

Exploring Digital Data – Medicines Safety and Beyond



Pharmacy department Southampton Pharmacy Research Centre (SPRC) University Hospital Southampton

Exploring Digital Data – Medicines Safety and beyond

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Royal Cornwall Hospitals NHS

Exploring Digital Data – Medicines Safety and Beyond Andy Fox – Consultant Pharmacist Medicines Safety, University Hospital Southampton NHS Trust

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Liam Bastian – Lead Pharmacist for Digital Medicines, Royal Cornwall Hospitals NHS Trust



Learning Objectives

- Learn about action you can take in advance of EP implementation to help reduce errors
- Learn about using EP data to help prioritisation for pharmacy staff
- Learn how data can be used to drive improvement and support staff deployment and decision making



Starting off – where to begin?

Instant fixes:

- Illegible handwriting
- Latin Abbreviations OD, TDS, PRN, Gutte, nocte
- Incomplete prescriptions signature, dose, frequency

Configuration:

- Interaction checking
- Dose range changed
- Rules/alerts



Sources of Data

Incident data – rich source of information/human factors e.g. Methotrexate and Trimethoprim

Methotrexate ONCE a day

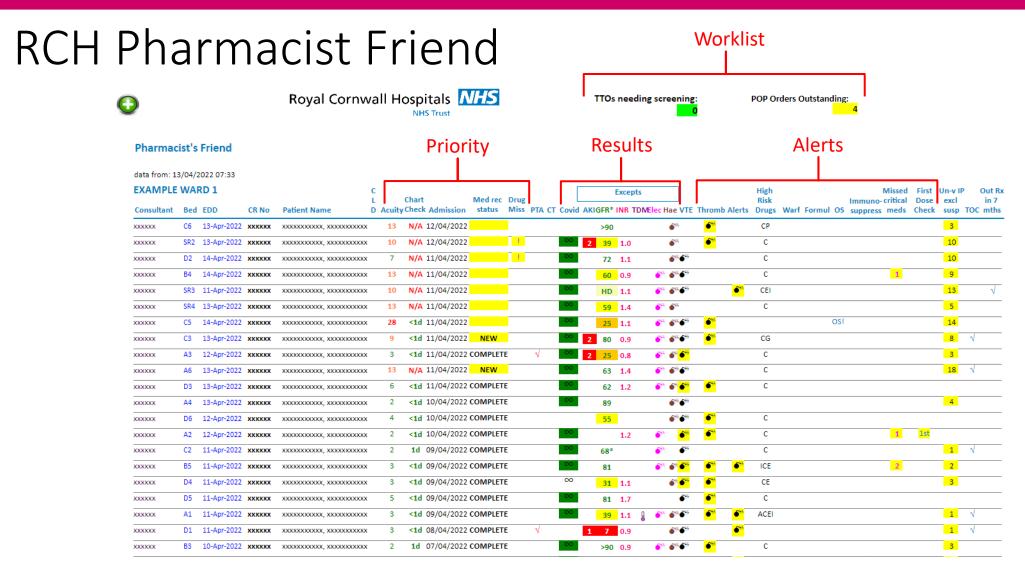
Incident	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Methotrexate (Rx once a day)	3	3	3	0	1	1	0	0	0	1 (op)
Methotrexate & Trimethroprim	1	2	3	0	3	2	2	0	0	1

- Never Events
- SafeMed Alerts
- NHS Patient Safety Alerts
- ePRaSE
- ePrescribing Masterclass



