UW TASP tele-antimicrobial stewardship program | echo

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Agenda

- Didactic: AS in the ED
- Cases and discussion

URL: http://rwpoll.com
Code: uwecho

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Antimicrobial Stewardship in the ED

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What's going on in the ED?

- High patient turnover and around-the-clock care
- Infections are one of the most frequent reasons for ED visits
- ~16% of ED patients are discharged with an antimicrobial Rx
- Antimicrobials are the #1 drug class for medication-associated ED visits (25%, 142K/yr)
- Antimicrobials started in the ED tend to be continued when admitted

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Antibiotic Use and Confidence	
On a typical shift, what % of patients being *discharged to home* do you prescribe antibiotics?	36% <10% 51% 10–20% 8% 21–40% 2% 41–60% 1% >60% 2% Not Sure

Mobile Use	
Currently Use a Smart Phone or ipad	89% Yes 11% No

Opinion on Antibiotic Use			
Antibiotics are overused in the ED	Strongly Agree: 31% Agree: 56% Neutral: 9% Disagree: 4% Strongly Disagree: 0%	Strongly Agree: 13% Agree: 44% Neutral: 32% Disagree: 11% Strongly Disagree: 0%	**p<.0001**
Antibiotic resistance does not present a significant problem in the ED at my institution	Strongly Agree: 1% Agree: 2% Neutral: 12% Disagree: 50% Strongly Disagree: 35%	Strongly Agree: 0% Agree: 7% Neutral: 7% Disagree: 63% Strongly Disagree: 22%	p=0.21

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Important Factors and Predictors	Attendings (n=88)	Residents (n=54)	Non-Parametric Chi-Square Tests
			p-Value
Antibiotic Use and Confidence in Prescribing			
How confident are you that antibiotics are used optimally in ED patients being *discharged* from the hospital?	Very Confident: 30% Somewhat Confident: 61% Somewhat Unconfident: 9% Very Unconfident: 0%	Very Confident: 4% Somewhat Confident: 81% Somewhat Unconfident:13% Very Unconfident: 2%	**p=0.001**
How confident are you that antibiotics are used optimally for ED patients being *admitted* to the hospital?	Very Confident: 33% Somewhat Confident: 59% Somewhat Unconfident: 7% Very Unconfident: 1%	Very Confident: 26% Somewhat Confident: 67% Somewhat Unconfident: 7% Very Unconfident: 0%	p=0.48

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AS Interventions in EDs

- Most common:
  - Patient and provider education
  - Guideline/pathway implementation
- These interventions associated with improved adherence/decreased abx use
  - ⇩ LOS (hospital and ED)
  - ⇩ Admission of low-risk patients
  - ⇩ Readmission to ED
  - ⇩ Mortality

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AS Interventions in EDs

- Audit and feedback / “personalized prescriber feedback”
  - ⇩ Abx prescriptions
  - ⇧ Adherence to guidelines
- A&F + electronic order set
  - No increase in treatment failures
  - No increase in adverse events
- Formulary restriction
  - Significant reduction in ciprofloxacin use

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Randomized Control Trials of AS in EDs

- Implementation of a CAP pathway vs conventional management
  - ⇩ use of health care resources
- Implementation of education pathway for URIs (16 hospitals)
  - 1:1, small or large group education sessions delivered to clinicians + abx rx benchmarking
  - Patient education
  - Intervention sites showed reduction in abx use

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Pharmacists in EDs

- Primary interventions in studies: culture review, follow-up on discharged patients and education
  - Significant decrease in readmission rates at 96 hours with pharmacist culture review + f/u + physician vs physician alone
  - Significant improvement in time to review and patient notification
  - Increase in appropriate prescribing

