**Journal Club, Jan 5th**

**Article:** Shah, S.S. Srivastava R., Wu, S. et al. Intravenous Versus Oral Antibiotics for Postdischarge Treatment of Complicated Pneumonia. Pediatrics. 2016; 138(6):e20161692.

**Study description:** Multicenter, retrospective, observational cohort study to answer the question of whether the route of antibiotic therapy for complicated pneumonia, defined as pneumonia with effusion or empyema, effects treatment failure rates.

**Population:** 2,123 children ages ≥ 2 months and < 18 years admitted during 3-yr period to 36 different children’s hospitals. Median age was 5 yrs. Reasons for exclusion: chronic conditions, not admitted through the ED, did not receive antibiotics on first day of hospitalization, had short (<4 days) or longer (>14 days) of stay, or transferred to another hospital or expired.

**Main exposure:** Oral antibiotics versus outpatient parental antibiotic therapy (OPAT) via PICC

**Main outcome measure:** Treatment failure, defined as ED revisit or rehospitalization that required changed in antibiotic regimen (duration, route, dose, or drug) or need for pleural drainage

**Secondary outcome measures:** (1) PICC complications; (2) adverse drug reactions; (3) ED visits or rehospitalizations not classified as treatment failure; or (4) composite of aforementioned three measures

**Statistical method:** Full matching of patient-level covariates across hospitals based on propensity scores to limit confounding variables. Data ultimately presented as matched odds ratio.

**Descriptive and analytical results:**

1. Microbiology: culture positive pathogen identified only 14%; common pathogens: *Strep pneumoniae*, *Staph aureus* (73% MRSA), *Strep pyogenes*, *Strep milleri*
2. Route of antibiotics: 281 children (13%) received OPAT
3. Primary outcome: After matching, no significant difference in treatment failure rates (OR 1.26, p > .2)
4. Secondary outcomes:
   1. PICC complications occurred in 20 children (7%) – PICC thrombosis (11), breakage (4), insertion site cellulitis (1), fever evaluation (1); no reported CLABSI events.
   2. Adverse drug reactions in 13 children (0.6%), significantly higher in OPAT (OR 19.1, p < .001)
   3. OPAT had statistically higher rates of related follow up visits (OR 4.71, p < .001)

**Limitations:** (1) observation study does not always account for illness severity; (2) hospital-level differences; (3) prescribed antibiotic may effect rates of adverse drug reactions, compliance, etc; (4) excluded primary care follow up visits; and (5) generalizability to the most fragile pediatric patients.