Improving the Relevance of Drug-Drug Interaction Warnings

Webinar: October 27, 2021

DDI Alert Customization

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DDI-CDS
Drug-Drug Interaction Clinical Decision Support

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Analyzing and Evaluating Drug-Drug Interaction Alert Data from Epic Electronic Health Records

Home / Analyzing and Evaluating Drug-Drug Interaction Alert Data from Epic Electronic Health Records

Introduction

Drug-drug interaction alerts are one of the most common types of safety alerts but the data output, with up to thousands of rows of warning messages, can be challenging to analyze. The purpose of this webinar is to provide attendees with an introduction to working with the data within Microsoft Excel. "Sample" data will be made available for download so attendees can get hands-on experience with Excel PivotTables. The webinar will also discuss approaches to make decisions about the outputs from data synthesis. Data regarding medication safety alerts can be downloaded for analysis.

Materials:

- **Instructions for analyzing alert data**
- **Alert data for Excel exercise**

Meaningful Drug Interaction Alerts

- Objectives:
  - Create contextual alerting algorithms to reduce alert fatigue
  - Disseminate and implement algorithms in various healthcare organizations

- Seeking Feedback:
  - Let us know if you have implemented one or more algorithms or have modified your system to reduce alert fatigue
    - Email: info@ddi-cds.org

Our Speakers

- **Andrew Romero, PharmD**

- **John Horn, PharmD, FCCP**

Epic Drug-Drug Interactions

Excel Pivot Table Analysis

Andrew Romero, PharmD

Epic Drug-Drug Interaction Customization

- Can change severity level of specific alerts.
- Can change the level of severity that are displayed to different users.
- Can suppress alerts within order sets.

Epic Medication Warning Report

- Log into Clinical Administration- Recommend this report is run in the Report or Shadow Environment due to the size of the report

- Go to Management Options -> Utilities -> Orders -> Medications -> Med Warning Statistics Report

- Fill in the prompts:
  - Start and End Date: Run 1 month or less at a time
  - Skip Filtered Warnings: Enter Yes so the report only shows warnings displayed to users.
  - Skip Cancelled Actions…: Enter No to include all warnings shown to users.

Epic Medication Warning Report – con't

- Hospital/Clinic- Enter Hospital Name
- Medication Warning Type: Type ? to see choices. Select Drug-Drug Interactions.
- Report- Enter 1 to generate a Medication Warning Detail Report
- Patient Identifier: Enter MRN or CSN depending on personal preference.
- Include External Identifiers: Enter No
- Enter a File Path and Base Name- Enter server location to save the report to.
- File Format: Select XML
- Start Excel and Open the MedWarnings_Detail Report
  - Note: If your facility uses inline dose warnings- not all alerts will be included in the report.

