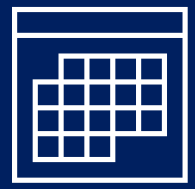
UWTASP
tele-antimicrobial stewardship program

November 15, 2023

Agenda

- *CAP Duration of therapy + how to implement a new practice*

Duration of therapy



CAP treatment duration

IDSA
Infectious Diseases Society of America

Discontinuing β-lactam treatment after 3 days for patients with community-acquired pneumonia in non-critical care wards (PTC): a double-blind, randomised, placebo-controlled, non-inferiority trial

THE LANCET

JAMA | Original Investigation

Effect of Amoxicillin Dose and Treatment Duration on the Need for Antibiotic Re-treatment in Children With Community-Acquired Pneumonia
The CAP-IT Randomized Clinical Trial

CAP (mild-moderate)

Adults:	Peds:
3-5 days	<6 months: 7 days ≥6 months: 3-5 days

Consider shorter courses with milder disease/rapid clinical improvement

Same RG, et al. J Pediatric Infect Dis Soc. 2021 Apr 3;10(3):267-273.
Kuitunen I, et al. Clin Infect Dis. 2023 Feb 8;76(3):e1123-e1128.
Bielicki JA, et al. JAMA. 2021 Nov 2;326(17):1713-1724.
Dinh A, et al. Lancet. 2021 Mar 27;397(10280):1195-1203.

Discontinuing β-lactam treatment after 3 days for patients with community-acquired pneumonia in non-critical care wards (PTC): a double-blind, randomised, placebo-controlled, non-inferiority trial

Articles
THE LANCET

RCT:
adults with moderate CAP(N~300)

Excluded:
immunocompromised, severe or complicated CAP, suspected aspiration PNA, HAP

3 days
(N=157)

8 days
(N=153)

Are the patients in this study similar to the patients at my hospital?

Primary outcome:
Cure at 15d after starting therapy (70-78%)

Secondary outcomes:
1. Cure at 30d (70-75%)
2. LOS difference: 1 day
3. No differences in all cause mortality, ADEs, or CAP symptom scores

Considerations:

- Minimal cultures
- No PCTs, inclusion of older patients with comorbidities
- De-escalation at 72h is encouraged

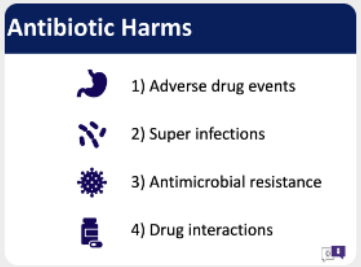
Dinh A, et al. The Lancet. 2021; 397(10280):1195-1203.

Harms with prolonged therapy

AMS

Clinician

Justification for practice change



ASB 101: Antibiotic Harms

Whitney Hartlage walks through harms of antibiotics and adverse drug events.