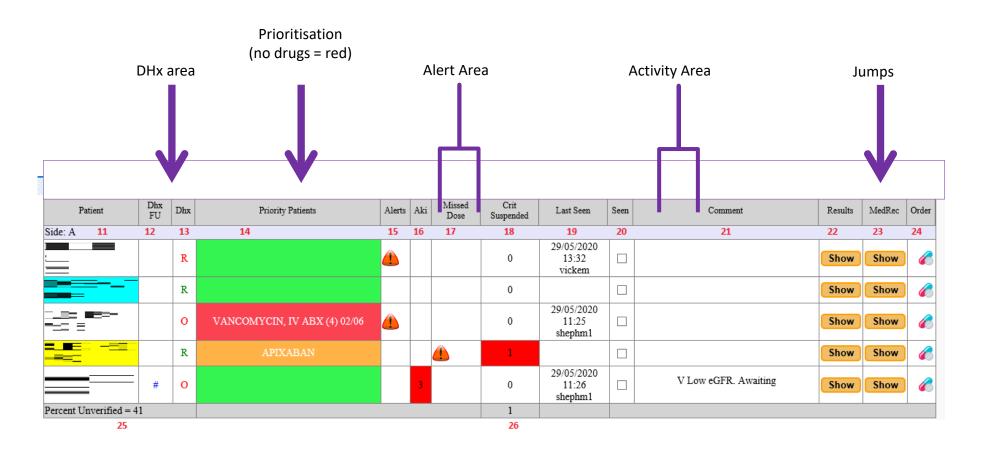
Live pages for pharmacy workload management







Pharmacy Portal - UHS





Ward dashboard





Specialty specific pages for different teams

Aspiring to provide Brilliant care to One + all





Current inpatient antibiotic and antifungal prescriptions

high risk antibiotics highlighted in yellow suspended medicines in

data last updated: 31/03/2022 06:48

data last updated: 31/03/2022 06:48									
AMU 1 RCH									
Patient	IV abx course start hrs	Drug description	Dose	Route	Frequency	First dose	Stop date	Protocol	Indication
_	31/03/2022 02:30 ³ 4.30	MEROPENEM 500 mg Injection	500 mg	intravenous	every EIGHT hours	31/03/2022 02:30			ind, rv date ind: Irti, cholecystitis, escalation as deteriorating pt, rv 24hrsind, rv date
		METRONIDAZOLE 500 mg in 100mL intravenous infusion	500 mg	intravenous	THREE times a DAY (6am 2pm 10pm)	25/03/2022 22:00			
	29/03/2022 16:29 38.32	PIPERACILLIN with TAZOBACTAM 4.5g injection	4500 mg	intravenous	every EIGHT hours	29/03/2022 16:29			SEVERE COPD - INFECTIVE ELEMENT SEVERE COPD - INFECTIVE ELEMENT
									PLEASE REVIEW DAILY AND CONSIDER PO SWITCH AS SOON AS APPROPRIATE
	29/03/2022 18:00 f 56:80	FLUCLOXACILLIN 1g Injection	2000 mg	intravenous	FOUR times a day (midnight, 6am, 12pm, 6pm)	29/03/2022 18:00			
	29/03/2022 14:00 40.80	PIPERACILLIN with TAZOBACTAM 4.5g	4500 mg	intravenous	THREE times a DAY {6am 2pm 10pm}	29/03/2022 14:00			Taz sepsis ?source rv 24hrs Taz
	22/03/2022 14:00 / 208.80	AMOXICILLIN 500 mg Capsules	500 mg	oral	THREE times a DAY (Morning, Lunchtime Night)	28/03/2022 + 13:00			
_	(DOXYCYCLINE 100 mg Capsules	100 mg	oral	ONCE a DAY in the	29/03/2022			

