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A CORUÑA
17-19 OCT 24

Clinical Safety

Pharmaceutical Leadership: Medication Safety Officer

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Disclosure

- Nothing to disclose

Objectives

- Review the history of the medication safety officer (MSO)
- Describe the purpose of the MSO
- Communicate example projects of a MSO

History of the Medication Safety Officer Role

The Beginning

- 1975 first medication error reported in Hospital Pharmacy
- 1980's Patient safety become more prominent
- Error reports from ISMP emphasized the need for a formal role
- Some hospitals created positions focusing on medication safety

Hosp Pharm. 1975 May;10(5):202-3.

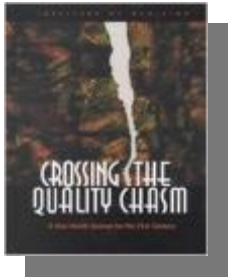
Landmark Publications

2000

To Err Is Human

- *Humans make errors*

2001



Chasing the Quality Chasm

- *System vs Humans*

2007

Preventing Medication Errors

- *Medication errors cause harm*

2016

Medical Error 3rd Leading Cause of Death

Uptake of MSO role

1996 — ISMP Fellowship established

2000 — MSO Role in USA

2005 — PGY2 Med Safety Residency established by ASHP

2010 — ISMP International Fellowship established

2014 — NHS Establishes MSO role

2024 — MSO is a common role in USA and UK

Statistics on Medication Errors

- **Global Impact**: Medication errors are the #1 cause of harm
- **Hospital Risks**: 1 medication error per day for hospitalized patients
- **Significant Harm**: 1 in 30 patients harmed by errors
- **Severe Consequences**: >25% of errors are severe or life-threatening
- **U.S. Concern**: 3rd leading cause of death
- **UK Overview**: 237 million errors/year; £98.5M cost, 712 deaths, 181,626 lost bed days
- **Chemotherapy Dangers**: 4 errors per 1000 orders
- **Pediatric Vulnerability**: 3x higher risk of errors
- **Emergency Dept. Stats**: Errors affect 4-14%, with up to 39% in pediatric ED patients

WHO, Tariq 2024, Hodkinson 2020, Makary 2016, Eliott 2020, Kennedy 2019, Weingart 2018, Croskerry 2004

Purpose of a Medication Safety Officer

Similar Roles

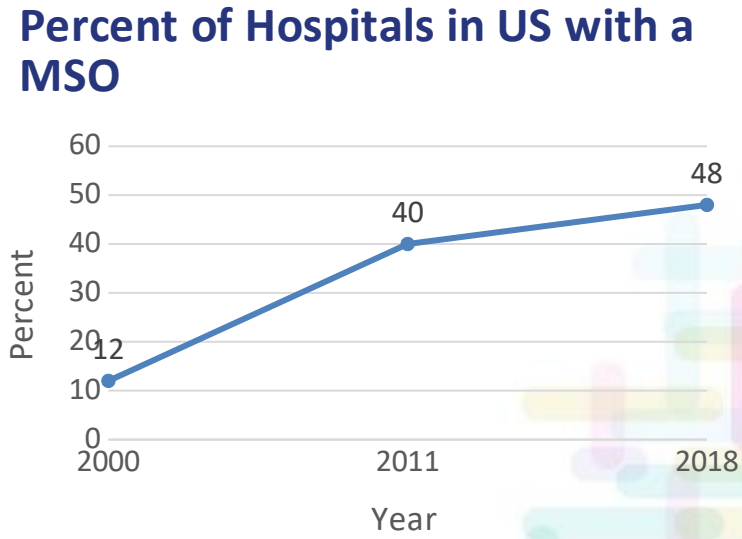
Infection Preventionist	↓ Infections
Antimicrobial Steward	↓ Drug Resistance
Aviation Safety Officer	↓ Sentinel Events

ISMP 2018

MSO's Improve Safety Scores

Employing a MSO at least 20 hrs/week showed significant improvement in a national medication safety assessment score between 2000 and 2011

12% →40% improvement



Jt Comm J Qual Patient Saf. 2014

MSO Role

- **Lead Medication Safety**: Develop and implement strategy, vision, and processes
- **Medication Safety Expert**: Provide expertise in safe medication practices
- **Proactive Improvement**: Identify and address opportunities within the medication-use system
- **Error Prevention Leadership**: Facilitate and implement strategies to prevent errors
- **Comprehensive Review**: Analyze medication error reports and optimize smart pump libraries
- **Safe Automation**: Ensure the safe use of automated dispensing systems
- **Culture of Safety**: Foster and build a strong culture of safety
- **Drive Practice Change**: Influence and implement changes in practice
- **Patient Protection**: Implement systems to avoid preventable medication-related harm
- **Staff Support**: Aid in developing a second victim support program