Site specific

- DOTs/SAAR
- HAI CDI
- Accreditation concerns

Peer comparison

- Neighboring sites

Larger scale

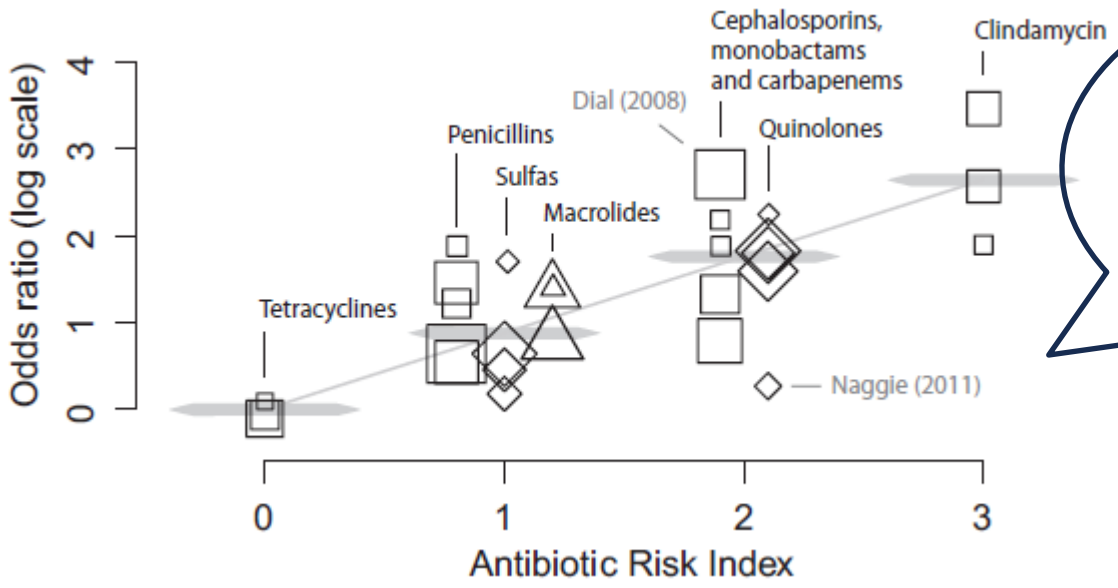
- Resistance
- CDI

DOT – days of therapy
SAAR – standardized antimicrobial administration ratio

HAI CDI – hospital acquired C. difficile
CDI – C. difficile

C. difficile risk: selection vs duration

- Mixed literature classifying “highest risk”
- Inherent bias in CDI studies
- Initial certainty of adequate coverage
- Most patients end up on more than one antibiotic



-Observational bias?
-Accuracy of identifying CDI?
-Other factors impacting microbiome diversity?

Brown Kaet al. Antimicrob Agents Chemother. 2013 May;57(5):2326-32.

MAJOR ARTICLE

Cumulative Antibiotic Exposures Over Time and the Risk of *Clostridium difficile* Infection

Vanessa Stevens,[1,3,4] Ghinwa Dumyati,[2] Lynn S. Fine,[2] Susan G. Fisher,[3] and Edwin van Wijngaarden[3]

[1]Center for Health Outcomes, Pharmacoinformatics, and Epidemiology, Department of Pharmacy Practice, School of Pharmacy and Pharmaceutical Sciences, State University of New York at Buffalo, Buffalo, New York; [2]Department of Medicine, [3]Department of Community and Preventive Medicine, and [4]Department of Pharmacy, University of Rochester, Rochester, New York

Adjusted Hazard Ratios for CDI Development with Each Additional Antibiotic

1 antibiotic	2 antibiotics	3 or 4 antibiotics	5 or more antibiotics
1 (reference)	2.5	3.3	9.6

Adjusted Hazard Ratios for CDI Development with Each Antibiotic Day

<4 days	4 to 7 days	8-18 days	>18 days
1 (reference)	1.4	3.0	7.8

Conclusion: Number and duration of antibiotics corresponded to increasing risk of CDI

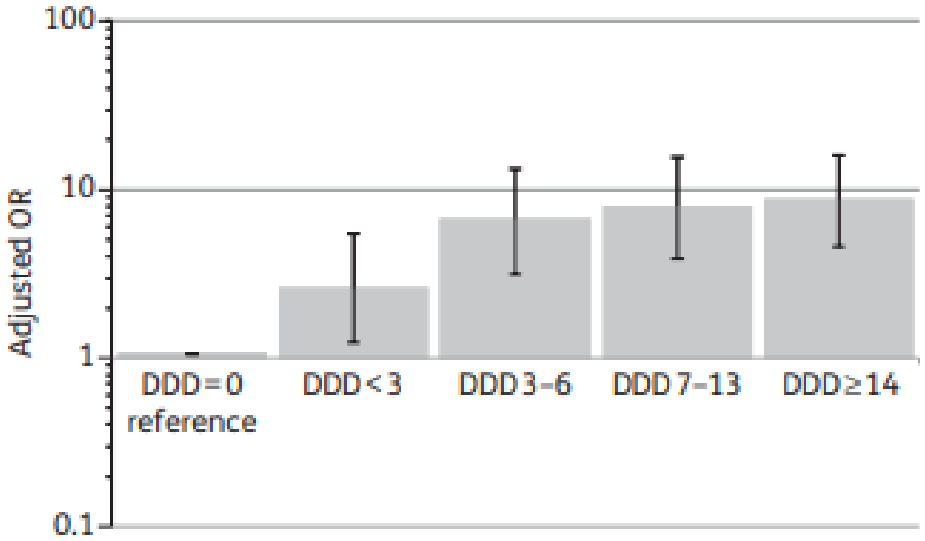
Stevens V, et al. Clin Infect Dis. 2011 Jul 1;53(1):42-8.