MORNING



Insulin

	patients with insuli 1/03/2022 05:55	n prescriptions This information must be treated confident Royal Cornwall Hosp		ed outside of	For rapid/ short acting insulins, hazards are recorded if admins occur. before 07:00, 08:30 to 12:00, 14:00 to 17:00, after 18:30. Sulfonylureas and Metformin: before 06:30 or after 18:00			
SWP Bed	Patient CH	Currently Prescribed Insulin	Self Admin	GFR	A1C	Alert Details		
TRAMU1 D4		gliCLAzide 80mg Tablets dose: 160 mg TWICE a DAY (Morning + Evening) - SUSPENDED ABASAGLAR (Glargine)100units in 1mL Pre-Filled KwikPen dose: 10 unit ONCE a DAY in the MORNING novoRAPID 100units in 1mL vial (PRN for HYPERGLYCAEMIA) dose: 6 unit every FOUR hours PRN novoRAPID 100units in 1mL vial (PRN for HYPERGLYCAEMIA) dose: 4 unit every FOUR hours PRN		>90 29/03/2022	162 22/03/2022	4 unit of novoRAPID 100units in 1mL vial (PRN for HYPERGLYCAEMIA) administered 30/03/2022 22:37 6 unit of novoRAPID 100units in 1mL vial (PRN for HYPERGLYCAEMIA) administered 30/03/2022 22:37 Missed dose(s) of ABASAGLAR (Glargine)100units in 1mL Pre-Filled KwikPen: 30/03/2022 07:30 Drug discontinued		
TRAMU1 B3		METFORMIN 500 mg Modified-Release Tablets dose: 500 mg ONCE a DAY in the EVENING METFORMIN 500 mg Modified-Release Tablets dose: 1000 mg ONCE a DAY in the MORNING		63 27/03/2022	51 22/03/2022			
TRAMU1 D5	_	METFORMIN 500 mg Tablets dose: 500 mg THREE times a DAY (Morning, Lunchtime + Evening) - SUSPENDED		23 30/03/2022	46 20/10/2021			
TRAMU1 B6		gliCLAzide 80mg Tablets dose: 80 mg ONCE a DAY in the MORNING - SUSPENDED ABASAGLAR (Glargine)100units in 1mL Pre-Filled KwikPen dose: 18 unit ONCE a DAY in the MORNING METFORMIN 500 mg Tablets dose: 500 mg TWICE a DAY (Morning + Lunchtime) - SUSPENDED SLIDING SCALE INSULIN (ADULT) - SEE SLIDING SCALE CHART dose: 1 Infusion SEE INFUSION SHEET novoRAPID 100units in 1mL vial (PRN for HYPERGLYCAEMIA) dose: 6 unit every FOUR hours PRN novoRAPID 100units in 1mL vial (PRN for HYPERGLYCAEMIA) dose: 4 unit every FOUR hours PRN		42 30/03/2022	80 29/03/2022	Missed dose(s) of ABASAGLAR (Glargine)100units in 1mL Pre-Filled KwikPen: 29/03/2022 19:30 Contraindicated patient factors Missed dose(s) of SLIDING SCALE INSULIN (ADULT) - SEE SLIDING SCALE CHART: 29/03/2022 06:00 Drug awaiting medical review 30/03/2022 06:00 Patient declined dose		



Trackers for specific issues



Opiates and eGFR/Respiratory rate

Current Inpatients prescribed Opiates started or modified in the last 2 days with an eGFR < 50 ml/min/1.73m