Epic Medication Warning Report

	A	B	C	D	E	F	G	H	I
1	Medication Warning Detail Report Without Filtered Medication Warnings (9/1/2021 - 9/30/2021)								
2	Mon Oct 1, 2021 2:01 PM								
3									
4	Type	Description	Source	Warning Status	Context	Medications involved in warning checking	Severity	Provider T	Override
5	Drug-Drug	METOCLOPRAMIDE / PROMETHAZINE	Verify Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/5 ML ORAL SOLUTION [77.	Contraind	Pharmacis	Benefit c
6	Drug-Drug	METOCLOPRAMIDE / PROMETHAZINE	Enter Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/5 ML ORAL SOLUTION [77.	Contraind	Physician	
7	Drug-Drug	METOCLOPRAMIDE / PROMETHAZINE	Verify Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Pharmacis	Benefit c
8	Drug-Drug	METOCLOPRAMIDE / PROMETHAZINE	Enter Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Resident	
9	Drug-Drug	KETOROLAC (INJECTABLE) / NSAIDS; ASPIRIN	Verify Orders	Viewed	Inpatient	KETOROLAC 30 MG/ML (1 ML) INJECTION SOLUTION	Contraind	Pharmacis	
10	Drug-Drug	KETOROLAC (INJECTABLE) / NSAIDS; ASPIRIN	Enter Orders	Overridden	Inpatient	KETOROLAC 30 MG/ML (1 ML) INJECTION SOLUTION	Contraind	Pharmacis	Benefit c
11	Drug-Drug	KETOROLAC (INJECTABLE) / NSAIDS; ASPIRIN	Verify Orders	Overridden	Inpatient	KETOROLAC 30 MG/ML (1 ML) INJECTION SOLUTION	Contraind	Pharmacis	Benefit c
12	Drug-Drug	RIVAROXABAN / P-GP AND STRONG CYP3A4 I	Enter Orders	Overridden	Outpatient	RIVAROXABAN 10 MG TABLET [110250], RITONAVIR	Contraind	Resident	
13	Drug-Drug	RIVAROXABAN / P-GP AND STRONG CYP3A4 I	Enter Orders	Overridden	Outpatient	RIVAROXABAN 10 MG TABLET [110250], RITONAVIR	Contraind	Physician	
14	Drug-Drug	METOCLOPRAMIDE / PROMETHAZINE	Verify Orders	Removed	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Pharmacis	
15	Drug-Drug	METOCLOPRAMIDE / PROMETHAZINE	Enter Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Physician	Inaccurat
16	Drug-Drug	SELECTED NEPHROTOXIC AGENTS / CIDOFOVI	Verify Orders	Overridden	Inpatient	PENTAMIDINE 300 MG SOLUTION FOR INJECTION [2	Contraind	Pharmacis	Does not
17	Drug-Drug	SELECTED NEPHROTOXIC AGENTS / CIDOFOVI	Enter Orders	Overridden	Inpatient	PENTAMIDINE 300 MG SOLUTION FOR INJECTION [2	Contraind	Resident	
18	Drug-Drug	SELECTED NEPHROTOXIC AGENTS / CIDOFOVI	Verify Orders	Overridden	Inpatient	PENTAMIDINE 300 MG SOLUTION FOR INJECTION [2	Contraind	Pharmacis	Benefit c
19	Drug-Drug	SELECTED NEPHROTOXIC AGENTS / CIDOFOVI	Enter Orders	Overridden	Inpatient	PENTAMIDINE 300 MG SOLUTION FOR INJECTION [2	Contraind	Pharmacis	Benefit c
20	Drug-Drug	SELECTED NEPHROTOXIC AGENTS / CIDOFOVI	Verify Orders	Viewed	Inpatient	PENTAMIDINE 300 MG SOLUTION FOR INJECTION [2	Contraind	Pharmacis	
21	Drug-Drug	SELECTED NEPHROTOXIC AGENTS / CIDOFOVI	Enter Orders	Overridden	Inpatient	PENTAMIDINE 300 MG SOLUTION FOR INJECTION [2	Contraind	Pharmacis	Benefit c
22	Drug-Drug	SELECTED NEPHROTOXIC AGENTS / CIDOFOVI	Enter Orders	Overridden	Inpatient	PENTAMIDINE 300 MG SOLUTION FOR INJECTION [2	Contraind	Pharmacis	Benefit c
23	Drug-Drug	SIROLIMUS / VORICONAZOLE	Verify Orders	Overridden	Inpatient	SIROLIMUS 1 MG/ML ORAL SOLUTION [26336], VORI	Contraind	Pharmacis	Does not
24	Drug-Drug	SIROLIMUS / VORICONAZOLE	Verify Orders	Overridden	Inpatient	SIROLIMUS 1 MG/ML ORAL SOLUTION [26336], VORI	Contraind	Pharmacis	Benefit c
25	Drug-Drug	SIROLIMUS / VORICONAZOLE	Verify Orders	Viewed	Inpatient	SIROLIMUS 1 MG/ML ORAL SOLUTION [26336], VORI	Contraind	Pharmacis	
26	Drug-Drug	SIROLIMUS / VORICONAZOLE	Enter Orders	Overridden	Inpatient	SIROLIMUS 1 MG/ML ORAL SOLUTION [26336], VORI	Contraind	Pharmacis	Benefit c
27	Drug-Drug	SELECTED HMG-COA REDUCTASE INHIBITORS	Resume Orders	Viewed	Outpatient	ATORVASTATIN 40 MG TABLET [19177], GEMFIBROZ	Contraind	Physician	
28	Drug-Drug	FENTANYL / MAOIS	Verify Orders	Overridden	Inpatient	FENTANYL (PF) 50 MCG/ML INJECTION SOLUTION [3	Contraind	Pharmacis	Benefit c
29	Drug-Drug	SIMVASTATIN (> 10 MG); LOVASTATIN (> 20 M	Enter Orders	Overridden	Outpatient	SIMVASTATIN 20 MG TABLET [11365], DILTIAZEM CD	Contraind	Resident	
30	Drug-Drug	METOCLOPRAMIDE / PROMETHAZINE	MAR	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Registere	
31	Drug-Drug	METOCLOPRAMIDE / ANTIPSYCHOTICS; PHEN	Enter Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Pharmacis	Benefit c
32	Drug-Drug	METOCLOPRAMIDE / ANTIPSYCHOTICS; PHEN	Verify Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Pharmacis	Benefit c
33	Drug-Drug	METOCLOPRAMIDE / ANTIPSYCHOTICS; PHEN	Enter Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Registere	
34	Drug-Drug	METOCLOPRAMIDE / ANTIPSYCHOTICS; PHEN	Verify Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Pharmacis	Benefit c
35	Drug-Drug	METOCLOPRAMIDE / ANTIPSYCHOTICS; PHEN	Enter Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Resident	
36	Drug-Drug	METOCLOPRAMIDE / ANTIPSYCHOTICS; PHEN	Verify Orders	Overridden	Inpatient	METOCLOPRAMIDE 5 MG/ML INJECTION SOLUTION	Contraind	Pharmacis	Benefit c

