



How to develop, implement and evaluate prescribing guidelines and post-prescription review

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Workshop objectives

- To re-consider the ‘low hanging fruit’ in antimicrobial stewardship focusing particularly on guidelines and post-prescription review
- To discuss and reflect on our experiences of development, implementation and evaluation of these as a group:
 - What processes were used?
 - What went well?
 - What did not go well?
 - How were obstacles overcome?
 - What lessons were learned and what would be done differently next time?

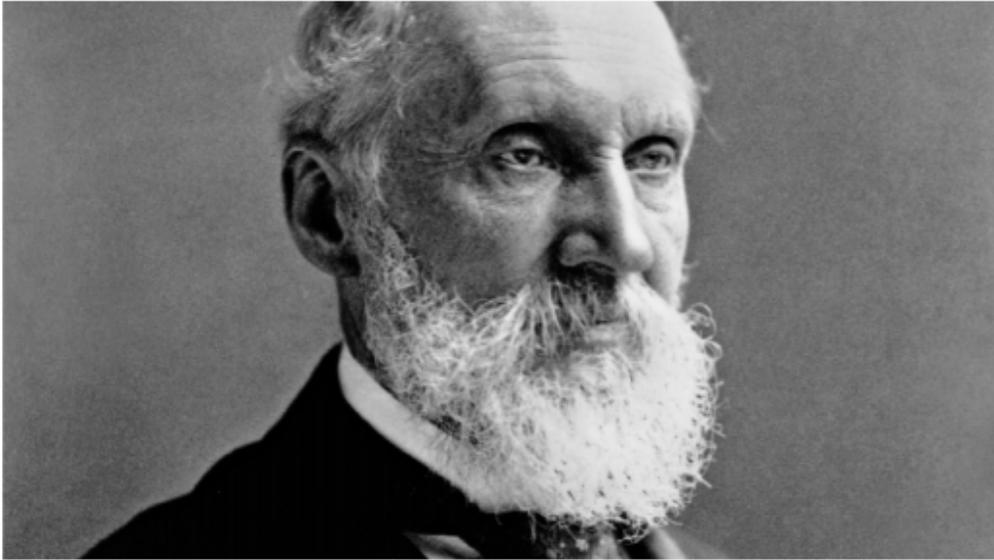
Outcome – to have considered options for guideline development and post-prescription review and lessons learned that can be taken back and implemented in our own area

Inappropriate prescribing

Scenario

Your Minister of Health makes a statement to the media and in Parliament to say that inappropriate antibiotic prescribing will be reduced by 50%

What do you do?

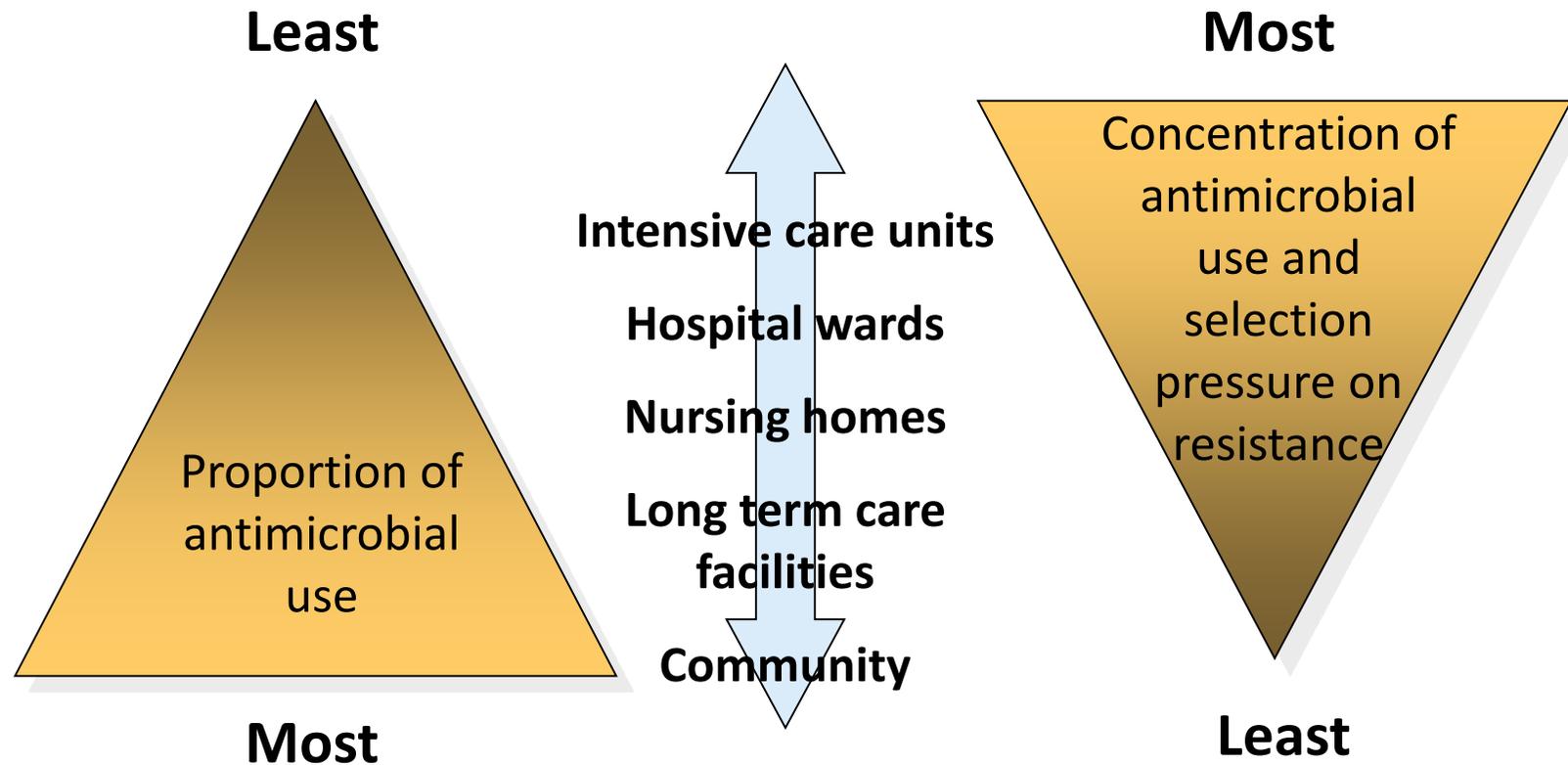


- The only way to determine if antibiotic use is improving is through measurement
- Set the baseline, then repeat measurement to check if things are improving

