

*Configuring drug : drug  
interactions – don't  
assume....*

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# Decision Support

Clinical decision support (CDS):

providing clinicians or patients with clinical knowledge and patient-related information, *intelligently* filtered and presented at appropriate times can improve the safety, quality, efficiency, and cost-effectiveness of care when applied to ePrescribing (ePMA) systems

American Medical Informatics Association, White Paper, 2005

# Types Of Clinical Decision support

- Drug – Drug Interaction
- Therapeutic duplication
- Drug – Allergy interaction
- Drug – Co-morbidity interaction
- Dose Range checking
- Therapeutic drug monitoring
- Sensitivity Checking

# Types of Clinical decision support available

- Build your own
  - Meditech
- System Provided
  - PICS
  - Ascribe
- Third party systems
  - FDB (JAC, CSC)

# Dependents

- Data Reference Source
  - recognised alerts
- Available data to cross check
  - allergies
  - Patient age
  - co-morbidities etc
- Up-date frequency
  - monthly,
  - new drugs & trial drugs
- Configurability / Local demands
- Retrospective checking

**Relevant**

**Significant**

**Appropriate**

**ALERT**

**Helpful**

**Timely**

**Useful**

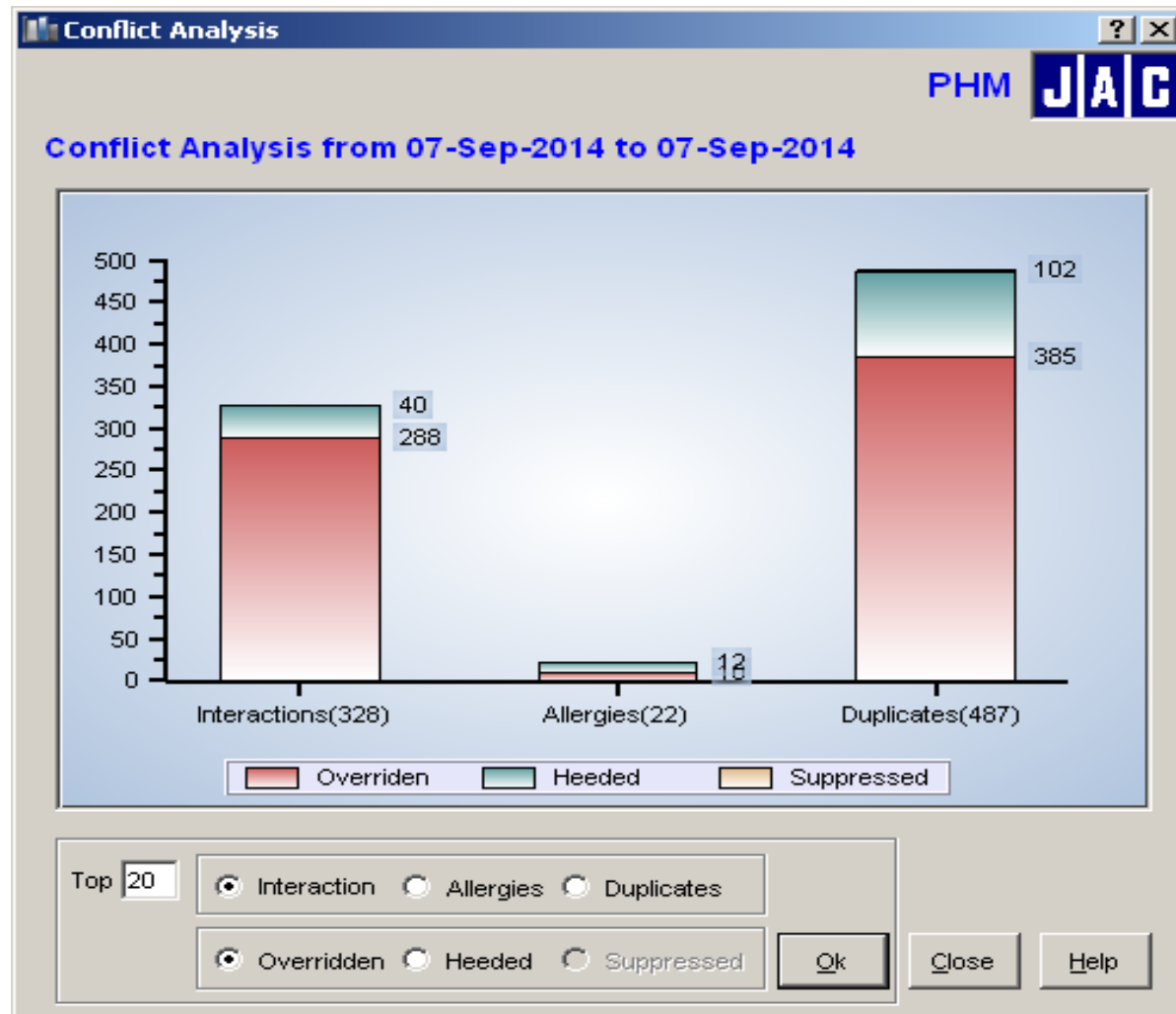
# Alert fatigue

**Drug Conflicts** [?] [X]

RIVAROXABAN 10 mg Tablets (ANTICOAGULANT) conflicts -