Data from: 31/03/2022 05:42:56

Hosp No	Surname	Ward AMU 1 RCH	eGEB 23	Respiratory Rate 16 (31/03 02:35)	Drug CODEINE PHOSPHATE 15 mg Tablets	Dose 15 mg every FOUR hours	Start date 29/03/2022 14:22	Prescriber
		AMU 1 RCH	21	24 (30/03 06:37)	OXYCODONE 10 mg in 1mL Injection	1 mg every hour	30/03/2022 09:26	
		AMU 1 RCH	30	18 (31/03 03:15)	MORPHINE SULPHATE 10mg in 5mL Oral Liquid	10 mg every FOUR hours	29/03/2022 12:19	
		AMU 2 RCH	40	20 (31/03 05:07)	CODEINE PHOSPHATE 30 mg Tablets	60 mg FOUR times a DAY (Morning, Lunch, Evening + Night)	30/03/2022 05:48	
		AMU 2 RCH	27	N/A	CXYCODONE 10 mg in 1mL injection	1 mg every hour	29/03/2022 13:09	
		AMU 2 RCH	24	19 (31/03 04:33)	BUPRENORPHINE 10 micrograms/hour Patch (NF)	1 Patch ONCE a WEEK	30/03/2022 07:30	
		AMU 2 RCH	11	14 (31/03 02:00)	CODEINE PHOSPHATE 15 mg Tablets	15 mg every FOUR hours	30/03/2022 20:53	
		DISCHARGE LOUNG	37	15 (31/03 05:25)	CODEINE PHOSPHATE 15 mg Tablets	15 mg every FOUR hours	29/03/2022 23:42	
		DISCHARGE LOUNG	27	15 (31/03 05:33)	CODEINE PHOSPHATE 30 mg Tablets	60 mg FOUR times a DAY (Morning, Lunch, Evening + Night)	29/03/2022 21:45	
		EDEN WARD	40	14 (31/03 01:22)	MORPHINE SULPHATE 10mg in 5mL Oral Liquid	10 mg every FOUR hours	29/03/2022 11:46	
		EDEN WARD	36	15 (31/03 03:42)	MORPHINE 1mg to 20mg titrated to pain (in recove	20 mg Titrate to pain as per protocol	30/03/2022 10:09	
			20	15 (31/03 05:27)	OXYCODONE 10 mg in 1mL Injection	1 mg every hour	29/03/2022 12:23	
		EMERGENCY DEPT	23	24 (31/03 03:01)	CODEINE PHOSPHATE 30 mg Tablets	60 mg FOUR times a DAY (Morning, Lunch, Evening + Night)	30/03/2022 19:24	
		EMERGENCY DEPT	6	15 (30/03 03:09)	CXYCODONE (IMMEDIATE RELEASE) Smg/ SmL Oral	5 mg every FOUR hours	30/03/2022 04:15	
		EMERGENCY DEPT	29	16 (31/03 04:43)	CODEINE PHOSPHATE 30 mg Tablets	60 mg FOUR times a DAY (Morning, Lunch, Evening + Night)	30/03/2022 16:34	
		EMERGENCY DEPT	37	18 (30/03 19:45)	MORPHINE SULPHATE 10mg in 5mL Oral Liquid	2.5 mg every TWO hours	30/03/2022 16:44	
		EMERGENCY DEPT	37	19 (31/03 02:16)	MORPHINE SULPHATE 10mg in 5mL Oral Liquid	5 mg every hour	30/03/2022 02:57	
		ESU	24	20 (31/03 05:27)	MORPHINE SULPHATE 10mg in 5mL Oral Liquid	10 mg every TWO hours	31/03/2022 04:18	
		ESU	43	15 (31/03 05:15)	MORPHINE SULPHATE 10mg in 5mL Oral Liquid	10 mg every hour	29/03/2022 21:25	
		GRENVILLE RENAL	44	20 (31/03 03:56)	OXYCODONE (IMMEDIATE RELEASE) 5mg Capsules	5 mg every FOUR hours	30/03/2022 15:23	
		GRENVILLE RENAL	39	19 (30/03 23:53)	OXYCODONE (IMMEDIATE RELEASE) Smg/ 5mL Oral	5 mg every FOUR hours	30/03/2022 11:53	
		GRENVILLE RENAL	10	16 (31/03 05:36)	HYDROMORPHONE 1.3 mg Capsules	2.6 mg every FOUR hours	29/03/2022 09:10	
		GRENVILLE RENAL	45	20 (31/03 04:29)	MORPHINE SULPHATE 10mg in 5mL Oral Liquid	5 mg every FOUR hours	30/03/2022 15:32	
		GRENVILLE RENAL HARBOUR - CATU	40	16 (31/03 05:31)	CODEINE PHOSPHATE 30 mg Tablets	30 mg FOUR times a DAY (Morning, Lunch, Evening + Night)	29/03/2022 11:17	
			33	N/A	MORPHINE SULPHATE 10 mg in 1mL Injection	5 mg every hour	29/03/2022 16:54	
		KERENSA WARD	45	17 (30/03 21:10)	OXYCODONE (SLOW RELEASE) 20mg MR Tablets	20 mg every 12 hours (8am + 8pm)	31/03/2022 20:00	
		MEDICAL 2 WCH	24	20 (30/03 22:35)	OXYCODONE (IMMEDIATE RELEASE) 5mg/5mL Oral	5 mg every FOUR hours	29/12/2021 11:47	
		MEDICAL 2 WCH	15	28 (30/03 15:49)	OXYCODONE 10 mg in 1mL Injection	1 mg every hour	29/03/2022 14:06	
		TRAUMA UNIT 1	31	18 (31/03 02:16)	OXYCODONE (IMMEDIATE RELEASE) 5mg Capsules	5 mg every FOUR hours	29/03/2022 15:56	
		TRAUMA UNIT 1	43	19 (31/03 02:41)	DIHYDROCODEINE 30 mg Tablets	30 mg FOUR times a DAY (Morning, Lunch, Evening + Night)	29/03/2022 13:00	
		TRAUMA UNIT 2	18	18 (31/03 04:32)	CXYCODONE (IMMEDIATE RELEASE) 5mg Capsules	5 mg every FOUR hours	29/03/2022 11:15	
		TRELAWNYTHEATRE	11	N/A	OXYCODONE (IMMEDIATE RELEASE) 5mg/5mL Oral	5 mg every FOUR hours	29/03/2022 16:23	
		WELLINGTON	30	18 (31/03 05:36)	OXYCODONE (IMMEDIATE RELEASE) 5mg/5mL Oral	2.5 mg every FOUR hours	30/03/2022 20:20	



