

2019 WISCONSIN  
ASSISTED LIVING ASSOCIATION  
SPRING  
CONFERENCE



**ENGINEERING ACCURACY: A  
FRESH LOOK AT PREVENTING  
MEDICATION ERRORS**

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Friday, March 15

10:30 A.M

## Engineering Accuracy: A Fresh Look at Preventing Med Errors

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## Objectives

- ▶ Attendees will be able to identify common causes of med errors in paper and eMAR environments
- ▶ Attendees will be able to demonstrate understanding of industry proven root cause analysis techniques, and apply them to their care setting.
- ▶ Attendees will understand and be able to discuss the core tenets of the Just Culture approach to managing medication errors

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## Goals of Medication Therapy

- ▶ Medication regimens help promote or maintain the resident's highest mental, physical, and psychosocial well-being
- ▶ Resident receives only those medications, in doses and for the duration clinically indicated to treat their assessed conditions
- ▶ Non-pharmacological interventions are considered and used when indicated, instead of medications

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## Reality Check

Medication errors are estimated to harm at least 1.5 million patients every year with about 400,000 preventable adverse events

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## Medication Delivery Process



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Steps, error rates, and IT systems in medication management

Stage	Error rate, %	Intercept rate, %	True error rate, %	Relevant IT systems
Prescription	39	48	22	CPOE with decision support Electronic medication reconciliation
Transcription	12	33	11	Automated transcription
Dispensing	11	34	10	Robots, automated dispensing cabinets
Administration	38	2	51	Bar coding, electronic medication administration

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## Dealing with Errors: A Cultural Evolution



Punitive  
Culture



Blame-Free  
Culture



Just  
Culture

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## Just Culture

- ▶ Individual practitioners should not be held accountable for system failings over which they have no control.
- ▶ Just Culture recognizes that many errors represent predictable interactions between human operators and the systems in which they work and recognizes that competent professionals make mistakes.
- ▶ Just Culture acknowledges that even competent professionals will develop unhealthy norms (shortcuts, workarounds, and "routine rule violations").
- ▶ A Just Culture has zero tolerance for reckless behavior

<https://www.nps.gov/learn/learning/just-culture.html>

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<https://www.noovlproject.com/en?>

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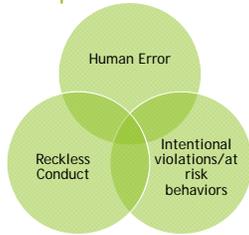
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## Fundamentals: Behavioral Principles




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## Behavior Based Strategy

Behavior	Human error	At-risk Behavior	Reckless Behavior
Example	Accidentally running a stop sign	Speeding in a car	Driving intoxicated
Definition	A slip, lapse, or mistake	A choice; risk was believed to be justified or insignificant	Disregard of substantial and unjustified risk
How to manage	Process improvement, design, training	Increase situational awareness; create incentives for healthy behavior	Remedial action; punitive action
Action for Behavior	Console	Coach	Punish

Hoop Pharm. 2017 Apr; 52(4): 308-315. A Just Culture Approach to Managing Medication Errors. E. Rigen, E. Griffith, et. al.

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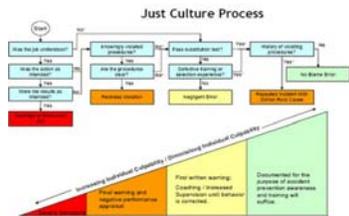
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## Just Culture Process



\* Included a "System" related error. Management must evaluate what part of the system failed and what remedial and preventative action is required. Corrective and preventative action shall be documented by management.

<https://detroit.cdc.net/atlanta.edu/journal.cfm?blog/quality-safety/720709/just-culture/720709-prodco-process-review-continued>

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## Just Culture Assessment Example



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## Working Conditions

### Latent Conditions

- Organizational processes, management decisions, and elements in the system, such as staff shortages, turnover, and medication administration protocols

### Error-Producing Conditions

- Environmental, team, individual, or task factors that affect performance, such as distractions and interruptions (e.g. delivering and receiving food trays), transporting residents, and performing ancillary services (e.g., delivery of medical supplies, blood products).

