Antimicrobial Chemotherapy:

When once is not enough – further evidence of procalcitonin-guided antibiotic stewardship
Stephan Harbarth, Werner C Albrich, and Beat Müller in Critical Care: 2009
- Every day, critical care physicians around the world face the same challenge of the optimal timing of antimicrobial administration: when to start and when to stop antibiotics. Duration of antibiotic therapy for sepsis is mostly based on expert opinion, but its reduction is arguably the most promising approach to decrease emergence and selection of antibiotic resistance. This study by Hochreiter and colleagues presents another piece of evidence suggesting that procalcitonin may indeed be a valuable diagnostic parameter to guide antibiotic treatment duration, despite the ongoing controversy about the diagnostic accuracy of procalcitonin.

Emerging trends in antibiotic use in US hospitals: quality, quantification and stewardship
Jacob, Jesse T; Gaynes, Robert P for the Expert Review of Anti-Infective Therapy, Volume 8, Number 8, August 2010, pp. 893-902(10)
- Three major trends in antibiotic use in US hospitals have emerged over the last few years: antibiotics as quality metrics, persistent use of different measures of antibiotic consumption and the emergence of antibiotic stewardship programs. Compared with Europe, where approaches are heterogeneous but generally consistent, the USA currently lacks the infrastructure to monitor antibiotic resistance and antibiotic consumption locally. Both have implemented programmatic strategies for prudent antibiotic use. The USA appears to have implemented processes more systematically to measure the quality of antibiotic use.

Antimicrobial stewardship: an evidence-based, antimicrobial self-assessment toolkit (ASAT) for acute hospitals
- The objective of this study is to describe the methodology in developing an antimicrobial self-assessment toolkit (ASAT). The ASAT was developed through a National Pharmacy Reference Group using an evidence-based approach of published information and national reports to identify criteria for inclusion. These were subdivided into domains that addressed:
  1. Antimicrobial management within the Trust—structures and lines of responsibility and accountability—high-level notification to the Board.
  2. Operational delivery of an antimicrobial strategy—operational standards of good antimicrobial stewardship.
3. **Risk assessment for antimicrobial chemotherapy.**
4. **Clinical governance assurance.**
5. **Education and training**—training needs and delivery of education and training for all who issue, prescribe and administer antimicrobials.
6. **Antimicrobial pharmacist**—systems in place for ensuring their optimum use.
7. **Patients, Carers and the Public**—information needs of patients, carers and the public.

- A web-based toolkit was developed using information from national reports and guidance on antimicrobial stewardship. The toolkit offers a checklist for hospitals to self-assess their organizations’ levels of antimicrobial stewardship. The ASAT offers a web-enabled, version-controlled instrument for the assessment of antimicrobial stewardship in acute hospitals. It may offer a sensitive instrument to assess longitudinal progress on antimicrobial stewardship in an individual institution or act as a benchmark with similar organizations.

**Improving Antibiotic Stewardship: Order Set Implementation to Improve Prophylactic Antimicrobial Prescribing in the Outpatient Surgical Setting**
Braxton, Carla C. MD, MBA, FACS; Gerstenberger, Patricia A. BSN; Cox, Glendon G. MD, MHSA, MBA in the Journal of Ambulatory Care Management: April/June 2010 - Volume 33 - Issue 2 - p 131–140

- In the landmark document *Crossing the Quality Chasm*, the Institute of Medicine lists 6 aims of healthcare, one of which is that healthcare has to be effective. One means of improving the effectiveness of healthcare includes the creation of evidence-based guidelines to help streamline processes, decrease variability in care, and improve outcomes. Postoperative infection constitutes one of the most common preventable complications for surgical patients. The practice of administering perioperative antibiotics is currently being examined to determine the most effective approach to decrease the incidence of surgical site infections, improve resource utilization, and meet Surgical Care Improvement Project (SCIP) mandates. In this article a tailored antibiotic prophylaxis form was utilized to help standardize perioperative antimicrobial use. The form was modified by a multidisciplinary antibiotic committee as new published clinical evidence or new SCIP guidelines were produced. The results demonstrated a more than 90% compliance with SCIP core measures and significantly decreased the variability of antibiotic-ordering practices within our institution. Compliance with timely (within 1 hour prior to incision) antimicrobial administration is more than 90% but remains with high variability. Improvement in documentation may decrease the perceived inconsistencies in timing. The results also demonstrate that a multidisciplinary approach to managing perioperative prophylactic antimicrobial can be effective in decreasing clinical variability and costs of perioperative care, while increasing compliance with national mandates for antibiotic prescribing.

**Antimicrobial Stewardship in the Intensive Care Unit: Advances and Obstacles**
• Antimicrobial stewardship involves a multifaceted approach that strives to combat the emergence of resistance, improve clinical outcomes, and control costs by improving antimicrobial use. Therefore, stewardship is of great importance and relevance in the intensive care unit. Clinical decision support systems, biomarker-derived treatment algorithms, and improved knowledge regarding the different components of antimicrobial therapy represent some of the advances that have been made in stewardship. Yet, significant obstacles have prevented the full achievement of stewardship's goals, and approaches to confronting these obstacles should be appreciated. Clinicians should realize that antimicrobials are important therapeutic agents and strive to use them wisely.

**Evaluation of an Antimicrobial Stewardship Program at a Pediatric Teaching Hospital**

Metjian, Talene A. PharmD; Prasad, Priya A. MPH; Kogon, Amy MD; Coffin, Susan E. MD, MPH; Zaoutis, Theoklis E. MD, MSCE

• Thirty to fifty percent of hospitalized patients receive antimicrobial therapy. Previous data suggest that inappropriate use results in higher mortality rates, longer lengths of stay, and increased medical costs. Antimicrobial Stewardship Programs (ASPs) reduce the improper use of antimicrobials and improve patient safety. Despite increased awareness about the benefits of these programs, few pediatric ASPs exist and fewer comprehensive studies evaluate their effects. A prospective observational study was conducted to describe the use and impact of a pediatric ASP. Data were collected on the clinician's request for targeted antibiotics and the interventions made by the ASP. Retrospective chart review was performed to assess outcomes and compliance on empiric antimicrobial therapy decisions and recommendations to discontinue antimicrobial therapy. During the 4-month study period, calls were placed to the ASP for 652 patients. Forty-five percent of those calls required an intervention by the ASP. These interventions included: (1) Targeting the known or suspected pathogens (20%); (2) Consultation (43%); (3) Optimize antimicrobial treatment (33%); and (4) Stop antimicrobial treatment (4%). Three of the 84 (3.5%) patients recommended to receive alternative therapy developed an infection not covered by the ASP recommendations or the antimicrobial initially requested by the clinician. The data demonstrates that an ASP improves the appropriate use of antimicrobial medications in hospitalized children. In addition, the ASP plays an integral role in providing guidance to clinicians and ensures that the appropriate antimicrobial agents are used.