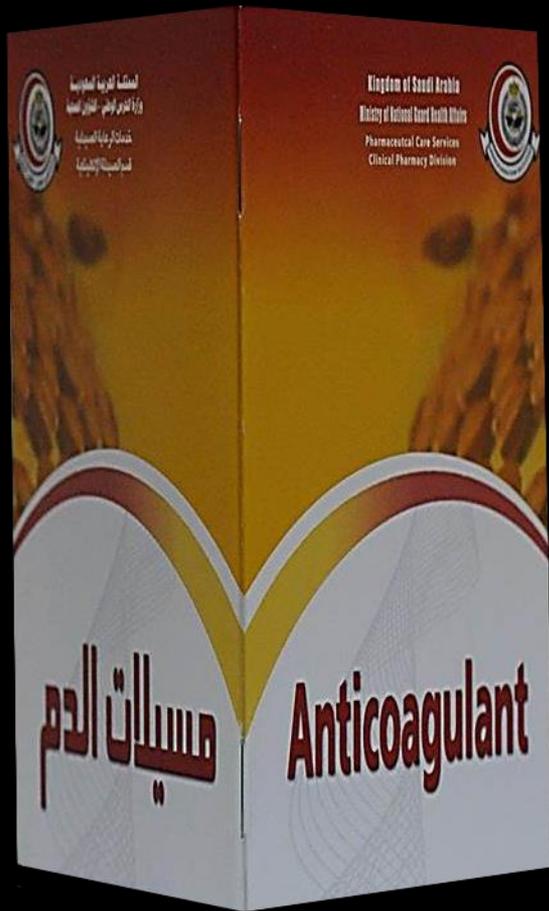
Common Risks: Anticoagulants

- 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

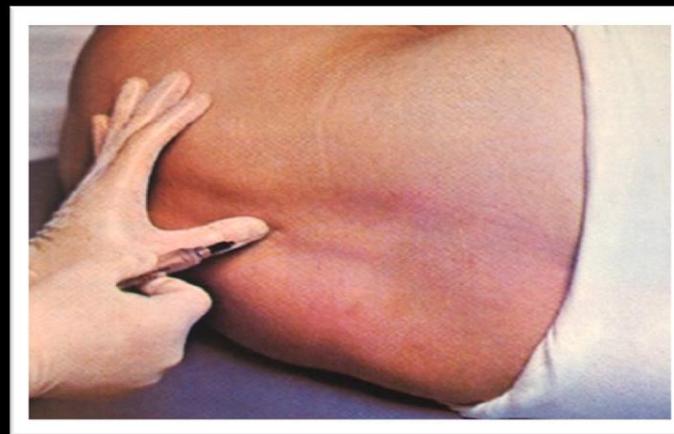
- Spell out “Units” and “Numbers”
- Smart pump / double-check
- Protected Standard Concentration
- Independent double checks
- Store separately / labels



Storage: Separate High Alert Medication (Look-Alike)

Chemotherapy Risks

Drug	Error and Outcome
Methotrexate	Administering daily instead of weekly (approximately 25 fatalities reported)
VinCRISTine	Accidental Intrathecal administration - Fatal
Lomustine	Oral agent administered daily instead of every 6 weeks, hospitalization and death
CARBO platin 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	<ul style="list-style-type: none"> • Cardioplegia • Eclampsia • Torsades de pointes 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Cardioplegia 	<ul style="list-style-type: none"> • 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

Name

[Beyond_Use_Date __BUD_Labels](#)

[Chemo_Std_Med_Lbls_07Sept2015](#)

[High_Alert_Meds_Std_Med_Lbls_09Dec2015](#)

[LASA_Meds_Std_Med_Lbls_07Sept2015](#)

[Med_Lbls_Std_Med_Lbls_07Dec2015](#)

[Narcotic_n_Controlled_Subst_Std_Med_Lbls_07Sept2015](#)

26514

Warfarin 2 mg tablet

HIGH ALERT MEDICATION

NGHA > NGHA > Saudi Medication Safety Center > APPs

One Stop Resource

[ADR & Med Error / Near Miss Summary Reports](#)

APPs

[Corporate Pharmacy & Therapeutics Committee, MNG-HA](#)

Links

[Medication Safety Information Alert Warnings](#)

[NGHA Specific Information](#)

[Patient Education Material](#)

[Educational Brochures](#)

[Reference Material](#)

[ISMP Medication Leaflets](#)

[USP Pictograms](#)

[Medication Information for Patients](#)

[Standardized Medication Labels](#)

APPs

URL

[1419-08 Patient Informed Consent](#)

[1423-05 Sentinel Events and Root Cause Analysis](#)

[1426-01 Drug Samples](#)

[1426-18 Patient & Family Education](#)

[1427-16 Error-Prone Abbreviations, Symbols, and Dose Designations](#)

[1427-29 Recall of Medications, Medical Supplies, Devices and Equipment](#)

[1428-10 Medical Credentialing, Privileging, & Promotions](#)

[1429-02 Look-Alike, Sound-Alike & High Alert Medications](#)

[1429-03 Prescribing & Dispensing Medication Guidelines](#)

[1429-19 Conflict of Interest](#)

[1429-31 Disposal, Sale and Donation of Items at MNG-HA](#)

[1429-33 Vaccine Storage, Transport & Handling](#)

[1430-05 Fall Risk Prevention & Management](#)

[1430-06 Palliative & End-Of-Life Care](#)

HIS-CPR Enhancements

TALL Man Letters & High Alert

KASCH - Pharmaceutical care services
PICU8-15 AlHarbi Khalid Abdulmuheem 2183298
TraMADol Injection 40mg

STAT, 40mg

High Alert Med
Re-print
27/12/15
28/12 09:09:02 Printed by: 69814

IV Push



HIS-CPR Enhancements (con't)

Alerts Logs

Px. Date 28/12/2015 ~ 28/12/2015 MRN 2565376 Alrabdi,Bader Abdullah ali Find Exclude D/C Order Only selected Order

Px. Date	Drug Information	Dept	Issuing Dept	Issued by	Px. Issue Reason	Save	Pharmacy Confirm	Other Reason
MediSpan Drug Interaction								
1	28/12/2015	OTPT	TMHAI	MGU	25526	5. Dose checked and confirmed	Y	5. Dose checked ar
Coadministration of Metoclopramide Injection with QUetiapine Tablet [50 mg Oral For 15 Days] may increase the risk of extrapyramidal reactions. Coadministration of QUetiapine Tablet [50 mg Oral For 15 Days] and Metoclopramide Injection is contraindicated according to official package labeling.								
2	28/12/2015						Y	5. Dose checked ar

Save Close

Alerts Advisories

- Max / Min Dosing
- Interactions
- Allergies

Safe Patient Care Is Our Goal