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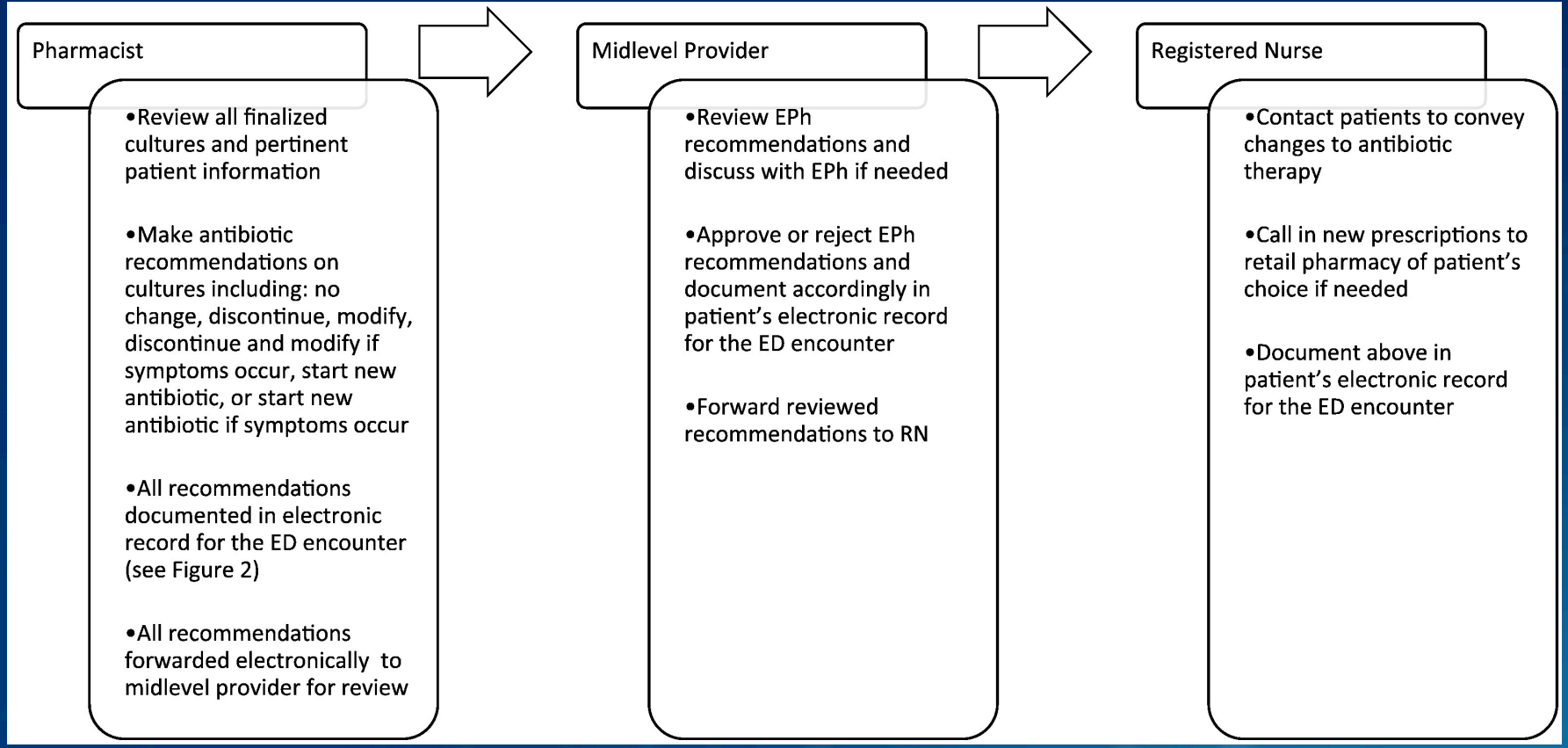

Thresholds for urine analysis (UA) components

UA component	Lab threshold reached and/or surpassed to be considered "present"
White blood cells (WBC)/Pyuria	3-10 per high power field (HPF)
Leukocyte esterase (LE)	Trace or abnormal
Nitrite	Positive

