

Indiana Medicaid Therapeutics Committee Therapeutic Class Review Summary

Therapeutic class:

First and Third Generation Oral Cephalosporins

Overview:

Cephalosporins are commonly used antibiotics in the ambulatory setting for both adults and children due to low toxicity and activity against various organisms. Twenty-five cephalosporins are currently available in the United States. Cephalosporins are grouped into "generations" according to spectrum of activity. First-generation cephalosporins are most active against gram-positive aerobes, while third-generation drugs are most active against gram-negative aerobes.

All first and second generation cephalosporins are available as generic products. The only third generation oral products currently available generically are cefpodoxime (Vantin[®]) and cefdinir (Omnicef[®]). Cefixime (Suprax[®]) is a third generation oral agent with expired patent; however, currently no company is manufacturing the generic version.

Based on microbiological spectrum and clinical indications, the brand name products do not offer additional benefit over the existing generics. Oral third generation agents are inactive against *Enterobacter*, *Pseudomonas* and most of the anaerobic organisms. Among the third generation oral agents, cefixime and ceftibuten are inactive against *Staphylococci*. Cefditoren is the newest addition to this class and has increased activity against gram-positive organisms. All of the oral third generation agents, except cefditoren, are available as suspensions.

In clinical trials, third generation oral agents demonstrated marginal benefit in clinical outcomes when compared to oral first or second generation agents in the treatment of mild to moderate respiratory, urinary tract, skin and structure infections. In addition, third generation oral agents have improved microbiological eradication rates and organisms develop resistance at slower rates. Consequently, the CDC recommends cefixime as the only oral first-line option for uncomplicated gonorrhea due to the emergence of fluoroquinolone-resistant gonorrhea. The dosage regimen for treatment of uncomplicated gonorrhea with cefixime is 400 mg as one single dose.

| GENERATION | GENERIC NAME | BRAND NAME | MANUFACTURER | GENERIC |
|------------|--------------|-------------------------|----------------------|---------|
| First | Cefadroxil | Duricef [®] | Warner Chilcott | Y |
| First | Cephalexin | Keflex [®] | Advancis | Y |
| First | Cephadrine | Velosef [®] | Bristol-Myers Squibb | Y |
| Third | Cefdinir | Omnicef [®] | Abbott | Y |
| Third | Cefpodoxime | Vantin [®] | Pharmacia/Upjohn | Y |
| Third | Ceftibuten | Cedax [®] | Shionogi | N |
| Third | Cefditoren | Spectracef [®] | Purdue | N |
| Third | Cefixime | Suprax [®] | Lupin | N |

Summary:

Based on the clinical data, it may be necessary to include at least one third generation oral cephalosporin for the treatment of resistant organisms.