

# Electronic Prescribing – Supporting Stewardship?

Clare Colligan  
Antimicrobial / Clinical Governance Pharmacist  
NHS Forth Valley

# Background

- HEPMA introduced in pilot wards – mental health / paediatrics – Feb 16
- Rapid roll out across all acute wards – Sep 16
- Moving to community hospitals – to be completed by May 17

# Benefits so far – early days

# High risk medicines

- Daily email to all acute pharmacists
- All patients
  - Gentamicin
  - Vancomycin
  - Clozapine
  - Lithium
- (This complements daily report on drug levels from labs)

**Current Inpatients on GENTAMICIN or VANCOMYCIN**



Patient	Drug Description	Start Date	Start Time	Ward
	GENTAMICIN IV Adult (as per online calculator)	26/02/2017	05:00:00	A11
	VANCOMYCIN IV INTERMITTENT Infusion	24/02/2017	06:00:00	A12
	GENTAMICIN IV STAT / Endocarditis / Synergy / Nebulised	27/02/2017	20:00:00	A12
	VANCOMYCIN IV INTERMITTENT Infusion	20/02/2017	04:30:00	A22
	GENTAMICIN IV Adult (as per online calculator)	26/02/2017	01:00:00	A22
	GENTAMICIN IV Adult (as per online calculator)	27/02/2017	17:00:00	A32
	VANCOMYCIN IV INTERMITTENT Infusion	20/02/2017	03:00:00	A32
	GENTAMICIN IV Adult (as per online calculator)	28/02/2017	05:00:00	AAU-1
	GENTAMICIN IV Adult (as per online calculator)	28/02/2017	00:00:00	AAU-2
	GENTAMICIN IV Adult (as per online calculator)	27/02/2017	11:00:00	B11
	GENTAMICIN IV Adult (as per online calculator)	25/02/2017	20:00:00	B12
	VANCOMYCIN IV INTERMITTENT Infusion	23/02/2017	17:00:00	B23
	GENTAMICIN IV Adult (as per online calculator)	27/02/2017	11:00:00	B23
	GENTAMICIN 0.3 % Eye/Ear Drops	24/02/2017	09:00:00	B31
	GENTAMICIN 0.3 % Eye/Ear Drops	24/02/2017	16:00:00	B31
	GENTAMICIN IV Adult (as per online calculator)	24/02/2017	20:00:00	B31
	GENTAMICIN IV Adult (as per online calculator)	23/02/2017	14:00:00	B32
	GENTAMICIN IV Adult (as per online calculator)	27/02/2017	12:00:00	B32
	VANCOMYCIN 125 mg Capsules	26/02/2017	18:00:00	B32
	GENTAMICIN IV Adult (as per online calculator)	27/02/2017	18:00:00	CAPACITY AREA 3
VANCOMYCIN IV INTERMITTENT Infusion	31/01/2017	18:00:00	CARDIOLOGY	

# Audit / Point Prevalence Study

- National PPS – Autumn 16
- Review each kardex from desk in pharmacy – identify which patients on antibiotics and collect data
  - Electronic notes not yet available in FV so still needed to go to ward for further details

