Antibiotic Stewardship

It's everyone's business

Ali Harmouche
Consultant Physician
Acute Medicine
SJH Livingston

Our mission

- Reduce unnecessary/inappropriate antibiotic use/ prevent harm
- Supporting doctors by promoting good practice
- Regular Audit and feedback

Our AMT (virtual)

- No dedicated pharmacist
- Advice available from microbiologist, ID.
- Regular review by microbiologist/ID of patients with proven bacteraemia/complicated cases/ITU/plastics
- Ward pharmacists will assist with IV antibiotic management (mainly vancomycin and gentamicin)
- Junior doctors and antimicrobial nurse help collecting data/identifying areas of improvement and re-audit

What influences doctors decision making when it come to antibiotic prescribing?

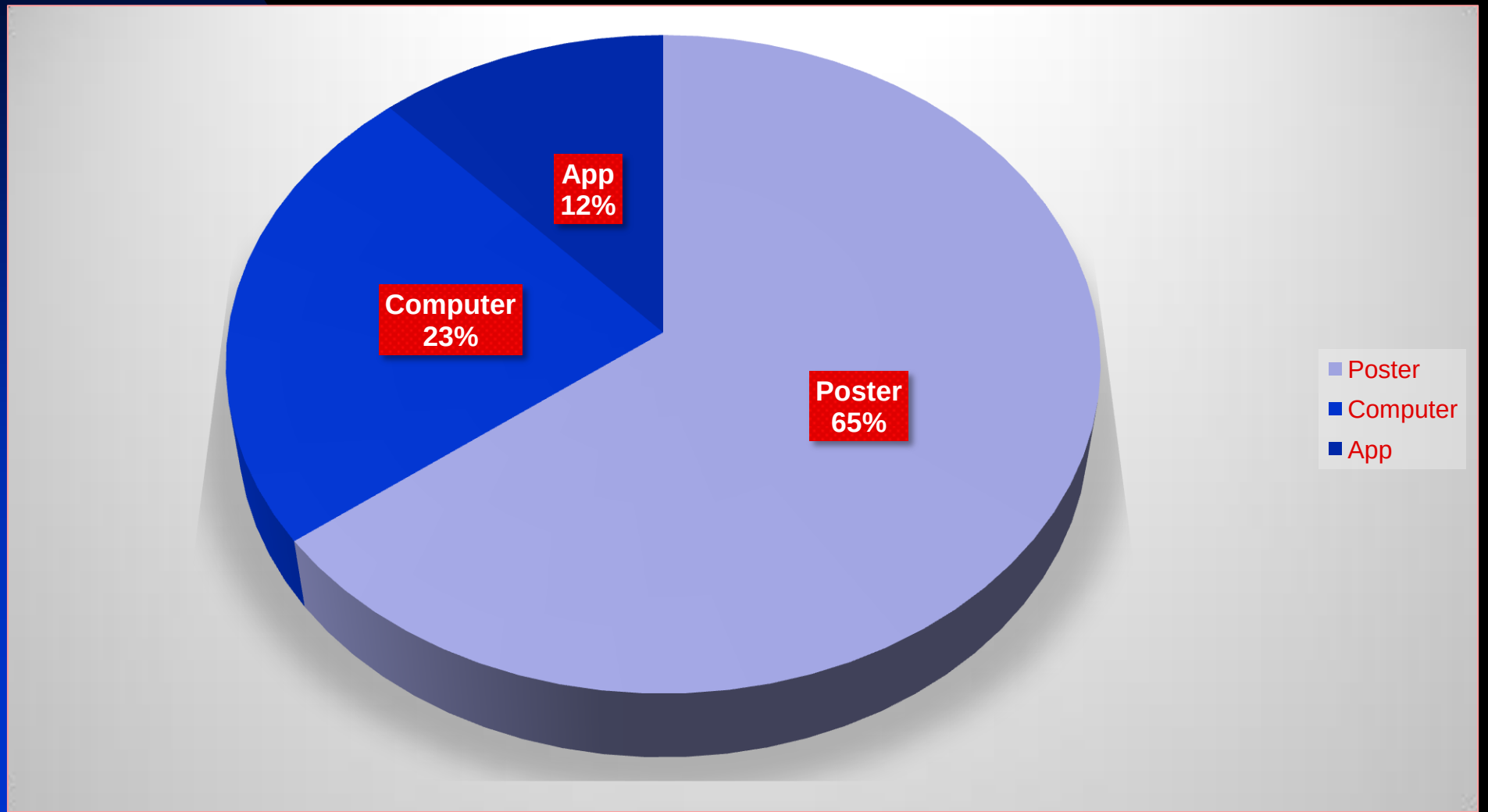
- Availability and ease of access to local protocol/guidance
- How important factor is CDI/AMR
- Prescribing etiquette/ local culture

Availability and ease of access to local protocol/advice

Short survey of 20 trainees

- Everyone knew the different forms (Poster, portal guide and App as well as micro consultant telephone advice) available and how to access them

What is your most preferred tool?



The winner is…

NHS Lothian

UHD Adult Antimicrobial Guidelines (2015/16)

http://intranet.lothian.scot.nhs.uk/NHSLothian/Healthcare/A-Z/amt
or search on 'antimicrobial guidelines' from intranet homepage

Prepared by Lothian Antimicrobial Management Team
Release version 6.0 Feb 2015 Not valid after 31st July 2016

NHS Lothian

Prudent Antimicrobial Practice

Before you prescribe antimicrobials:
- Know why you are prescribing - always record the indication and intended duration in case notes and drug chart
- Send appropriate specimens before you start antimicrobials (blood, CSF, urine, sputum, wound swab)
- Follow UHD Antimicrobial Guidelines
- Write a review or stop date on the drug chart.
- Use antimicrobial with narrowest spectrum for the shortest possible duration.
- Check for allergies & document on drug chart.

Additional good practice points:
- Review all antimicrobials regularly; de-escalate and narrow therapy as soon as sensitivity results are available
- Consult microbiology or ID physician if the patient does not respond within 48-72 hrs
- Avoid unnecessary intravenous use, use oral route if no reason for IV.

Indications for IV Delivery

1. Serious sepsis
2. Febrile neutropenia or immunosuppression‡
3. Specific infections
   - -severe pneumonia, endocarditis
   - -encephalitis, brain abscess, meningitis
   - -septic arthritis, osteomyelitis
   - -severe soft tissue infection
4. Oral route compromised
   - -nil by mouth
   - -reduced absorption
   - -swallowing problem
   - -coma
   - -no oral formulation

Review need for IV route 48hrs after initiation and at least every 24hrs thereafter.

‡ *seek specialist advice*

Switch from IV to oral when:
- temperature <38°C for 48hrs
- patient clinically improved and CRP, WBC improving
- oral fluids/foods tolerated and poor oral absorption of antibiotics unlikely
- suitable oral alternative.

See full guidelines for oral step down options.

Pneumonia severity assessment (CURB65)

Confusion (new or AMT score ≤8)
Urea >7mmol/l
Respiratory rate ≥ 30/min
BP DBP ≤60mmHg Or SBP <90mmHg
Aged ≥65 years
Plus evidence of consolidation on CXR

Gentamicin and Vancomycin

For gentamicin and vancomycin dosing and monitoring guides, see separate guidelines on AMT intranet site.

Gentamicin requires daily monitoring of levels and must not be continued for more than 3 days without discussion with Microbiology or Infectious Diseases.

