INFECTION PREVENTION AND ANTIMICROBIAL STEWARDSHIP: YIN & YANG OF PATIENT SAFETY

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EUCIC Chair
What is an Antimicrobial Stewardship?

- Refers to coordinated interventions designed to improve and measure the appropriate use of antimicrobials by promoting the selection of the optimal antimicrobial drug regimen, dose, duration of therapy, and route of administration.

1. Minimize toxicity and other adverse events
2. Reduce the costs of health care
3. Limit the selection for antimicrobial resistant strains

Which is the difference with being a reliable ID / CM?
Inappropriate therapy

Table 1
Cohort study: appropriate antibiotic treatment

<table>
<thead>
<tr>
<th>Country</th>
<th>Patients</th>
<th>Physician&lt;sup&gt;a&lt;/sup&gt;</th>
<th>TREAT&lt;sup&gt;b&lt;/sup&gt;</th>
<th>P value&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israel</td>
<td>164</td>
<td>87 (53.0)</td>
<td>121 (73.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Germany</td>
<td>105</td>
<td>62 (59.0)</td>
<td>71 (67.6)</td>
<td>0.108</td>
</tr>
<tr>
<td>Italy</td>
<td>81</td>
<td>50 (61.7)</td>
<td>53 (65.4)</td>
<td>0.690</td>
</tr>
<tr>
<td>Overall</td>
<td>350</td>
<td>199 (56.9)</td>
<td>245 (70.0)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Paul & Tacconelli, JAC 2013
The percentage of inappropriate empiric antibiotic use ranged from **14% to 79%** (Q1-Q3: 28.1% to 57.8%); 13 of 27 studies (48%) described an incidence of 50% or more.

Effect of appropriate and inappropriate antibiotic therapy against severe infections
Everything for infection control for which I need to ask extra money for…

**ACTIVE INFECTION CONTROL:**

1. Universal screening
2. Active screening on admission to specific ward/unit
3. Pre-emptive isolation of patients on admission
4. Patient cohorting
5. Patient isolation
6. Bathing with antisectic agents
7. Contact precautions
8. Hand hygiene audit
9. Patient record flagging
10. Antibiotic formulary changes and restriction policies
11. Reinforce environmental cleaning (including post-discharge)
12. Nurse cohorting (dedicated nursing)
13. In-ward education on the implementation of infection control measures
14. Decolonisation

**FOR THIS SPECIFIC TALK I REFER TO:**

1. Universal screening
2. Active screening on admission to specific ward/unit
3. Pre-emptive isolation of patients on admission
4. Contact precautions / Isolation room
5. Antibiotic formulary changes and restriction policies
6. Reinforce environmental cleaning (including post-discharge)
http://amr-review.org/
LOWERING DEMAND FOR ANTIMICROBIALS AND REDUCING UNNECESSARY USE

- Public awareness
- Sanitation and hygiene
- Antibiotics in agriculture and the environment
- Vaccines and alternatives
- Rapid diagnostics
- Human capital

Demand

Quantity

http://amr-review.org/
IF NOT TACKLED, RISING AMR COULD HAVE A DEVASTATING IMPACT

By 2050, the death toll could be a staggering one person every three seconds if AMR is not tackled now.

http://amr-review.org/
Laxminarayanmì, LID 2016
Publications 2001-2016
Road map

(1) Can Infection Control stand without Antimicrobial Stewardship?

(2) Can Antimicrobial Stewardship stand without Infection control?

Evidence for ATBS effectiveness against HA-MDRO

Evidence for the combination of the two measures against HA-MDRO
Antibiotics usage impacts on MRSA incidence
76 studies, 24,230 patients

Antibiotics usage impacts on MRSA incidence

**TABLE 3. Incidence of acquisition for 1,000 antibiotic-days by antibiotic class, patient risk factor, and duration of therapy for the overall target ARB (i.e., MRSA, VRE, and CR-PA) and specific for MRSA.**