ASHP 2018, ISMP 2018

Characteristics

- **Clinical Expertise**: In-depth knowledge and experience in clinical practice
- **Medication-Use Process**: Comprehensive understanding of all aspects
- **Analytical Proficiency**: Strong skills in analyzing data and identifying trends
- **Methodological Knowledge**: Expertise in FMEA, RCA, and process mapping
- **Leadership Ability**: Strong leadership skills to guide and influence others
- **Effective Communication**: Clear and impactful communication skills
- **Systemic Approach**: Belief in addressing medication errors as system-wide issues rather than individual faults
- **Just Culture Advocacy**: Commitment to fostering a Just Culture that promotes transparency and the sharing of lessons learned

Being a Medication Safety Officer

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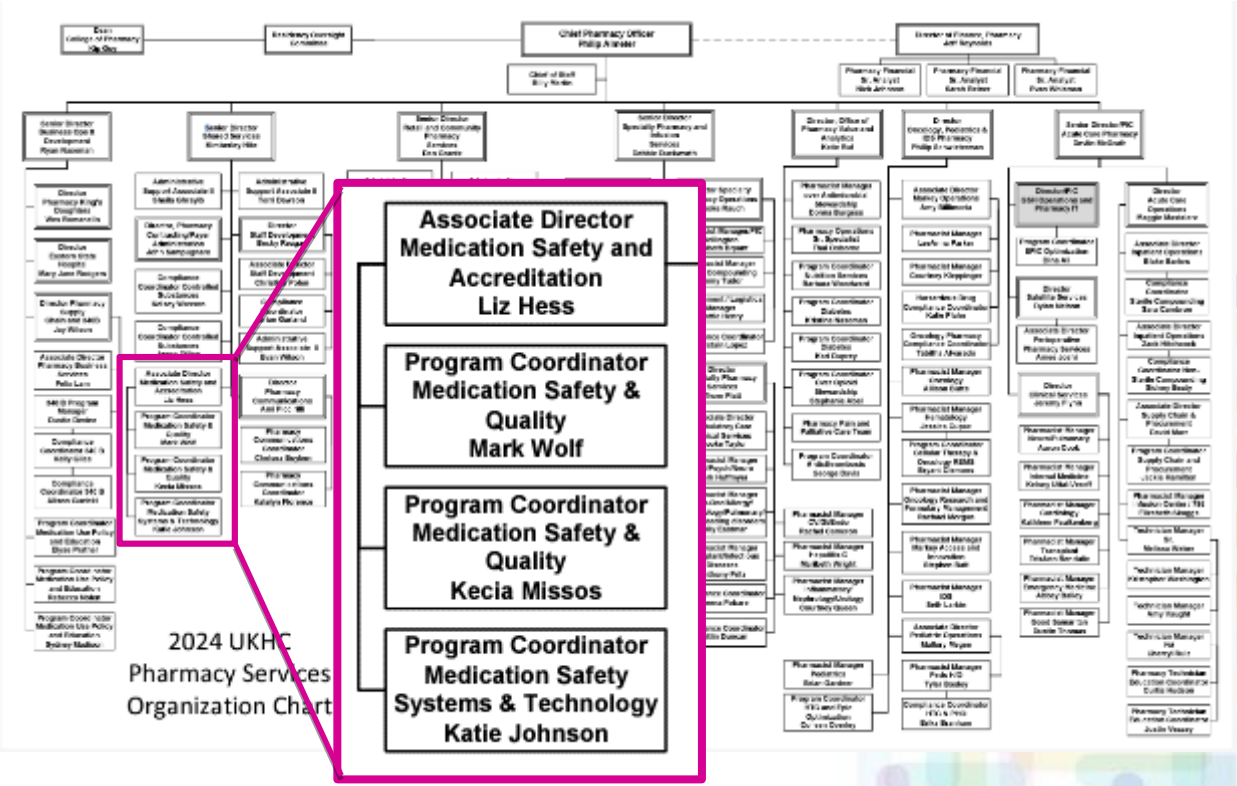
University of Kentucky HealthCare

- Decentralized distribution model
- 24/7 Pharmacy services
  - 4 satellite pharmacies
- 7 Retail Pharmacies
- EHR – Epic
- ADC – Pyxis
- Smart Pump – BD Alaris, CADD Solis

1040 Beds	225 ICU Beds	Level 1 Trauma Center
Level IV NICU	Level 3 PICU	Transplant Center
Comprehensive Stroke Center	NCI Designated Cancer Cetner	100+ Ambulatory clinics

UKHC Pharmacy Department

- Current 4 FTEs
  - Adult
  - Peds
  - Smart Pumps
  - Associate Director/Ambulatory
- Position justification
  - ASHP MSO Justification Toolkit
  - ISMP White Paper – Case for MSO



