



Hospital Electronic Prescribing and Medicines Administration (HEPMA) within NHS Scotland – an ongoing journey

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Digital Health & Electronic Prescribing, NHS
Ayrshire & Arran

(with additional input from Stephen Dewar,
HEPMA Benefits Realisation Pharmacist,
NHS Ayrshire & Arran and other NHS
Scotland colleagues where appropriate)

The beginnings of HEPMA (ePMA) in Scotland



Hospital Electronic Prescribing and Medicines Administration (HEPMA) has a long history within NHS Scotland with initial early limited implementations within 4 boards:



1997



2013



2015



2016

The move from early implementers to National HEPMA



Experiences from these early adopters highlighted the benefits of HEPMA but also the considerable risks and challenges that could present through poor system design either by supplier or in local implementation.

In response, building on the experience of these boards the Scottish government commissioned the development of a national HEPMA operational requirement. Suppliers were invited to tender against this to determine whether they would be approved for deployment within NHS Scotland.

The NHS Scotland HEPMA Operational Requirement



The operational requirement entailed multiple clinical scripts for suppliers to perform on a live system in real time under scrutiny by a panel of selected NHS staff.

The primary purpose was to evaluate safety of the systems compared to existing paper based systems with further functionality used to differentiate systems which passed this initial benchmark.

Approach was in reflection to the relative immaturity of the market with regard to HEPMA systems at the time.

Outcome of national HEPMA evaluations



At the conclusion of the process a total of 3 systems were deemed safe for implementation in NHS Scotland health boards and were placed on the national HEPMA framework.

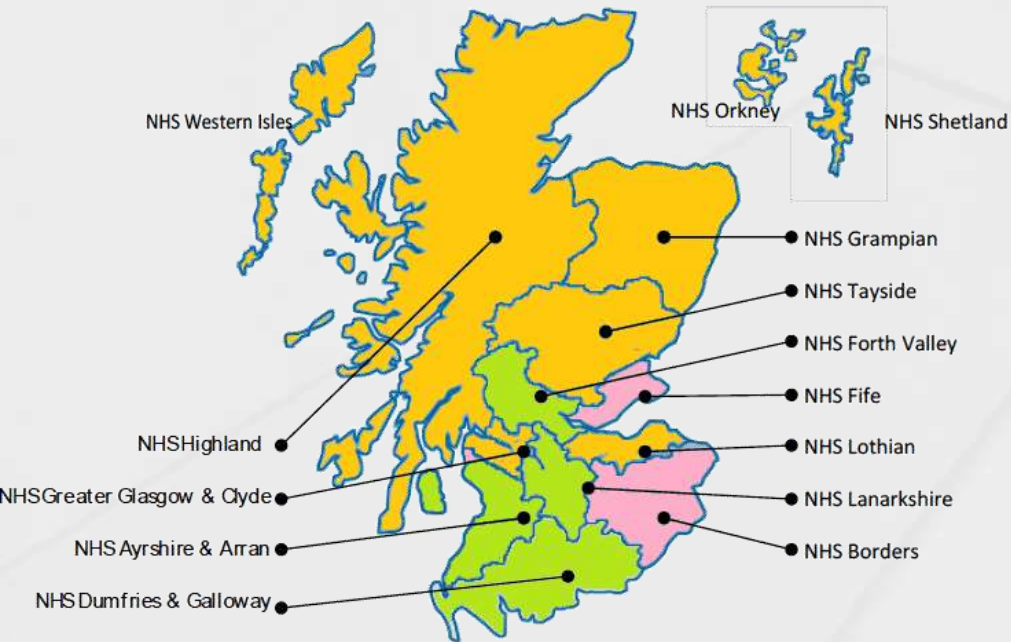
Central money was made available by Scottish Government for a limited time for the individual boards to call down for their HEPMA implementations.

The HEPMA Implementation Oversight board (HIOB) was created to support and monitor the progress of the NHS Scotland boards in implementing HEPMA.

Current position across NHS Scotland



HEPMA systems are now either in place, in implementation or the latter stages of planning across Scotland. With the various boards reporting back on the status of their implementations to Scottish Government via the HEPMA Implementation Oversight Board.



Established	Implementing	Planning
NHS Ayrshire & Arran	NHS Greater Glasgow & Clyde	NHS Fife
NHS Dumfries & Galloway	NHS Lothian	NHS Golden Jubilee
NHS Forth Valley	NHS North of Scotland (regional implementation)	NHS Borders
NHS Lanarkshire		

Collaboration on system design/build

Experienced boards have been able to support newer boards and in some cases help accelerate their implementations. This has come through sharing of:



- Core drug dictionary & associated system tables
- Core prescribing dictionaries & associated system tables
- Experience from system configuration choices
- SOPs and guidelines
- Training materials
- Reporting tools

Healthcare Improvement Scotland (HIS) HEPMA national learning platform



The obvious value of shared learning, commonality of approach in system design and implementation led to the commission of a national HEPMA learning platform by the Scottish Government.