<table>
<thead>
<tr>
<th>Antibiotic class and risk factor*</th>
<th>Overall</th>
<th>By duration of therapy:</th>
<th>MRSA incidence overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10 days</td>
<td>15 days</td>
</tr>
<tr>
<td>Carbapenems</td>
<td>13.8</td>
<td>18.3</td>
<td>13.2</td>
</tr>
<tr>
<td>Dialysis</td>
<td>29.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>28.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICU</td>
<td>22.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cirrhosis</td>
<td>20.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broad-spectrum cephalosporins</td>
<td>5.8</td>
<td>5.1</td>
<td>3.5</td>
</tr>
<tr>
<td>Chronic renal failure</td>
<td>27.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td>15.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV infection</td>
<td>10.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cirrhosis</td>
<td>19.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of &gt;70 yrs</td>
<td>8.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quinolones</td>
<td>5.9</td>
<td>6.6</td>
<td>5.2</td>
</tr>
<tr>
<td>Age of &gt;70 yrs</td>
<td>8.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycopeptides</td>
<td>9.2</td>
<td>11.3</td>
<td>8.0</td>
</tr>
<tr>
<td>HIV</td>
<td>19.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cirrhosis</td>
<td>15.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macrolides</td>
<td>5.8</td>
<td>7.2</td>
<td>10.9</td>
</tr>
<tr>
<td>Chronic renal failure</td>
<td>22.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td>16.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piperacillin-tazobactam</td>
<td>6.5</td>
<td>11</td>
<td>3.1</td>
</tr>
<tr>
<td>Age of &gt;70 yrs</td>
<td>16.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Only relevant risk factors are reported.
[5-12-16] Today, the FDA is requiring labeling changes for antibacterial drugs called fluoroquinolones, including an updated boxed warning, stating that the serious side effects associated with fluoroquinolones generally outweigh the benefits for patients with sinusitis, bronchitis and uncomplicated urinary tract infections who have other treatment options. For patients with these conditions, fluoroquinolones should be reserved for those who do not have alternative treatment options.

FDA Response to Citizen Petition: Southern Network on Adverse Reactions (SONAR), Docket No. FDA-2014-P-0856. The Petition requests that FDA require changes in the professional labeling of Levaquin (levofloxacin) regarding “Potential Mitochondrial Toxicity”.
Limitations of current evidence

Lack of consideration of:

- Comorbidities
- Other drugs
- Sequential therapy
- Association therapy
- Advanced age
- Diet
- Temperature
Effect of ASPs on hospitalized patients

145 studies / 14 objectives

Guideline-adherent empirical therapy was associated with a RR for mortality of 35% and for de-escalation of 66%

Resistance rates for restricted antibiotics were significantly decreased across a wide variety of infective agent and drug combinations.

A few studies reported increased resistance rates for non-restricted antibiotics.

Schuts, LID 2016
Antimicrobial stewardship: systems and antimicrobial medicine use

NICE guidelines [NG15]  Published date: August 2015

Implementing an Antibiotic Stewardship Program:
Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America
The role of antimicrobial stewardship in controlling HAI MDR-Gram positive (up to 2006)

- 7 studies
- Colonisation / Infections (MRSA and VRE)
- Follow up: 1-24 months
- Risk of bias:
  - Low (2 studies)
  - Moderate (2 studies)
  - High (3 studies)
- Reduction of infection / colonisation:
  - +10% to -89%

➢ Infection control measures not described
➢ Infection control measures changed
ATBS and C. difficile

A multidisciplinary antibiotic management program to minimize the inappropriate use of third-generation cephalosporins

Carling, ICHE 2033
When stratified by intervention type, a significant effect was found for **restrictive ASPs** (complete removal of drug or prior approval requirement). Furthermore, ASPs were particularly effective in **geriatric settings**.