Zhang, Am J Emergency Med, 2017

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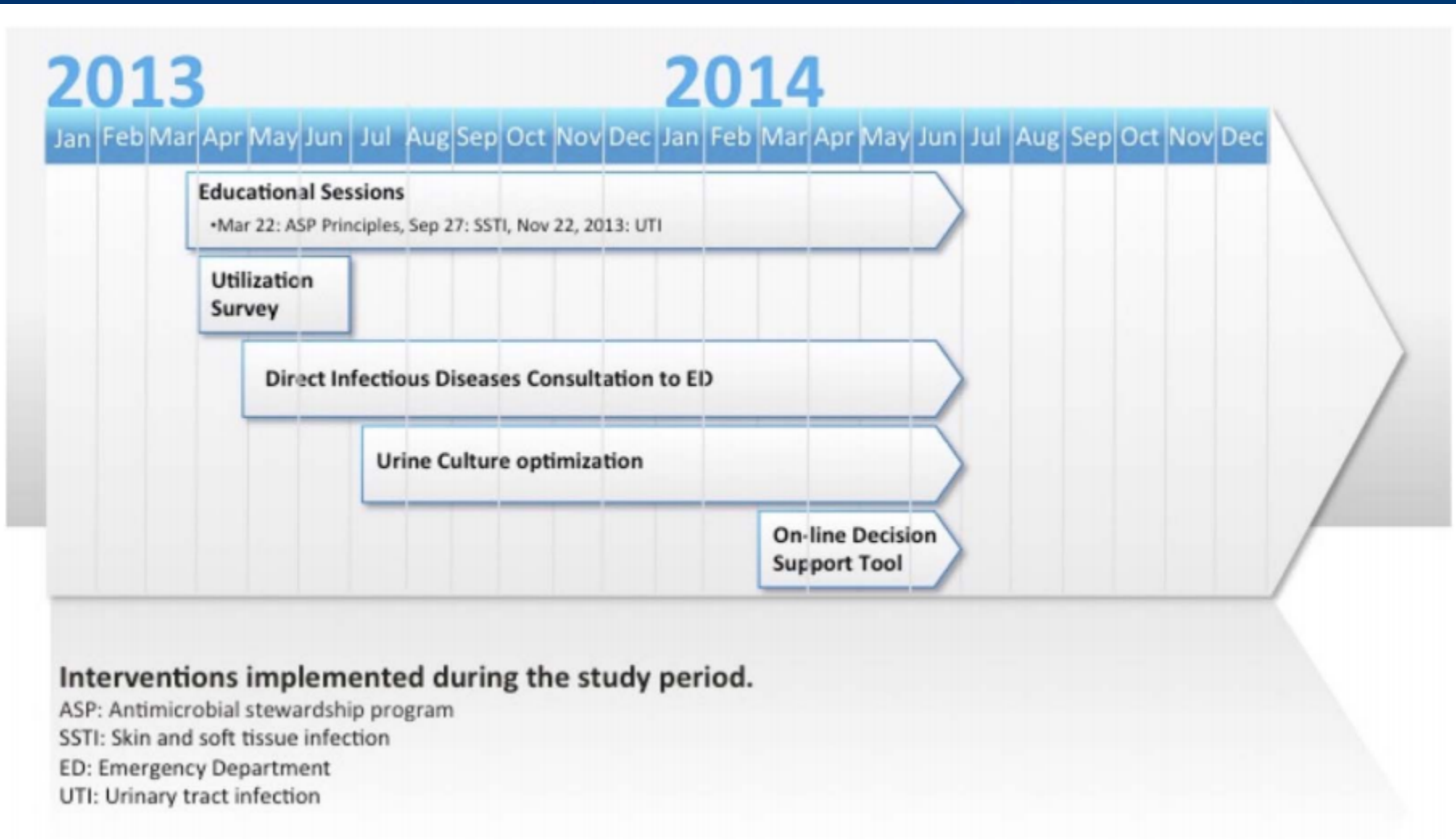
Front-line Ownership (FLO) Methodolog



Interventions implemented during the study period.

ASP: Antimicrobial stewardship program
SSTI: Skin and soft tissue infection
ED: Emergency Department
UTI: Urinary tract infection