This provides a regular 6 weekly forum for boards to share their HEPMA learnings and experiences and also provides a repository for documents to be shared between health boards.



The platform also provides an opportunity for boards to seek input/advice on their current challenges across NHS Scotland, initially at a level to support implementation but also to serve as a way of highlighting and sharing best practice and innovation.

Ongoing networking between NHS Scotland boards




Beyond the formal structure provided by the HIS Learning Platform and HIOB, strong informal ties have been fostered between the various HEPMA teams across NHS Scotland.

Informal collaboration through:

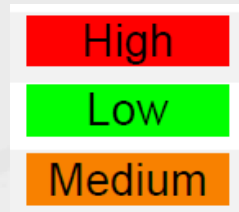
- Shared teams channel
- Monthly networking call
- Shared approach to engagement with supplier
- Collaborative approach to system development requests



Advantages of collaborative working

- “Once for Scotland” – removing duplication of effort
 - Accelerated implementation process for new HEPMA boards
 - Transferability of tools between boards
 - Co-ordinated voice with supplier
- 
- An illustration of seven hands of different colors (orange, yellow, purple, pink, green, cyan, and light blue) reaching towards the center and overlapping, symbolizing collaboration and teamwork.
- Shared training materials and training records
 - Standardised approach to UAT by development of national testing scripts and shared findings
 - National HEPMA data streamlined by standardised system design
 - See what you could have...

Bespoke locally developed tools currently in use within NHS Ayrshire & Arran



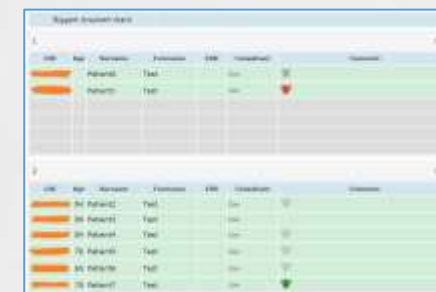
PHEW Risk scoring



Prescribed in error feedback



IDL Discharge messenger



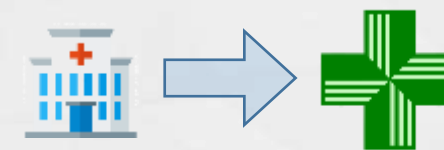
Parkinson's eWB prompt



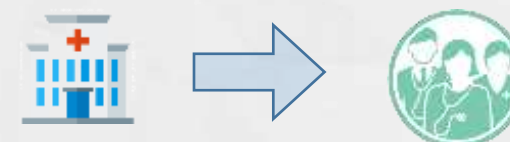
GP practice access to ePrescribing records



Ward round proforma



CP compliance aid notification



Referral messaging to Primary care & Frailty info.

Recent Benefits Realisation (last 12-18 months)