Clinical Surveillance - anticoagulants

Clinical Surveillance 25/03/2022 07:54

Please check that prescriptions for multiple anticoagulants are appropriate and/ or that females prescribed valproate are aware of the dangers to pregnancy. Note: twice a day doses of LMWH (excl. Apixaban and Rivaroxaban) are now included due to change in VTE doses for covid patients

Current inpatients with more than one anticoagulant prescribed

hosp no	consultant	ward	bed	INR	INR date	anticoagulants prescribed	stopped or disc'd admins	gender	birth gender	age	dob weig	ght
XXXXXXXX	XXXXXXXXXX	KYNANCE UNIT	SR1	1.2	21/01/2022	APIXABAN 5 mg Tablets TWICE a DAY (Morning + Evening) + DALTEPARIN 5000 units in 0.2mL Pre-filled Syringe ONCE a DAY at NIGHT	М	70 22/01/1952	44.8 kg - Actual 25/01/2022	measurem	nent on	
XXXXXXXX	XXXXXXXXX	ST MICHAELS	F4	1.6	19/03/2022	WARFARIN FOR INPATIENTS MAINTENANCE ONCE a DAY at 2pm (For Warfarin Only) + DALTEPARIN 5000 units in 0.2mL Pre-filled Syringe ONCE a DAY at NIGHT	F	87 19/06/1934	no measuremer recorded	nt currently	1	
XXXXXXXX	XXXXXXXXX	ST MICHAELS	F2	1.2	17/03/2022	RIVAROXABAN 20 mg Tablets ONCE a DAY in the MORNING + DALTEPARIN 5000 units in 0.2mL Pre-filled Syringe ONCE a DAY at NIGHT	F F		89 26/11/1932	no meas recorded	urement currently	

Running since Jan 2020

Picked up 153 errors (to Mar 2022)

Number of errors (>2 doses) reduced 46%

Takes 5mins/day to check

Median time for error detection (all) unchanged ~ 7h

Median time for errors (>2 doses) reduced from 34h to 14h

Maximum time for error detection reduced from 320h (13 days) to 36h (1.5 days)