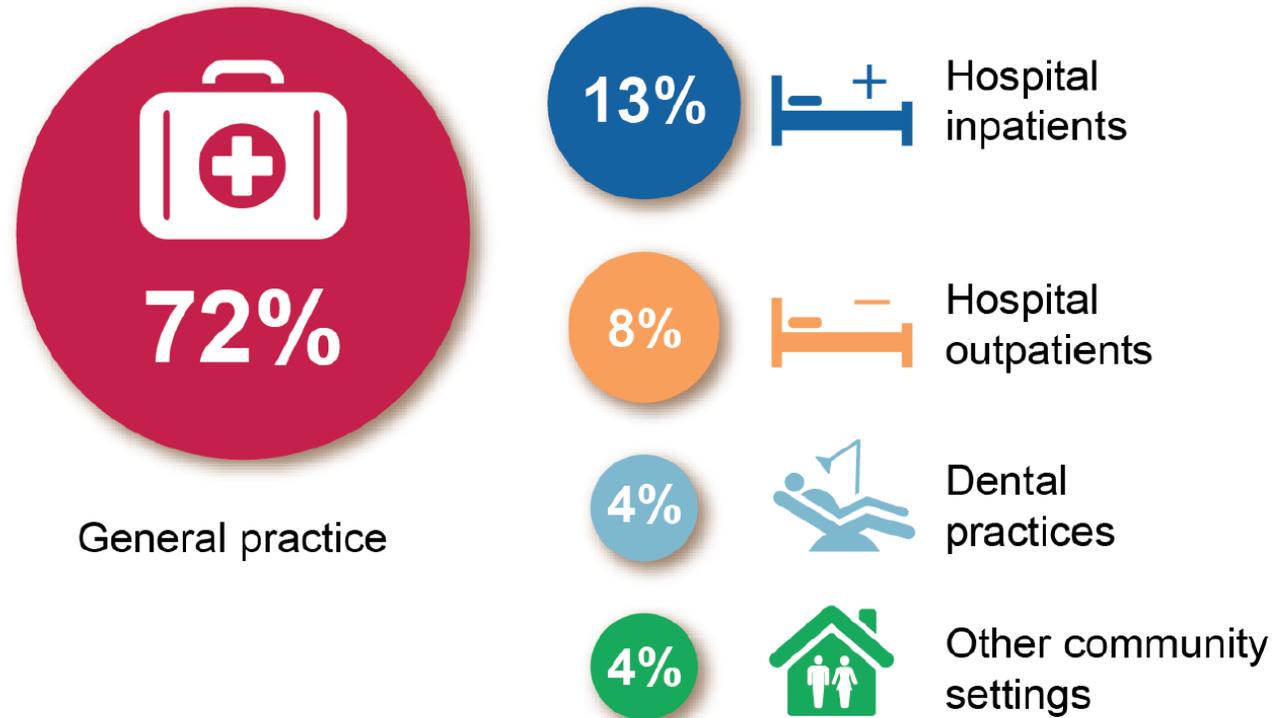
“ *To measure is to know*

“ *If you cannot measure it,
you cannot improve it*

The pyramids of antibiotic use and the selection of resistance



Where antibiotics were prescribed, England 2018



Reasons for inappropriate prescribing –the ‘big two’