Unwanted Variation

*Antimicrobial Review
Opioid / attractive stock monitoring*



COVID 19 Service Improvement

*CD Ordering
Ward stock Auto-top Up*



Clinical priority & assessment

*Doctor helper webpage
Prescription scanner*



Collaborative working

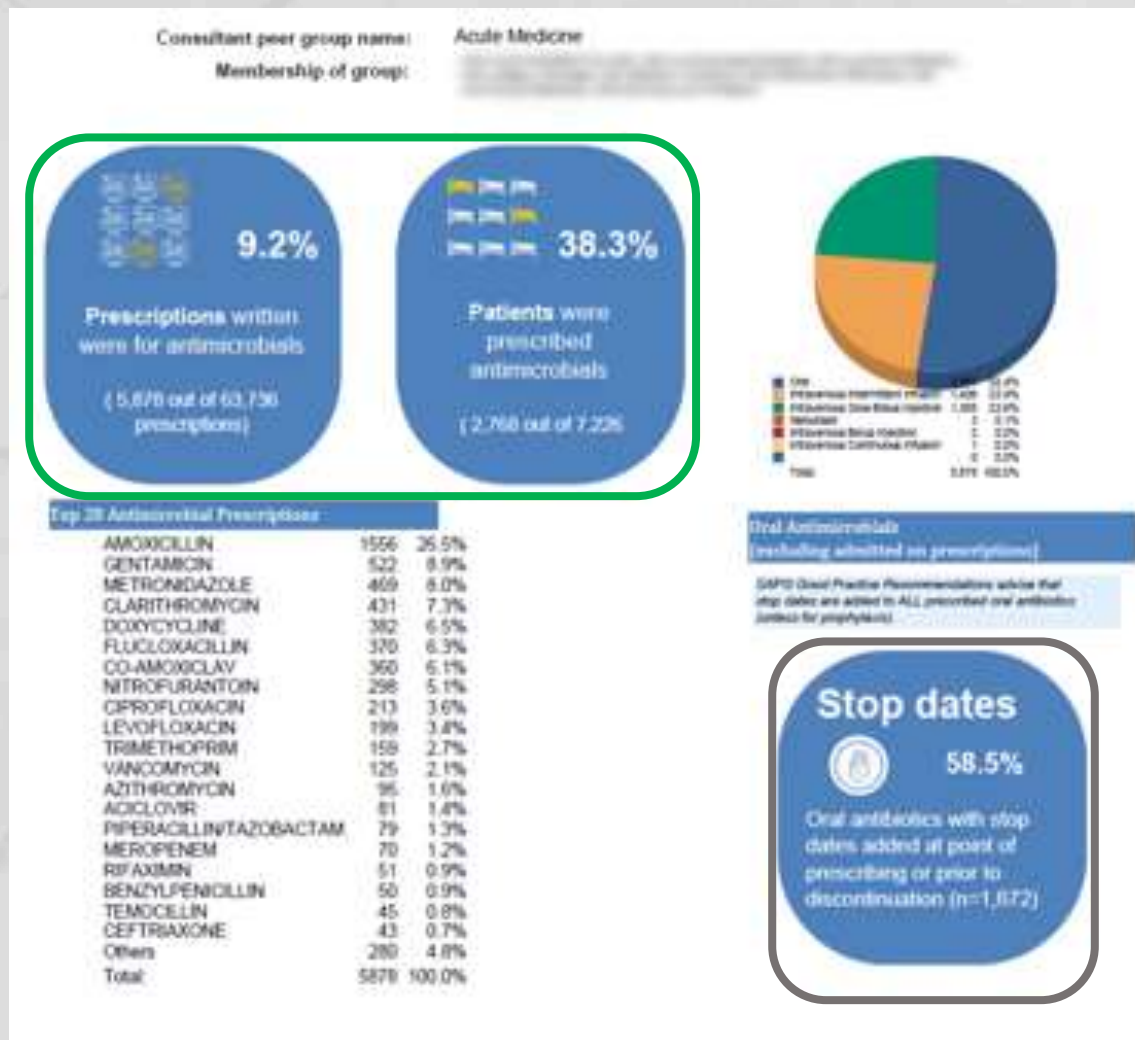
Regional pharmacy screening tool (PHEW)



