Burkholderia cepacia complex found in docusate product

The FDA recently discovered *Burkholderia cepacia* complex in bottles of Rugby Diocto, PharmaTech's docusate sodium, from a specific lot manufactured in Davie, Florida[1]. This is not the first time PharmaTech's products have been at the epicenter of controversy. Their products were previously implicated in a 2016 *B. cepacia* outbreak when contaminated water was used in the manufacturing process[1]. An environmental pathogen capable of living in water, *B. cepacia* has been noted by the CDC to be pathogenic when lapses in infection control facilitate transmission[2]. In addition to oral liquid, it has been seen contaminating nasal sprays, ultrasound gels, and sublingual probes to name a few[2].

A waterborne, aerobic, gram-negative rod, the species embodying the *Burkholderia cepacia* complex (BCC) are similar to Pseudomonas, having even been named in the past *Pseudomonas cepacia*[3]. Dissimilar to *P. aeruginosa*, BCC produces an endotoxin with an up to 9 times greater TNF-alpha induction than Pseudomonas, causing a more pronounced inflammatory response and more significant clinical decline (days rather than months)[5]. BCC also demonstrates an intimidating multi-drug resistant (MDR) pattern to many agents including those that are often used to treat Pseudomonas infections, such as aminoglycosides and antipseudomonal penicillins[4].

Common BCC species include *multivorans* (58%), *cenocepacia* (36%), and *vietnamiensis* (2%), and each has an MIC resting comfortably at around 80% resistant[6]. Antimicrobial activity against BCC varies by the individual species, but in general trimethoprim/sulfamethoxazole (52.5% sensitive), doxycycline (46.4% sensitive), and minocycline (45.9% sensitive) are most active, with agents like ceftazidime, minocycline, and carbapenems having some efficacy as well[3,6]. While synergy with aminoglycosides could be considered, their efficacy of around 30% is not optimal[6]. Colistin, fosfomycin, and rifampicin have been shown to have 0% activity and tigecycline, cefepime, and piperacillin/tazobactam have unreliable efficacy at best[3,6]. Regardless of the regimen selected to manage a BCC infection, sensitivities are crucial for successful treatment.

1. FDA updates on 2017 Burkholderia cepacia contamination. Updated October 27, 2017. Accessed at: https://www.fda.gov/Drugs/DrugSafety/ucm570672.htm
2. Multistate Outbreak of *Burkholderia cepacia* Infections Associated with Oral Liquid Docusate Sodium. Updated August 25, 2017. Accessed at: https://www.cdc.gov/hai/outbreaks/b-cepacia/index.html
3. Spacek L, Bartlett JG. Burkholderia cepacia complex. Johns Hopkins ABX Guide. Updated June 9, 2017.
4. Gautam V, Singhal L, Ray P. *Burkholderia cepacia* complex: Beyond pseudomonas and acinetobacter. Indian Journal of Medical Microbiology. 2011;29(1):4-12.
5. Jones AM, Wodd ME, Webb AK. *Burkholderia cepacia*: current clinical issues, environmental controversies, and ethical dilemmas. Eur Respir J. 2001;17:295-301.
6. Abbott FK, Milne KEN, Stead DA, Gould IM. Combination antimicrobial susceptibility testing of *Burkholderia cepacia* complex: significance of species. International Journal of Antimicrobial Agents. 2016;48:521-527.

Eric Kinney, PharmD Candidate 2018