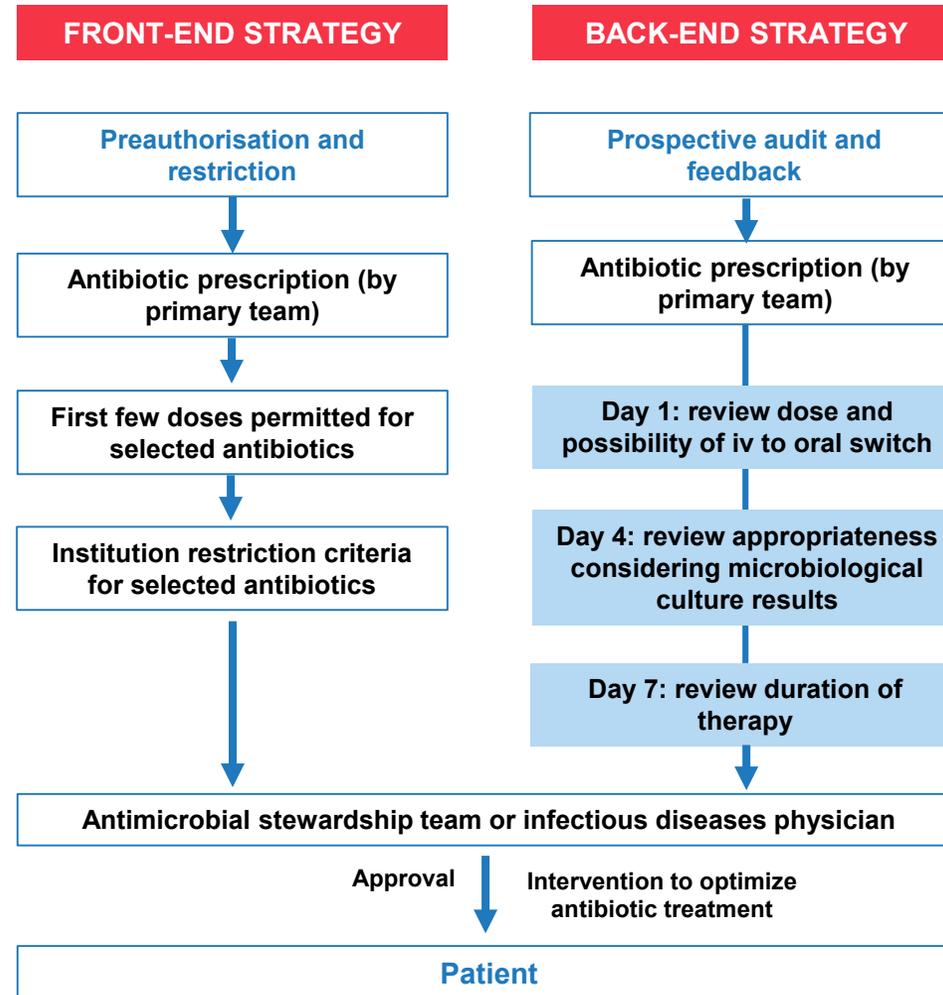
Community

- Starting antibiotics in those who don't need them

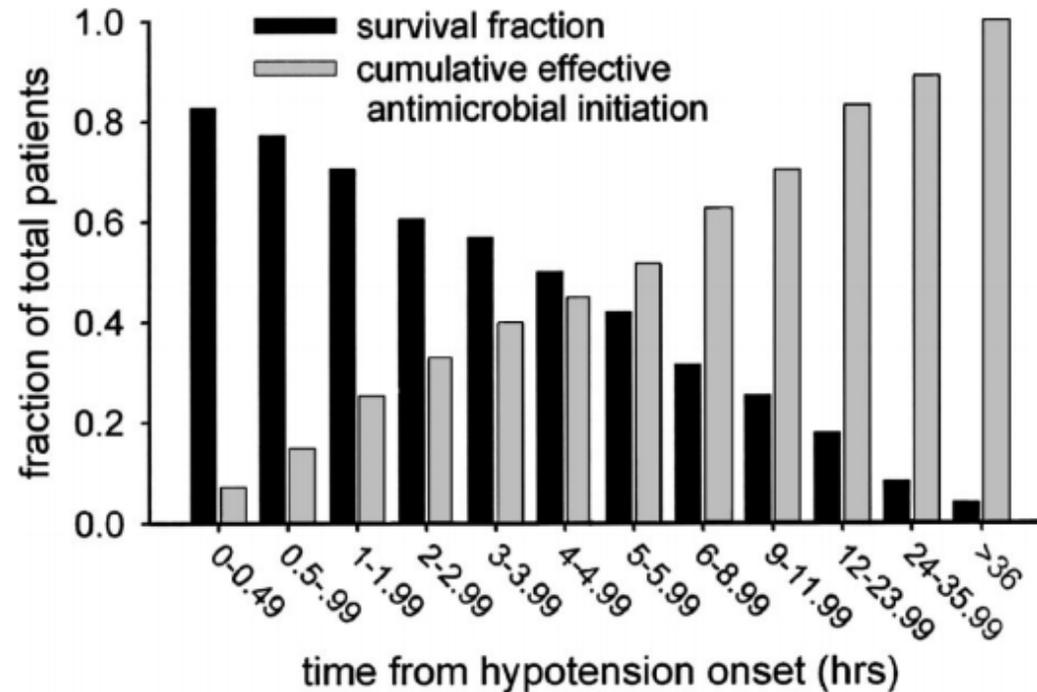
Hospital

- Continuing antibiotics for too long

'Front-end' versus 'Back-end' AMS strategies



'The Golden Hour'- Survival and timing of effective antimicrobial therapy in patients with septic shock



ANTIMICROBIAL STEWARDSHIP

**Right drug, right dose, right time, right duration...
...every patient**

England AMS
Standards
Start Smart then
Focus

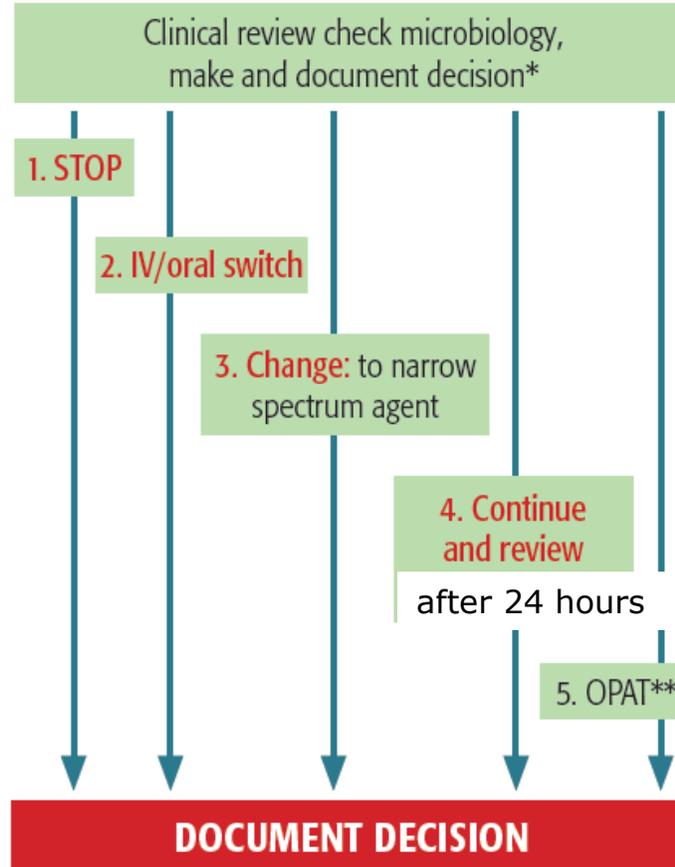
Start Smart

Then
focus

Clinical review & decision* at 48 hours

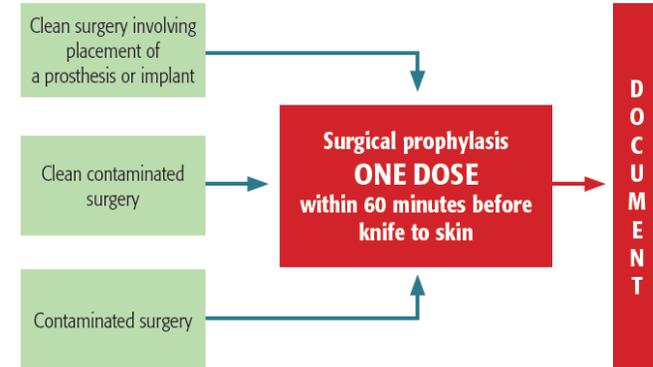
**Do not start antibiotics
in the absence of evidence
of bacterial infection**

