Antimicrobial Stewardship Programs (ASP)

Bugs & Drugs

Objectives

- **Following the conclusion of participation in this activity, the attendee shall be able to:**
  - List three different metrics for use in the Quality Measurements in Stewardship
  - List the members of an “ideal” Antimicrobial stewardship committee
  - Explain the advantages coordination between ASP and IP bring to an organization

References

- https://www.cdc.gov/vitalsigns/pdf/2015-08-vitalsigns.pdf
- https://www.cdc.gov/antibiotic-use/core-elements/nursing-homes.html
- Dellit TH et al. Clin Inf Dis 2007:44: 159-177.

1. Richards CL, Darrandji M, Weinberg DM, et al. Antimicrobial Use in Post-Acute Care: A Retrospective Descriptive Analysis in Seven Long-Term Care Facilities in Georgia. *J Am Med Dir Assoc.* 2005; 6 (2): 109-12.
2. TeamSTEPPS® Long-Term Care Version. Content last reviewed September 2015. Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq.gov/professionals/education/curriculum-tools/teamstepps/longtermcare/index.html. Accessed on August 22, 2016.
3. Choosing Wisely. Tests & treatments for urinary tract infections (UTIs) in older people. 2014 Consumer Reports. Developed in cooperation with the AMDA: The Society for Post-Acute and Long-Term Care Medicine and The American Geriatrics Society. https://www.choosingwisely.org/wp-content/uploads/2018/02/Tests-And-Treatments-For-Urinary-Tract-Infections-In-Older-People-AGSAMDA.pdf

References

- Curr Infect Dis Rep. 2021; 23(10): 15. Published online 2021 Aug 18. doi: 10.1007/s11908-021-00759-w
- An integrated stewardship model: antimicrobial, infection prevention and diagnostic (AID)
- Future Microbiol. Dik JH et al. 2016;11(1):93-102. doi: 10.2217/fmb.15.99. Epub 2015 Sep 1
- Dellit TH, et. al. Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship; Clin Infect Dis. 2007;44:159-177
- Moody J, Cosgrove SE, Olmsted R, et al. Antimicrobial stewardship: a collaborative partnership between infection preventionists and health care epidemiologists. *American journal of infection control.* Mar 2012;40(2):94–95.
- Edwards R, Drumright L, Kiernan M, Holmes A. Covering more Territory to Fight Resistance: Considering Nurses' Role in Antimicrobial Stewardship. *Journal of infection prevention.* Jan 2011;12(1):6
- https://www.science.org/content/article/bad-news-paxlovid-coronavirus-can-find-multiple-ways-evade-covid-19-drug
- https://nccid.ca/antimicrobial-stewardship-long-term-care/#:~:text=Antimicrobial%20stewardship%20in%20long%20term%20care%20facilities%20involves,emergence%20of%20antibiotic%20resistance%20and%20other%20adverse%20effects.

Financial Disclosure

- I do not have any financial disclosure or conflicts of interest with the material in this presentation.

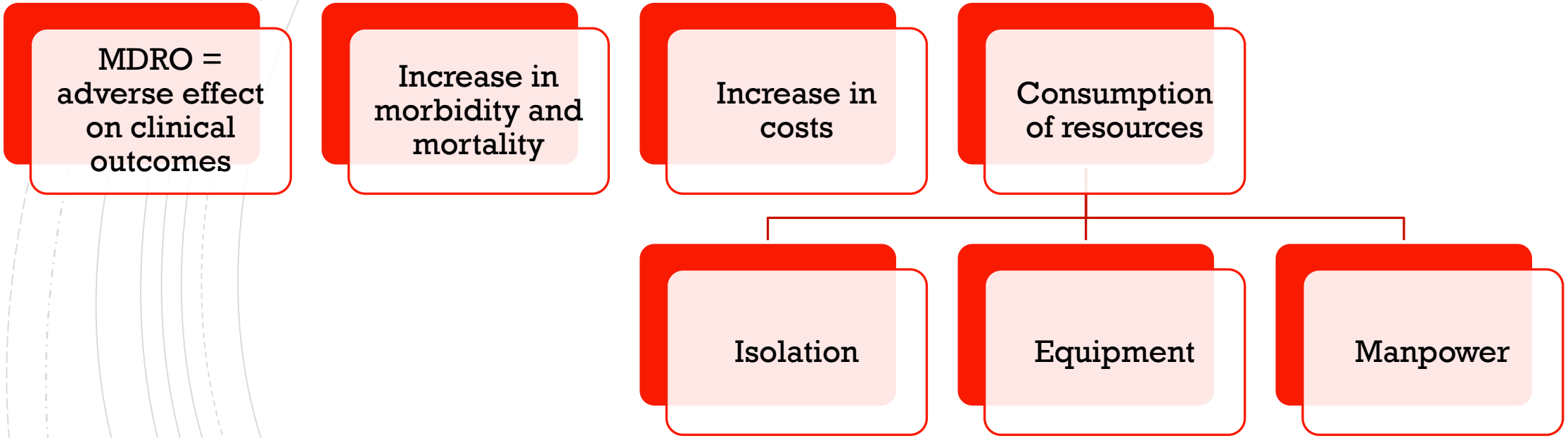
- I am a consultant with Steven Hirsch & Associates, a healthcare management company.