Warning	Severity/Reaction	Override Reason	Discontinue Existing
<b>Drug-Drug Interaction</b>			
RIVAROXABAN & WARFARIN - Increased risk of bleeding	Usually avoid combination		<input type="checkbox"/>
RIVAROXABAN plasma level may be reduced by PHENYTOIN SODIUM	Usually avoid combination		<input type="checkbox"/>
RIVAROXABAN & CLOPIDOGREL - Increased risk of bleeding	Usually avoid combination		<input type="checkbox"/>
RIVAROXABAN & ENOXAPARIN - Increased risk of bleeding	Usually avoid combination		<input type="checkbox"/>
RIVAROXABAN & IBUPROFEN - Increased risk of bleeding	Usually avoid combination		<input type="checkbox"/>
<b>Therapeutic Duplicate</b>			
RIVAROXABAN - Oral anticoagulants - WARFARIN			<input type="checkbox"/>

# Conflict Log



**Top n Analysis** ? X

**Conflict Analysis from 07-Sep-2014 to 07-Sep-2014** PHM **JAG**

**Overriden Interactions**

No.	Conflict	Severity	Count	
1	ASPIRIN - ENOXAPARIN	3	15	...
2	VANCOMYCIN - GENTAMICIN	3	5	...
3	SANDO-K - RAMIPRIL	3	4	...
4	IBUPROFEN - ENOXAPARIN	3	4	...
5	FUROSEMIDE - VANCOMYCIN	3	4	...
6	SALBUTAMOL - BISOPROLOL	3	4	...
7	GABAPENTIN - MORPHINE SULFATE	3	4	...
8	ONDANSETRON - TRAMADOL	3	4	...
9	TRAMADOL - ONDANSETRON	3	4	...
10	AMITRIPTYLINE - GABAPENTIN	3	3	...
11	DOXYCYCLINE - BENZYLPENICILLIN	3	3	...
12	ASPIRIN - FLUOXETINE	3	3	...
13	ASPIRIN - ENOXAPARIN	3	3	...
14	FUROSEMIDE - AMIODARONE	3	3	...
15	AMIODARONE - DIHYDROCODEINE	3	3	...