Unwanted Variation

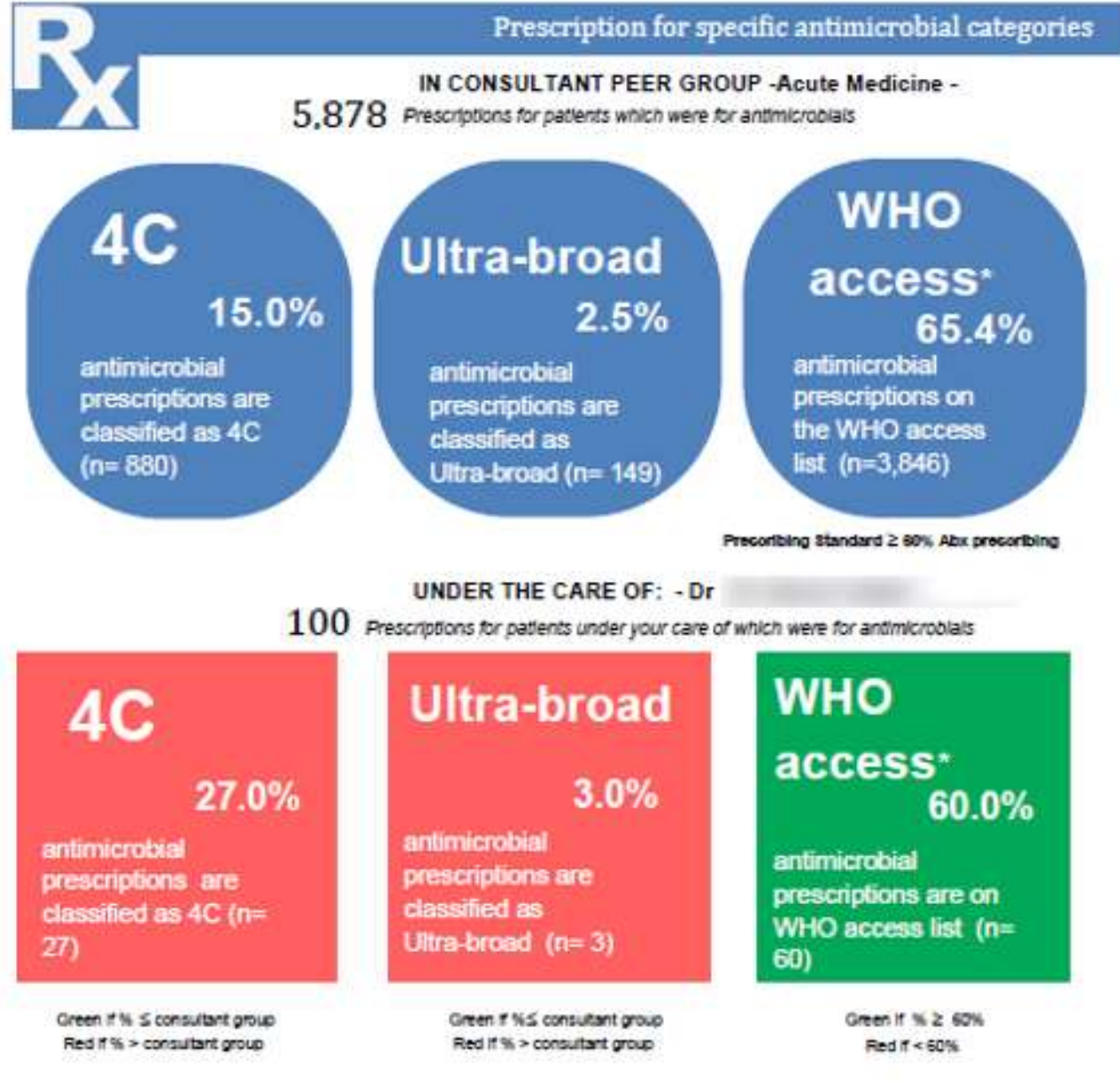
Antimicrobial Review

- 6 prescribing indicators
- Consultant focused
- Individual and peer comparison
- Take forward to national antimicrobial prescribing group





Unwanted Variation





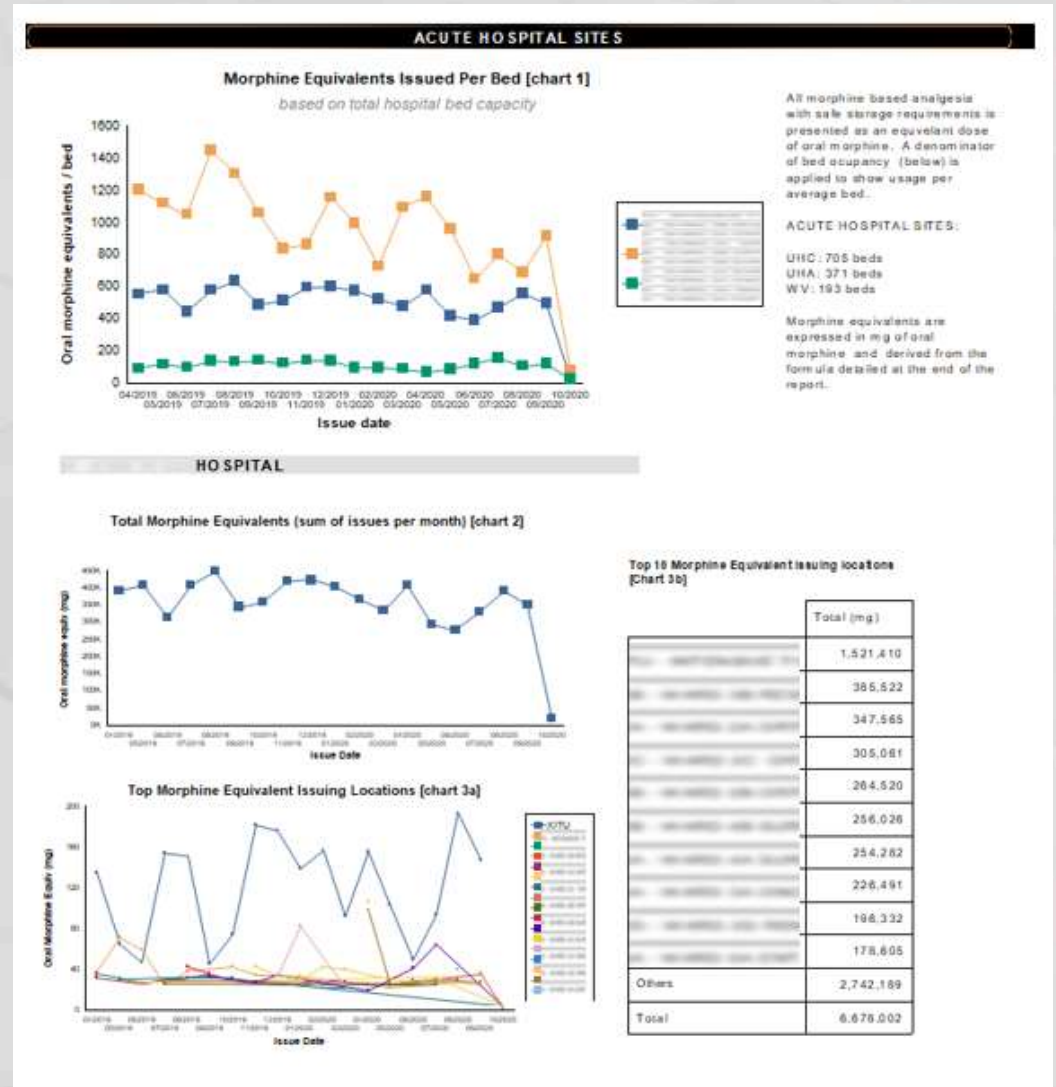
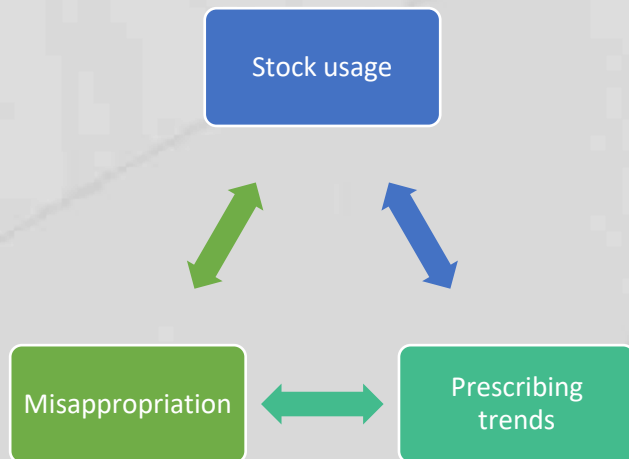
Unwanted Variation