Outline of presentation

- ASP
  - Background
  - Committee
  - Roles and Responsibilities
- Infection Prevention

‘There is the danger that ignorant man may easily underdose himself and, by exposing his microbes to non-lethal quantities of the drug, make them resistant.’

Resistance = Public Health Emergency



What is antimicrobial stewardship

The prospective management of antibiotics through a series of concerted efforts

- De-escalation procedures
- Focused therapy
- Formulary control
- Supportive consultations
- Active review and interventions

Per Infectious Disease Society of America (IDSA) –

- Appropriate selection of antimicrobials
- Appropriate dosing of antimicrobials
- Appropriate route and duration of antimicrobial therapy

Why have an ASP

- Required by CMS, TJC, HFAAP, DNV
- We want to save money
- We need another committee

Why we should have an ASP

- We want to improve outcomes
- We want to reduce harm
- A national initiative

What is antimicrobial stewardship

Traditional

- Clinical microbiologists
- ID specialists
- IP
- ID pharmacists

Best Practice

- Bedside nurses
- ”Hospitalists”
- Laboratory
  - microbiologists
- Finance folk
- IP
- ID Rx
- IT

New model

Automatic abx time out

- 72-96 hours
- Patient assessment
  - Fever
  - Drainage
  - Cardinal Symptoms

Team rounds

- Bedside nurses
- ”Hospitalists”
- Laboratory
  - microbiologists
- Finance folk
- IP
- ID Rx
- IT

42 CFR 482.42 (d)

- §482.42(d)(4) A qualified individual (or individuals) with expertise in infection prevention and control has been designated at the hospital:
  - responsible for ***communicating*** with the unified infection prevention and control and ***antibiotic stewardship programs***,
  - implementing and maintaining the policies and procedures governing infection prevention and control and ***antibiotic stewardship*** as directed by the ***UNIFIED*** infection prevention and control and antibiotic stewardship programs,
  - providing education and training on the practical applications of infection prevention and control and ***antibiotic stewardship*** to hospital staff.

42 CFR 482.42 (c)(3)

- ***(3) The leader(s) of the antibiotic stewardship program is responsible for:***
  - ***(i) The development and implementation of a hospital-wide antibiotic stewardship program***
    - ***nationally recognized guidelines, to monitor and improve the use of antibiotics.***
  - ***(ii) All documentation, written or electronic, of the program activities.***
  - ***(iii) Communication and collaboration***
    - ***medical staff, nursing, and pharmacy leadership,***
    - ***infection prevention and control***
  - ***(iv) Competency-based***
    - ***training and education of hospital personnel and staff, including medical staff, and, as applicable, personnel providing contracted services in the hospital,***

42 CFR 483.

Implied - 42 CFR 483.