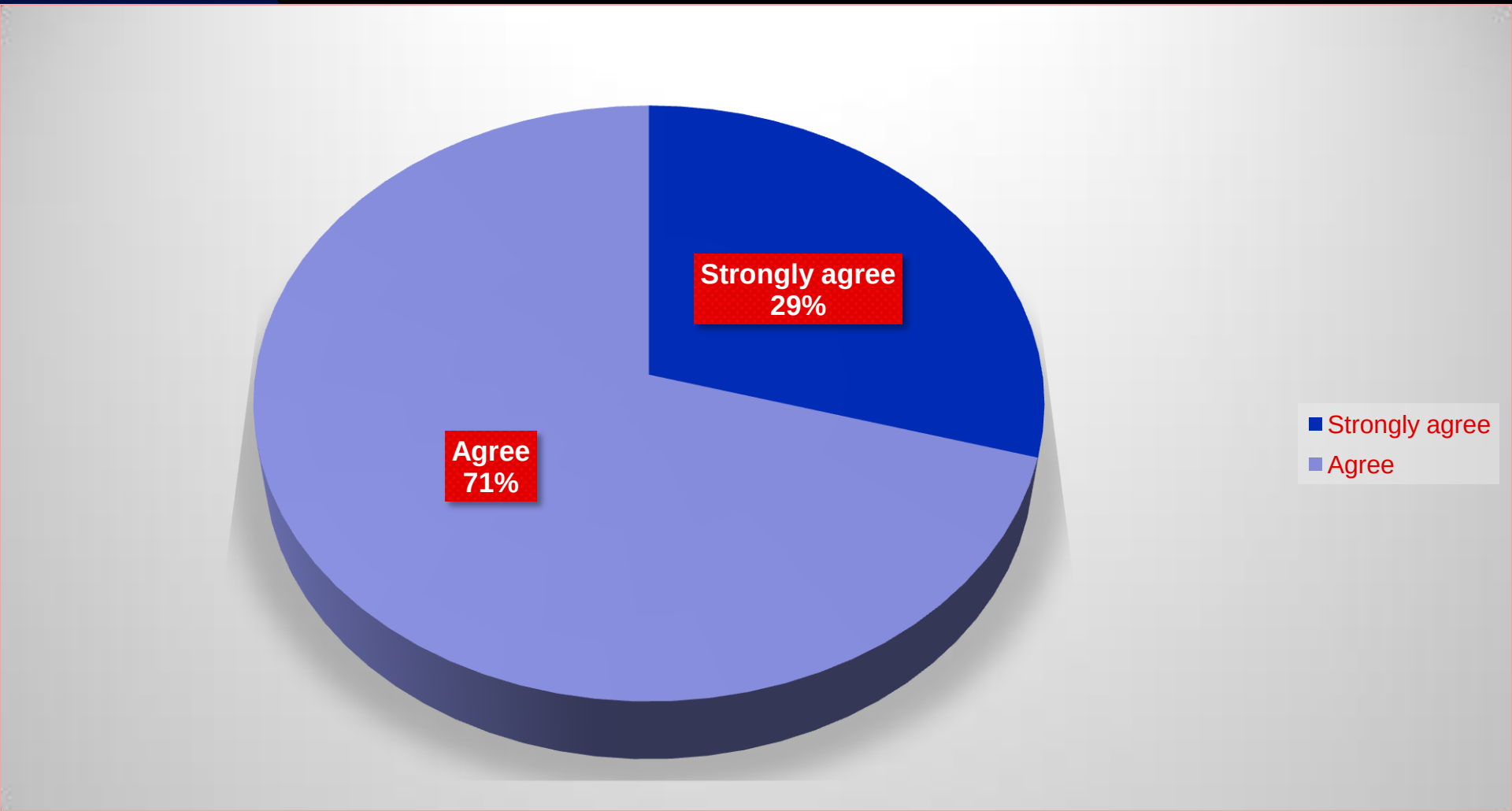
Notes:

See full guideline. Seek urgent advice from Microbiology, ID or relevant specialists (eg surgery, haematology, oncology)
* Modify dose in renal impairment
$ significant drug interactions

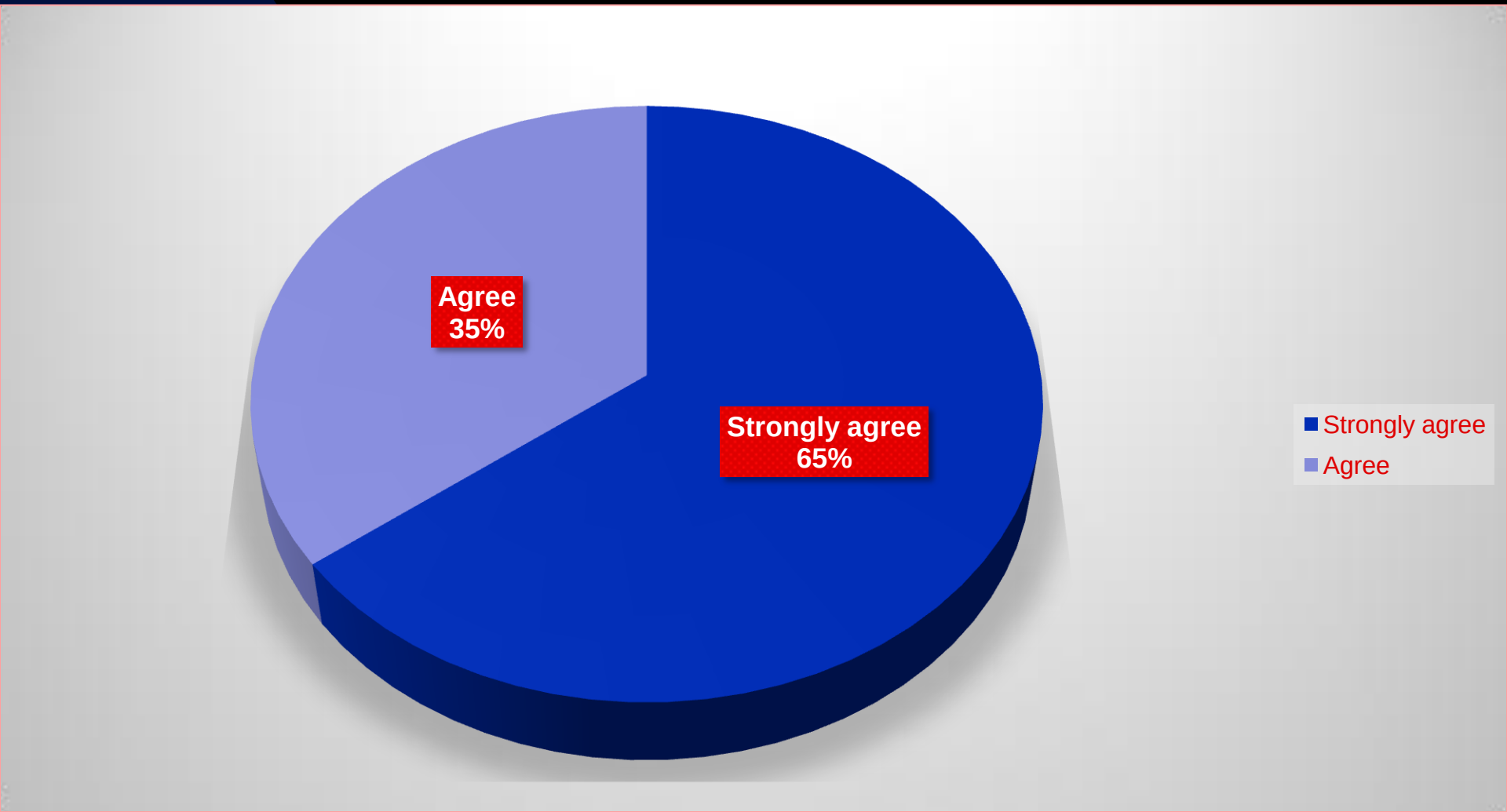
All antibiotic doses should be reviewed in patients with a creatinine clearance of 10mls/min or less