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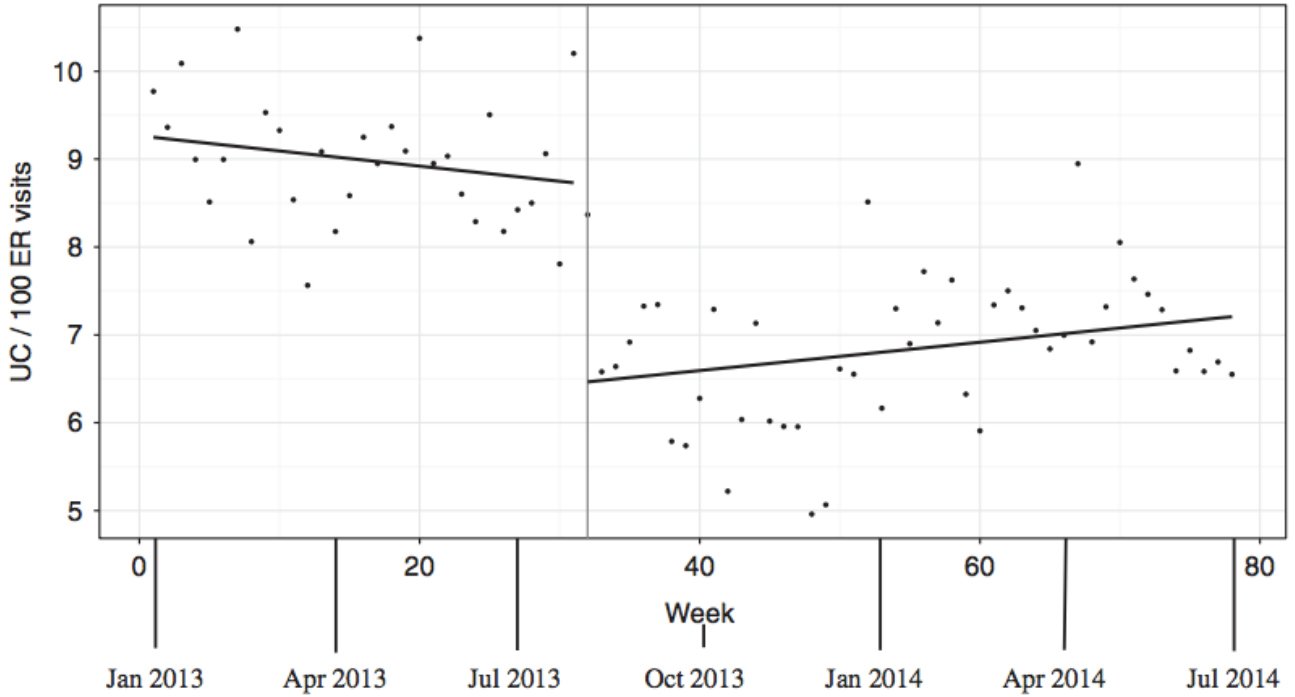
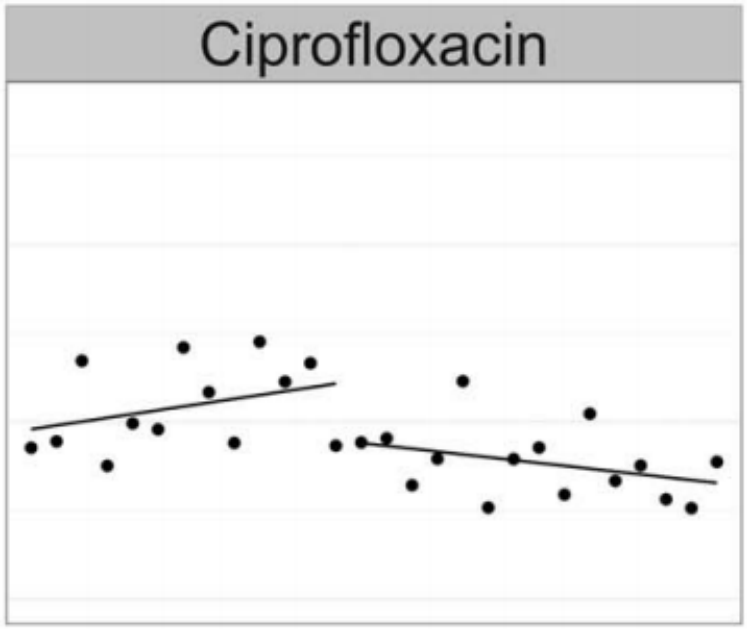


Figure 3. Weekly rates of urine cultures (UC) in the emergency department (ED) per 100 patient visits from December 30, 2012 to June 30, 2014.



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Facilitators and Barriers to AS in EDs

- Acceptability of guidelines
  - Requires multidisciplinary involvement
  - Respect for professional autonomy
  - Timely availability at point of care and during decision making
  - Integration of intervention into workflow
  - Automatic initiation of intervention tailored to patient data
  - Short duration of use
- Need for additional resources

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Barriers and Facilitators to Antimicrobial Stewardship

Antibiotic Stewardship Intervention	Barrier	Facilitator
Antibiograms	"They're really difficult to read. And if you don't have the knowledge on what you might be covering in the first place they're a bit pointless." – *Attending, 6 yrs.*	They actually had inpatient and outpatient specific biograms, and that was actually useful, and it was also sobering. – *Attending, 10 yrs.*
Wait and See Prescriptions	"If you had someone who seemed very reliable and could actually verbalize to you the plan and had a working phone that would be a person I would be willing to try it with. But, in our system, often we end up not meeting all those standards, so we just give them the antibiotic." – *Attending, 14 yrs.*	"Somebody with a borderline infection. I'm not sure whether I think it's truly bacterial infection or whether needs treatment, but the convenience of having to come back, they might have to wait 10 hours to be re-evaluated. So I let them re-evaluate themselves." – *Attending, 11 yrs.*
Culture Callbacks	"It creates a level of comfort where physicians feel like they can order more cultures than necessary, but on the back end, the physicians or the nurse practitioners have to follow up, I feel like it probably creates a lot more extra work than necessary." – *Resident, 3 yrs.*	"We're lucky here, the nurses keep track of all the cultures that we order, blood and urine cultures, and if we have not prescribed the appropriate antibiotic or didn't prescribe antibiotics then they let the night doc know." – *Attending, 2 yrs.*
Patient Education	"I've had a lot of patients come in with an agenda and because they've already researched the symptoms themselves they think they have something and that they've figured out for themselves online." – *Attending, 27 yrs.*	If you have a chance to actually talk to the patient about why you are not giving the antibiotics, it makes them understand. – *Resident, 4 yrs.*
Provider Education	Right now, a lot of the continuing education is the exact opposite. It's pharmaceutical industry based, trying to get you to prescribe more antibiotics in a, typically, very broad-spectrum antibiotics. And so, if there were education to counter that, that might be useful. – *Attending, 11 yrs.*	"The fact that I work in an academic facility with residents, fellows, faculty that are always going to ask why did you use that? Why couldn't you have just used this? That is always staying in the back of my mind that I need to be able to clearly defend my decision to use an antibiotic in a given situation." – *Attending, 8 yrs.*