DDI-CDS
Drug-Drug Interaction Clinical Decision Support

Data Files for Pivot Table Analysis

https://ddi-cds.org/

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Files for activity

SAVE files to Desktop or other location for analysis

A Brief History of Drug Interaction Alert Customization at UW Medicine

John R. Horn, PharmD, FCCP

Emeritus Professor

DDI-CDS
Drug-Drug Interaction Clinical Decision Support

- Formed in 2005 prior to Cerner go live

- Monthly meeting to review inpatient interaction alerts for clinical relevance

- Membership:
  - Medication safety pharmacists
  - Pharmacy IT analyst
  - Clinical pharmacy specialists (Cardiology, Oncology, Pain, Infectious Disease, Gen Med, DDI)
  - Prescribers PRN

Drug Interaction Screening Programs: Avoiding Alert Fatigue

- Only major interactions are presented to providers / pharmacists
- Establish criteria for "Major" interaction; i.e., risk of DDI > benefit of giving drug pair
- Identify interactions where alert will stop order processing for further consideration and risk mitigating action
- Customize the DDI database with new risk classification and revise as needed

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Customization of Multum DDI Database at UW Medicine

- DDI database modifications reviewed by committee
- Additional expertise consulted as needed – sub-specialty pharmacists and physicians
- Modifications made based on new evidence
- Reviewed monthly updates to Multum DDI database
- All new DDIs evaluated against existing rule set developed for UW Medicine
- Currently ~16 years of customization

Customization of Multum DDI Database at UW Medicine

Date	Number of DDI Updates	Major Reviewed	Moderate Reviewed	% Major Changed to Moderate	% Moderate Changed to Major
2014 – 2017	155,814	15,781	43,027	66	11
2017 alone	57,920	5,300	14,040	57.5	6

UW Medicine DDI Alert Customization Pre Go Live Epic

- Reviewed interruptive alerts previously set in OP Epic over 3 weeks
- 71 of 287 most common alerting drug pairs reviewed (83% of all alerts)
- Interruptive alerts 6334; after review 1289 interruptive alerts
- ~80% reduction in alerts

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UW Medicine DDI Alert Customization Post Go Live Epic