### Active Failures

- Errors involving slips (actions in which there are recognition or selection failures), lapses (failure of memory or attention) and mistakes (incorrect choice of objective, or choice of an incorrect path to achieve it, compared to violation, where rules of correct behavior are consciously ignored).

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## eMR's - The Good, the Bad, and the ...?

- ▶ Easier and more accurate record keeping and scheduling;
- ▶ Automation of lab orders and integration of lab reports;
- ▶ Links to pharmacies (including electronic prescribing) and computerized physician order entry (CPOE);
- ▶ Integration of decision support systems (DSS)—alerts and reminders for providers to improve the quality of care, reduce medication costs, eliminate redundant tests, and prevent errors;
- ▶ Epidemiological analysis of data from targeted or broad populations of patients; and
- ▶ Potentially safer and less expensive care.

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## eMRs - Better or Worse?

In 1993,

- ▶ 49% of Medication Errors happened during the ordering process
- ▶ 26% stages of during medication administration

In 2015,

- 50.4% of Medication Errors happened during the electronic ordering process
- 28.2% during Prescription Dispensing Process
- 28% eMAR medication administration

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## Common Errors Caused by HIT

- ▶ System downtime
- ▶ System Malfunction
- ▶ Used incorrectly
- ▶ Interoperability with other components

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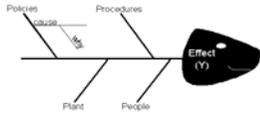
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## Root Cause Analysis



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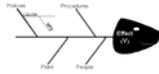
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## Case Studies

**NovoLOG Solution 100 UNIT/ML (Insulin Aspart)**  
Inject as per sliding scale:  
if 60 - 150 = 0 Units;  
151 - 200 = 4 Units;  
201 - 250 = 8 Units;  
251 - 300 = 10 Units;  
301 - 350 = 12 Units;  
351 - 400 = 16 Units;  
401+ = 12 Units if > than 400 give 12 Units and call MD, subcutaneously before meals and at bedtime related to TYPE 1 DIABETES MELLITUS WITHOUT COMPLICATIONS (E10.9)  
-Start Date-  
02/07/2019 0730

Sunday night, resident has blood sugar reading of 401, nurse gives 20 units, assuming that the 12 unit order is written in error.



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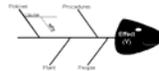
## Case Studies

91 y/o female resident with CHF, Diabetes, Dementia, CAD, and Depression. Allergic to NSAID, Sulfa, and Clindamycin.

Drug Regimen:

- ASA 81mg qd
- Lisinopril 10mg qd
- Crestor 20mg qhs
- Celexa 10mg qhs
- Namenda XR qd

Med Passer notices allergy to NSAID, and does not give ASA. Attempts to reach supervisor, but unsuccessful. Med Passer signs out all meds, and places post-it note on DOW desk asking about ASA.



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### Case Studies

Novolog U-100 Insulin aspart 100 unit/mL subcutaneous solution  
 SIG: inject by subcutaneous route per prescriber's instructions. Insulin dosing requires individualization.  
 Dx: E10.65-Type 1 diabetes mellitus with hyper  
 Schedule: Every Day at 6:30 am; 11:30 am; 5:00 pm  
 Original Order Date: 12/05/2018  
 Order Source: Phone

Novolog U-100 Insulin aspart 100 unit/mL subcutaneous solution  
 SIG: inject with sliding scale four times a day as needed  
 Dx: E10.36-Type 1 diabetes mellitus with diabe  
 Schedule: PRN  
 Original Order Date: 01/24/2019  
 Order Source: Phone

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### Case Studies

69 y/o male resident using local independent pharmacy, owned by a long time family friend.

