UW TASP tele-antimicrobial stewardship program | echo

June 12th, 2018

Chloe Bryson-Cahn MD
Robert Cybulski, PhD
Marisa D'Angeli, MD
Zahra Escobar, PharmD
Rupali Jain, PharmD
John Lynch, MD, MPH
Natalia Martinez-Paz, MA, MPA
Paul Pottinger, MD
Erica Stohs MD, MPH
Ted Wright, MD

Agenda

- Chloe Bryson-Cahn: AS Research Update
- Case Discussions
- Open Discussion

UW TASP tele-antimicrobial stewardship program | echo

Antimicrobial Stewardship Research Update

Chloe Bryson-Cahn, MD
Fellow, Infectious Disease
University of Washington

June 12th, 2018

Clinical Utility of MRSA Nasal Screening to R/O MRSA Pneumonia: A Diagnostic Meta-Analysis

- 1st meta analysis to evaluate nares swab to r/o
- 22 studies; 5,163 patients

Type of Pneumonia	Studies, No.	Sensitivity (95% CI), %	Specificity (95% CI), %	PPV, %	NPV, %
All	22	70.9 (58.8–80.6)	90.3 (86.1–93.3)	44.8	96.5
CAP/HCAP	4	85.0 (59.7–95.6)	92.1 (81.5–96.9)	56.8	98.1
VAP	5	40.3 (17.4–68.4)	93.7 (77.1–98.4)	35.7	94.8

Parente, CID, 2018

Clinical Utility of MRSA Nasal Screening to R/O MRSA Pneumonia: A Diagnostic Meta-Analysis

- Test characteristics for all MRSA Pneumonia
  - 71% Sensitive
  - 90% Specific
  - 97% Negative Predictive Value

- Note: recent decolonization, structural lung dz

Parente, CID, 2018

Short-course vs. Long-course Oral Antibiotics for Infections Treated in Outpatients: Review of Reviews

- Compilation of 9 reviews
- Peds and adult studies evaluating short vs. long duration of treatment for bacterial infections

Dawson-Hahn, Family Practice, 2017

Short-course vs. Long-course Oral Antibiotics for Infections Treated in Outpatients: Review of Reviews

kids
- Tonsillopharyngitis
- CAP
- Acute otitis media
- UTI

adults
- Acute bacterial sinusitis
- Uncomplicated UTI in non-pregnant women
- Acute pyelonephritis
- CAP

Dawson-Hahn, Family Practice, 2017

UWTASP tele-antimicrobial stewardship program

Short-course vs. Long-course Oral Antibiotics for Infections Treated in Outpatients: Review of Reviews

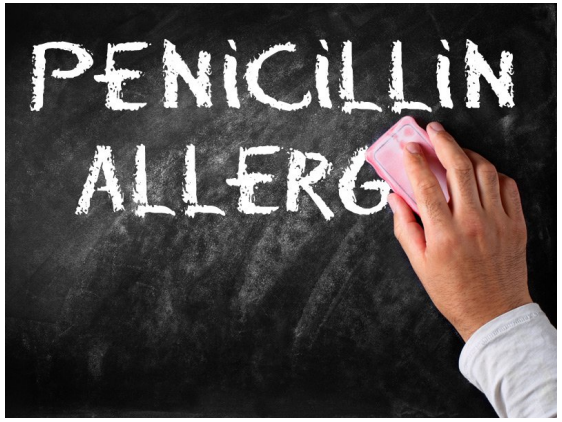
- For all indications, short either equivalent or better than long duration

Dawson-Hahn, Family Practice, 2017

UWTASP
tele-antimicrobial stewardship program

Antibiotic Use After Removal of Penicillin Allergy Label

- Follow-up of 100 patients
  - Previous PCN allergy with negative allergy test
- Results known:
  - 90% of parents
  - 84% of PCPs
  - BUT medical record still listed allergy in 52%