Details Allergies: \*\*\*No Known Drug Allergies\*\*\*

Active Medications Discontinued Medications

Status	Drug Name	Dose (at Dose Rate)	Frequency	Route	Start Date/Time	Stop Date/Time	BNF
<b>Regular Medications</b>							
	ADCAL-D3 Chewable Tablets	1 Tablet	2X0618 - TWICE daily at	Oral	13-Feb-2017 08:00		Nutrition a
	COMBIVENT 2.5mL Nebuliser Solution	2.5 mL	4X - FOUR times daily at	Nebulised	12-Feb-2017 22:00		Respirator
	CYANOCOBALAMIN 50 micrograms Tablets	150 microgram	1X06 - ONCE daily at 8a	Oral	13-Feb-2017 08:00		Nutrition a
S	DLITAZEM 180 mg (Dilzem XL) Modified Release	180 mg	2X0618 - TWICE daily at	Oral	13-Feb-2017 18:00		Cardiovas
	ESCITALOPRAM 10 mg Tablets	10 mg	1X06 - ONCE daily at 8a	Oral	28-Feb-2017 08:00	8-Mar-2017 08:01	Central Ne
	MIRTAZAPINE 15 mg Tablets	15 mg	1X22 - ONCE daily at 10p	Oral	27-Feb-2017 22:00		Central Ne
	MONTELUKAST 10 mg Tablets	10 mg	1X16 - ONCE daily at 6p	Oral	13-Feb-2017 18:00		Respirator
	OMEPRAZOLE 20 mg Capsules	20 mg	2X0620 - TWICE daily at	Oral	12-Feb-2017 20:00		Gastro-int
	PIPERACILLINTAZOBACTAM 4G/0.5G (4.5 g) Injec	4.5 g	3X0612/18 - THREE time	Intravenous Infusion	27-Feb-2017 18:00		Infections
	SODIUM CHLORIDE 0.9% (5mL) Nebule / Injection	5 mL	4X - FOUR times daily at	Nebulised	17-Feb-2017 12:00		Nutrition a
	SPIRONOLACTONE 16 mg Tablets	12.5 mg	1X06 - ONCE daily at 8a	Oral	13-Feb-2017 08:00		Cardiovas
	TERBUTALINE 500 micrograms (Turbohaler) Dry P	2 Dose	3X0612/18 - THREE time	Inhalation	13-Feb-2017 08:00		Respirator
S	UMECLIDINIUM (Incroce Elnpts) 65 micrograms Inf	1 Dose	1X06 - ONCE daily at 8a	Inhalation	13-Feb-2017 08:00		Respirator
	WARFARIN as per INR	1 DOSE as PAPER CHART	1X16 - ONCE daily at 6p	Oral	13-Feb-2017 18:00		Cardiovas
<b>As required (PRN) Medications</b>							
	CO-CODAMOL 30/600 Tablets	2 Tablet	PRN	Oral	12-Feb-2017 19:03		Central Ne
	LORAZEPAM 1 mg Tablets	0.5 mg	12H - every 12 HOURS F	Oral	23-Feb-2017 19:21		Central Ne
	OXYGEN to target SpO2 94%-96%	1 Dose(s)	PRN	Inhalation Continuous	12-Feb-2017 19:03		Medical G

R  
P  
C  
I  
T  
S

Select Patient	Patient Maint	Patient Allergy	Conflict Log	Notes	Add Order	Modify Order	Verification	Discontinue Order	Suspend Order	Resume Order	Close
Patient Details	Lab Results	Previous Meds.	Clinical Info		Discharge	Short Term Leave	Admin. Chart	Charting	Order Inquiry	All Orders	Help