Opioid / attractive stock monitoring



Response to Gosport and clinical investigations

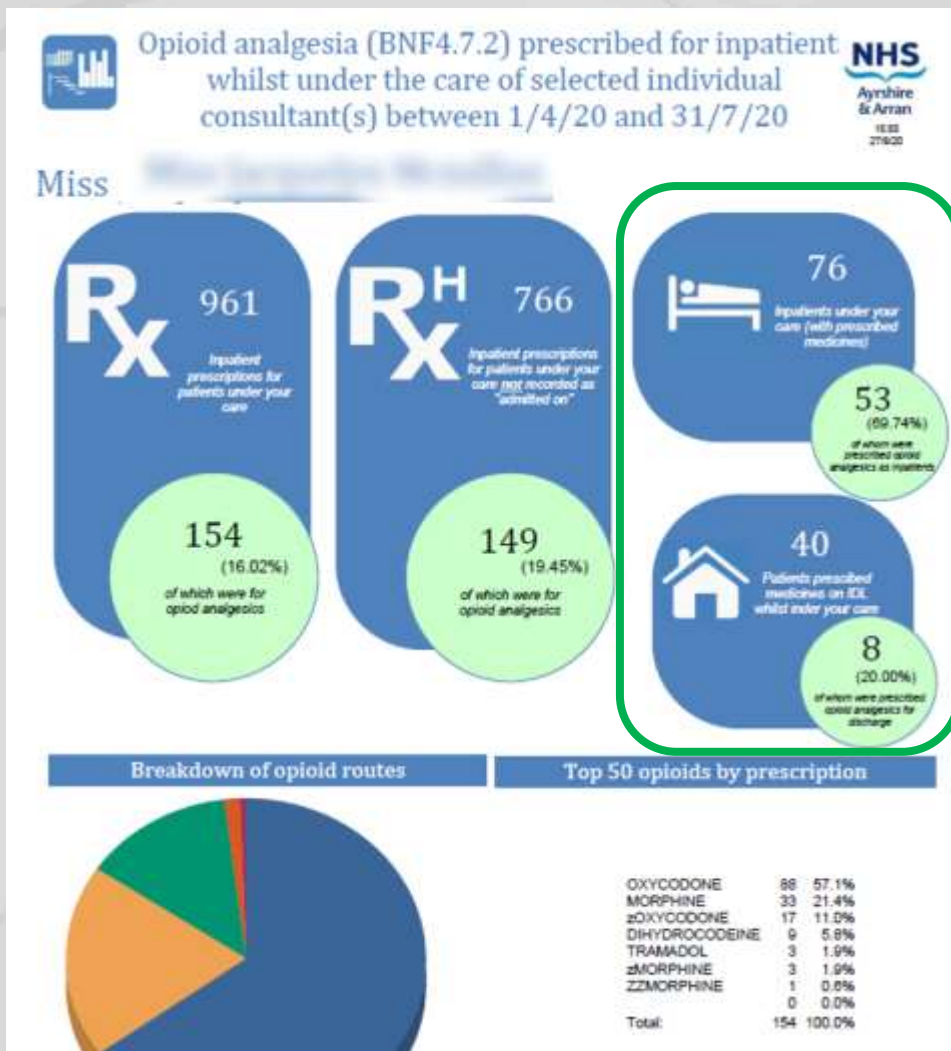
- How do we safe guard patients from harm?
- How do we monitor attractive stock?
- What / Why / Who/ How?