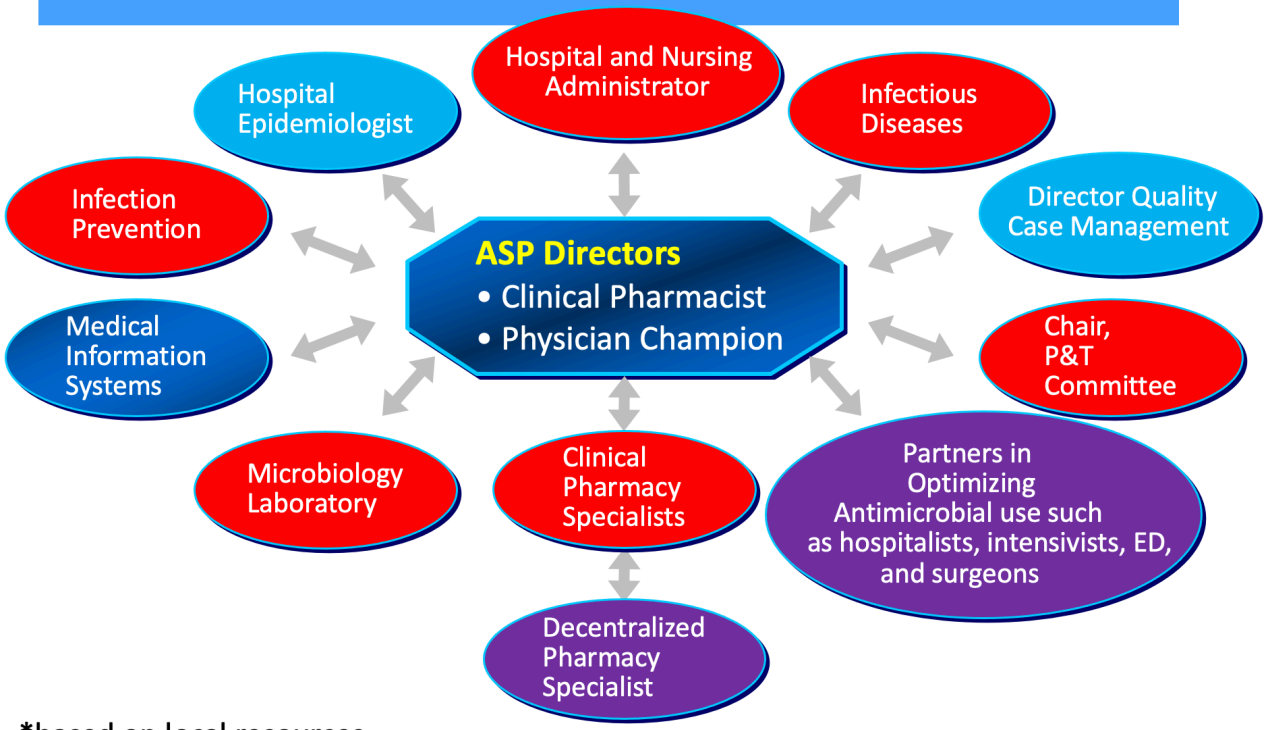
- **Completeness of clinical assessment documentation at the time of the antibiotic prescription.**
- **Antibiotic selection is consistent with recommended agents for specific indications.**
- Measures of antibiotic use
  - **Point prevalence of antibiotic use.**
- Antibiotic outcome measures
  - **Track adverse drug events related to antibiotic use.**
  - **Track costs related to antibiotic use.**

Why - LTC

- Studies have shown that 40-75% of the antibiotic courses prescribed in long term care facilities are unnecessary or inappropriate, leading to significant risks from antibiotic overuse. Any actions taken to improve antibiotic use promotes better outcomes for residents in long term care settings

Antimicrobial Management Team

Multidisciplinary Team Approach to Optimizing Clinical Outcomes*



*based on local resources

Modified from : Dellit TH et al. *Clin Infect Dis.* 2007;44:159-177.

Core Elements of an ASP

Hospital Leadership Commitment: Dedicate necessary human, financial and information technology resources.

Accountability: Appoint a leader or co-leaders, such as a physician and pharmacist, responsible for program management and outcomes.

Pharmacy Expertise: Appoint a pharmacist, ideally as the co-leader of the stewardship program, to lead implementation efforts to improve antibiotic use.

Action: Implement interventions, such as prospective audit and feedback or preauthorization, to improve antibiotic use.

Core elements - cont.

Tracking: Monitor antibiotic prescribing, impact of interventions, and other important outcomes like *C. difficile* infection and resistance patterns.

Reporting: Regularly report information on antibiotic use and resistance to prescribers, pharmacists, nurses, and hospital leadership.

Education: Educate prescribers, pharmacists, and nurses about adverse reactions from antibiotics, antibiotic resistance and optimal prescribing

Guidelines (IDSA, Society, SHEA, APIC)	Committees •MEC (Good) •Department (Better)

Who should be at the table and why

Physician – chair

- ID physician preferrable

Pharmacist –

- Responsible for a great deal of the action
- Infectious Disease pharmacist – when available
  - Coordinate the Data
  - Closest to the source
  - Quickest to respond – interventions
  - Develop program goals
  - Technical expertise

Who should be at the table and why

- **Infection preventionists and hospital epidemiologists**
  - Educating staff
  - Analyzing and reporting data on antibiotic resistance and *MDR* infection trends
  - Support reporting to the NHSN AUR Module by updating monthly reporting plans,
  - AUR users,
  - data upload
  - Daily observations

Continuing around the table

- **Quality improvement, patient safety and regulatory staff**
  - Advocate for adequate resources
  - Integrate stewardship interventions into other quality improvement efforts,
    - >sepsis management.
  - Support implementation and outcome assessments.