Indication		First Line	Alternative/2nd Line	Typical Duration
Skin & Soft Tissue	Cellulitis Mild	**flucloxacillin** 500mg qds orally	**clarithromycin***$ 500mg bd orally	5-10 days
	Cellulitis Severe	**flucloxacillin** 2g qds IV	**vancomycin***	
	Bites			
Symptomatic Catheter UTI		See full guidelines (Appendix 2) for decision aid. Systemic symptoms: a single dose of **gentamicin*** with catheter change (see full guideline) may be sufficient; otherwise treat according to diagnosis (cystitis/pyelonephritis). N.B. gentamicin not normally needed with routine catheter change		1 dose
Lower UTI (cystitis)		**trimethoprim***$ 200mg bd orally (3 days female; 7 days male)	**nitrofurantoin** 50mg qds orally (3 days female; 7 days male); (do not use if eGFR<45 ml/min/1.73m²)	
		If prostatitis suspected:		
Upper UTI (pyelonephritis)		**amoxicillin** 500mg tds orally (or 1g tds IV) plus daily **gentamicin*** max. 3 days then stop or discuss	**ciprofloxacin***$ 500mg bd orally (7 days)	14 days
MRSA	Non-severe	**doxycycline**$ 100mg every 12 hours orally		
	Severe	**vancomycin***		
Sepsis	Neutropenic	**piperacillin\tazobactam*** 4.5g qds IV plus **gentamicin*** add **clarithromycin***$ 500mg bd IV if chest infection add **metronidazole**$ 500mg tds IV if lower GI symptoms **Penicillin allergy:**		
	Intraabdominal (community acquired e.g. peritonitis, diverticulitis)	**amoxicillin** 1g tds IV plus daily **gentamicin*** (max. 3 days then stop/discuss) plus **metronidazole**$ 400mg tds orally (or 500mg tds IV)	**Penicillin allergy: vancomycin*** instead of **amoxicillin**	
	Unknown site MILD	**amoxicillin** 500mg tds orally plus **trimethoprim***$ 200mg bd orally	**Penicillin allergy: doxycycline**$ 200mg od orally instead of **amoxicillin**	
	Unknown site SEVERE	**amoxicillin** 1g tds IV plus daily **gentamicin*** (max. 3 days then stop/discuss) plus **metronidazole**$ 400mg tds orally (or 500mg tds IV)	**Penicillin allergy: vancomycin*** instead of **amoxicillin** Consider adding **flucloxacillin** or **vancomycin*** if particular concern re staphylococcal infection	
Meningitis		**ceftriaxone**$ 2g bd IV If >50years, pregnant, immunocompromised or on steroids add **amoxicillin** 2g every 6 hours IV. If pneumococcal meningitis likely give **dexamethasone** 10mg qds IV before, with or within 4 hours of first antibiotic dose		
COPD (inf. exac.) or LRTI (no CXR changes)		**doxycycline**$ 200mg day 1 then 100mg daily orally (4 days)	**amoxicillin** 500mg tds orally	5 days
Hospital Acquired Pneumonia (HAP)	Early (hospital stay <5 days)	Assess and treat as CAP (see below)		5-7 days
	Late (hospital stay ≥ 5 days) AND mild	**doxycycline**$ 200mg daily orally		5-7 days
	Late (hospital stay ≥ 5 days) AND moderate or severe	**piperacillin\tazobactam*** 4.5g tds IV Previous MRSA respiratory colonisation: add **vancomycin***	**Penicillin allergy: vancomycin*** plus **ciprofloxacin***$ 500mg bd orally	5-7 days
Community Acquired Pneumonia (CAP)	CURB65 0-1	**amoxicillin** 500mg tds orally	**doxycycline**$ 200mg day 1 then 100mg daily orally (6 days)	7 days
	CURB65 2	**amoxicillin** 500mg tds orally or IV plus **clarithromycin***$ 500mg bd orally or IV		
	CURB65 3-5	**co-amoxiclav*** 1.2g tds IV plus **clarithromycin***$ 500mg bd IV	**ceftriaxone**$ 2g daily IV plus **clarithromycin***$ 500mg bd IV	7-10 days

Does AMR influence your prescribing



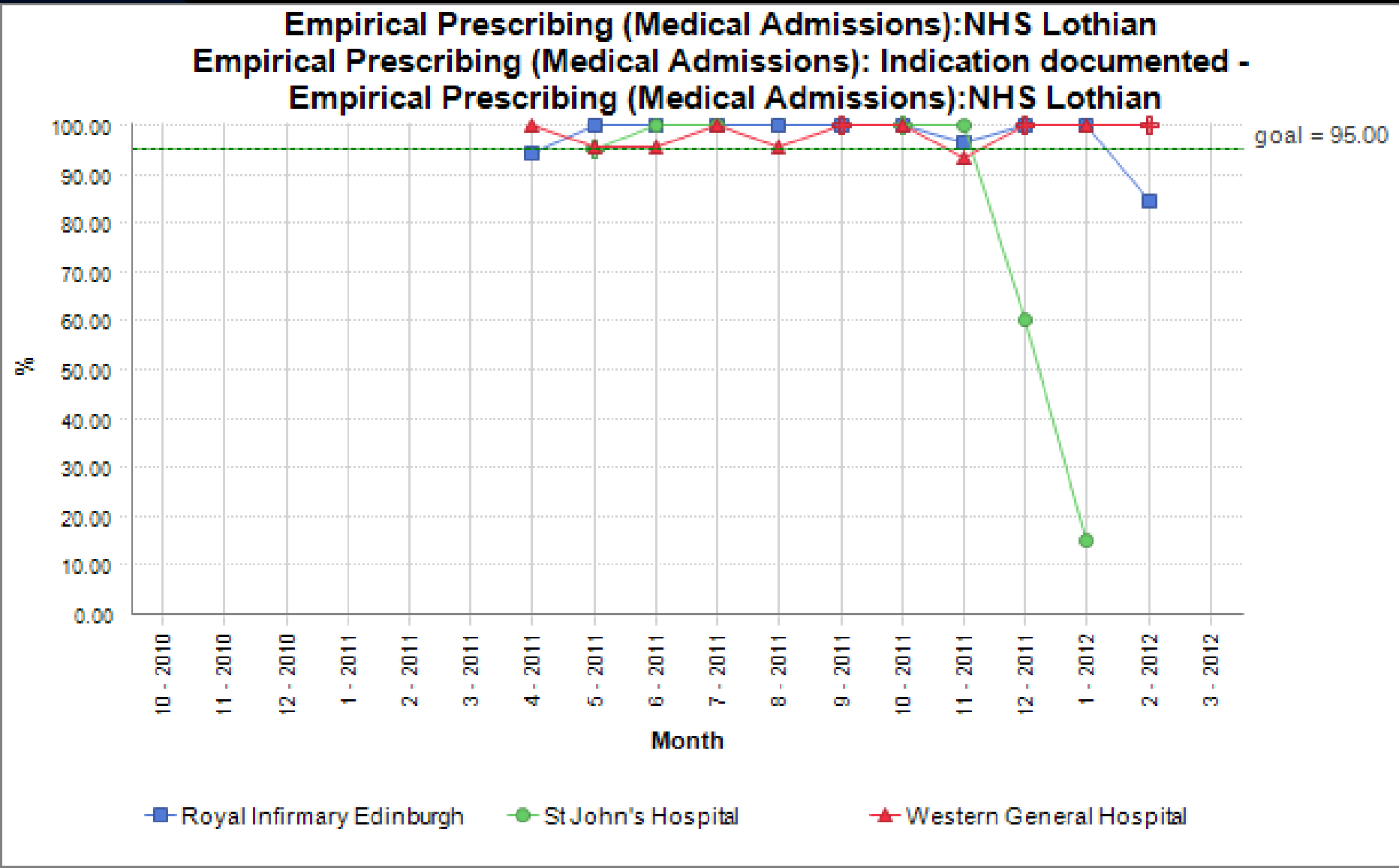
Does the risk CDI influence you prescribing