**Details** Allergies: \*\*\*No Known Drug Allergies\*\*\*

Active Medications **Discontinued Medications**

Status	Drug Name	Dose (at Dose Rate)	Frequency	Route	Start Date/Time	Stop Date/Time	BNF
<b>Regular Medications</b>							
	CLARITHROMYCIN 500 mg Tablets	500 mg	2X08/20 - TWICE daily at 8a	Oral	12-Feb-2017 20:00	19-Feb-2017 08:01	Infections
	CO-AMOXICLAV 500/125 Tablets	625 mg	3X08/12/18 - THREE time	Oral	22-Feb-2017 08:00	25-Feb-2017 18:01	Infections
	CO-AMOXICLAV 1500/200 Intravenous Injection	1200 mg	3X08/14/22 - THREE time	Intravenous Injection	12-Feb-2017 22:00	14-Feb-2017 08:01	Infections
		1200 mg	3X08/14/22 - THREE time	Intravenous Injection	20-Feb-2017 22:00	27-Feb-2017 14:01	Infections
	DILTIAZEM 180 mg (Diltzem XL) Modified Release (	180 mg	1X08 - ONCE daily at 8a	Oral	13-Feb-2017 08:00	13-Feb-2017 08:01	Cardiovascul
	ENOXAPARIN PFS 40 mg in 0.4mL Subcutaneous	40 mg	1X18 - ONCE daily at 6p	Subcutaneous Injectio	13-Feb-2017 18:00	13-Feb-2017 17:59	Cardiovascul
	ESCITALOPRAM 10 mg Tablets	20 mg	1X08 - ONCE daily at 8a	Oral	13-Feb-2017 08:00	27-Feb-2017 14:53	Central Nerv
	MONTELUKAST 10 mg Tablets	10 mg	STAT	Oral	12-Feb-2017 18:07	12-Feb-2017 18:07	Respiratory S
	PIPERACILLINTAZOBACTAM 4G/0.5G (4.5 g) Injec	4.5 g	STAT	Intravenous Infusion	14-Feb-2017 12:43	14-Feb-2017 12:43	Infections
		4.5 g	3X08/12/18 - THREE time	Intravenous Infusion	14-Feb-2017 18:00	21-Feb-2017 12:01	Infections
	POTASSIUM (Sando-K) Effervescent Tablets	2 Tablet	3X08/14/22 - THREE time	Oral	18-Feb-2017 22:00	22-Feb-2017 14:01	Nutrition and
		40 mg	1X08 - ONCE daily at 8a	Oral	13-Feb-2017 08:00	18-Feb-2017 08:01	Endocrine S
	PREDNISOLONE 5 mg Tablets	30 mg	STAT	Oral	17-Feb-2017 11:27	17-Feb-2017 11:27	Endocrine S
		30 mg	1X08 - ONCE daily at 8a	Oral	18-Feb-2017 08:00	21-Feb-2017 08:01	Endocrine S
	TIOTROPUM 18 micrograms Dry Powder for Inhal	1 Dose(s)	1X08 - ONCE daily at 8a	Inhalation	13-Feb-2017 08:00	13-Feb-2017 08:01	Respiratory S

R  
P  
C  
I  
T  
S

Select Patient	Patient Blank	Patient Allergy	Conflict Log	 Notes	Add Order	Med. Max. Modify	Verification	Discontinue Order	Suspend Order	Renew Order	Close
Patient Details	Lab Results	Previous Meds.	Clinical Info		Discharge	Short Term Leave	Admin. Chart	Charting	Order Inquiry	All Orders	Help



# Alert Antibiotics

- Daily email report of all patients receiving
  - Meropenem
  - Pip/taz
  - Levofloxacin
- Antibiotic pharmacist / microbiology consultants
- Started Feb 17

# Current Inpatients on Meropenem, Piperacillin/Tazobactam or Levofloxacin

Please note: The Start Date reflects the ORDER start date and will not reflect any modification dates.