# Configuration

- Trust Specific
- Linked to Guidelines
- Ability to turn off
- Ability to add (clinical Trials)
- Therapeutic duplications

# UHS Configuration

- Duplicates
  - Morphine IV/Oral
- Interaction Levels
  - Level 1-4
  - Can be set per user type i.e. Pharmacist, Junior Doctor
  - No defined list per level
- Suppressed interactions

# Interaction set-up

DSRMaint - Decision Support Rule Maintenance

PHM JAC

Restrict Interaction Conflict by Severity Level

Grade	*	**	***	****
.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agency Midwife	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ALL GRADES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bereavement Care	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consultant	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dietetics Assistant	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dietician	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dietician Prescriber	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ePMA/Pharmacy IM&T Team	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Healthcare Support Worker	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Restrict Interaction Conflict by Specific Interactions

Speciality

<<ALL SPECIALITIES>>

Add Remove

Interaction Group One Interaction Group Two

Restrict Therapeutic Duplicate Conflict

Therapeutic Group	Suppress
5HT3 antagonists	<input type="checkbox"/>
Absorbent dressing pads, sterile	<input type="checkbox"/>
ACBS - Foods	<input checked="" type="checkbox"/>
ACBS - Foods - complete	<input checked="" type="checkbox"/>
ACBS - Foods - supplement	<input checked="" type="checkbox"/>
Accessories	<input type="checkbox"/>
ACE inhibitors	<input type="checkbox"/>
Acne and rosacea	<input type="checkbox"/>
Active immunity	<input type="checkbox"/>
Acute cyanide poisoning	<input type="checkbox"/>
Acute gout	<input type="checkbox"/>
Acute migraine treatment	<input type="checkbox"/>
Acute porphyrias	<input type="checkbox"/>
Adhesive bandages	<input type="checkbox"/>
Adhesive discs, rings, pads, plasters etc	<input type="checkbox"/>
Adhesive dressing removers	<input type="checkbox"/>
Adhesive dressings	<input type="checkbox"/>
Adhesive dressings sprays, solutions etc	<input type="checkbox"/>
Adhesive remover sprays, liquids etc	<input type="checkbox"/>
Administration sets	<input type="checkbox"/>

Ok Close Help

# Interaction severity levels

- 4 Star: Risk is high and outweighs possible benefit. Do not combine.
- 3 Star: Risk is significant. Combine in special circumstances only having considered the risk to benefit ratio for the patient.
- 2 Star: Risk is moderate. Combine with caution having considered the risk to benefit ratio for the patient.
- 1 Star: Risk is low. Combine having considered the risk to benefit ratio for the patient.

NB: FDB state there is a degree of clinical judgement that goes into assigning them.

# Conflict Log

Conflict Log - Warnings		
Date/Time		Severity
	<b>Potential Allergy/Sensitivity to</b>	
13-OCT-2014 10:52	BENZYL PENICILLIN - benzylpenicillin in the PENICILLINS group	
	<b>Drug - Drug Interactions</b>	
	CLARITHROMYCIN increases plasma level of PHENYTOIN SODIUM	***
	CLARITHROMYCIN & WARFARIN - May increase anticoagulant effect	***
	OMEPRAZOLE & CLOPIDOGREL - Antiplatelet effect reduced	***
13-OCT-2014 10:52	OMEPRAZOLE & PHENYTOIN SODIUM - PPI plasma level may be reduced; phenytoin plasma level may be increased	***
	BENZYL PENICILLIN effect antagonised by DOXYCYCLINE	***
	OMEPRAZOLE & WARFARIN - May increase anticoagulant effect	***
	OMEPRAZOLE & CLARITHROMYCIN - Plasma level of each drug increased/risk of arrhythmias	***
	<b>WARFARIN &amp; PHENYTOIN SODIUM - Anticoagulant effect may be increased or reduced</b>	*****
	WARFARIN & IBUPROFEN - May increase anticoagulant effect and increased risk of GI bleeding	***
13-OCT-2014 10:51	WARFARIN & DOXYCYCLINE - May increase anticoagulant effect	***
	WARFARIN & ENOXAPARIN - Increased risk of bleeding	***
	WARFARIN & CLOPIDOGREL - Increased risk of bleeding	***
	PHENYTOIN SODIUM reduces plasma level of DOXYCYCLINE	***
10-OCT-2014 08:44	CLOPIDOGREL & IBUPROFEN - Increased risk of bleeding	***
	ENOXAPARIN & IBUPROFEN - Increased risk of bleeding	***
	CLOPIDOGREL & ENOXAPARIN - Increased risk of bleeding	***