- Take history of relevant allergies
- Initiate prompt effective antibiotic treatment within one hour of diagnosis (or as soon as possible) in patients with life threatening infections
- Comply with local prescribing guidance
- Document clinical indication and dose on drug chart and clinical notes
- Include review/stop date or duration
- Ensure relevant microbiological specimens taken



* Antimicrobial Prescribing Decision
** Outpatient Parenteral Therapy

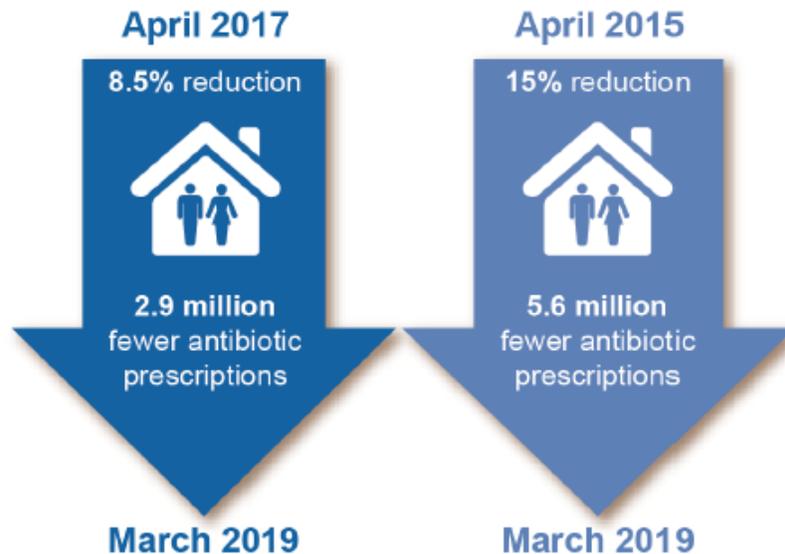
SINGLE DOSE SURGICAL PROPHYLAXIS*



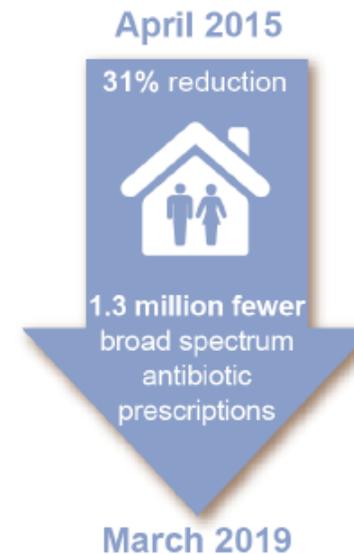
* A repeat dose of prophylaxis may be required for prolonged procedures or where there is significant blood loss. A treatment course of antibiotics may also need to be given (in addition to appropriate prophylaxis) in cases of dirty surgery or infected wounds. The appropriate use and choice of antibiotics should be discussed with infection specialists for each case.

Quality premium in community practice

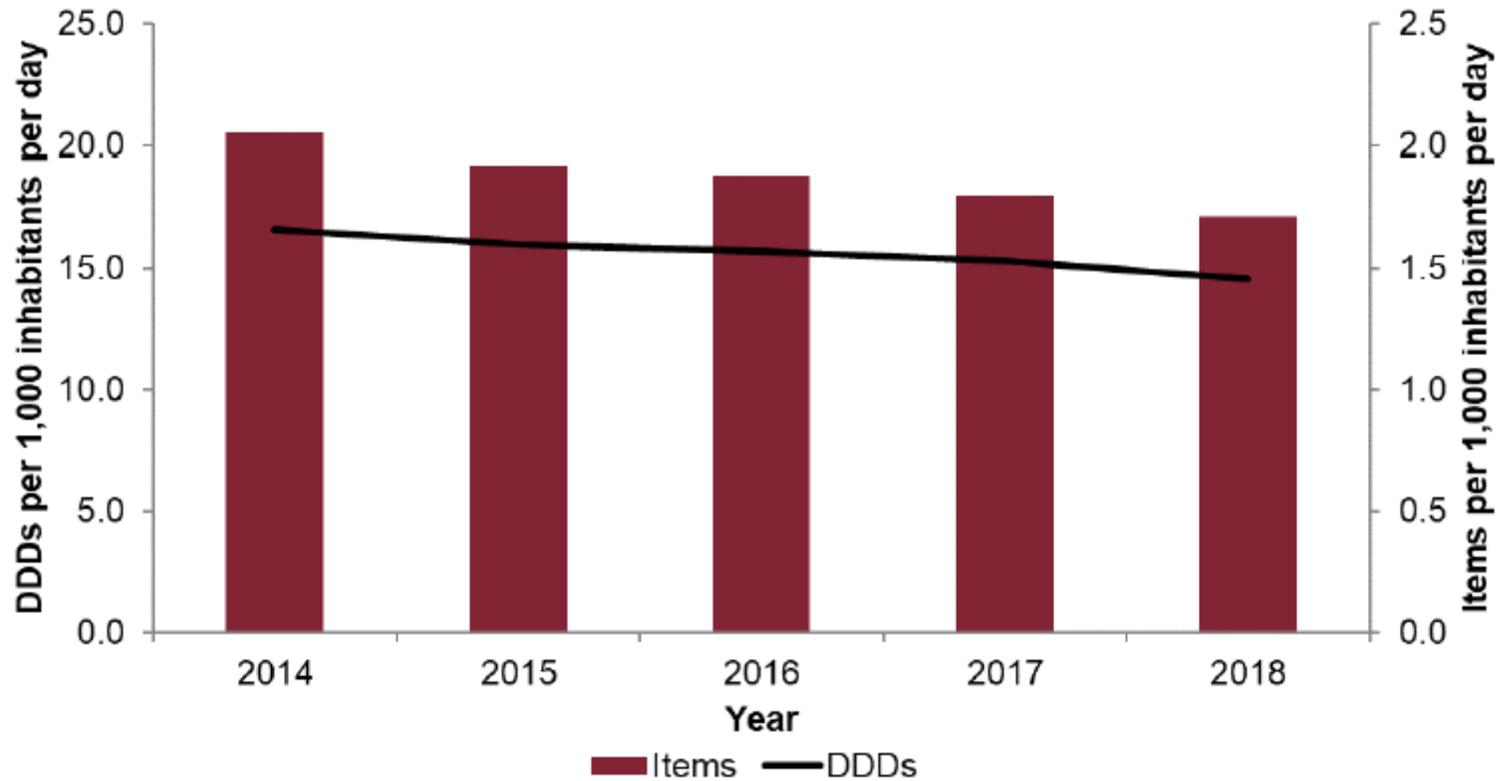
Reducing inappropriate antibiotic prescribing in primary care 2015-2019