Unwanted Variation

Opioid / attractive stock monitoring



HEPMA Charted Administrations vs Pharmacy Stock Issues

Results filtered by selected ward(s) and/or medicine(s) as below.

Medicine(s): CODEINE, DIHYDRO, TRAMA, CO-COD, DIAZ, PREGAB, GABAP
 Ward(s):
 Period: 31/03/2020 22:18:10 to 21/03/2021 22:18:16

CO-CODAMOL 30/500 Effervescent Tablets

Administrations charted			Pharmacy stock issued		
Month	Patient count	Dose units administered	Month	Transaction count	Quantity issued
04/2020	1	4 Tablet	05/2020	3	96 Tablet
05/2020	1	8 Tablet	09/2020	3	96 Tablet
09/2020	1	100 Tablet	11/2020	2	64 Tablet
10/2020	1	16 Tablet	12/2020	1	32 Tablet
11/2020	1	88 Tablet	03/2021	1	32 Tablet
Total administered:			Total issued:		
5 216 Tablet (s)			10 320 Tablet (s)		
			Difference: 104 (32.5%)		

CODEINE 15 mg in 5mL Oral Sugar Free Linctus

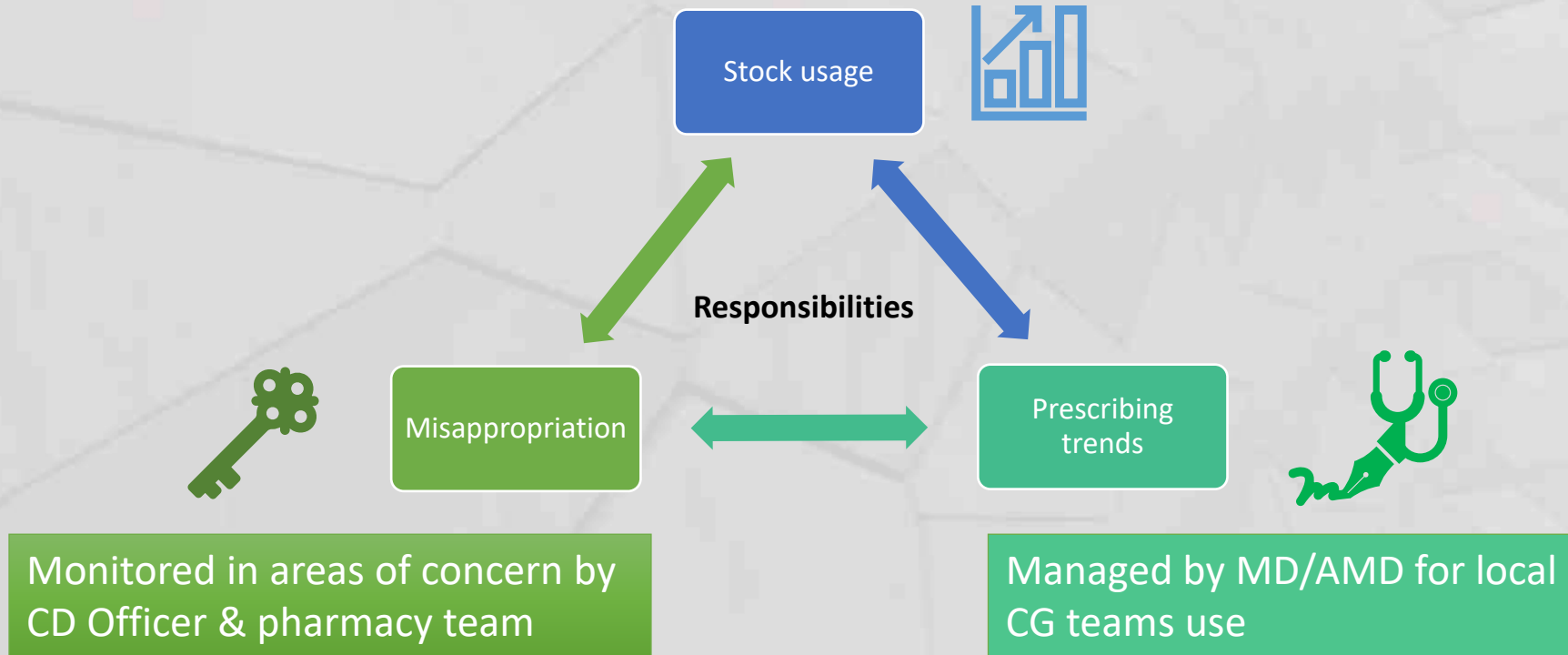
Administrations charted			Pharmacy stock issued		
Month	Patient count	Dose units administered	Month	Transaction count	Quantity issued
05/2020	2	105 mg	05/2020	1	200 mL
06/2020	1	900 mg	03/2021	1	200 mL
10/2020	1	30 mg			
03/2021	1	360 mg			
Total administered:			Total issued:		
4 465 mL (s)			2 400 mL (s)		
			Difference: -65 (-16.3%)		