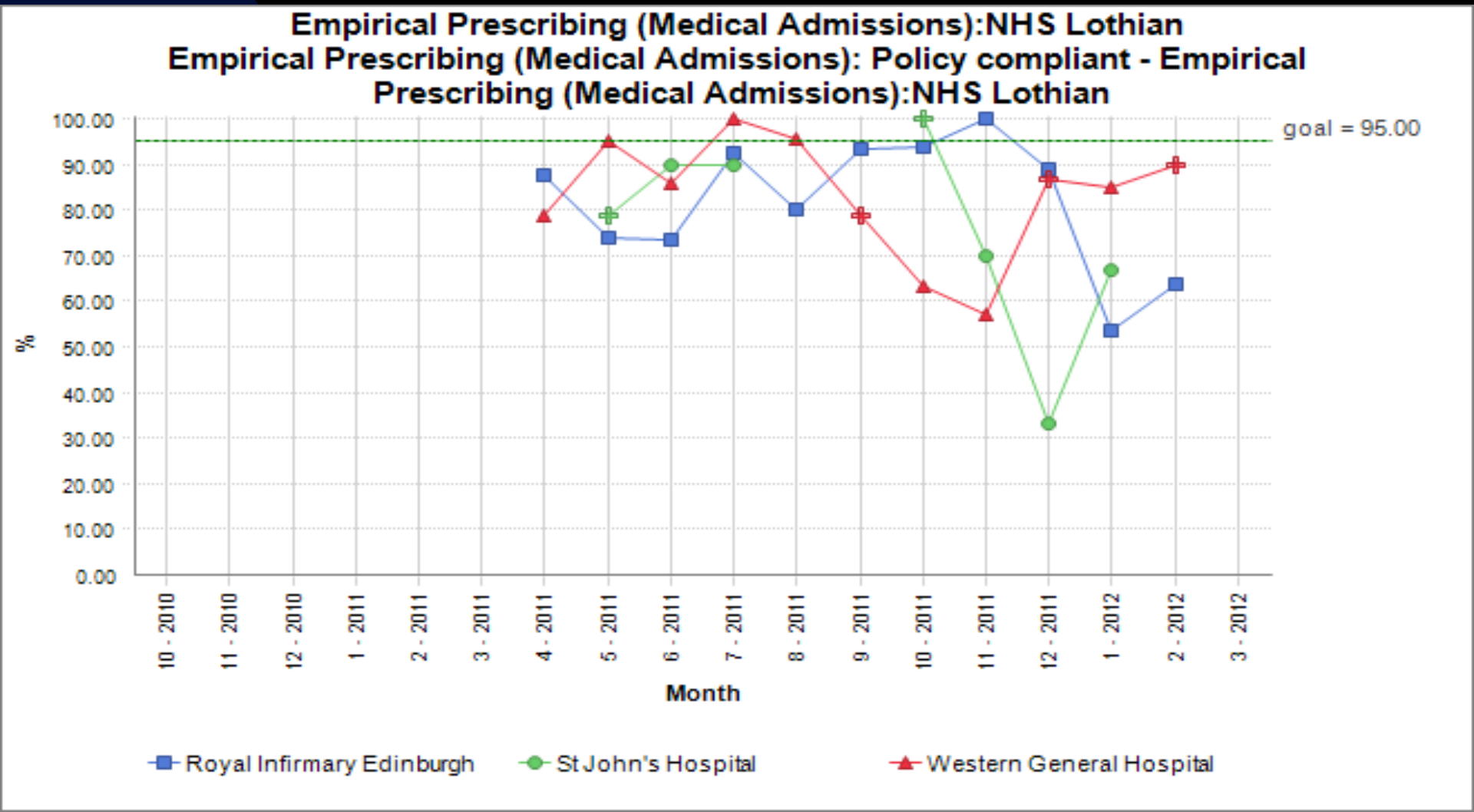
What this short survey tell us

- The best and easier to access is the poster "the most useful poster the NHS ever produced"
- AMR is seen as important, but "this is what might happen in the future"
- CDI is more of an acute problem and therefore seen as more relevant