J Antimicrob Chemother 2012; **67**: 742–748
doi:10.1093/jac/dkr508 Advance Access publication 6 December 2011

Journal of Antimicrobial Chemotherapy

Time interval of increased risk for *Clostridium difficile* infection after exposure to antibiotics

Marjolein P. M. Hensgens[1], Abraham Goorhuis[2], Olaf M. Dekkers[3,4] and Ed J. Kuijper[1]*



Conclusion: increasing exposure demonstrated a positive correlation with risk of CDI – these results are not isolated events

DDD – Defined Daily Dose

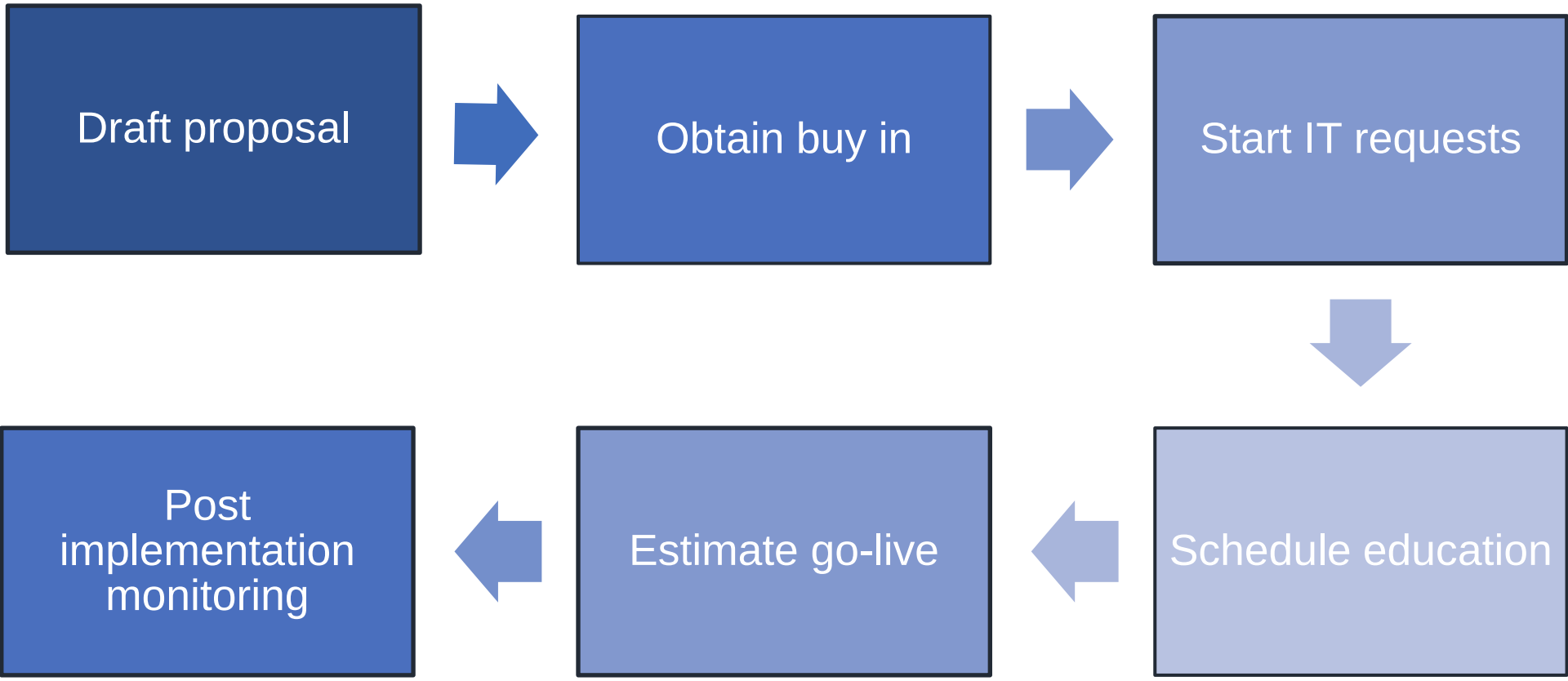
Hensgens MP, et al. J Antimicrob Chemother. 2012 Mar;67(3):742-8.