Reducing broad spectrum antibiotic prescribing in primary care 2015-2019



Antibiotic consumption in primary care



Consumption expressed as DDDs and Items per 1,000 inhabitants per day

How to figure out how long antibiotics need to be given

Paul E Sax
October 22nd, 2010

- Choose a multiple of 5 (fingers of the hand) or 7 (days of the week).
- Is it mild? If so, choose something less than 10 days.
 - really mild (antibiotics probably aren't needed at all) - Break the 5:7 rule and give 3 days.
 - serious problem - 10 days is the minimum.
 - not better at end of course - Extend treatment, again using a multiple of 5 or 7 days.
- The following lengths of therapy are inherently weird, and should generally be avoided: 2, 4, 6, 8, 9, 11, 12, 13 days

Real world prescribing - Duration of antibiotic treatment in 50 ICU patients receiving 150 antibiotic courses

Indication for antibiotic treatment

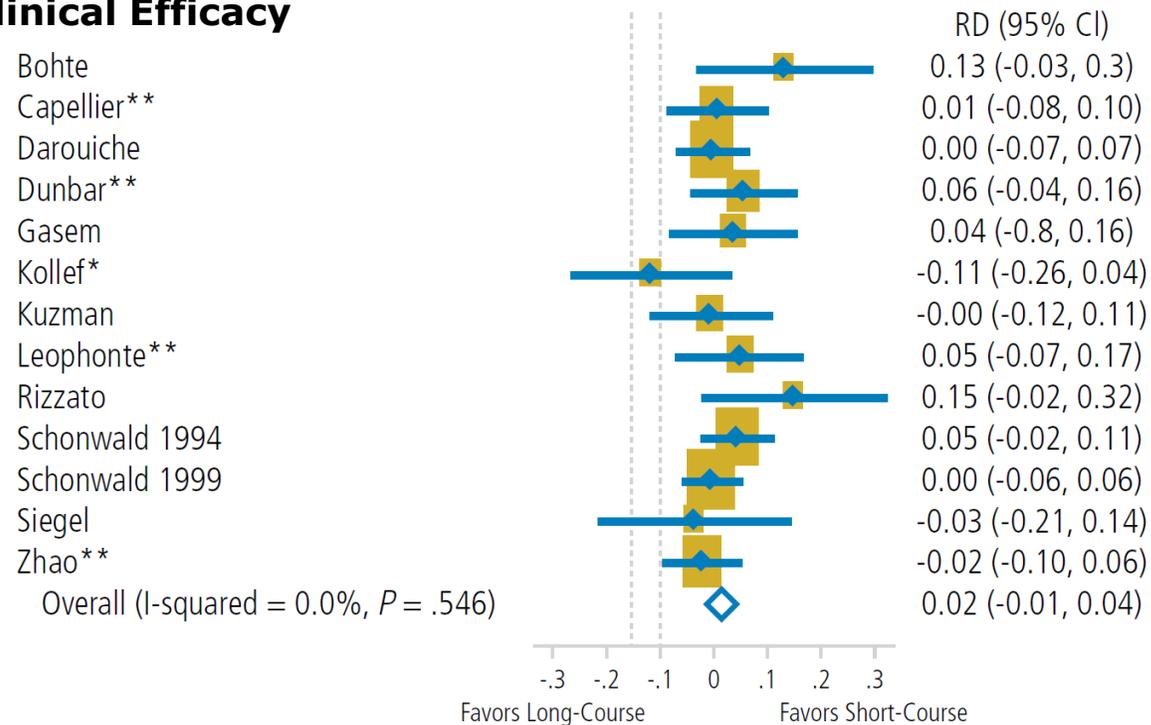
Reason	Days	Even	Uneven	Ratio ^a
Meningitis	21	0	3	30.00
FUO	2-14	9	21	2.33
Respiratory tract infection	2-16	19	41	2.16
Sepsis/CRI	2-28	13	25	1.92
Other infections	5-42	13	4	0.31

Uneven number of days course was much more common

Predicted = 28% courses should have been stopped during the weekend
Actual = <10% were stopped on Saturday and Sunday
24% (or 1.7 time the expected rate) were stopped on Monday

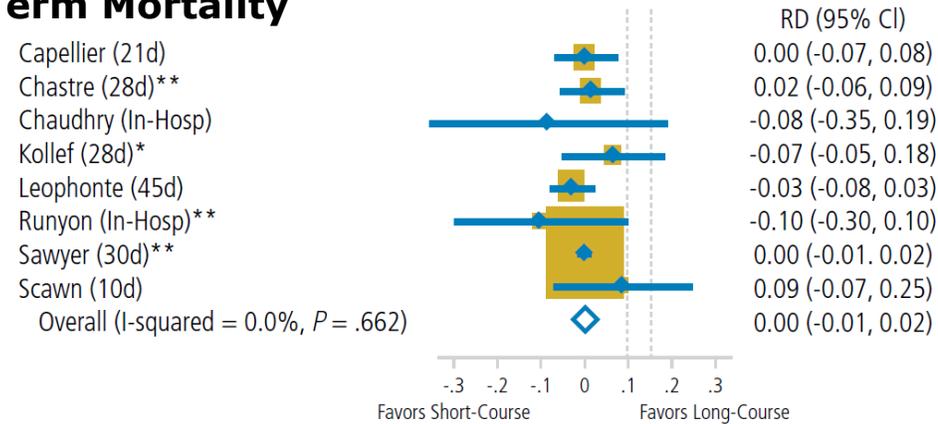
Shorter Versus Longer Courses of Antibiotics for Infection in Hospitalized Patients: A Systematic Review and Meta-Analysis