Unwanted Variation

Opioid / attractive stock monitoring

Monitored at set frequency by pharmacy team





COVID / service improvement

CD Ordering



Ward ordering of controlled drugs to hospital pharmacy

- Paper-lite working
- Reducing surface to surface transmission and portering footfall
- Using existing systems (bespoke local development)
- Implemented at ward request - 93% of ward areas.

CONTROLLED DRUG [A-B] REMOTE REQUEST

You must select one drug for each of the single selection protocols

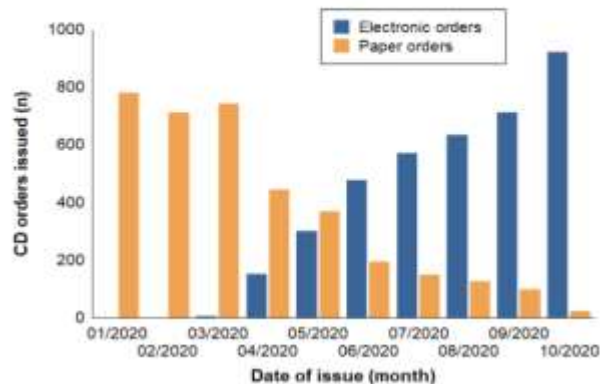
PROTOCOL SEARCH | CLINICAL DRUG INFORMATION | HELP

Drug Notes | **Formulary** | Drug Details

Select a drug (for each single protocol) to proceed:

Drug Name	Frequency	Route	Formulary Status
CONTROLLED DRUG [A-B] REMOTE REQUEST			
CD ORDER> ALFENTANIL (ICU ONLY) 25 M...		Pharmacy CD R...	Formulary
CD ORDER> ALFENTANIL (ICU ONLY) 5 M...		Pharmacy CD R...	Formulary
CD ORDER> ALFENTANIL 1 MG IN 2ML IN...		Pharmacy CD R...	Formulary
CD ORDER> ALFENTANIL 5 MG IN 1 ML IN...		Pharmacy CD R...	Formulary
CD ORDER> ALFENTANIL BUCCAL/NASAL...		Pharmacy CD R...	Formulary

Image 2: Number of CD orders over time : Electronic vs paper



*‘It’s great – you don’t have to chase down the book anymore and can see exactly what has been ordered
Surgical Nurse, Crosshouse Hospital*

Paper: “Introducing a bespoke electronic controlled drug ordering system during COVID-19”; S Dewar, R Cottrell; Hospital Pharmacy Europe; March 2022



COVID / service improvement

Ward stock auto top-up



Adapted from work by:



- Deducts administered medicines from known stock quantity per ward
 - If amount used exceeds the set value, a pack is automatically ordered.
 - Reduces frequency of manual ward visits



- Measured benefits?
 - Once off cost saving
 - Time saving
 - Fewer missed doses





Clinical priority & assessment

Prescription scanner



A secondary care tool to display primary care prescribing data

Two distinct datasets, two reporting systems

Allows users to see a group of patient's pre-admission medicines without accessing individual Emergency Care Summary's (ECS)

- *Acute Receiving Units*
- *ED*



Attendance at ED & Triage

ED Doctor Review

Medical Doctor review and prescribe / assess regular medicines

Regular medicines obtained and administered



Paper: In review process



Clinical priority & assessment

Prescription scanner



HEPMA records:		Allergy/Intolerance	Reaction																																																
Last admission: 09/12/15 - 14/12/15		***No Known Drug Allergies***																																																	
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Regional
collaboration