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Wrong Dose - Oxycodone

- Annual review of reported opioid events
- Wrong dose of oxycodone administered
- Inconsistent dose availability
  - Some units had oxycodone 5 mg
  - Some units had oxycodone 5 mg and 10 mg
- Many nurses staff on different units
- Standardized stock by adding oxycodone 10mg to all Automated Dispensing Cabinets

Wrong Drug Administered

- Antibiotic administered instead of ordered antiseizure medication – no harm to patient
- Led to review of reported medication errors for the Emergency Department
  - Did not have pharmacist verification of orders
  - Did not have profiled Automated Dispensing Cabinets (ADC)
  - Did not have Barcode Medication Administration (BCMA)
- MSO led the work to profile Automated Dispensing Cabinets to prevent errors
- Barcode Medication Administration implemented later

	Yes	Yes, If BCMA*	Maybe	No
Could pharmacist order verification prevent error?	15 (60%)			10 (40%)
Could profiled ADC prevent error?	**21 (84%)**		2 (8%)	2 (8%)
Could BCMA prevent error?	11 (44%)	14 (56%)		

Event Type	n (%)
Wrong drug	9 (36)
Wrong dose – extra dose	4 (16)
Wrong patient	4 (16)
Monitoring error – clinical	2 (8)
Wrong dose – underdose	2 (8)
Wrong time	1(4)
Wrong dose – overdose	1(4)
Dose omission	1(4)
Wrong technique	1(4)

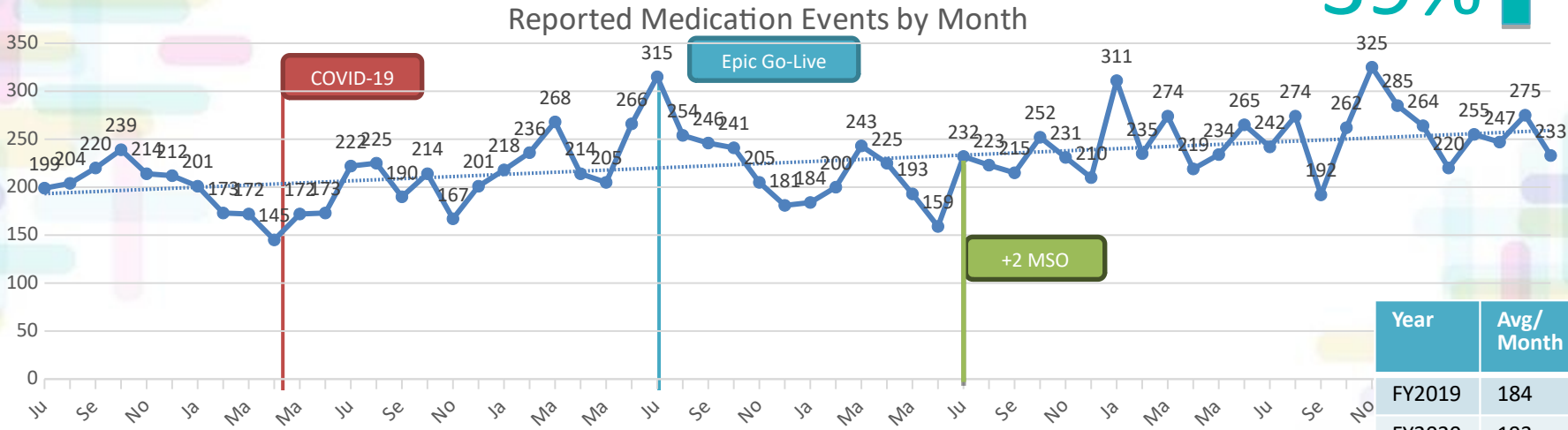
Team Metrics/Measures

- Team Purpose
  - Zero Harm
  - Build Culture of Safety
  - Reduce risk of harm
  - Standardize (reduce variation)
  - Stop preventable harm

	Goal	FY22	FY23	FY24
ADE rate per 1000 pt days or doses dispensed	Lower	0.026	0.023	0.026
Smart Pump Guardrails Utilization, %	> 95%	80.9	84%	86.4
BCMA Utilization, %	> 95%	87.8	92.2	93.4
EHR medication warning rate (inpatient), %	< 15	23.5	24.9	20.7
ADC Override Rate	Lower	1.7	1.4	1.4

Medication Error Tracking

39%



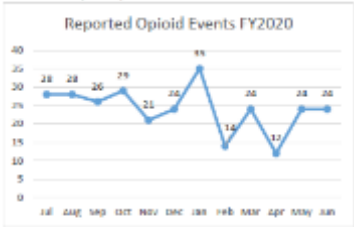
Year	Avg/ Month
FY2019	184
FY2020	193
FY2021	219
FY2022	221
FY2023	236
FY2024	256