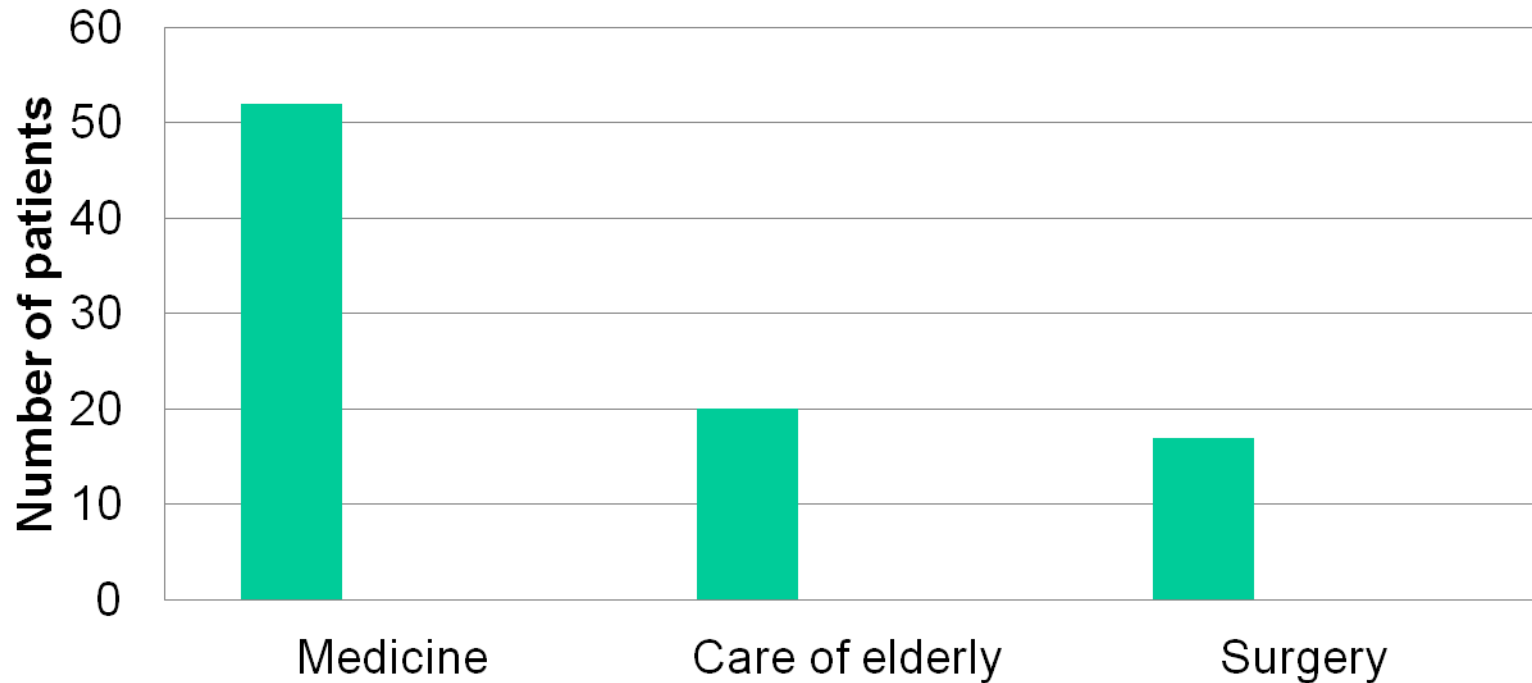
Patient	Start Date	Start Time	Ward
<b>LEVOFLOXACIN 500 mg Tablets</b>	21/02/2017	18:00:00	B31
	27/02/2017	20:00:00	B32
	28/02/2017	20:00:00	FVRH ICU
<b>MEROPENEM 1 g Injection</b>	26/02/2017	22:00:00	A11
	22/02/2017	20:00:00	A12
	01/03/2017	08:00:00	A31
	15/02/2017	15:00:00	B31
<b>PIPERACILLIN/TAZOBACTAM 2G/0.25G (2.25 g) Injection</b>	26/02/2017	08:00:00	A12
	25/02/2017	14:00:00	CHILDRENS WARD
<b>PIPERACILLIN/TAZOBACTAM 4G/0.5G (4.5 g) Injection</b>	28/02/2017	22:00:00	A22
	27/02/2017	22:00:00	A22
	24/02/2017	22:00:00	A31
	01/03/2017	08:00:00	AAU-1
	28/02/2017	22:00:00	B11

# Preliminary work - Meropenem

- Microbiology consultants use to identify patients not known to them
  - Monitor patterns of use
  - Identify areas of concern
  - More timely and targeted antimicrobial stewardship reviews