- Microbiologist
  - Understanding of Susceptibility testing
  - Control the Antibiogram
  - First Alert for resistance
  - Contemporary information source for bug (and new names)

Around the table

- **Clinical Services – (Division of Nursing)**
  - Nursing education regarding their role in antibiotic stewardship
  - Indication and duration of antibiotic therapy
  - Adverse event detection
  - Appropriate microbiology specimen collection
  - Timing of therapeutic drug level acquisition
  - Timing of medication administration

How are antibiotics misused

Given when not needed

- Does not have infection (ABUTI)
- Does not have a bacterial infection (pharyngitis)

Continued when no longer indicated

Given at the wrong dose or interval

Broad spectrum with very susceptible bacteria

Antibiotic/pathogen mismatch

Infection Prevention program

- Early detection
- Surveillance
- “shoe leather epidemiology”
- Detailed patient profiling
- Care issues
  - Hand hygiene
  - Protective environment
  - Guidance

Commonalities between IP and ASP

Similar multidisciplinary model

Heavily dependent on collaboration

- Information Technology (IT
- microbiology specialists

Dedicated professionals

- adequate training
- experience in infection prevention (IP) or antimicrobial stewardship (AS)

Shared commonalities

Both programs rely heavily on third party software platforms

- highly customized electronic medical records platforms

ASP and IPP

- data surveillance,
- review and reporting,
- generate line lists for targeted interventions

ASPs and IPP

- resources to cut down on individual program costs
- support needs

Outcome metrics

IPPs track HAIs,

ASPs track infections associated with antibiotic use

- infections by MDROs, CDI.
- Healthcare-associated CDI,
- Infections with certain MDROs like methicillin-resistant *Staphylococcus aureus*, are tracked by IPPs.

Both ASPs and IPPs report to NHSN (ideal)

Hospital biome

MDRO

- C. difficile
- Acinetobacter
- KPC
- ESBL – enterobacter
- S. aureus
- VRE

Other unusual pathogens unique to the organization e.g. *S. marcescens*

Isolation

Standard precautions

- A barrier between you and anything you don't want to touch
  - Minimally gloves - blood or body fluids
  - Feces, urine, and vomitus don't require gloves – your call

Transmission based precautions

- Barriers are used based on mode of transmission of the disease/condition
- Three basic types that maybe combined depending on the situation.
- Signage serves as warning
- Compliance is required

Equipment

Blood Pressure cuff

- Disposable
- Disinfect (does your disinfectant cover soft fabrics – check)

Blood Glucose machine

Cleaned

How/when

WOW – scanning wand

Disinfected

Radiology

All contact surfaces

GI procedures

EKG

Cables

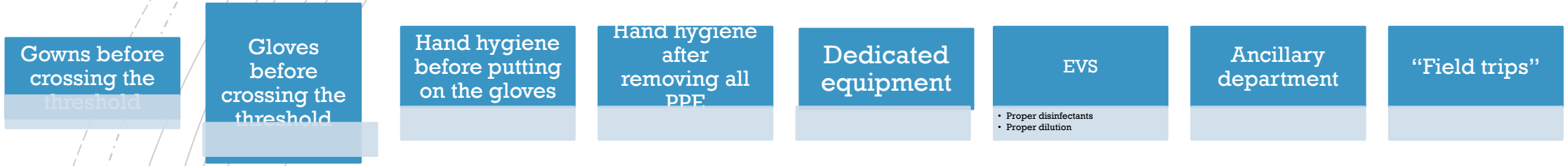
IV pumps

How when attached

Who

Contact precautions

- Diseases which maybe spread by the direct contact with the infectious material
  - MDRO
    - CRE
    - ?MRSA
    - ABC
  - Diarrheal illness
    - CDI
    - Enteric (salmonella, Shigella, E. coli (nursery)
  - Wound drainage (purulent)
  - Pediatric viral diseases



Key components of contact precautions

Epidemiologically Important Pathogens

Any infectious agent that have one or more of the following characteristics

- Propensity for transmission within facilities
- Antimicrobial resistance implications
- Associated with serious disease; increased morbidity and mortality
- A newly discovered or re-emerging pathogen

Education

- Guidelines for clinicians
- Antibiogram
- Isolation practices
- New and emerging pathogens
- Formulary
- New and emerging antibiotics

It isn't only antibiotics

Prescriptions for Paxlovid® have skyrocketed

- Proven to reduce severe disease from SARS-CoV-2 infections.

New lab studies show the coronavirus can mutate

- less susceptible to the drug

Some mutations already circulating in infected people,

- physicians could soon lose one of their best therapies

Candida auris

- Disinfectant on LIST K (not N)
- Multiple antifungal resistance – don't guess

In conclusion

Establish and maintain good communication between

- IP and Micro
- IP and ASP
- ASP and Micro
- (“do lunch”)

Establish and maintain protocols

- ABX monitoring
- Isolation practices

Things to do

- Review your policies
  - Are they current
  - Is the background evidence valid and current
  - Are the being implemented as designed
  - “Anything is easy if you don’t have to do it yourself”
- Talk amongst yourselves
- Annual review!

Conclusion

Document activities

- What was done
- What was recommended
- Implementation
  - Monitoring

Educate

- Physicians – treatment guidelines
- Bedside staff – best practices with administration, isolation

Implement proven interventions