Implement new practice

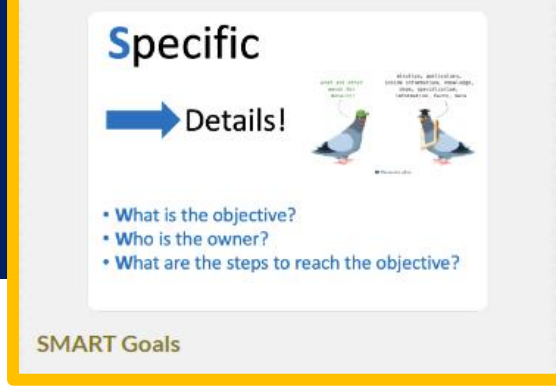
Checklist

- ❑ Policy development
- ❑ Education
  - ❑ Provider
  - ❑ RN
  - ❑ Pharmacy
- ❑ Specialty groups/workflow
  - ❑ Purchasing workflow
  - ❑ Microbiology workflow
- ❑ Leadership communication
  - ❑ Medical directors and other leadership groups
- ❑ IT
  - ❑ Impact any existing builds
  - ❑ New build required
  - ❑ Reporting needed for pre/post changes
- ❑ Post implementation monitoring plan

Implementation



Drafting proposal

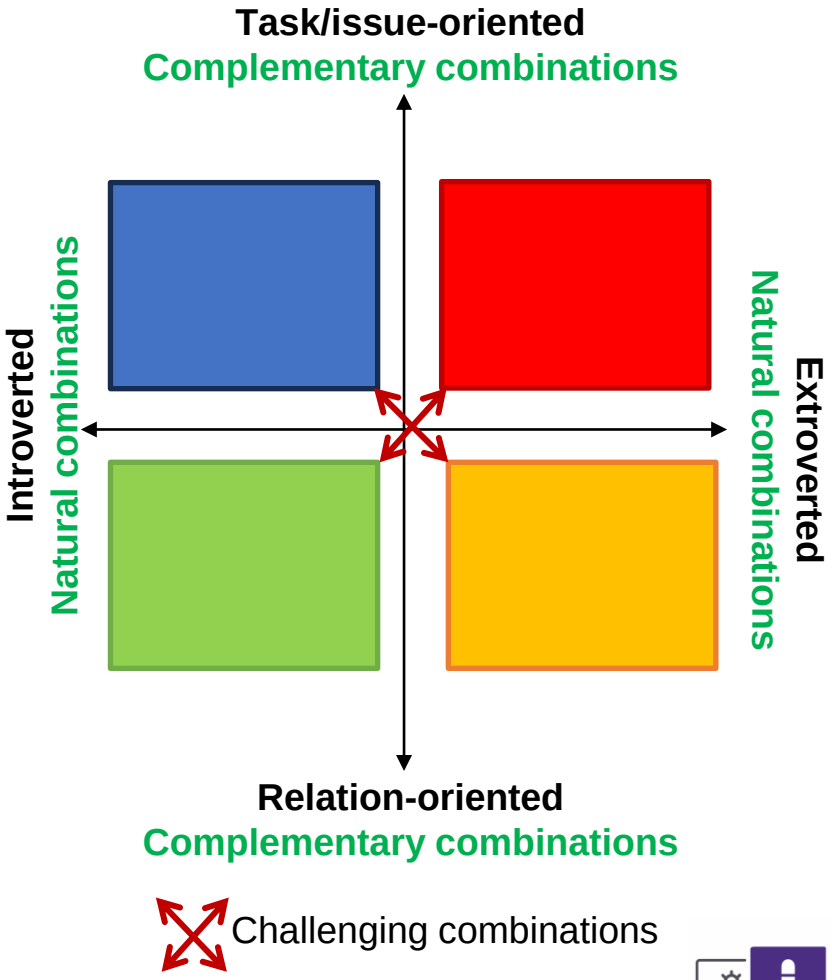


- SMART goal
- MUE, SBAR

"Durations of therapy can be variable when prescribed for pneumonia. Newer literature now support shorter durations for CAP in adults and children. We will develop/update institutional guidelines with new treatment durations for mild to moderate CAP. Prescribing clinicians will be aware of these new guidelines by XYZ"

Pre-buy in

- Identify end users most impacted
- Obtain buy in
  - AMS MD
  - Management
  - Provider(s)



Official buy in

- AMS committee
- Leadership meetings (ie. Hospitalists, P&T, etc.)

2023
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Antimicrobial Stewardship Team

These recommendations are based on local microbiology, antimicrobial resistance patterns and current IDSA guidelines. They should not replace clinical judgement and may be modified depending on individual patient presentation. Consult pharmacy for aminoglycoside, vancomycin and renal dosing as needed.