Feazel, JAC 2014
The role of antimicrobial stewardship in controlling HAI MDR-Gram negative
Search up to 2006, P. Davey 2013

• 9 studies
• Colonisation / Infections
• Follow up: 1-24 months
• Risk of bias:
  • Low (3 studies)
  • Moderate (3 studies)
  • High (3 studies)
• Reduction of infection / colonisation:
  - 23% to -96%
The role of antimicrobial stewardship in controlling HAI MDR-Gram negative (updated 2011)

- There is low quality evidence that ASPs can improve prescribing and microbial outcomes with reduced costs without significant adverse impact on patient outcomes.
- 9 studies (7 ITS, 2 CCT) reported colonization (3) or infection (6) with antibiotic-resistant *gram-negative* bacteria.
- Follow up: 1-24 months
- Reduction ranged from 21%-92%
- Low quality
- Low evidence
ATBS and MDR-Gram negative

- A before-after comparative trial
- Restriction of use of the cephalosporin class
- Approval by ID beyond a single dose for immediate therapy

Rahal, JAMA 1998
ATBS and MDR-Gram negative

<table>
<thead>
<tr>
<th>Site</th>
<th>Year</th>
<th>No. of PR-CRK</th>
<th>Change, %</th>
<th>Incidence by Unpaired Median PR-CRK/ADC Ratio (Range)</th>
<th>P</th>
<th>Incidence by Paired Median Monthly PR-CRK/ADC Ratio Difference (Range)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital-wide</td>
<td>1995</td>
<td>150</td>
<td>-44.2</td>
<td>0.032 (0.016-0.054) 0.019 (0.008-0.033)</td>
<td>&lt;.01</td>
<td>-0.019 (-0.037-0.014)</td>
<td>&lt;.05</td>
</tr>
<tr>
<td></td>
<td>1996</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All intensive care units</td>
<td>1995</td>
<td>55</td>
<td>-70.8</td>
<td>0.137 (0.098-0.237) 0.084 (0.012-0.121)</td>
<td>&lt;.001</td>
<td>-0.098 (-0.237-0.049)</td>
<td>&lt;.01</td>
</tr>
<tr>
<td></td>
<td>1996</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgical intensive unit</td>
<td>1995</td>
<td>55</td>
<td>-67.5</td>
<td>0.203 (0.083-0.639) 0 (0-0.143)</td>
<td>&lt;.001</td>
<td>-0.104 (-0.633-0.043)</td>
<td>&lt;.005</td>
</tr>
<tr>
<td></td>
<td>1996</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical intensive unit</td>
<td>1995</td>
<td>17</td>
<td>-58.8</td>
<td>0.100 (0-0.300) 0 (0-0.200)</td>
<td>&gt;.05</td>
<td>-0.023 (-0.214-0.200)</td>
<td>&gt;.05</td>
</tr>
<tr>
<td></td>
<td>1996</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac intensive unit</td>
<td>1995</td>
<td>2</td>
<td>100</td>
<td>0 (0-0.091) 0 (0-0.231)</td>
<td>&lt;.05</td>
<td>0 (-0.091-1.54)</td>
<td>&lt;.05</td>
</tr>
<tr>
<td></td>
<td>1996</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*PR-CRK/ADC indicates number of patient-related ceftazidime-resistant Klebsiella (PR-CRK) per 1000 average daily census (ADC), hospital-wide and per 100 ADC for individual and all intensive care units.

Rahal, JAMA 1998
Rette antibiOTika
RETTLE LEBEN

1. Übermäßiger Einsatz und unsachgemäßer Gebrauch von Antibiotika ist ein Hauptgrund für Antibiotika-Resistenz
2. Antibiotika-Resistenz und damit verbundene Mortalität steigen weltweit
3. Die Antibiotika-"Pipeline" ist derzeit leer

Kein Patient sollte unnötig Antibiotika bekommen

NOT ist ein Projekt der UKT gegen übermäßigen Gebrauch von Antibiotika

Zu Unterricht und Praxis
Bundesanstalt für Gesundheit und Umwelt
Dr. Rainer Kral
rainer.kral@bgu.de

Universität Tübingen
Medizinische Klinikum
Universität Tübingen
<table>
<thead>
<tr>
<th>Quality Indicator</th>
<th>Days of Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Clinical rationale for antibiotic start detailed</td>
<td></td>
</tr>
<tr>
<td>Appropriate microbiological culture</td>
<td></td>
</tr>
<tr>
<td>Local SOP-guided empiric therapy</td>
<td></td>
</tr>
<tr>
<td>Review of diagnosis</td>
<td></td>
</tr>
<tr>
<td>De-escalation</td>
<td></td>
</tr>
<tr>
<td>Discontinuation</td>
<td></td>
</tr>
</tbody>
</table>

Tacconelli, under submission
ATBS and diagnostic stewardship

FIG 3 Timeline of events (hours). Abbreviations: GS, Gram stain; ID, identification.