Diagnostic Testing	"It's easier to just kind of churn through the patients than sit and wait for a rapid strep." – *Resident, 2 yrs.*	"I think a completely normal urine dipstick makes a UTI less likely. It helps you pursue other diagnoses." – *Attending, 22 yrs.*
Clinical Decision-Making Support	"I worry about it through the electronic health record because you definitely get pop-up fatigue, where you just don't want to see anymore pop-ups and you're like please let me discharge this patient. Just click through all of them, you know?" – *Attending, 6 yrs.*	"A centralized location of information, an actual website where you go to and say, this is the antibiotic and this is the condition it treats and to actually have it be free." – *Resident, 3 yrs.*
Performance Feedback	"If people bounced back to the emergency department, it got flagged, and people reviewed that case. That was a good improvement measure you could assess." – *Attending, 4 yrs.*	"I always have to make sure the patient is 100 percent satisfied with their visit by the time that they leave. Or else I'll hear about it in a bad way." – *Attending, 4 yrs.*
Guidelines	"The problem with guidelines in general, is there is unique patient populations. And if they're not addressed in the guidelines, then you kinda just have to default to what you think is best." – *Attending, 10 yrs.*	"We love guidelines. I mean they make it easy for us and also gives us ammunition when we're talking to the patient. We have specific guidelines that say to do this. We have specific guidelines that say to prescribe this." – *Attending, 5 yrs.*

May, ICHE, 2014

Codes and Themes

- Impact of resources and environmental factors
- Access and quality of care received outside RD consult
- Patient-provider relationship
- Clinical inertia
- Local knowledge production

May, ICHE, 2014

No/Little Data and Other Challenges

- Pre-authorization (IDSA ASP core recommendation)
- Prospective audit and feedback (IDSA ASP core recommendation)
- Surviving Sepsis Campaign – rapid administration of broad-spectrum abx within 3 hours of presentation
- Others?

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Summary of Intervention Types

Type of Intervention	Number of Included Studies	Outcomes With a Statistically Significant Change From Baseline (n = number of studies)
Guideline or clinical pathway implementation ± education[19-22,28-30,32,37,40,41,43,44]	13	• Increase in appropriate antibiotic prescribing (n = 4)[28,32,40,43] • Decrease in antimicrobial use (n = 3)[21,30,44] • Decrease in ED or hospital length of stay (n = 4)[19,20,28,40] • Decrease in hospital admission or increased discharge from ED (n = 2)[20,28] • ED readmission within 30 days (n = 2)[28,40] • 30-Day mortality (n = 1)[28]
Multifaceted intervention[18,23,24,26,33,35,36,39,45,47,49,52]	12	• Increase in appropriate antibiotic prescribing (n = 4)[35,36,45,52] • Increased adherence to guidelines (n = 4)[26,36,47,49] • Decrease in antimicrobial use (n = 4)[18,24,45,49] • Decrease in ED length of stay (n = 1)[33] • Time to follow-up after ED discharge (n = 1)[18] • Total cost per patient (n = 1)[33]
Culture review and follow-up ± education[27,51,53-57]	7	• Increase in appropriate antibiotic prescribing or frequency of intervening when antibiotic was inappropriate (n = 3)[53,56,57] • ED readmission within 96 hours (n = 1)[51] • Time to follow-up after ED discharge (n = 1)[27]
Clinical decision support ± education[38,42,46,58-60]	6	• Increase in appropriate antibiotic dosing (n = 2)[38,46] • Increased adherence to guidelines (n = 3)[42,58,59]
Education alone[25,31,34]	3	• Decrease in antimicrobial use (n = 1)[25]
Prospective audit and feedback alone[48]	1	• Increase in appropriate antibiotic prescribing (n = 1)[48]
Formulary restriction[50]	1	• Decrease in antimicrobial use (n = 1)[50]

References and Reading