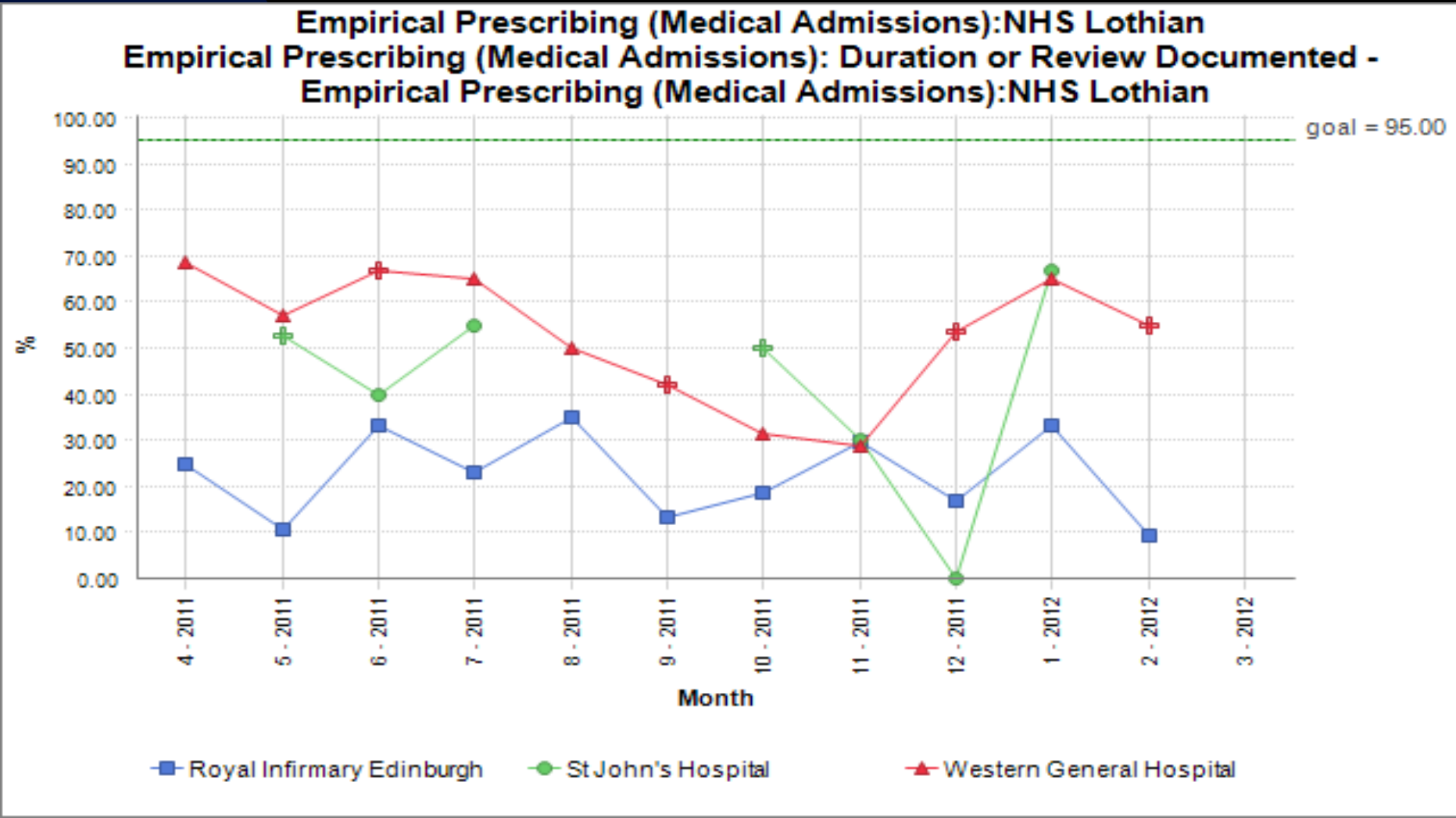
Where did we started from

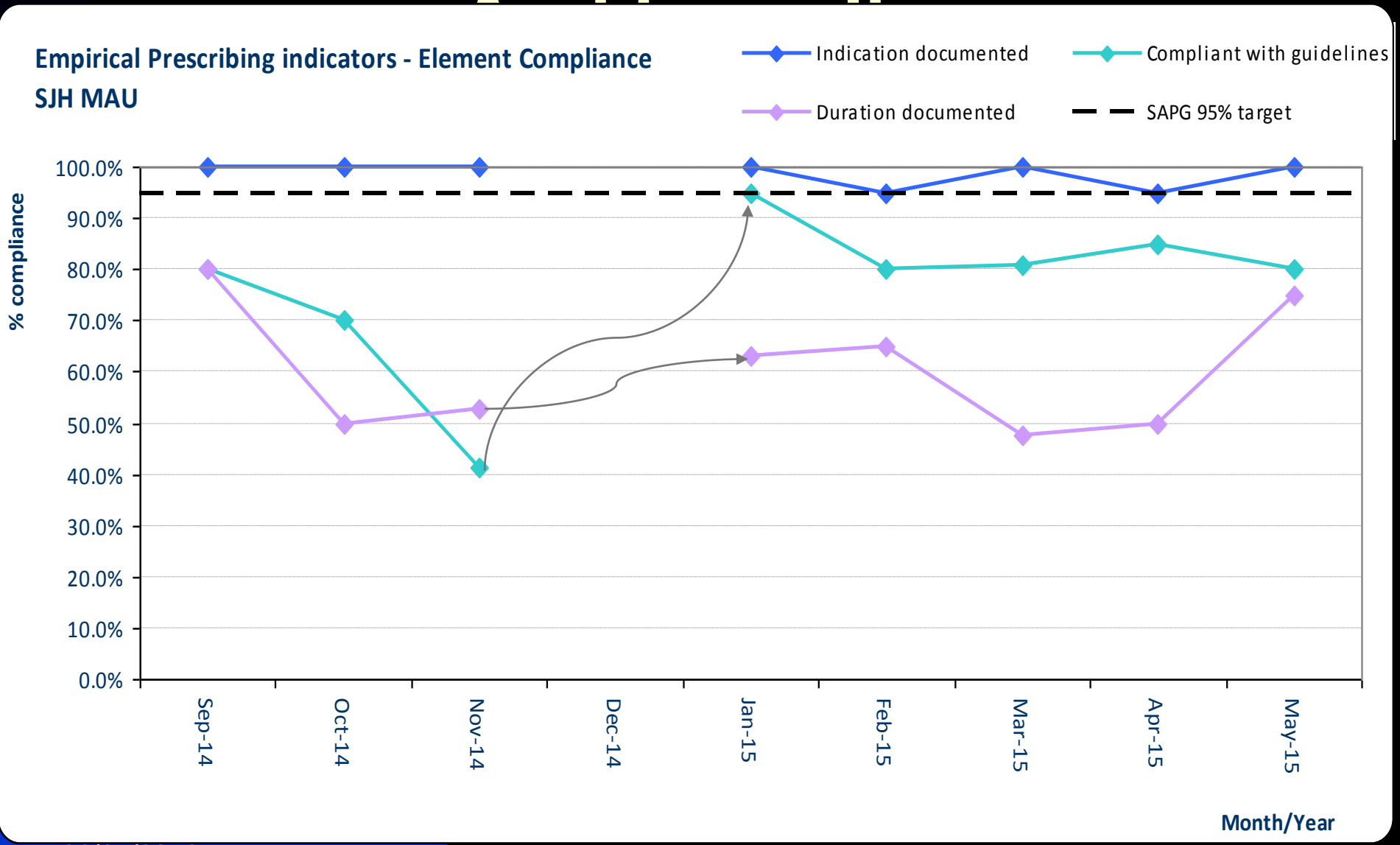


Antibiotic choice compliant

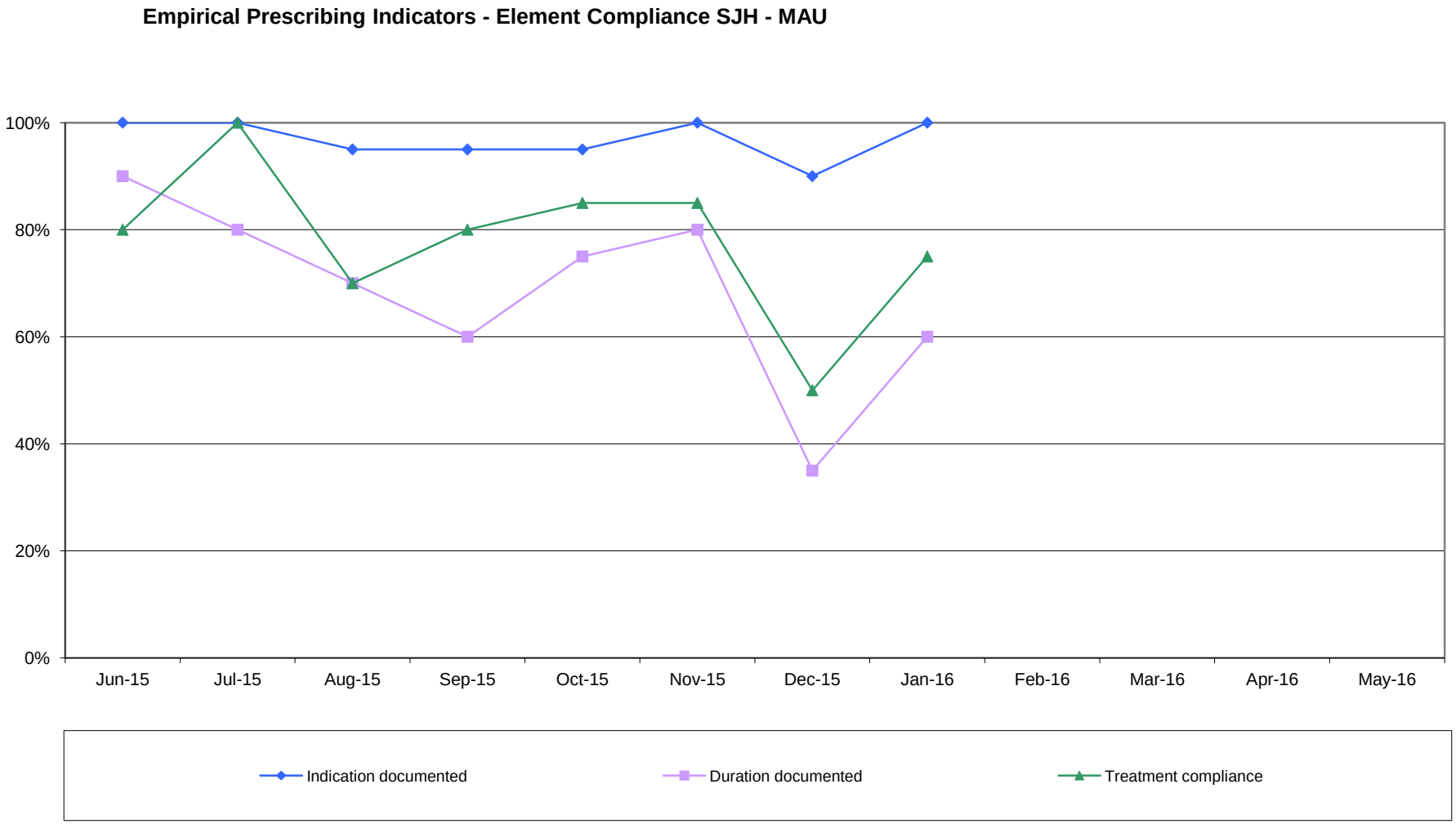


Duration/review/stop date

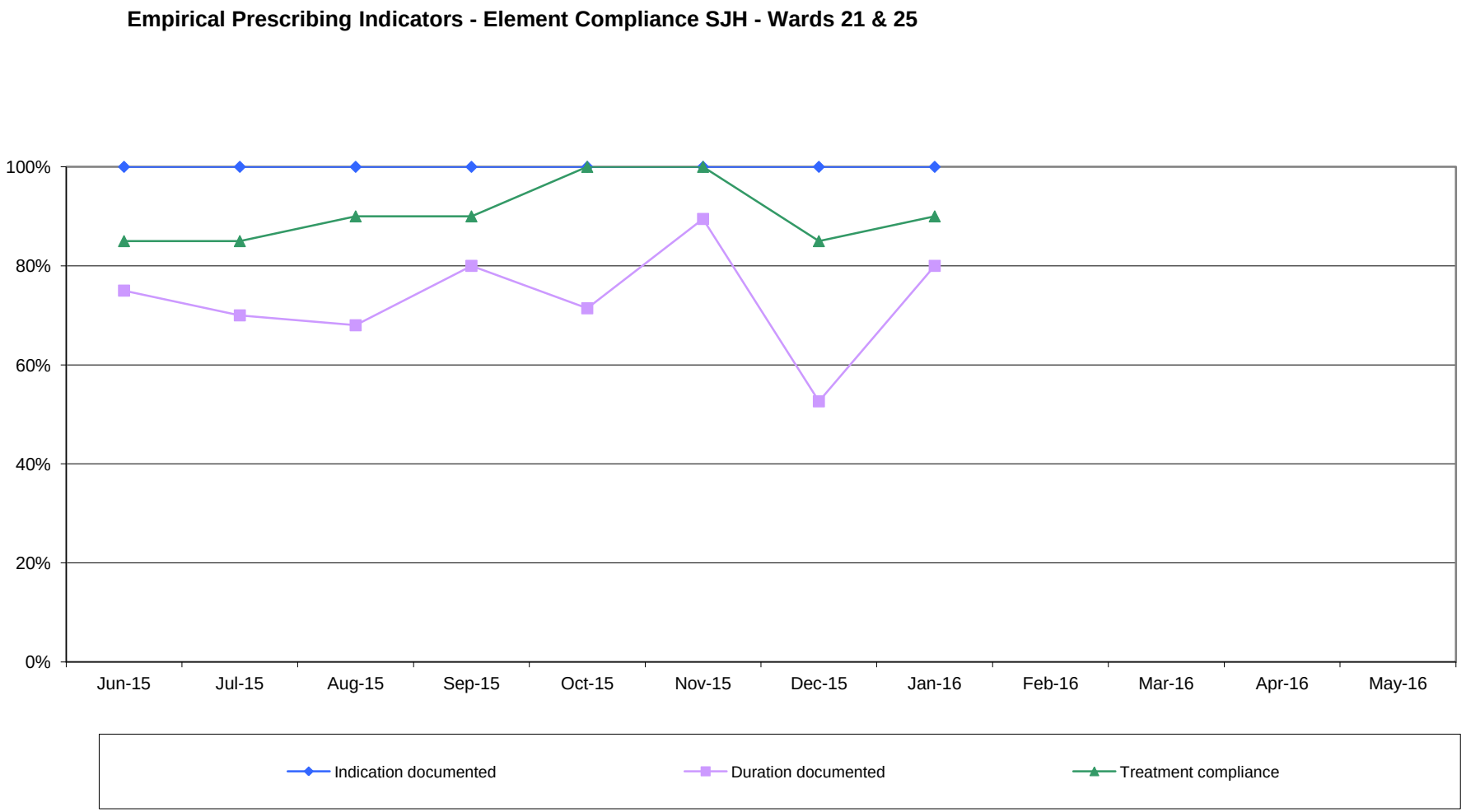



Empirical Prescribing indicators - Element Compliance
SJH MAU
Indication documented
Compliant with guidelines
Duration documented
SAPG 95% target
% compliance
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Month/Year

MAU data


Empirical Prescribing Indicators - Element Compliance SJH - MAU
100%
80%
60%
40%
20%
0%
Jun-15
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Indication documented
Duration documented
Treatment compliance

