**Supplemental Digital Content 1. Inclusion and exclusion criteria**

**Inclusion criteria**

To be eligible for the study, patients had to meet all the following criteria at screening:

1. Male or female 3 months to <18 years of age
2. Body weight of at least 5 kg
3. Diagnosis of either hospital-acquired pneumonia (HAP; pneumonia occurring after ≥48 hours of hospitalization) or community-acquired pneumonia (CAP) requiring hospitalization and administration of intravenous (IV) antibiotic therapy, characterized by:
   1. Fever (>38.5°C) or hypothermia (<35°C), and
   2. Leukocytosis or leukopenia (relevant to patient age and institutional normal ranges), and
   3. At least two of the following signs or symptoms: cough, lower respiratory tract secretions, auscultatory findings of pneumonia, dyspnea/tachypnea, increased work of breathing (retractions, nasal flaring, or grunting), and/or hypoxemia/oxygen saturation <92% (on room air)
4. Patients with CAP had to present with at least one of the following conditions:
5. Admission to an intensive care unit, intermediate care unit, or a unit that was able to provide constant and close monitoring and care
6. Suspected infection with multi-drug-resistant pneumococci or methicillin-resistant *Staphylococcus aureus*
7. History of absent or incomplete pneumococcal vaccination (did not receive all vaccinations as per schedule)
8. Recent clinical diagnosis of influenza with exacerbation of fever and respiratory symptoms after initial improvement in the symptoms of acute influenza
9. Failure to clinically improve on initial antibiotic therapy for at least 48 hours and need for antibiotic treatment change
10. Oxygen saturation on room air ≤90%
11. New or progressive imaging findings consistent with bacterial pneumonia (e.g. X-ray, ultrasound, or computer tomography)
12. Requirement for IV antibacterial treatment for pneumonia
13. Sufficient vascular access to receive IV study drug
14. Informed consent from the parent or legally acceptable representative to participate in the study, and child’s assent as appropriate
15. Female patients who were not pregnant or breastfeeding and who met one of the following conditions:
    1. Pre-menarcheal, or
    2. A negative serum or urine pregnancy test and was willing to use a highly reliable method of contraception during the study until the last follow-up visit.

**Exclusion criteria**

Patients who met any of the following criteria at screening were excluded from the study:

1. Known resistance of the causative pathogen to ceftobiprole or IV standard-of-care (SoC) cephalosporin treatment (± vancomycin)
2. On mechanical ventilation at screening for more than 48 hours
3. Chest trauma with severe lung contusion or flail chest
4. Acute respiratory distress syndrome
5. Empyema or lung abscess
6. Anatomical bronchial obstruction
7. Documented or suspected active or currently treated pulmonary tuberculosis
8. Documented or suspected atypical bacterial pneumonia, or viral pneumonia without bacterial superinfection, or need for antibiotic coverage with a macrolide
9. Known positive result from a rapid diagnostic test for influenza or respiratory syncytial virus, unless bacterial pneumonia secondary to viral respiratory illness was suspected based on a clinical history of exacerbation of fever and respiratory symptoms after initial improvement in the symptoms of an acute respiratory infection
10. Documented or suspected pertussis, chemical pneumonitis (e.g. aspiration of gastric contents or inhalation injury), or cystic fibrosis
11. Severe immunodeficiency (HIV infection, or congenital or acquired immunodeficiency syndrome)
12. Significant laboratory abnormalities (based on local laboratory results), including:
    1. Hematocrit <20%
    2. Absolute neutrophil count <0.5 × 109/L
    3. Platelet count <50 × 109/L
    4. Alanine aminotransferase, aspartate aminotransferase, or total bilirubin >5× the age-specific upper limit of normal
    5. Creatinine clearance of <50 mL/min/1.73m2, or requirement for any form of renal dialysis therapy
13. Use of systemic antimicrobial therapy for more than 24 hours in the 48 hours before randomization for the current episode of pneumonia. Exception: patients with CAPs with failure to clinically improve on initial antibiotic therapy for at least 48 hours and need for antibiotic treatment change (see inclusion criterion 3)
14. History of a previous, clinically relevant hypersensitivity or serious adverse reaction to beta-lactam antibiotics or to vancomycin
15. Poorly controlled seizure disorder (˃1 seizure in the month preceding randomization).