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

<table>
<thead>
<tr>
<th>Drugs Considered High Alert Medications</th>
<th>% Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chemotherapy, oral &amp; parenteral</td>
<td>93</td>
</tr>
<tr>
<td>2. Antithrombotic Agents</td>
<td>93</td>
</tr>
<tr>
<td>3. Insulin, IV</td>
<td>93</td>
</tr>
<tr>
<td>4. Potassium Chloride injection</td>
<td>89</td>
</tr>
<tr>
<td>5. Insulin, subcut (including pens &amp; pumps)</td>
<td>84</td>
</tr>
<tr>
<td>6. Neuromuscular Blocking Agents</td>
<td>83</td>
</tr>
<tr>
<td>7. Epidural or Intrathecal Medications</td>
<td>82</td>
</tr>
<tr>
<td>8. Potassium Phosphate Injection</td>
<td>80</td>
</tr>
</tbody>
</table>

**Medication Safety Alert Acute Care; 09 February 2012 vol 17, issue 3**
Top 10 Medications Reported as Causing Harm

- Insulin: 50 reports
- Hydromorphone: 40 reports
- Heparin: 30 reports
- Fentanyl: 20 reports
- Warfarin: 10 reports
- Furosemide: 10 reports
- Dalteparin: 5 reports
- Metoprolol: 5 reports
- Ramipril: 5 reports

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

- Opiates/Narcotics: 135
- Antithrombotic: 117
- Insulin: 61
- Chemotherapeutic Agent: 42
- Total Parenteral Nutrition: 31
- Adrenergic Agonists: 31
- Anesthetic Agents: 20
- Midazolam: 17
- Neuromuscular Blockers: 15
- Inotropic Agents: 8
- Antiarrhythmics: 7
- Vasopressin: 6
- Others: 5

Total: 160
Harm Category for High Alert Medication Reported Errors
January – December 2014

The bar chart shows the distribution of harm categories for high alert medication reported errors in the Central Region for January to December 2014. The categories are:

- A - Potential to cause Harm/Damage
- B - Near Miss - Error did not reach the individual
- C - Error reached individual - No Harm/Damage
- D - Required monitoring to confirm No Harm/Damage
- E - Temporary Harm - Required intervention
- F - Temporary Harm - Required hospitalization
- N/S - Not Applicable

- Category A: 124
- Category B: 153
- Category C: 135
- Category D: 51
- Category E: 7
- Category F: 1
- Category N/S: 36
- Category Not Applicable: 25
Half of Preventable ADEs involve:

**DRUG:**
1. Opiates
2. Insulin
3. Anticoagulants

**TOO MUCH LEADS TO:**
- Respiratory depression
- Hypoglycemia
- Bleeding

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

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 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

<table>
<thead>
<tr>
<th>Drug</th>
<th>Error and Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methotrexate</td>
<td>Administering daily instead of weekly (approximately 25 fatalities reported)</td>
</tr>
<tr>
<td>VinCRIStine</td>
<td>Accidental Intrathecal administration - Fatal</td>
</tr>
<tr>
<td>Lomustine</td>
<td>Oral agent administered daily instead of every 6 weeks, hospitalization and death</td>
</tr>
<tr>
<td>CARBOplatin and CISplatin</td>
<td>CISplatin administered at dose intensity appropriate for CARBOplatin, fatal outcome</td>
</tr>
</tbody>
</table>
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 / m²), when applicable mg / kg
- Use updated lab information
- Use ‘Time Out’ for intrathecal administration
- Patient / caregiver education
- 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

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):

<table>
<thead>
<tr>
<th>Concentrated Electrolyte</th>
<th>Clinical Justification for Concentrated Electrolyte</th>
<th>Location by Clinical Care Area</th>
<th>Quantity</th>
</tr>
</thead>
</table>
| 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

APPs

NGHA > NGHA > Saudi Medication Safety Center > APPs

One Stop Resource
ADR & Med Error / Near Miss Summary Reports

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

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
1428-18 Medical Credentialing, Privileging, & Promotions
1429-02 Look-Alike, Sound-Alike & High Alert Medications
1429-03 Prescribing & Dispensing Medication Guidelines
1429-10 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

26514
Warfarin 2 mg tablet
HIGH ALERT MEDICATION
HIS-CPR Enhancements

TALL Man Letters & High Alert

KASCH - Pharmaceutical care services
PICU8-15 AlHarbi Khalid Abdulmuheen
TraMADol Injection

STAT, 40mg

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

IV Push
Alerts Advisories

• Max / Min Dosing
• Interactions
• Allergies
Safe Patient Care Is Our Goal