Vyles, Pediatrics, 2018

Antibiotic Use After Removal of Penicillin Allergy Label

- 36 received abx during follow-up (50% amox)
  - 1 rash, no serious adverse events

- 1 year cost savings: $1368
- Potential ED cost savings (for 67000 visits/year)
  - $192 K

Vyles, Pediatrics, 2018

UWTASP
tele-antimicrobial stewardship program

Top Questions in Uncomplicated, Non-*Staph aureus* Bacteremia

- What is the role of oral abx?
- Clinical & PK/PD support high bioavailable agent
  - After susceptibility confirmed
- Oral beta-lactams step-down
  - OK for *S. pneumoniae* bacteremia
  - Enterobacteriaceae (high success, mixed results)
  - *? Strep*, *Enterococcus*

Sutton, OFID, 2018

Top Questions in Uncomplicated, Non-*Staph aureus* Bacteremia

- Shortest effective duration?

- Understudied. Multiple ongoing RCTs.
- For Enterobacteriaceae and *S.pneumo*
  - ≤ 7 days likely similar to 14 days
- Lack of data for *Pseudomonas, Acinetobacter, Enterococcus, Strep sp.*

- Note: Limited published data for 14 days too!

Sutton, OFID, 2018

Top Questions in Uncomplicated, Non-*Staph aureus* Bacteremia

- Role of Repeat Blood Cultures?

- Data all retrospective, single-center
- Persistent bacteremia in ~15% (mostly GP)
- UTI, SSTI, gram negative
  - a/w even lower yield
  - longer abx course
  - no M&M difference

Sutton, OFID, 2018

Extensive Impact of Non-Antibiotic Drugs on Human Gut Bacteria

- Tested 1,197 compounds (relevant doses) against 40 representative gut bacteria isolates
- Anticommensal: reduced growth of 1+ strain

- 156 abx: 78% anticommensal
- Non-antibiotic drugs: 27% anticommensal
  - 3% Anti-virals, anti-fungals
  - 24% were human targeted drugs

Maier, Nature, 2018

Extensive Impact of Non-Antibiotic Drugs on Human Gut Bacteria

- Human targeted drugs with anticommensal activity
  - Most affected <10 bacterial strains
  - 40 drugs affected 10+ strains
    - Methotrexate, loratadine, tamoxifen, amiodarone, clomiphene
  - 14 not previously described
- More abundant bacteria were significantly more susceptible

Maier, Nature, 2018

References

- Dawson-Hahn EE, Mickan S, Onakpoya I, Roberts N, Kronman M, Butler CC, Thompson MJ. Short-course versus long-course oral antibiotic treatment for infections treated in outpatient settings: a review of systematic reviews. Family practice. 2017 Sep 1;34(5):511-9.

- Maier L, Pruteanu M, Kuhn M, Zeller G, Telzerow A, Anderson EE, Brochado AR, Fernandez KC, Dose H, Mori H, Patil KR. Extensive impact of non-antibiotic drugs on human gut bacteria. Nature. 2018 Mar;555(7698):623.

- Parente DM, Cunha CB, Mylonakis E, Timbrook TT. The Clinical Utility of Methicillin Resistant Staphylococcus aureus (MRSA) Nasal Screening to Rule Out MRSA Pneumonia: A Diagnostic Meta-analysis with Antimicrobial Stewardship Implications. Clinical Infectious Diseases. 2018 Jan 11.

- Sutton JD, Sayood S, Spivak ES. Top Questions in Uncomplicated, Non–Staphylococcus aureus Bacteremia. Open Forum Infectious Diseases 2018 Apr 21 (Vol. 5, No. 5, p. ofy087). US: Oxford University Press.

- Vyles D, Chiu A, Routes J, Castells M, Phillips EJ, Kibicho J, Brousseau DC. Antibiotic Use After Removal of Penicillin Allergy Label. Pediatrics. 2018 May 1;141(5):e20173466.