Clinical Efficacy

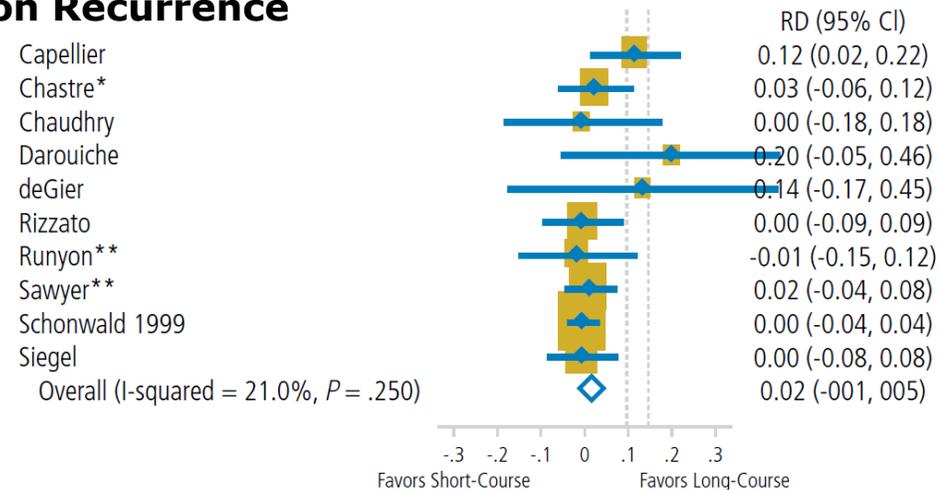


Shorter Versus Longer Courses of Antibiotics for Infection in Hospitalized Patients: A Systematic Review and Meta-Analysis

Short-Term Mortality



Infection Recurrence



Acute Hospital Prescribing

CQUIN (2018/19)

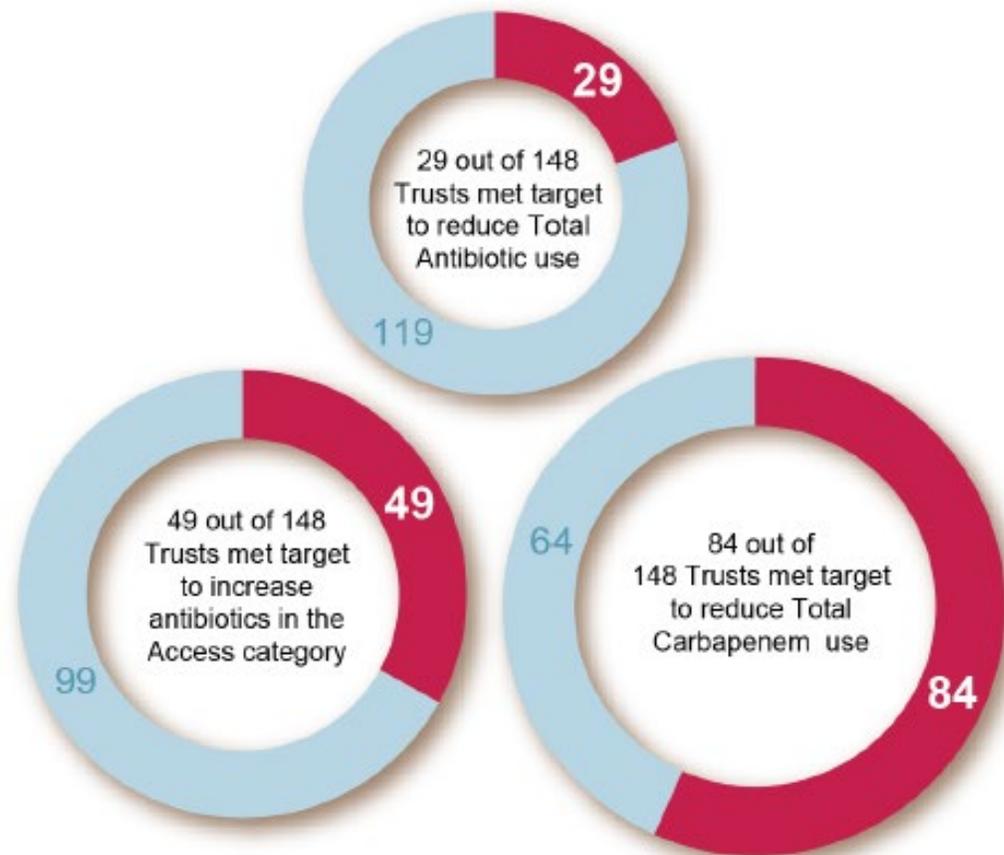
- Overall antimicrobial consumption reduced by 1-2% from 2016 baseline.
- Carbapenem consumption reduced by 1-2% reduction from 2016 baseline
- Use of WHO Access Group increased by 3%

CQUIN (2019/20)

- Improve management of lower UTIs in older patients
- Antibiotic prophylaxis in elective colorectal surgery

