A Review of Antibiotic Prophylaxis for Prevention of Surgical Site Infection
Anna Kataryniak, R.Ph., Pheba John, PharmD, Carlo Lupano, R.Ph. MBA, CCP
The Valley Hospital, Ridgewood, New Jersey

Introduction
There have been numerous clinical trials that determined antimicrobial prophylaxis to be effective against surgical site infections (SSIs). The agent chosen should be directed against the most likely pathogen. For majority of elective surgeries, choice of antibiotics should have coverage for gram-positive organisms, specifically Staphylococci spp. and Streptococci spp. In colon and hysterectomy surgeries, broader spectrum antibiotic agents are required to cover against anaerobes and gram-negative bacilli. In addition to antibiotic selection, the current standard of practice also emphasizes on the timing of initiation and discontinuation of the antibiotic agents.

The goal of Surgical Infection Prevention (SIP) is to prevent SSIs by assessing compliance in the appropriate selection, dosage, and timing of the administration of prophylactic pre-operative and post-operative antibiotics. This should be consistent with the core measures established by the Centers for Medicare and Medicaid Services (CMS) National Hospital Quality Initiative, The Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and New Jersey Peer Review Organization (NJPRO).

Methods
A multidisciplinary task force, known as the SIPs Committee, was implemented in 2003 to improve the care to surgical patients through the management of antimicrobial prophylaxis using three performance measures. Retrospective review of medical and pharmacy data was used to assess compliance and target goal performance over a five year period (2003-2008) in patients having elective surgery at The Valley Hospital. Antibiotic selection was based on the institution’s formulary and supported by evidence-based medicine to cover the most likely pathogens (Table 1).

Core Measures:
SIP 1: Prophylactic antibiotic received within one hour prior to surgical incision.
SIP 2: Prophylactic antibiotic selection for surgical patients.
SIP 3: Prophylactic antibiotic discontinued within 24 hours after surgery end time.

Elective Surgeries:
Colon, Hysterectomy, Vascular, Cardiac (CABG & Non-CABG), Orthopedic (total hip replacement & total knee replacement)

Results
Compliance data from 2519 elective surgical cases from 2003 to 2008 were reviewed. The information was categorized into the three core measures. Compared to initial data in 2003, compliance was improved in all three categories. Figure 1 depicts annual compliance rates based on the total number of surgical cases performed. Even though the target compliance goal of 90% was not met by the end of 2003, a noticeable upward trend toward improving compliance was seen in 2004 and 2005. By 2006, all three indicators exceeded the 90% target goal. Table 1 depicts the variance in antibiotic selection based on the surgical procedure performed.

Figure 1.

Table 1.

Disclosures
The authors did not receive any outside funding in support of the research for the preparation of this work.

Conclusions
A marked improvement was shown in the appropriate selection, dose, timing of initiation and discontinuation of the specific antibiotic agent(s). In addition, the data demonstrates the hospital’s performance has exceeded the target compliance goal of 90% since 2006 in all three core measures.

References