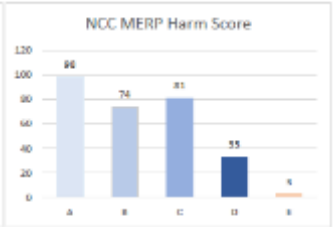
Medication Error Dashboard

HealthCare
Pharmacy Services

FY2020 Opioid Events – All Locations

280 events reported, 5 harm events





NCC MERP Event Type	N
Other	121
Wrong dose – overdose	22
Wrong drug	21
Wrong technique	18

Origin of Event	N
Administration	93
Storage	80
Prescribing	42
Dispensing	36

Medication Name	N
Hydromorphone	68
Oxycodone	57
Morphine	50
Fentanyl	34
Hydrocodone acetaminophen	17
Buprenorphine naloxone	13
Methadone	11
Tramadol	11
Not listed	9
Codeine	5

Top Contributing Factors	N
Storage incorrect	90
Infusion pump (programmed incorrectly)	28
Communication	18
Double check failure	17
Infusion pump (PCA)	16
Pyxis (stock incorrect)	13
BCMA (not utilized)	10
EHR	6
Pyxis (waste)	6
Pyxis (override)	5

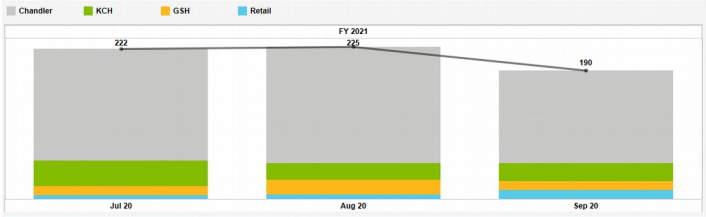
Harm Events

1	Hydromorphone	Wrong Dose - underdose (1)
		Dose Omission (2)

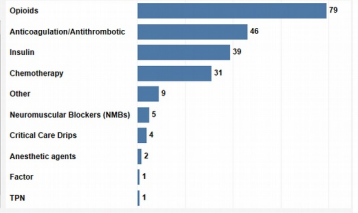
Pharmacy Safety

Reported Date: 7/1/2020 to 12/31/2020 | Location: All | High Alert Class: All | Drug Class: All | Drug Name: All

Events



High Alert Med Class



Harm Score

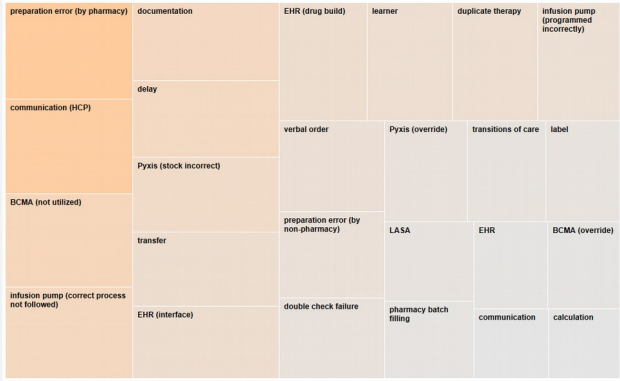
Track and Trend (>5%)

Track and Trend	Distinct Event	% of Total
CS	88	56.05%
external return bin	29	18.47%
COVID	18	11.46%
PCA	16	10.19%
M2B	8	5.10%

Top 10 Drug Names

Drug Name	Distinct Event	% of Total
vancomycin	36	5.65%
hydromorphone	30	4.71%
not listed	27	4.24%
gabapentin	22	3.45%
enoxaparin	16	2.51%
heparin	16	2.51%
insulin regular	15	2.35%
insulin lispro	11	1.73%
oxycodone	11	1.73%
fentanyl	10	1.57%

Top 25 Contributing Factors



Event Type

Pharmacy Mgr: NCCMERP Event Type	Distinct Event	% of Total
Dose omission	95	14.91%
Other	84	13.19%
Wrong drug	66	10.36%
Wrong dose – overdose	61	9.58%
Wrong time	56	8.79%
Wrong patient	37	5.81%
Wrong dose – extra dose	35	5.49%
Wrong dose – underdose	31	4.87%
Wrong strength/concentration	30	4.71%
Monitoring error – clinical	28	4.40%
Wrong technique	26	4.08%
Deteriorated drug error	25	3.92%
Wrong rate – too fast	14	2.20%
Wrong route of administration	14	2.20%
Wrong rate – too slow	11	1.73%
Monitoring error – drug-drug interaction	10	1.57%
Wrong dosage form	7	1.10%
Monitoring error – drug-disease interaction	5	0.78%
Monitoring error – documented allergy	2	0.31%

For Every Patient….





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Key Points

- MSO’s improve safety scores for hospitals
- MSO’s can lead quality improvement projects
- MSO’s can prevent harm to patients and improve quality

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Gracias por su atención

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