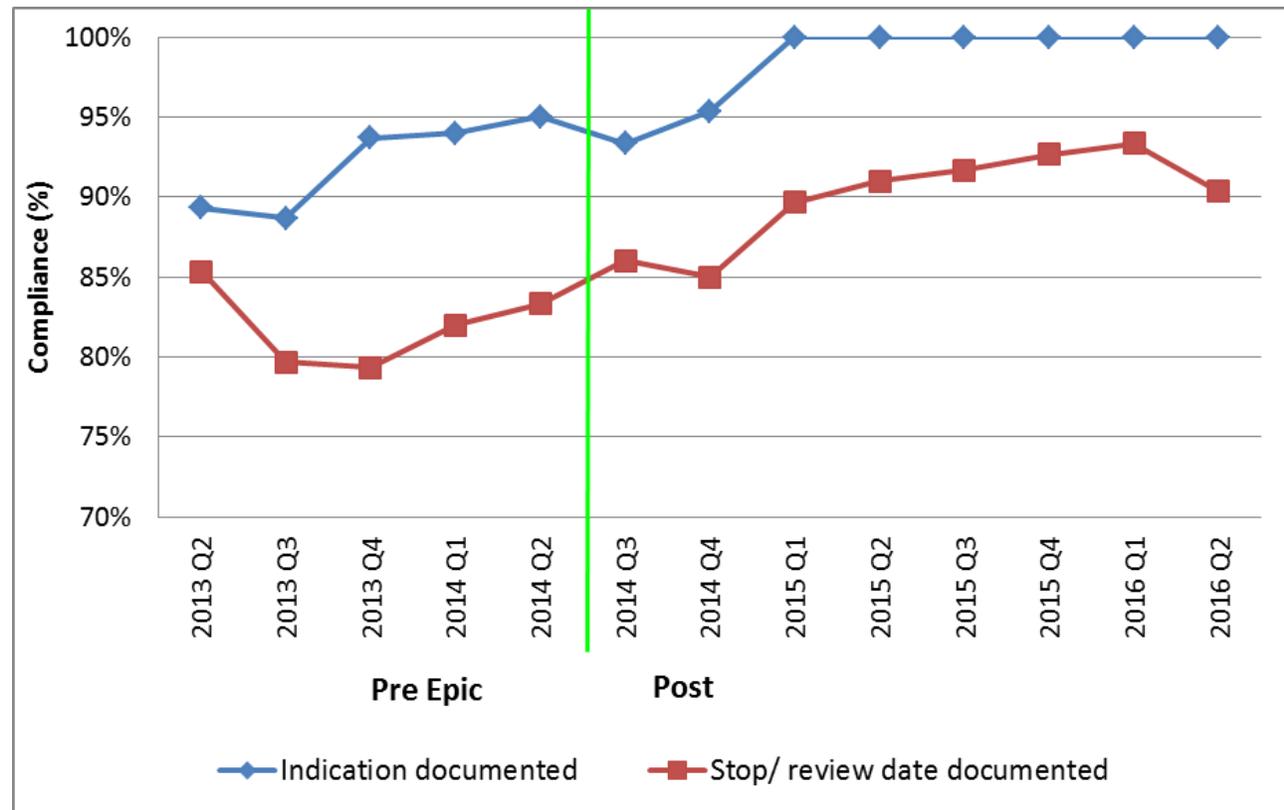
CQUIN = 'commissioning for quality improvement and innovation' a performance management tool used by NHS England with financial incentives to comply

CQUIN performance in secondary care



Acute Hospital Prescribing

Impact of the implementation of an electronic patient record



AMR local indicators

Indicator keywords

Supporting NHS
England
Initiatives

Antimicrobial
Resistance

Antibiotic
Prescribing

Health Care
Associated
Infection

Infection
Prevention and
Control

Antimicrobial
Stewardship

All Trust

All Clinical
Commissioning
Group

- Overview
- Compare indicators
- Map
- Trends
- Compare areas
- Area profiles
- Definitions
- Download

Area type: CCG

Benchmark: England

Benchmark against goal where applicable

Area: NHS West Essex CCG

Sub-region: East

10 most similar CCGs to West Essex

Compared with benchmark: Better Similar Worse Lower Similar Higher Low High Not compared

Export table as image

Indicator	Period	England	East NHS region	NHS Basildon And Brentwood CCG	NHS Cambridgeshire and Peterborou...	NHS Castle Point And Rochford CCG	NHS Great Yarmouth And Waveney CC...	NHS Ipswich And East Suffolk CCG	NHS M1 Essex CCG	NHS North East Essex CCG	NHS North Norfolk CCG	NHS Norwich CCG	NHS South Norfolk CCG	NHS Southern CCG	NHS Thurrock CCG	NHS West Essex CCG	NHS West Norfolk CCG	NHS West Suffolk CCG
Twelve month rolling total number of prescribed antibiotic items per STAR-PU	Mar 2017	1.07	1.14	1.22	1.11	1.13	1.16	1.07	1.13	1.28	1.11	1.16	1.02	1.18	1.14	1.17	1.20	1.15
≤ mean England prescribing (2013/14)																		
> mean England prescribing (2013/14)																		
Twelve month rolling percentage of prescribed antibiotic items from cephalosporin, quinolone and co-amoxiclav class	Mar 2017	8.92	11.19	9.64	12.35	11.40	7.85	12.04	9.81	9.98	12.38	11.67	14.42	11.49	8.34	10.01	13.82	11.71
All C. difficile rates by CCG and financial year	2015/16	26.0	25.0	24.9	19.8	28.7	39.2	28.3	14.3	19.6	30.6	32.4	31.2	26.4	13.4	22.8	45.0	26.6
All E. coli bacteraemia rates by CCG and financial year	2015/16	70.0	63.1	67.8	58.9	79.9	81.6	58.4	47.3	67.9	61.8	58.8	76.4	60.0	69.1	50.7	73.2	70.6
Twelve month rolling proportion of trimethoprim class prescribed antibiotic items as a ratio of trimethoprim to nitrofurantoin	Mar 2017	55.5	62.7	69.3	60.3	71.4	63.6	67.9	63.8	54.5	61.4	61.7	60.9	70.9	69.7	57.8	57.3	65.7

<http://fingertips.phe.org.uk/profile/amr-local-indicators/data#page/0>

AMR local indicators

Indicator keywords

- Supporting NHS England Initiatives
- Antimicrobial Resistance
- Antibiotic Prescribing**
- Health Care Associated Infection
- Infection Prevention and Control
- Antimicrobial Stewardship
- All Trust
- All Clinical Commissioning Group

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Search for an area

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Total number of prescribed antibiotic items per 1000 resident individuals by quarter	2017 Q1	170.1	188.1	200.6	178.2	189.7	202.8	187.7	175.1	220.5	185.5	189.9	162.2	186.5	178.6	186.8	198.6	202.9
Total number of prescribed antibiotic items per STAR-PU by quarter	2017 Q1	0.28	0.31	0.33	0.30	0.31	0.31	0.30	0.31	0.35	0.29	0.31	0.28	0.32	0.32	0.32	0.33	0.32
Percentage of prescribed antibiotic items from cephalosporin, quinolone and co-amoxiclav class by quarter	2017 Q1	8.39	10.56	9.74	11.60	11.39	7.13	10.78	9.49	9.64	10.73	11.06	13.61	11.45	8.17	9.27	13.16	10.67
Twelve month rolling total number of prescribed antibiotic items per 1000 individuals per day	Mar 2017	1.74	1.89	2.01	1.80	1.94	2.08	1.83	1.77	2.21	1.93	1.94	1.61	1.91	1.76	1.86	1.98	2.02
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Area type: CCG Benchmark: England