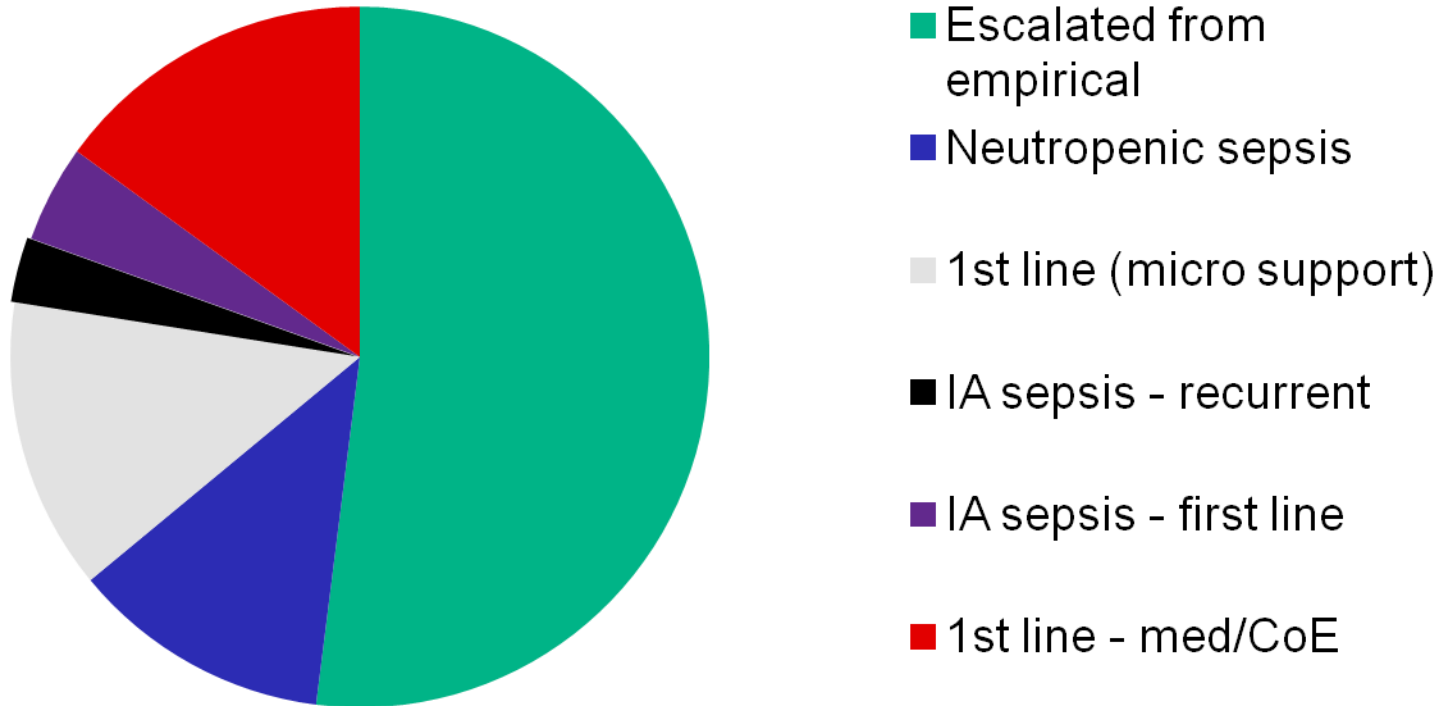
# Preliminary work – Pip/taz

Patients commenced Pip/Taz by speciality  
(excl ITU)  
1<sup>st</sup>-14<sup>th</sup> Feb 17 (n=89)



# Reason for prescribing

Indication



# **1<sup>st</sup> line Medicine / CoE (n=13)**



- 6 - HAI –prolonged admissions**
- 2 - CAP in immunocompromised**
- 2 - Sepsis**
- 1 - Diabetic foot**
- 1- COPD exacerbation**
- 1- Unknown**

