

Antimicrobial Stewardship: Improving Patient Care Quality and Safety

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Objectives

- Describe antimicrobial stewardship in Human medicine
- Show some evidence of impact of a “stewardship” program
- Describe how stewardship improves patient quality and safety
- Summarize recent initiatives in promoting ASP

Antimicrobial Stewardship: Why Now?

- ASP is **NOT** a new concept in Human healthcare
- 25% reduction of outpatient antibiotic prescriptions in Canada since 1998.
- Some parameters of resistance have stabilized.
- New antimicrobial resistant organisms (AROs) have emerged
- Carbapenemase Producing Enterobacteraceae (CPE)-NDM-1
- No effective antibiotics available and patients die
- Little new antimicrobials coming on the horizon
- Accreditation Canada made ASP an ROP

Reaction to emerging ARO's

- WHO statement
- CDC policy
- Federal task force on ARO incl. a subcommittee on ASP
- AMMI Canada-Choose Wisely Canada
- Ontario: PHO, HQO, Artic program, CAHO and MOH all wanting to develop a comprehensive Asp for the Province

Antimicrobial Stewardship- Historical Approaches

- Control of usage was based on prescribing restriction, guidelines, & pathways
- Hide susceptibility patterns to veer prescribers to certain antimicrobial classes or “cheaper” drugs.
- These approaches had limited beneficial impact

Why Did Control Measures Not Work?

- Prescribers don't like to be told what to do
- Evidence for the restrictions was often lacking ... credibility gap.
- Guidelines were vague
- Guidelines often encourage broad spectrum coverage by being overly inclusive.
- Effective impact was not sustainable
- Is it time to look at prescribing as a behavior rather than just a knowledge based activity?

Goal of Antibiotic Therapy

- The right antimicrobial, dose and duration
- Goal: cure infection with minimal toxicity and minimal impact on selective (resistance) pressure.
- **Inappropriate Use** leads to:
 - Unnecessary exposure to antimicrobial
 - Increased cost
 - Antibiotic resistance and “super-infections”
 - Increased LOS

Myths about antibiotics

- More is better
 - “broad spectrum superior to narrow spectrum”
- Don't change what ain't broke
 - “stick with the meds which the patient has responded to”
- IV is superior to PO
- Narrow spectrum is inferior care- “simplification”
- Individual prescribing has no impact on resistance

Impact of Changing the Choice of Antibiotics

- Finland... '90... macrolides for Group A streptococcus
- Restrict the use of 3rd generation cephalosporins (ceftazidime) reduced ESBL's
- Rotate antibiotic classes... ICUs
 - cephalosporin, B-lactams (PiP/Tazo), carbapenem, quinolone

Impact of Changing the Choice of Antibiotics

- Rotate the attending physician

TOH ICU and General Medicine

- Randomized study of ASP:
- TOH 1100 bed , 2 campus model
- Each campus pilot was compared to its sister ward across town
- All sites had prescribing totals from the 3 months prior to the pilot and the same time period from the previous years

Impact of ASP

- 30% reduction in antibiotic days
- 40% reduction in antibiotic cost on the wards tested
- Translated into \$160,000 annualized saving
- Hospital saved \$400,000 in antibiotic costs that fiscal year
- No negative impact seen (mortality, LOS, readmission)
- Spill-over effect on the non-intervention wards
- These wards are covered by the same Medical residents
- Is this a learning effect? Change in behavior?

Lessons learned

- Good data make believers out of skeptics
- Need strong senior leadership to implement the program and changes needed for potential success.
- Identifying local champions (early adopters) improves the chances of success and makes the project much more fun
- Work with people who at least are willing to consider change

Conclusions

- Individual prescribing patterns do impact resistance but it is hard to measure.
- If we adopt stewardship principles as a group we can effect profound impact on resistance and patient safety
- ASP and Infection Control programs should be coordinated. They are both needed to reduce resistance and *C. difficile*

ASP and AROs /ESBLs

- UK data: IPAC enhancements slowed down the *C. difficile* but the rapid fall in CDI only happened with aggressive reduction in antimicrobials
- Ontario data; 30% reduction in CDI outbreaks in past 2 years and significant decline in associated mortality
- But no change in *C. difficile* infections
- How does this happen?
- Better patient recognition, better diagnosis, patient isolation reduce spread in the hospital!

C. difficile

- Many of our outbreaks are polyclonal isolates based on Molecular typing
- Are these real outbreaks?
- Where is the CDI reservoir in our communities?
- IPAC goes only so far. Need aggressive reduction in discretionary antibiotic usage

CPEs

- Rapid increase over the past 3 years
- More modest increase in 2013
- 70% colonization vs. 30% infection
- 25% have no defined risk!
- Risk factors are medical care or travel outside N. America
- Main infection site is UTI
- No antimicrobial utilization data is available to correlate cause and effect

PHO - Antimicrobial Stewardship Program

- To support community hospitals that do not have infectious Disease or Microbiology expertise
- Focus on support for the ICPs and pharmacists who become the front line advocates for ASP
- Focus on education and support
- Developed a suite of 30 evidence based ASP interventions and they are ranked based on priority and feasibility.
- These will be available “on-line” at the PHO website in the next couple of months

Future PHO Directions

- ASP scorecard, will be sent out hopefully in late 2015 to help hospitals know how they compare with their peers
- Pilot of stewardship/management of UTIs in LTC.
- Implementation Science to evaluate the process and the outcomes of the intervention. First 2 pilot sites started Oct 2015. Full rollout in next fiscal year
- *C. difficile* reservoir studies.
- Behavior change theory applied to IPAC
- HAI provincial surveillance database combined with antibiotic utilization data

Thank you!

Questions?

Comments welcome