Biork AAC 2015
Der „kleine Unterschied“ bei Medikamenten
Verteilung der Arznei-Tagesdosen, die berufstätige Frauen und Männer 2010 durchschnittlich verordnet bekamen

Männer
- Muskeln, Skelette: 46%
- Atmung: 14%
- Nerven: 13%
- Stoffwechsel: 6%
- Hormonpräparate: 6%
- Urogenitalsystem und Sexualhormone: 14%
- Herz-Kreislauf: 7%

Frauen
- Muskeln, Skelette: 22%
- Atmung: 17%
- Nerven: 14%
- Stoffwechsel: 14%
- Hormonpräparate: 10%
- Urogenitalsystem und Sexualhormone: 11%
- Herz-Kreislauf: 7%

Graphik-Quelle: Gesundheitsreport der Techniker Krankenkasse 2011
The largest sex difference in absolute numbers was observed for antibiotics, more commonly dispensed to women.

Loikas, 2013
Overall antibiotics prescription
Age and gender

Tacconelli, JAC 2016
Women were 27% more likely than men to receive an antibiotic prescription in their lifetimes. The amount of antibiotics prescribed to women was 36% higher than that prescribed for men in the 16 to 34 years age group and 40% greater in the 35 to 54 years age group.
Antibiotic prescribing in community: is there evidence of gender discrepancy? An evidence based approach

**LIMITATIONS**

- Information on the diagnoses or conditions the drugs were prescribed for was not included.
- Information limited to prescribed and not used.

**POSSIBLE RATIONALE**

- Women have more RTIs
- Women have more UTIs
- Women see doctor more frequently
- Women talk different about their symptoms
- Women have a higher life expectancy
Do women have higher life expectancy than men?

Source: Eurostat (online data code: demo_mlexpec)
ATBS plus IC and MRSA

- Antibiotic stewardship and hand hygiene programs
- 2,000-bed tertiary hospital in South Korea (65% MRSA)
- CDSS for ATBS
- Monthly mean antibiotic consumption decreased from 690.54 ± 28.33 defined daily dose per 1,000 patients-days in 2008 to 652.47 ± 20.77 (P = .015) in 2011.
- The rates of performance in hand hygiene increased from 43% in 2008 to 83% in 2011 (P = .043).
- Incidence of MRSA BSI was reduced from 0.171 per 1,000 patient-days in 2009 to 0.116 per 1,000 patient-days in 2011 (P = .009).

Kim, Am J Infect Control 2013
ATBS plus IC and MRSA

Lawes, BMJ Open 2015
### Table 2
Temporal associations between hospital use of macrolides, fluoroquinolones and clindamycin and related antibiotic resistances within strains