Practicalities

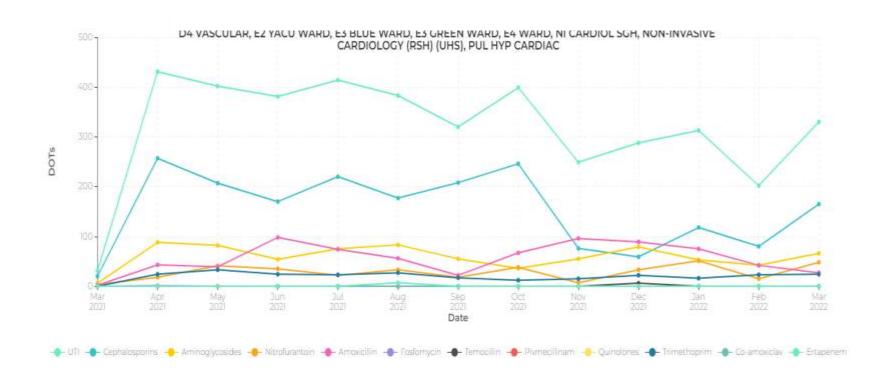
When to send data

How often can you refresh a report?

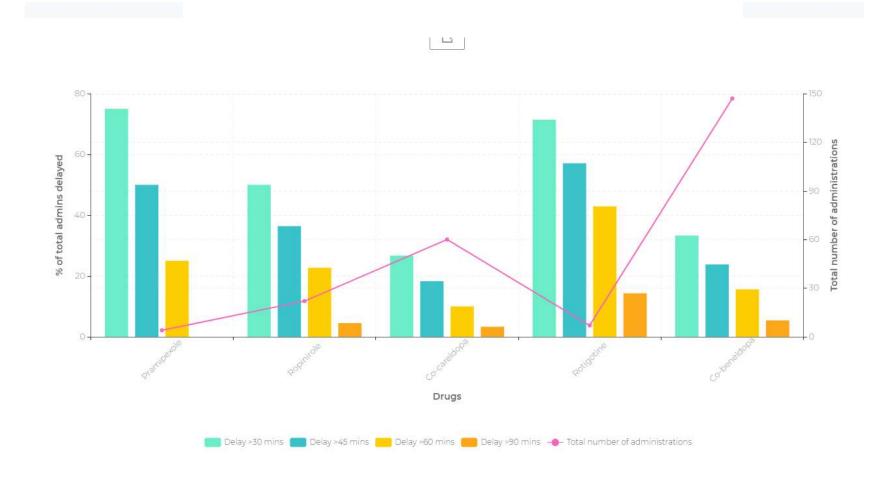
• Types of data display – keep simple

Prioritisation

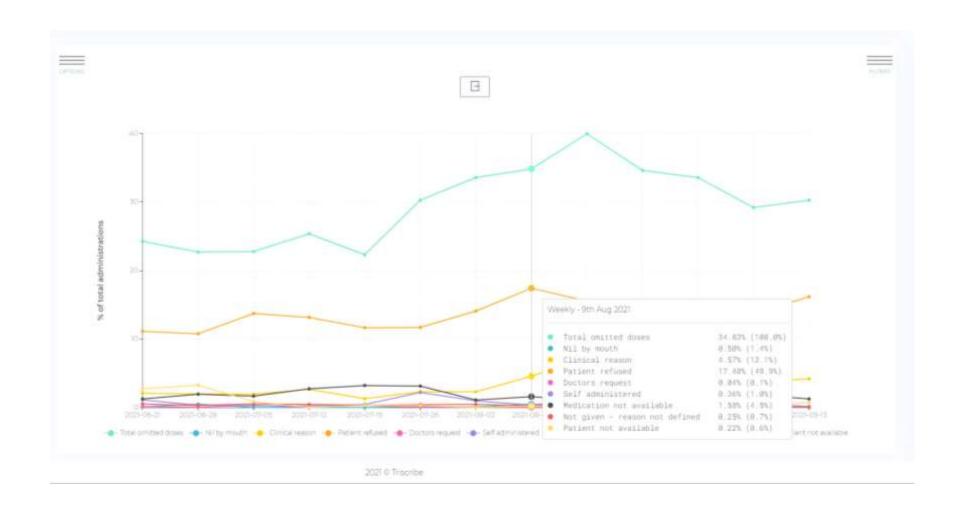
Trends – Antimicrobials



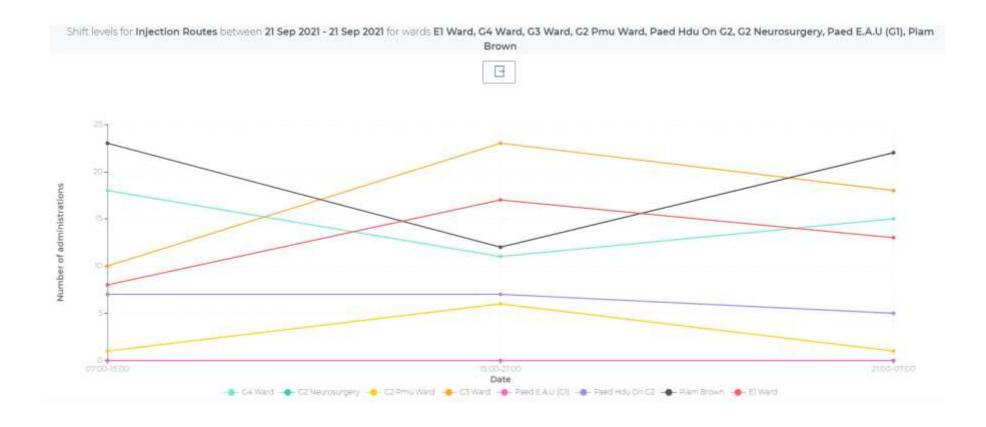
Trends – Timeliness of doses



Trends – Omitted doses



Skill Mix - IV admin











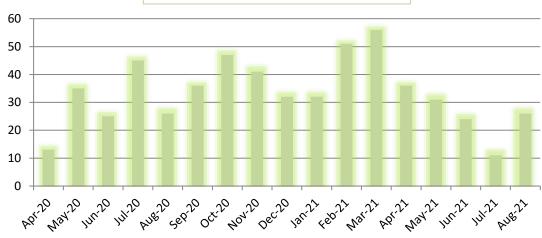
Retract and Re-prescribe (RAR)

- Prescriber Dr A
 - Rx Ramipril
 - Patient X