Previous Drug Regimen:

- Plavix 75mg po qd
- Carvedilol 3.125mg po bid
- Lasix 40mg po qd
- Potassium 10meq po qd

New order written by visiting prescriber for Atenolol 25mg po bid, in response to review of elevated blood pressure readings. The nurse was unaware that this resident gets meds provided by local independent pharmacy and sends script to their preferred provided pharmacy and requests stat delivery. Preferred Pharmacy fills script, and pharmacy staff bypasses duplicate therapy alert kicked back by insurance plan, assuming Carvedilol was discontinued. Nurse received medication and administers to resident immediately, since family was there waiting. Nurse did not stop to check MAR, prior to medication administration.

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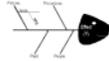
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## Case Studies

**Aspirin-81 Tablet  
Delayed Release  
(Aspirin)**  
Give 1 Tbsp by  
mouth one time a  
day for prophylactic  
-Start Date-  
01/29/2018 0800

**Potassium Tablet  
(Potassium)**  
Give 40 mg by  
mouth one time a  
day related to  
CHRONIC  
OBSTRUCTIVE  
PULMONARY  
DISEASE,  
UNSPECIFIED  
(J44.9)  
-Start Date-  
11/08/2016 0800



**Metamucil Powder  
28.3 % (Psyllium)**  
Give 1 dose by  
mouth every 24  
hours as needed for  
constipation  
-Start Date-  
09/16/2015 1530

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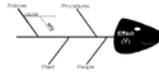
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## Case Studies

**Tempra Tablet 6.6 MG**  
495004010005  
6.6 MG  
495004010005  
0 Unspecified  
Give 6.6 mg by mouth every 12 hours as needed for constipation give 2 tablets for constipation  
Phone START MARCH 2019 1530  
03/05/2019



**Colace Capsule 100 MG**  
499999501200  
100 MG  
499999501200  
0 Unspecified  
Give 100 mg by mouth every 12 hours as needed for constipation give 2 tablets  
Phone START MARCH 2019 1530

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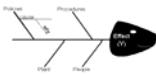
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## Case Studies

**) Ketotifen fumarate (Pataday) 1 drop into each eye daily**  
**) Brimonidine 0.2% 1 drop into each eye BID**



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### Recommendations

- ▶ Follow best practices using Just Culture philosophy.
- ▶ Identify and correct workarounds that staff are using to address system flaws.
- ▶ Conduct a root-cause analysis using information from the individual(s) involved in the events and interdisciplinary team.
- ▶ When the dose of the medication differs from the available strength, list the amount needed for the dose on the eMAR (e.g., propranolol 5 mg [ $\frac{1}{2}$  x 10 mg] tablet).
- ▶ Work with prescribers to include the indication for the medication within their orders.
- ▶ Partner with your pharmacy and eMAR vendor to create solutions and provide suggestions for product enhancements, and best practices.
- ▶ Use standardized order sets within the EHR to guide prescribers to select appropriate drug therapy and doses, to prevent medication errors.
- ▶ Eliminate alerts in the system that are clinically irrelevant, to prevent alert fatigue.
- ▶ Limit the ability to order medications using a combination of both discrete and free-text fields, because these could contradict each other or lead to misinterpretation.
- ▶ Provide a mechanism to facilitate safe order entry of complex medications (e.g. electrolyte solutions) or drugs that require a variable dose schedule (e.g., steroid tapering) so that orders include all required elements and appear clearly and in a logical sequence.

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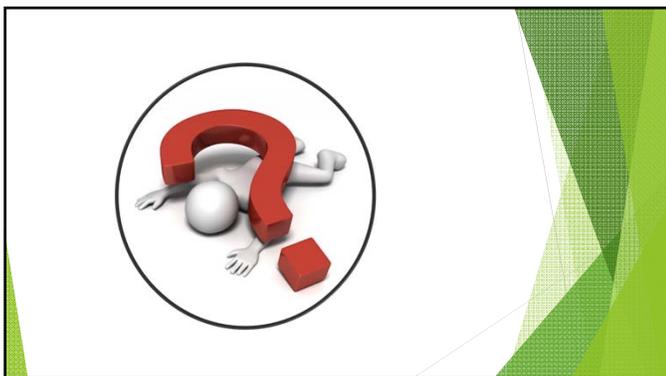
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