Revised: June 2023

INFECTIONS		
PNEUMONIA	UTI	INTRAABDOMINAL INFECTION
NEUTROPENIC FEVER	MENINGITIS	SSTI

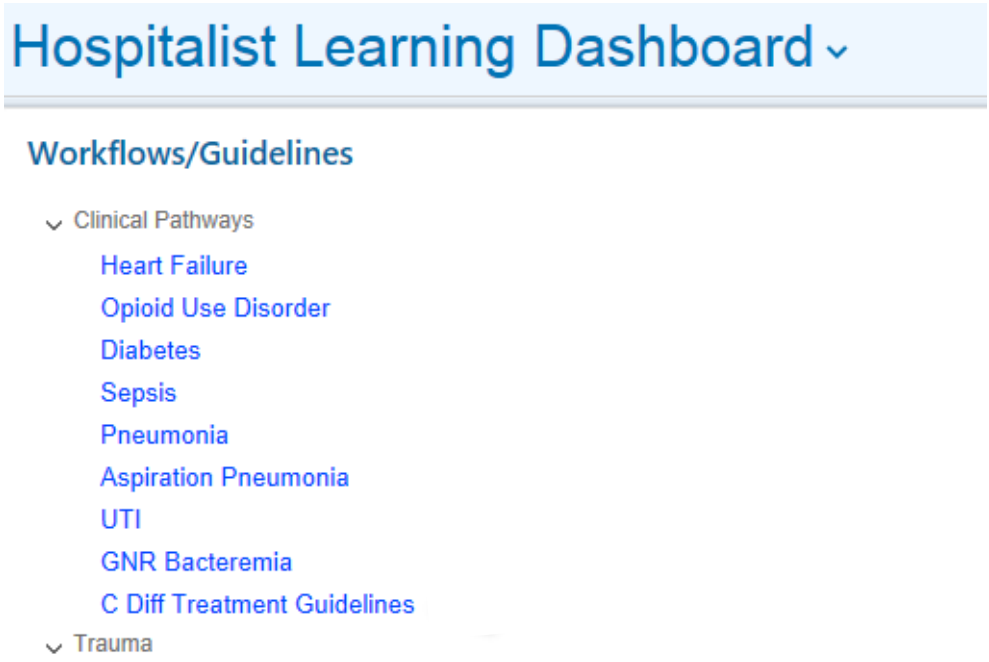
PNEUMONIA

2) Inpatient (3 to 5 days) 3 day may be considered for moderately severe CAP (admission to non-CCU unit)

Community acquired pneumonia (**CAP**)	Ceftriaxone 1-2 g q24h[2] x3-5 days **AND** Azithromycin 500 mg q24h x 3 days if no confirmed legionella