Downstream wards data



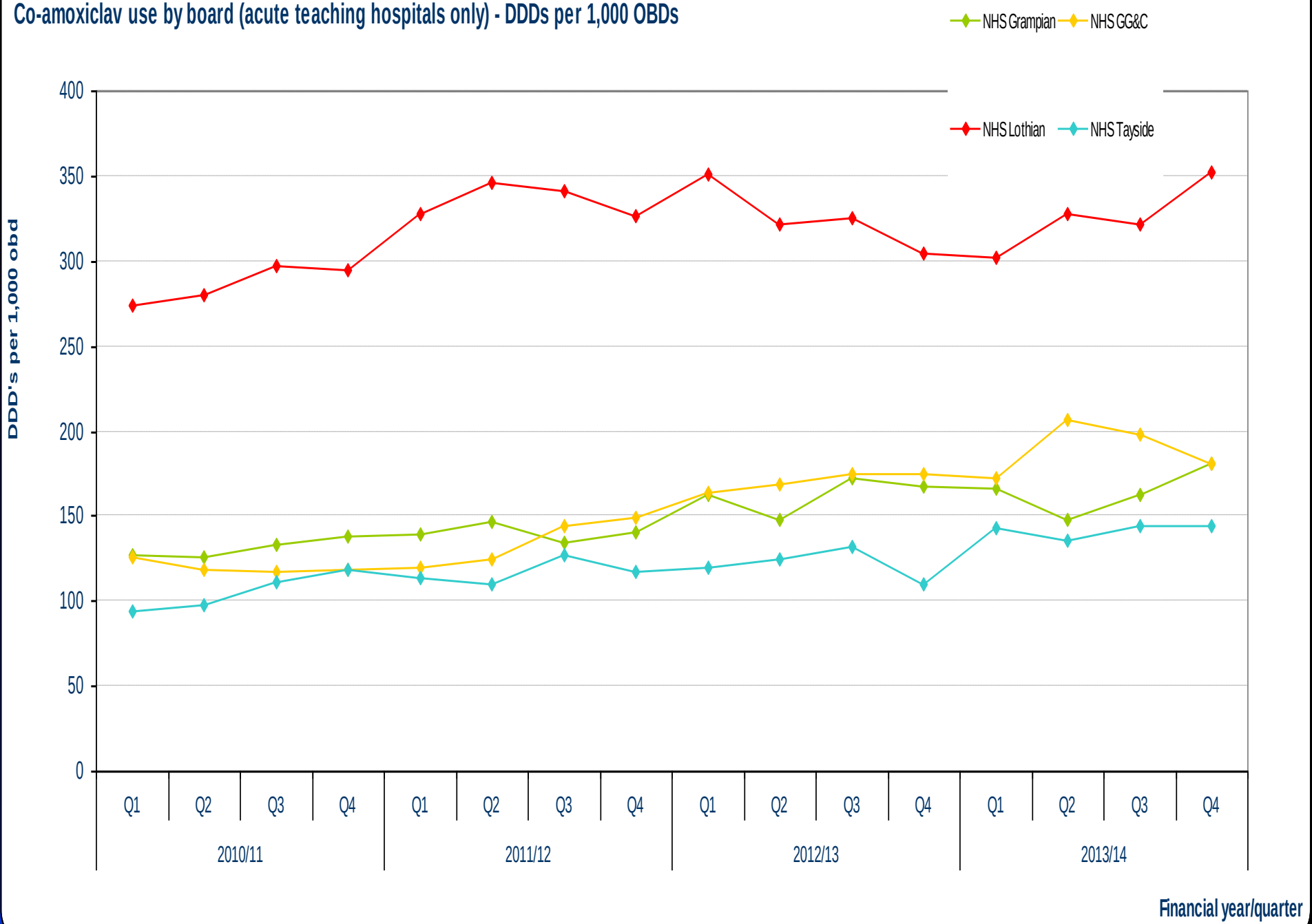
Trends

- Diagnosis is reliably hitting target
- Antibiotic compliant with guidance: not far behind, but not there yet
- Duration/review/stop date is the weakest measure

Difficulties

- Pneumonia often documented as CAP/LRTI with no severity scoring
- Exacerbation of COPD often documented as CAP/LRTI
- Just in case prescribing
- Often diagnosis documented - Confusion? Infection (?RTI/UTI)
- Staff turnover/ Senior doctors attitudes/Nursing staff lack empowerment
- Cleaning the stairs starts from the top/making data count

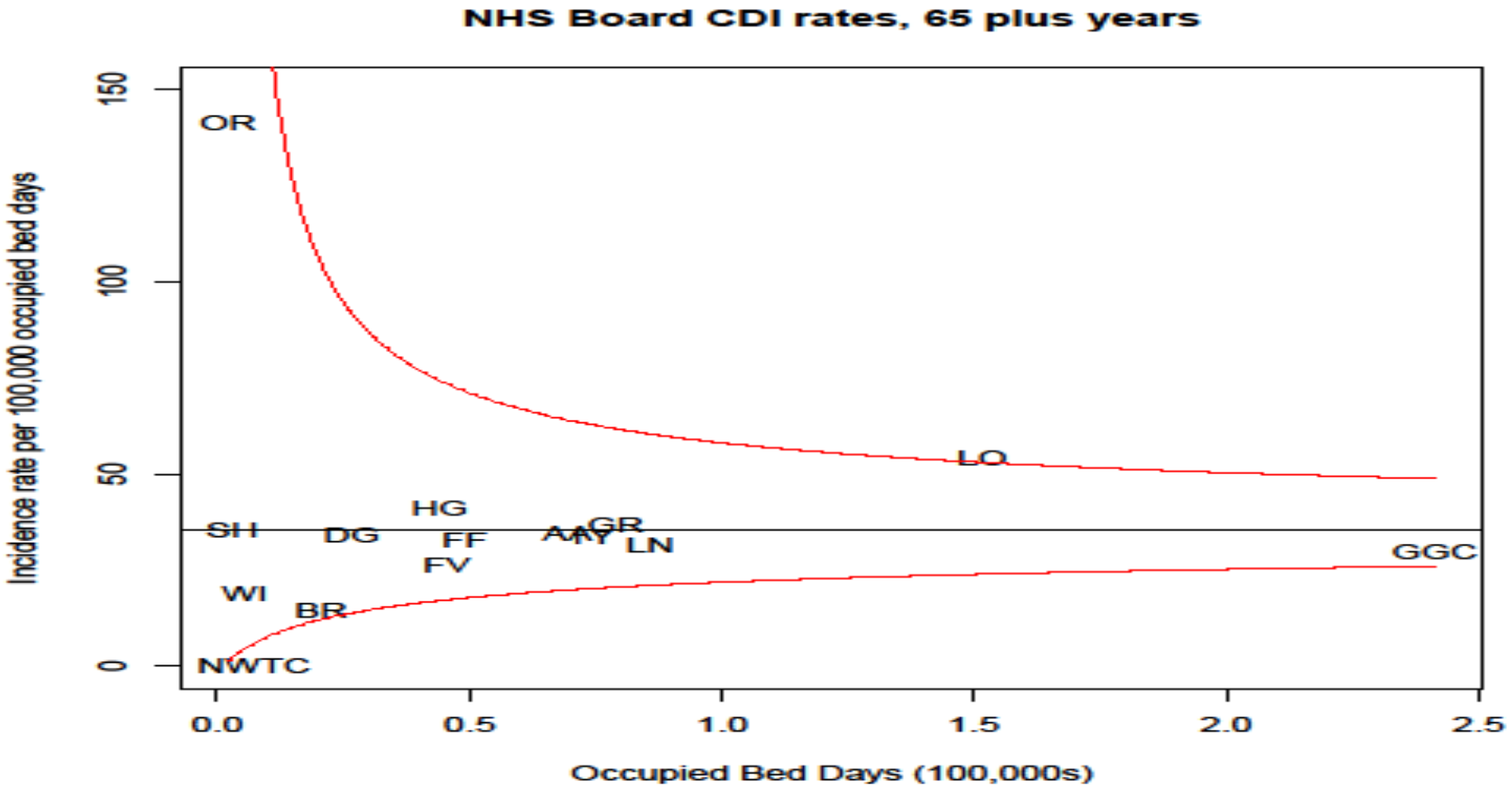
Co-amoxiclav use by board (acute teaching hospitals only) - DDDs per 1,000 OBDs