<table>
<thead>
<tr>
<th>Antibiotic and strain</th>
<th>ARIMA model* (p,d,q) (P,D,Q)</th>
<th>Model R²</th>
<th>Lag</th>
<th>Coefficient (95% CI)†</th>
<th>T ratio</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macrolide use, DDDs/1000 OBDs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC22, % erythromycin resistance</td>
<td>(1,0,1) (1,0,0)</td>
<td>0.291</td>
<td>0</td>
<td>0.088 (0.012 to 0.164)</td>
<td>2.25</td>
<td>0.026</td>
</tr>
<tr>
<td>CC30, % erythromycin resistance</td>
<td>(2,0,2) (0,0,0)</td>
<td>0.432</td>
<td>5</td>
<td>0.098 (0.006 to 0.190)</td>
<td>2.08</td>
<td>0.039</td>
</tr>
<tr>
<td>CC5 and other, % erythromycin resistance</td>
<td>(1,0,0) (0,0,0)</td>
<td>0.109</td>
<td>0</td>
<td>0.110 (0.090 to 0.130)</td>
<td>11.51</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Fluoroquinolone use, DDDs/1000 OBDs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC22, % ciprofloxacin resistance</td>
<td>(2,0,2) (1,0,0)</td>
<td>0.451</td>
<td>0</td>
<td>0.062 (0.027 to 0.097)</td>
<td>3.36</td>
<td>0.001</td>
</tr>
<tr>
<td>CC30, % ciprofloxacin resistance</td>
<td>(2,0,2) (1,0,0)</td>
<td>0.331</td>
<td>0</td>
<td>0.128 (0.048 to 0.209)</td>
<td>3.14</td>
<td>0.002</td>
</tr>
<tr>
<td>CC5 and other, % ciprofloxacin resistance</td>
<td>(1,0,2) (0,0,0)</td>
<td>0.074</td>
<td>0</td>
<td>0.108 (0.076 to 0.140)</td>
<td>6.58</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Clindamycin use, DDDs/1000 OBDs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC22, % clindamycin resistance</td>
<td>(1,0,1) (0,0,0)</td>
<td>0.298</td>
<td>0</td>
<td>0.173 (0.137 to 0.208)</td>
<td>9.76</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>CC30, % clindamycin resistance</td>
<td>(2,0,1) (0,0,0)</td>
<td>0.691</td>
<td>0</td>
<td>0.455 (0.067 to 0.843)</td>
<td>2.30</td>
<td>0.023</td>
</tr>
<tr>
<td>CC5 and other, % clindamycin resistance</td>
<td>(2,0,1) (0,0,0)</td>
<td>0.176</td>
<td>0</td>
<td>0.334 (0.175 to 0.493)</td>
<td>4.11</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Autoregressive Integrated Moving Average models, in which: p=order (number) of non-seasonal autoregressive terms representing impact of previous values in time-series, d=order of differencing to achieve stationary time-series; q=order of non-seasonal moving average terms representing response to previous disturbances (residual error) in time-series; and P, D, Q reflect orders of seasonal (lag 12) autoregressive, differencing and moving average terms.

†Change in % resistance associated with a +1 DDD/1000 OBDs increase in antibiotic use. DDDs, defined daily doses; OBDs, occupied bed days.

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Lawes, BMJ Open 2015
Interrupted time-series analysis

- Staff education
- IC measures
- Environmental cleaning
- Local guidelines (pocket-size antibiotic guide) on empirical treatment of common infections
- No formal restriction (pharmacist phone call)

Valiquette, CID 2007

Figure 2. Targeted antibiotic (Abx) consumption and nosocomial *Clostridium difficile*-associated disease (CDAD) incidence per 1000 patient-days of hospitalization.
ATBS, IC and MDR-Gram negative

- 2010-2014, 30-month follow-up
- Screening, cohorting, education and ATBS

- Incidence rate of CRE BSI (risk reduction 0.96, 95% CI 0.92-0.99, p 0.03) and CRE colonization (risk reduction 0.96, 95% CI 0.95-0.97, p <0.0001) significantly decreased over a period of 30 months

Viale, CMI 2015
ESCMID guidelines for the management of the infection control measures to reduce transmission of multidrug-resistant Gram-negative bacteria in hospitalized patients

E. Tacconelli¹, M. A. Cataldo², S. J. Dancer³, G. De Angelis⁴, M. Falcone⁵, U. Frank⁶, G. Kahlmeter⁷, A. Pan⁸,⁹, N. Petrosillo², J. Rodríguez-Bano¹⁰,¹¹,¹², N. Singh¹³, M. Venditti⁵, D. S. Yokoe¹⁴ and B. Cookson¹⁵

CMI 2014
MDR-GN
Failure of interventions

- Overall failure rate: 31%
- Risk factors:
  - not applying a bundle approach (45% vs 28%)
  - endemic situation (47% vs 27%)
  - MDR P. aeruginosa.

Endemic setting:
- lack of implementation of HH plus EDU (RR 4.7)
- lack of implementation of HH plus CP (RR 1.8)

Epidemic setting:
- lack of implementation of HH plus PI plus CP (RR 2.3)
- lack of implementation of HH plus PE plus CP plus ASC (RR 1.7).