# Available Clinical Information

**CDDI - Clinical Drug Database Information** ? ×

**GENTAMICIN 80mg/2ml injection** **JAG**  
PHM

Uses	Warnings	Mandatory Instructions	Ingredients	Action Groups	Print Options
Monograph	Side Effects	Contra-indications	Precautions	Interactions	Dosage

CARBOPLATIN / OXALIPLATIN  
COLISTIMETHATE  
LOOP DIURETICS  
MUSCLE RELAXANTS (DEPOLARISING)  
MUSCLE RELAXANTS (NON DEPOLARISING)  
NEOSTIGMINE / PYRIDOSTIGMINE / DISTIGMINE / PHYSOSTIGMINE  
VANCOMYCIN (PARENTERAL)  
CEFALOTIN  
POLYMYXIN B  
LOOP / POTASSIUM SPARING COMBINATION  
BISPHOSPHONATES (ORAL)  
AMPHOTERICIN  
CAPREOMYCIN  
BOTULINUM TOXIN  
TACROLIMUS (ORAL AND PARENTERAL)  
TEICOPLANIN  
FOSCARNET  
CIDOFOVIR  
BISPHOSPHONATES (PARENTERAL)  
PEMETREXED  
AGALSIDASES (ALPHA AND BETA)  
CEFALORIDINE  
NSAIDS  
CICLOSPORIN  
CISPLATIN  
DIMETHYL FUMARATE  
FFAVIREN7, FMTRICITABINE AND TENOFOVIR DISOPROXII

Select Drug Close Help

# Drug Chart View

ePMA Reporting																			
PATIENT INFORMATION																			
SURNAME / FIRST NAME: VIEW, DRUG				HOSPITAL NO: 0754516				NHS NUMBER: 000 000 0000				FULL PATIENT DETAILS							
DATE OF BIRTH: 19 October 1967				WARD: ZODIAC UNIT				CONSULTANT: RN Fiona Gribble				DRUG ALLERGY							
<a href="#">Back to Home</a>				<a href="#">← back</a>		<b>Regular Medications</b>		<a href="#">Once only and Premedications</a>			<a href="#">As required</a>		<a href="#">forward →</a>						
DRUG / STRENGTH / FORM		TIMES	March 2013 to April 2013																
			28	29	30	31	01	02	03	04	05	06	07	08	09	10	11	12	13
ASPIRIN 75 mg Dispersible Tablets DOSE: 75 mg ROUTE: Oral FREQUENCY: 1A NOTE:		08:00	x	✓	x	✓													
CALCITONIN (Salmon) 200units per actuation Nasal Spray DOSE: 200 unit ROUTE: RIGHT nostril FREQUENCY: 1A NOTE:		08:00	x	✓	x	✓	✓	x	✓	✓	✓								
CIPROFLOXACIN 250 mg Tablets DOSE: 750 mg ROUTE: Oral FREQUENCY: 2A NOTE:		08:00 21:00	x	✓	x	✓													
CO-BENELDOPA 12.5/50 Capsules DOSE: 1 Capsule ROUTE: Oral FREQUENCY: NOTE:			x	x	✓	✓	x	✓	x	✓	✓								
CO-BENELDOPA 12.5/50 Capsules DOSE: 2 Capsule ROUTE: Oral FREQUENCY: NOTE:			x	x	✓	✓	x	✓	x	✓	✓								
DOXYCYCLINE 100 mg Capsules DOSE: 200 mg ROUTE: Oral FREQUENCY: 1A		08:00	x	✓	x	✓	✓	x	✓	✓	✓								

# Thank you

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