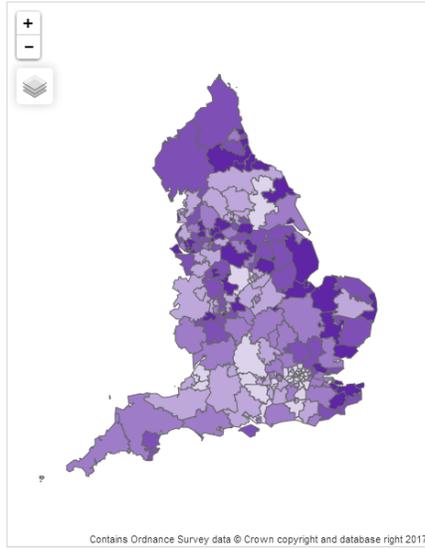
Area: **NHS West Essex CCG** Search for an area 10 most similar CCGs to West Essex

Indicator: **Total number of prescribed antibiotic items per 1000 resident individuals b...**

* a note is attached to the value, hover over to see more details

Compared with benchmark Better Similar Worse Lower Similar Higher Low High Not compared

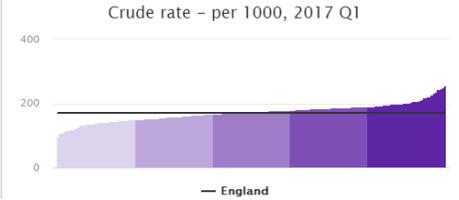
Export map as image



Map colour: Comparison to benchmark

Select an area from the map

Export chart as image



The current review and revise mindset



Continue unless I can justify stopping

The ARK review and revise mindset



Stop unless I can justify continuing

ARK = antibiotic resource kit

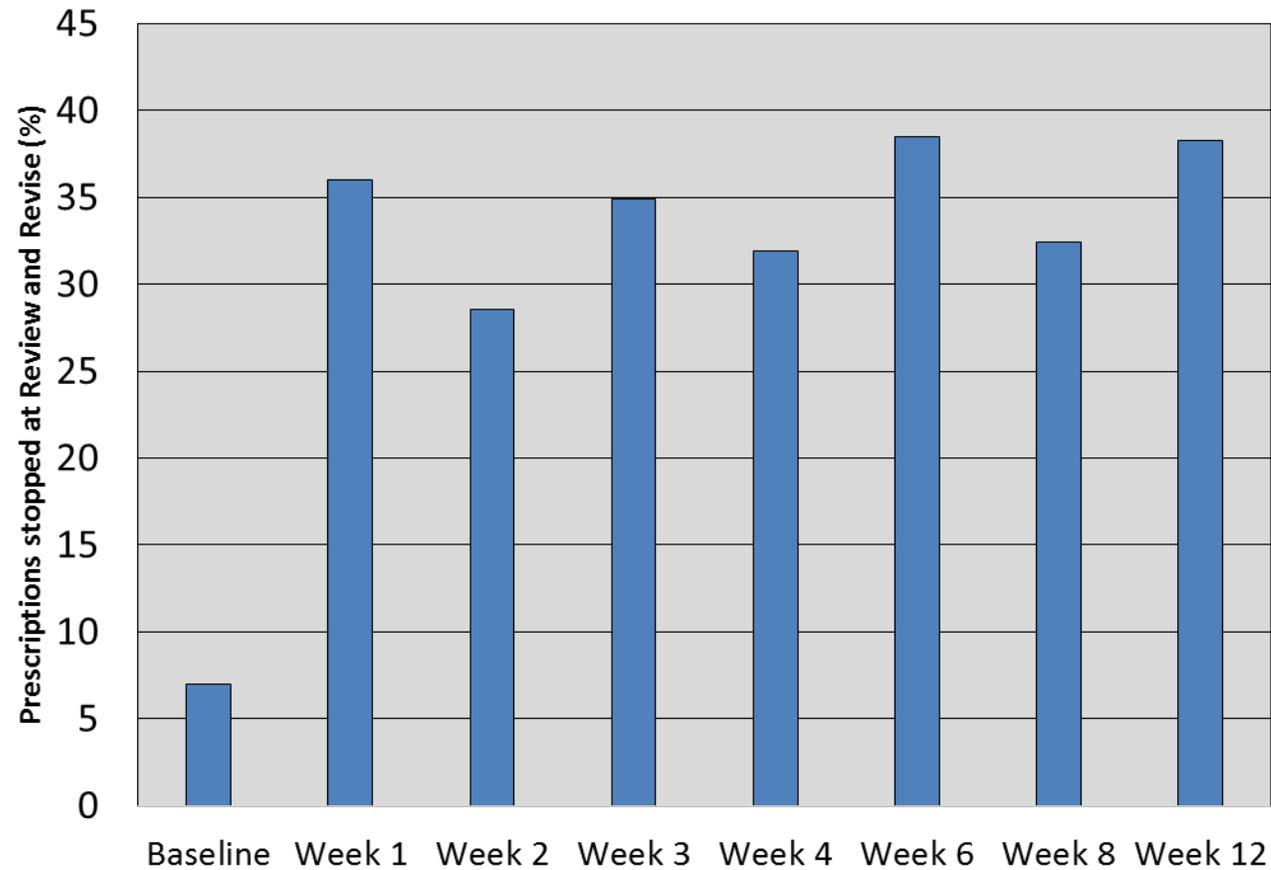
The Antibiotic Resource Kit (ARK) decision aid

Initial antibiotic prescriptions categorized by **diagnostic confidence**

- **Probable** diagnosis of infection: *Infection is the most likely diagnosis but diagnosis and treatment still needs to be reviewed*
- **Possible** risk from infection: *Infection is not the most likely diagnosis but you want to use antibiotics as a **precaution***

In both cases prescriptions are time limited (to 48-72 hours) and must then be reviewed and revised

Antibiotic prescriptions stopped at review during initial feasibility study



'Possible' 45% stopped
'Probable' 23% stopped