Tacconelli (under submission)
HOW SURVEILLANCE CAN IMPROVE HEALTH OUTCOMES

Globally
Provide early warnings of emerging threats and data to identify and act on long-term trends

Nationally
Guide policy and ensure appropriate and timely public health interventions

Locally
Allow healthcare professionals to make better informed clinical decisions to ensure better patient outcomes
Does universal active MRSA surveillance influence anti-MRSA antibiotic use?

Figure 2. Evolution of the diagnostic accuracy of (a) initial anti-MRSA therapy for MRSA-positive admission cultures over time and (b) nasal MRSA surveillance for MRSA-positive admission cultures over time.

Jones JAC 2014
**Table 3.**

Determinants of antibiotic prescribing in hospitals (modified from data in Charani et al.37)

<table>
<thead>
<tr>
<th>Theme</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Decision-making autonomy</td>
<td>Sometimes during a procedure, if the surgeon feels there’s a need to introduce antibiotics, they say so and I have never challenged that, no one has ever challenged that. Nurse, Orthopaedics (12 years)</td>
</tr>
<tr>
<td>2. Limitations of local evidence-based policies</td>
<td>Sometimes it is difficult to... use the policy because the policy will be your average sort of thing, it’s not looking at someone at the top or at the bottom. Pharmacist, General Medicine (2 years)</td>
</tr>
<tr>
<td>3. Culture of hierarchy</td>
<td>The junior doctors tend to change it and the junior doctors won’t change it if their senior doctors, if the consultant or registrar’s specifically asked them to prescribe something else. Pharmacist, ICU (7 years)</td>
</tr>
<tr>
<td>4. Etiquette</td>
<td>‘I think doctor to doctor, it’s very difficult for clinician to clinician, especially different specialties to go and criticize one another. I think that’s not collegial practice, so people don’t want to do that.’ Nurse, Outpatient Parenteral Antimicrobial Therapy Services (14 years)</td>
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Peter Davey J. Antimicrob. Chemother. 2015;70:2931-2944
The Ethical Significance of Antimicrobial Resistance

- AMR is a distinct ethical issue.
- Successful responses to the problem of AMR will not only be a scientific or medical undertaking, it must also be an ethical undertaking.
- Every level of an AMR response (improving surveillance and reporting, reducing ATB usage, ..) strategy will inevitably involve making decisions with ethical implications.
- Promoting research and innovation into different preventative, diagnostic and therapeutic interventions will require us to make funding and allocation decisions that prioritise AMR over other important projects and policies.

Littmann, Public Health Ethics
Do you have questions regarding EUCIC? Would you like to contribute?

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  Scientific Coordinator

European Committee on Infection Control (EUCIC)
Infection prevention and control: an ESCMID priority!
Major Goals

- Contribution to the harmonization and standardization of IPC procedures
- Development of new educational and training tools
- Development of new EU network of excellence centers to run clinical research on IC
Conclusions I

• Development of resistance should be considered as adverse event of antibiotic therapy.
• There is evidence that the impact of antibiotic therapy on the intestinal microbiota is depending from type of antibiotic, dosage, duration, and route of administration with long term effects that currently are still under investigation.
• Combination and sequential therapy impact differently according to patients‘ comorbidities and setting.
• Modulation of adverse effects through personalised antibiotic therapy could be addressed although feasible tool are still missing and impact on other outcome requires further analysis.
Conclusions II

1. Antibiotic stewardship programs form only one strategy for minimising the incidence of resistance and must partner with infection control measures.

2. Outcome measurements should be customised to the institution and agreed on before the program is implemented. Each department must be included and their feedbacks sought.

3. Culture of an institution may be a major determinant of the success of an antibiotic stewardship program.

4. The choice of the outcomes is essential.
DOCTORS WORKING IN INFECTIOUS DISEASE AND HIV EARN LESS

Doctors' annual pay for working in infectious diseases and HIV in 2012 compared with other medical fields in the US.

Could be this the reason why some of us are so smart, thoughtful and funny? A sort of positive selection bias....

Eli Perencevich @eliowa
Why aren't folks choosing Infectious Diseases as a subspecialty? Extra training and lowest SALARY hacontroversies.blogspot.com/2016/04/the-de... by @mike_edmond