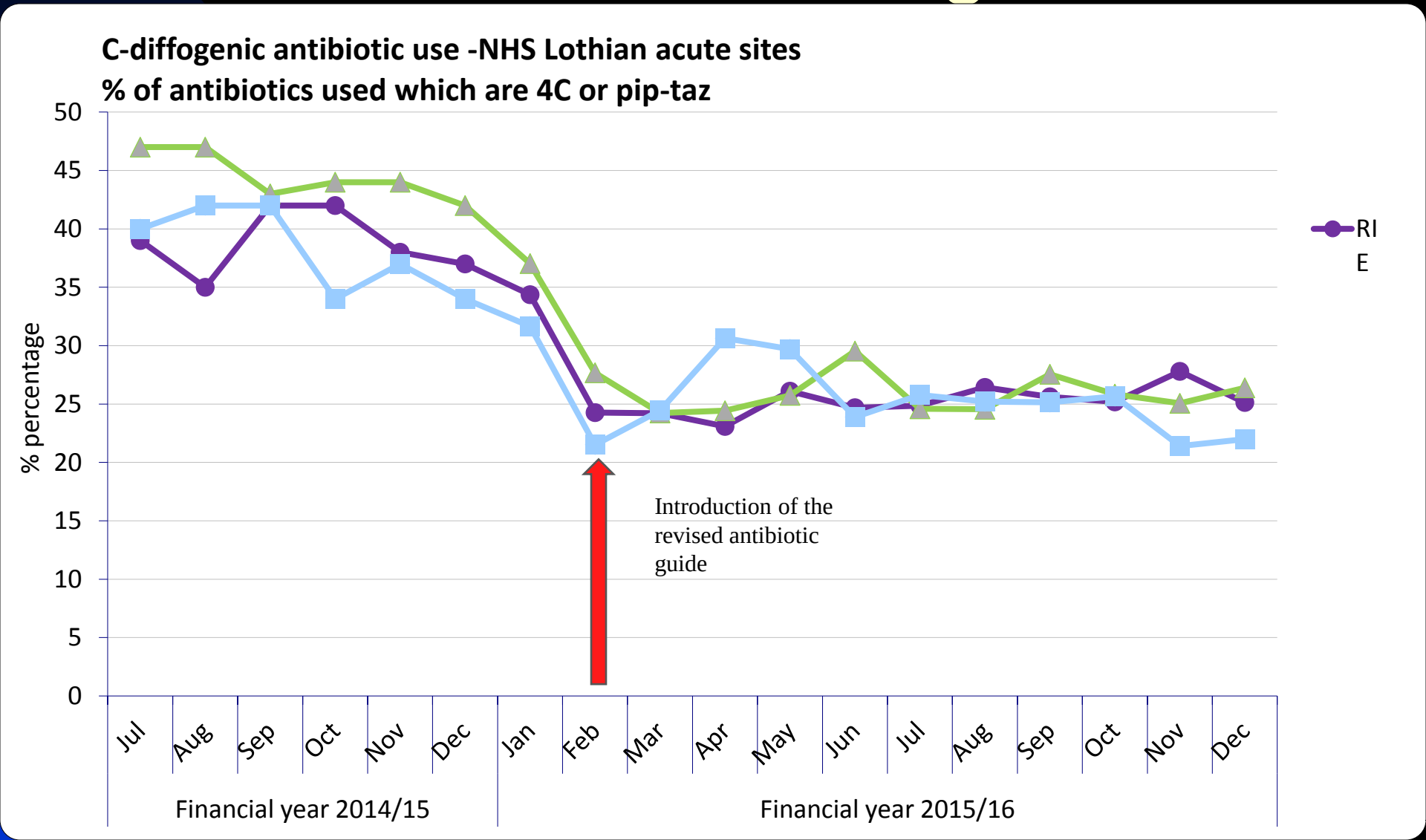
CDI cases per occupied bed stays (15+) in Health Boards across NHS Scotland

NHS Board	Year ending December 2014	NHS Board target (due for delivery 2014/15)
NHS AYRSHIRE & ARRAN	0.37	0.32
NHS BORDERS	0.23	0.32
NHS DUMFRIES & GALLOWAY	0.42	0.32
NHS FIFE	0.33	0.32
NHS FORTH VALLEY	0.20	0.32
NHS GRAMPIAN	0.30	0.32
NHS GREATER GLASGOW & CLYDE	0.29	0.32
NHS HIGHLAND	0.37	0.32
NHS LANARKSHIRE	0.36	0.32
NHS LOTHIAN	0.49	0.32
NHS ORKNEY	0.60	0.32
NHS SHETLAND	0.30	0.32
NHS TAYSIDE	0.33	0.32
NHS WESTERN ISLES	0.62	0.32

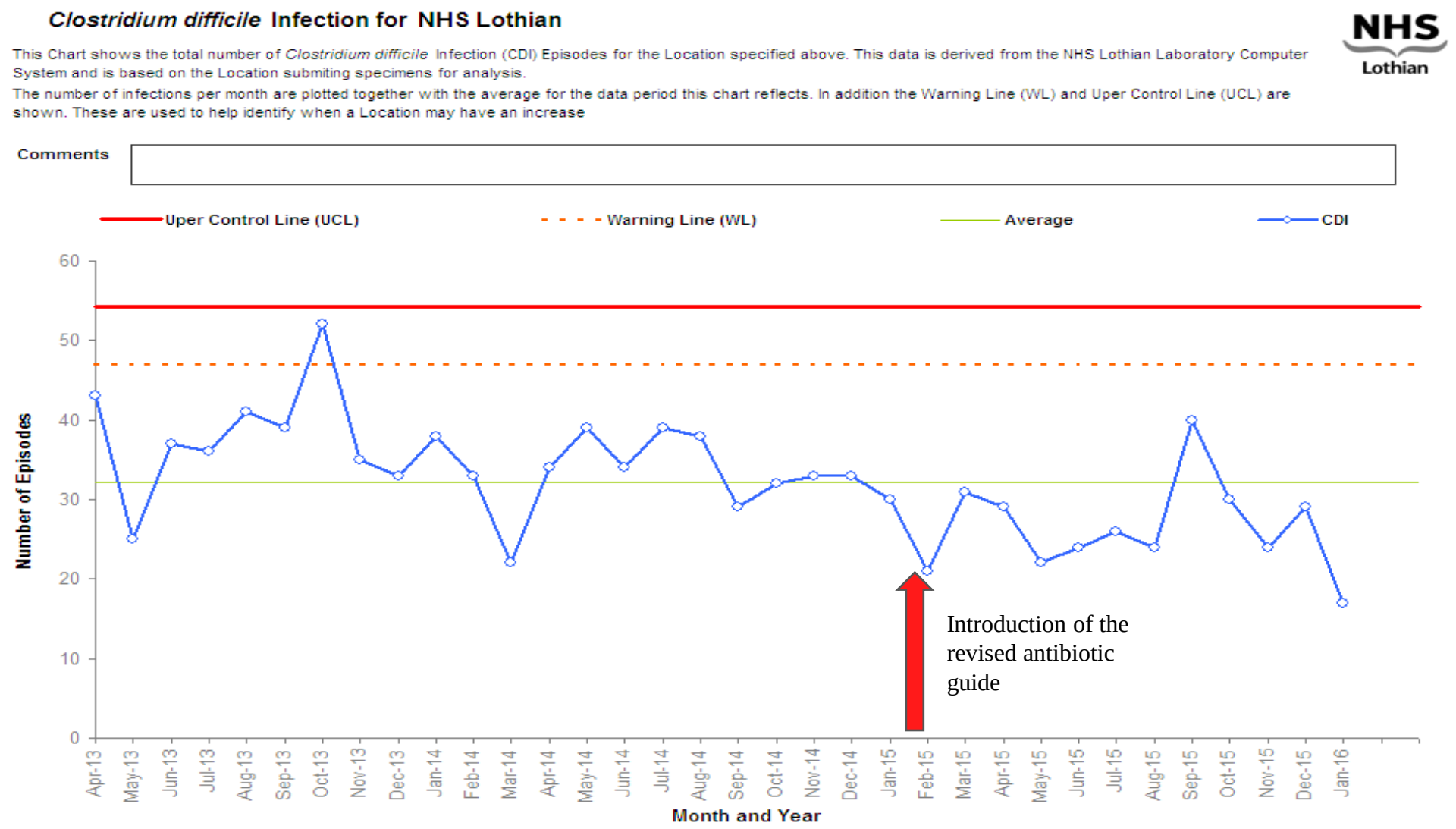
CDI incidence rate NHS Scotland 2014



C-diffogenic antibiotic use before and after the new guide



CDI infection at SJH



Progress against HEAT Target to March 2016

 ess against HEAT Target | Updated March 2016

NHS Lothian

	CDI Summary		SAB Summary	
	n	HEAT	*n*	HEAT
HEAT Target Allowance	262	0.32	184	0.24
NHS Lothian	304	0.40	218	0.29
Royal Infirmary of Edinburgh	76	0.26	100	0.34
Western General Hospital	89	0.40	72	0.32
St Johns Hospital	37	0.31	27	0.23
Liberton Hospital	4	0.09	5	0.11
Royal Hospital for Sick Children	3	0.11	10	0.36

This report card shows the progress against HEAT Target for NHS Lothian and main acute hospital sites from April 2015 to January 2016
NHS Lothian progress is calculated using the national Bed Day Data published by Health Protection Scotland
Hospital Site progress is calculated using local bed day data

Thank you