- Prescriber Dr A
- Discontinue Ramipril
 - Patient X
 - Prescriber Dr A
 - Rx Ramipril
 - Patient Y

Wrong Patient Selection Errors

- Why?
- Similar names/locations/drugs
- Corrective Action
- UK/hospital based definitions?

RAR. Number of instances



Pharmacy department

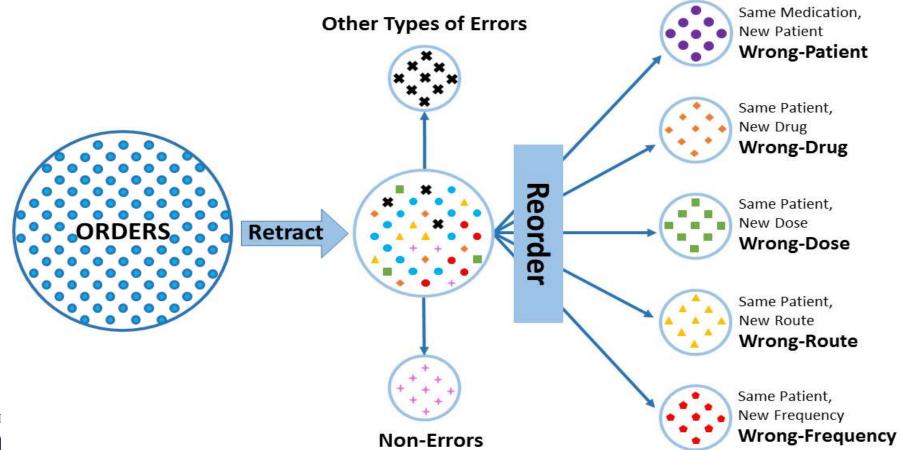
Southampton Pharmacy Research Centre (SPRC)





Not Just Wrong Patient

Develop and Validate Health IT Safety Measures to Capture Violations of the 5 Rights of Medication Safety







Thanks for listening. Any questions?