DDI-CDS
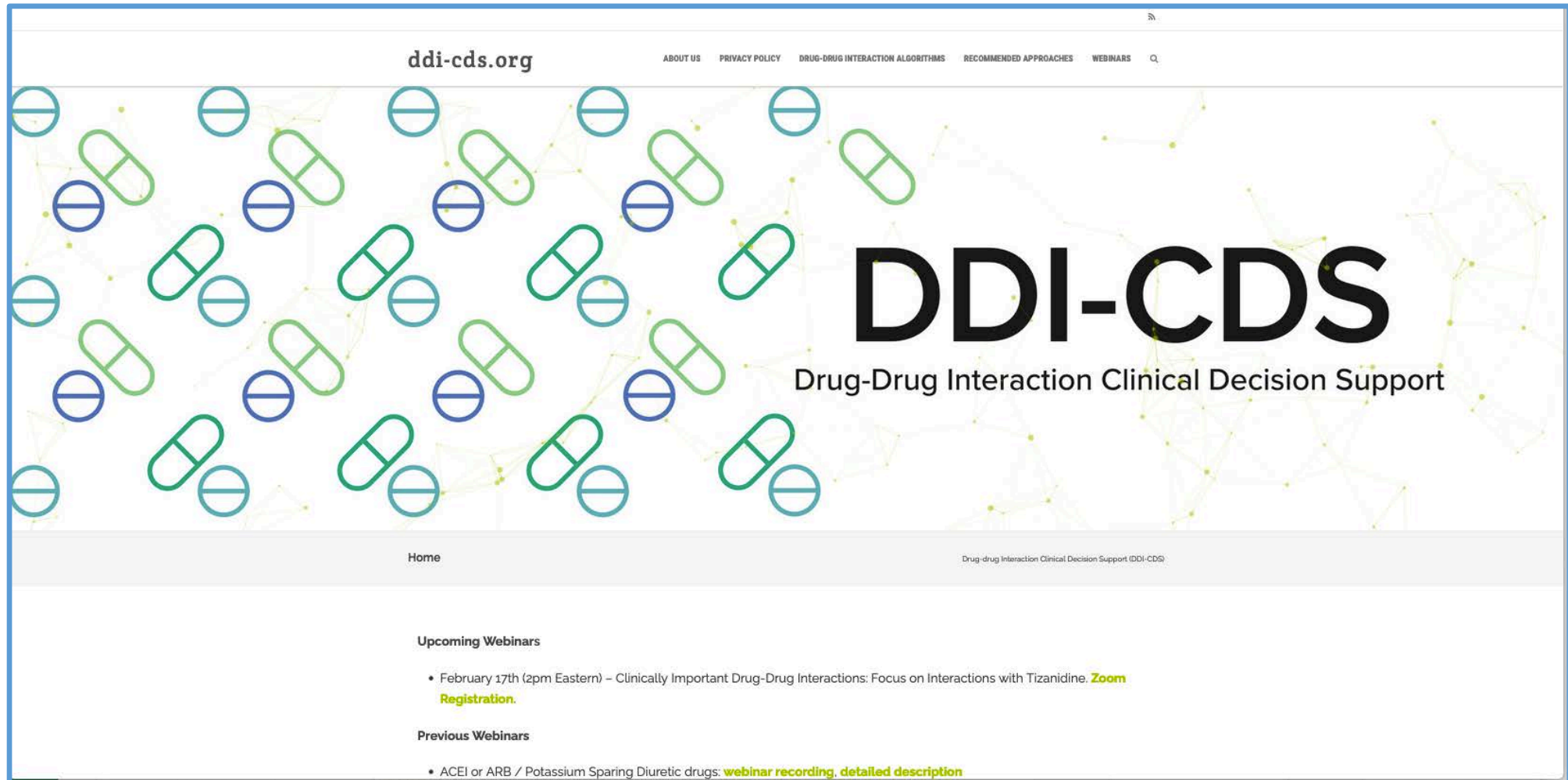Drug-Drug Interaction Clinical Decision Support

- Reviewed interruptive alerts remaining after pre go live customization in inpatients

- 53 most common alerting drug pairs reviewed

- Interruptive alerts 11,739; after review 9,723 interruptive alerts

- ~17% reduction in alerts

Audience Questions

Please submit questions

—via the chat function

—unmute yourself

Please visit our website: https://ddi-cds.org/

Meaningful Drug Interaction Alerts

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  - Disseminate and implement algorithms in various healthcare organizations

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Share Your Experience

- Seeking organizations to share their approach to reducing alert fatigue with DDI warnings

  - Contact: dan.malone@utah.edu