PHEW score

Pharmacy Early Warning System



Rule based pharmacy screening
tool weighted on prescribed
medicines

Supported and piloted in
neighbouring health board

Potential for further deployment

Maintenance

Ward Clinical Pharmacy ePrescribing Summary

PHEW calculation & ePDR check from: 31/03/2021 06:22:07

WARD	PCI	RV	eGFR	Patient Details	Admitted	Updated	Status Flags	INR/Gent. results	IDL dic date
High	<input type="checkbox"/>	<input type="checkbox"/>	44mls	[Patient Name]	3/9/21		COVID 19 +ve	1.0mls	1.71mls
High	<input type="checkbox"/>	<input type="checkbox"/>	44mls	[Patient Name]	3/9/21		Shielding		
High	<input type="checkbox"/>	<input type="checkbox"/>	31mls	[Patient Name]	28/8/21	02/09	COVID 19 +ve	1.0mls	01/09
High	<input type="checkbox"/>	<input type="checkbox"/>	47mls	[Patient Name]	18/8/21	20/08	COVID 19 +ve	3.2mls	06/09
High	<input type="checkbox"/>	<input type="checkbox"/>	49mls	[Patient Name]	4/9/21		COVID 19 +ve		30/08
High	<input type="checkbox"/>	<input type="checkbox"/>	49mls	[Patient Name]	26/8/21	26/08	COVID 19 +ve		
High	<input type="checkbox"/>	<input type="checkbox"/>	53mls	[Patient Name]	3/9/21		Shielding		
High	<input type="checkbox"/>	<input type="checkbox"/>	53mls	[Patient Name]	10/8/21	11/08	COVID 19 +ve		01/09
High	<input type="checkbox"/>	<input type="checkbox"/>	53mls	[Patient Name]	3/9/21		COVID 19 +ve	3.2mls	06/09
Medium	<input type="checkbox"/>	<input type="checkbox"/>	20mls	[Patient Name]	23/8/21		COVID 19 +ve		30/08
Medium	<input type="checkbox"/>	<input type="checkbox"/>	20mls	[Patient Name]	18/8/21	06/09	COVID 19 +ve		
Medium	<input type="checkbox"/>	<input type="checkbox"/>	20mls	[Patient Name]	2/9/21		Shielding		
Medium	<input type="checkbox"/>	<input type="checkbox"/>	5mls	[Patient Name]	3/9/21		COVID 19 +ve	1.0mls	04/09
Medium	<input type="checkbox"/>	<input type="checkbox"/>	5mls	[Patient Name]	3/9/21		Shielding		
Medium	<input type="checkbox"/>	<input type="checkbox"/>	35mls	[Patient Name]	31/8/21	01/09	COVID 19 +ve	2.8mls	08/09
Medium	<input type="checkbox"/>	<input type="checkbox"/>	58mls	[Patient Name]	1/9/21	02/09	COVID 19 +ve		
Medium	<input type="checkbox"/>	<input type="checkbox"/>	58mls	[Patient Name]	3/9/21		Shielding	1.0mls	
Low	<input type="checkbox"/>	<input type="checkbox"/>	56mls	[Patient Name]	4/9/21		COVID 19 +ve		06/09
Low	<input type="checkbox"/>	<input type="checkbox"/>	56mls	[Patient Name]	25/8/21	26/08	COVID 19 +ve		06/09
Low	<input type="checkbox"/>	<input type="checkbox"/>	56mls	[Patient Name]	19/8/21	24/08	COVID 19 +ve		03/09
Low	<input type="checkbox"/>	<input type="checkbox"/>	56mls	[Patient Name]	27/8/21	27/08	Shielding		
Low	<input type="checkbox"/>	<input type="checkbox"/>	56mls	[Patient Name]	3/9/21		COVID 19 +ve	1.12mls	
Low	<input type="checkbox"/>	<input type="checkbox"/>	56mls	[Patient Name]	3/9/21		COVID 19 +ve		

Legend: Care Plan complete in ED, Pre-Op Patient, No Allergy status, Allergies incomplete, Unspecified high cost inhibitor, Warfarin pt, eGFR result, Restricted antimicrobial, COVID 19 test positive/negative / pending, COVID 19 shielding pt, Gentamicin/Vancomycin, Unspecified Novel Anti-coagulant (NOAC), Indicator of admin. of unrefill orders in last 24 hrs, Dose missed - unable to swallow, Dose missed - unavailable, CI on system

Paper: Cottrell R, Jardine G, Caldwell M, Improving patient safety by changing a clinical pharmacy service, Hospital Pharmacy 15 March 2014

Future and reflections

MHRA Yellow card

Frailty to GP

Improved Dashboarding

Engagement from clinicians

Resource Library

Evidenced improvements

Alignment with regional objectives

National sharing of tools

Replication of local innovation

Standardised resources across HEPMA boards