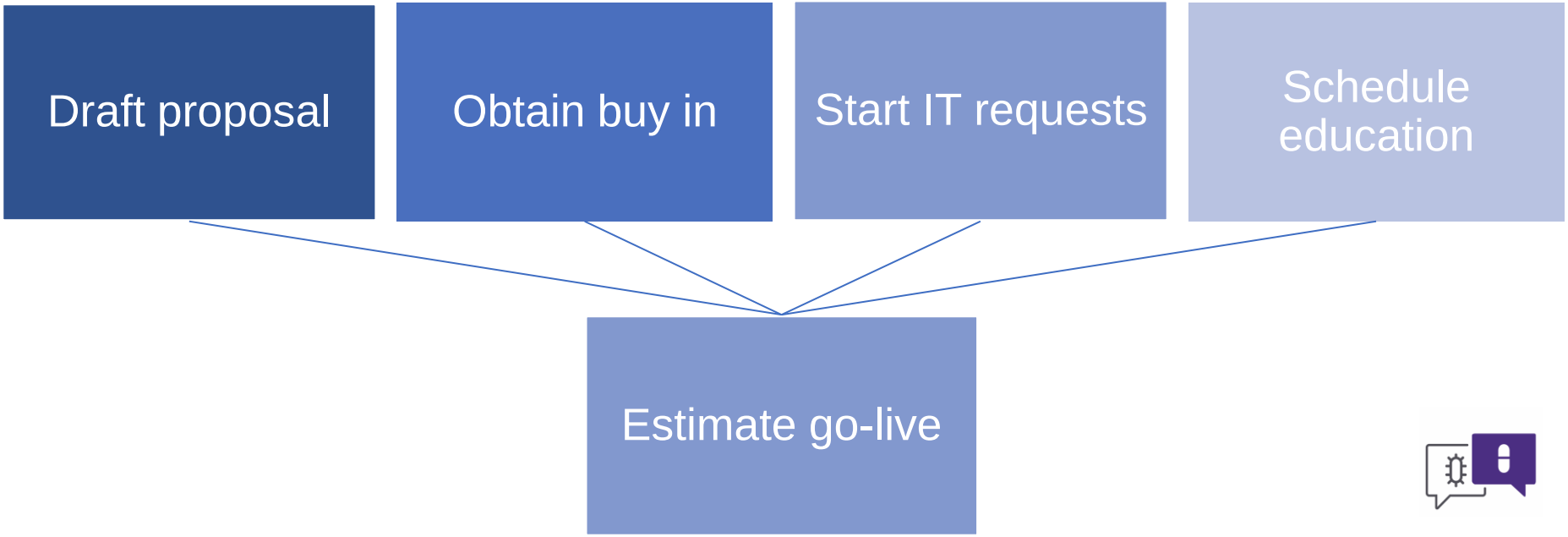
Unseen efforts –IT and education

- IT
  - Ordersets
  - Reporting
  - Dashboard links
- Education
  - Huddles
  - Quarterly meetings



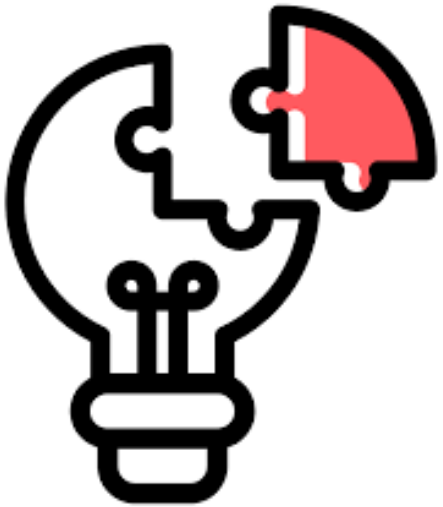
Estimate go-live

- Pilot on unit vs Hospital-wide
- Remind providers and leadership close to go-live date



Post implementation

- Nudge new changes
- Provide feedback based on prescribing practices
- Anticipate change to be slow
- Create plan for data review
  - Project proposal
  - MUE
  - Learner involvement



Questions?

Supplementary slides

PHARMACOTHERAPY

Duration of Exposure to Antipseudomonal β-Lactam Antibiotics in the Critically Ill and Development of New Resistance

Besu F. Teshome,[1,2] Scott Martin Vouri,[3,4] Nicholas Hampton,[5] Marin H. Kollef,[6] and Scott T. Micek[1,7,*]

Hazard Ratios for new Resistance Development with Each Additional Day of Exposure Grouped by Antipseudomonal β-lactam

Any antipseudomonal beta lactam	Cefepime	Piperacillin-tazobactam	Meropenem
1.04	1.08	1.08	1.02

Conclusion: 4% increased risk for new resistance within 60 days with each additional day of an antipseudomonal β-lactam

Teshome B, et al. Pharmacotherapy. 2019;39(3):261-268.

Infection Control & Hospital Epidemiology (2020), **41**, 484–491
doi:10.1017/ice.2019.381

SHEA
The Society for Healthcare Epidemiology of America

Letter to the Editor

Evaluation of a ceiling effect on the association of new resistance development to antipseudomonal beta-lactam exposure in the critically ill

Besu F. Teshome PharmD[1,2], Scott Martin Vouri PharmD, PhD[3,4], Nicholas B. Hampton PharmD[5], Marin H. Kollef MD[6] and Scott T. Micek PharmD[1,7]

Cumulative Days of Antipseudomonal Exposure	No. of Patients (n)	New Resistance Events, n (%)	Hazard Ratio
1-3	1816	38 (2.09)	1 (reference)
4-6	1632	85 (5.21)	1.01
7-9	1249	98 (7.85)	1.85
10-12	709	66 (9.31)	2.93
13-15	474	44 (9.28)	3.94

Conclusion: Increased risk of new resistance seen starting at 7-9 days

Teshome B, et al. Infection Control & Hospital Epidemiology. 2020, 41(4), 484-485.