# **Surgery** (n=7)



**4 patients given pip/taz first line – no previous admissions, no C+S to support use**

**3 patients were recurrent admissions but no C+S to support**

# Escalation (n=46)



**24 – Medical**

**13 – Care of the elderly**

**9 – Surgical**



# Ad hoc Audit

- Can be used to run reports to support audit

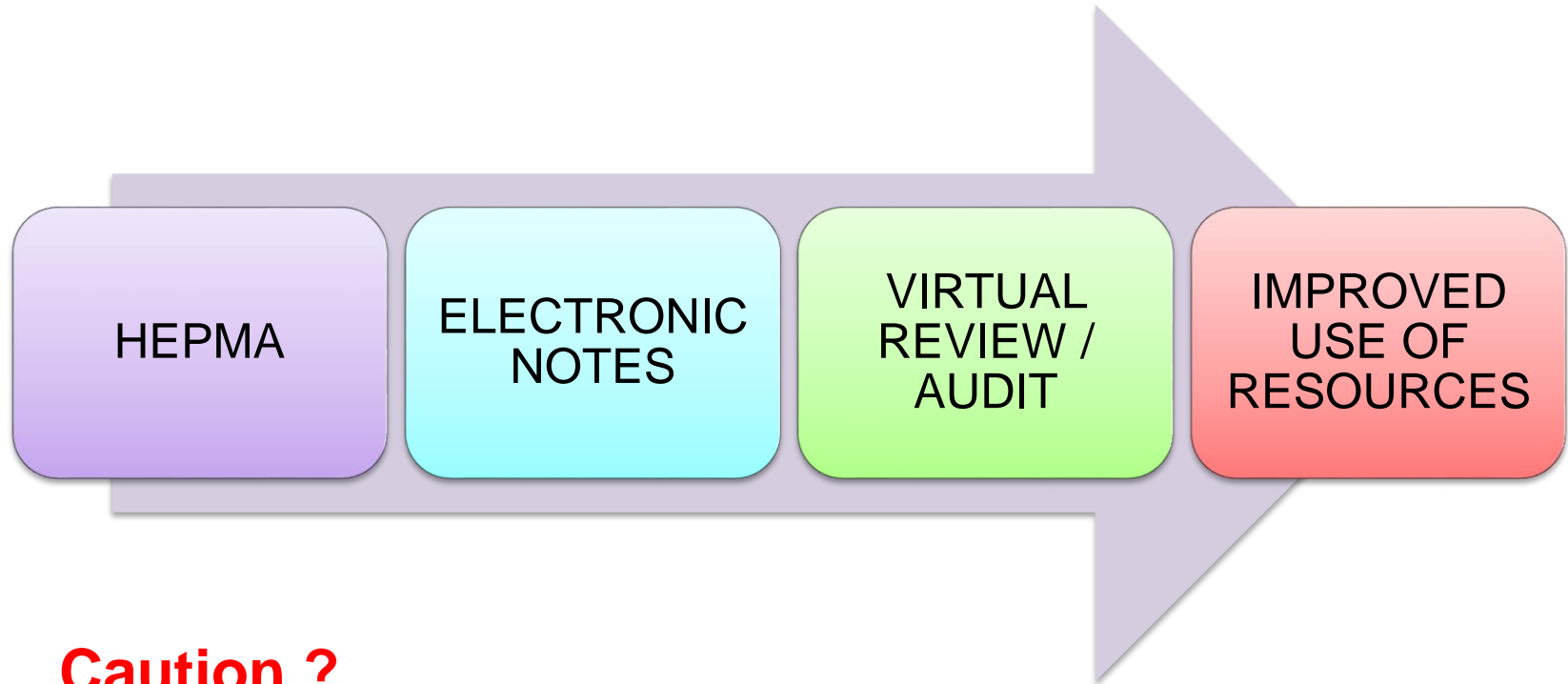
e.g – patients receiving drug x on ward y during selected time period

Drill down to prescriber / consultant etc

# Summary

- Information never available in hospital before
  - (Without lots of leg work!)
- Pro-active approach
- Prevent harm – identify at risk patients
- Protect antibiotics

# Future?



## Caution ?

Don't forget however - Benefits of interacting with prescribers