



## Post-Procedure Pneumonia (PPP) Event

**Introduction:** Patients who undergo thoraco-abdominal operations are at increased risk of acquiring healthcare-associated pneumonia, even in the absence of mechanical ventilation.<sup>1,2,3</sup> Based on NNIS system reports, pneumonia was the third most frequently reported healthcare-associated infection among hospitalized surgical patients (15%), and among thoracic surgery patients, 34% of the healthcare-associated infections reported were pneumonia. Further, when NNIS surgical patients with healthcare-associated infections died and the death was attributed to the infection, pneumonia was the most frequently associated infection (38%). In this group, the risk of surgical patient death due to healthcare-associated pneumonia was similar whether or not a mechanical ventilator was used.<sup>4</sup> Prevention of postoperative pneumonia includes ambulation and deep breathing as soon as possible after operation and, in some patients, the use of incentive spirometry.

**Settings:** Surveillance of surgical patients will occur in any inpatient setting where the selected NHSN operative procedure(s) are performed.

**Requirements:** Select at least one NHSN operative procedure and indicate selected operation on the *Patient Safety Monthly Reporting Plan* (CDC 57.106). Collect numerator and denominator data on all selected operations for at least one month.

**Definitions:** Pneumonia (PNEU) is identified by using a combination of radiologic, clinical, and laboratory criteria (see definitions section under VAP event [Chapter 6]).

**Post-procedure pneumonia:** A pneumonia that meets the criteria after an inpatient operation takes place.

### REPORTING INSTRUCTIONS:

- Report as PPP those pneumonias that are detected prior to discharge following inpatient operations.
- Do not report PPP following outpatient operations.

**Numerator Data:** All inpatients having the selected procedure are monitored for signs of PPP. The *Pneumonia (PNEU)* form (CDC 57.111) is completed for each such patient found to have a PPP. The *Instructions for Completion of Pneumonia Form* (Tables of Instructions, Tables 4 and 2a) includes brief instructions for collection and entry of each data element on the form. The *PNEU* form includes patient demographic information and information about the operative procedure, including the date and type of procedure. Additional data include the specific criteria met for identifying the PNEU, whether the PNEU was also associated with the use of a ventilator, whether the patient developed a secondary bloodstream infection, whether the patient died, and the organisms isolated from cultures and the organisms' antimicrobial susceptibilities.



**Denominator Data:** For all patients having a procedure selected for surveillance during the month, complete a *Denominator for Procedure form* (CDC 57.121). The data are collected individually for each inpatient operative procedure performed during the month specified on the *Patient Safety Monthly Surveillance Plan* (CDC 57.106). The *Instructions for Completion of Denominator for Procedure* (Tables of Instructions, Table 13) includes brief instructions for collection and entry of each data element on the form.

**Data Analyses:** The PPP rates per 100 operative procedures are calculated by dividing the number of PPPs by the number of specific operative procedures and multiplying the results by 100. These calculations will be performed separately for the different types of operative procedures.

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<sup>1</sup>Celis R, Torres A, Gatell JM, Almela M, Rodriguez-Roisin R, Agusti-Vidal A. Healthcare-associated pneumonia: a multivariate analysis of risk and prognosis. *Chest* 1988;93:318-24.

<sup>2</sup>Hooton TM, Haley RW, Culver DH, White JW, Morgan WM, Carroll RC. The joint association of multiple risk factors with the occurrence of healthcare-associated infection. *Am J Med* 1981;70:960-70.

<sup>3</sup>Windsor JA, Hill GL. Risk factors for postoperative pneumonia: the importance of protein depletion. *Am Surg* 1988;208:209-14.

<sup>4</sup>Horan TC, Culver DH, Gaynes RP, Jarvis WR, Edwards JR, Reid CR, and the National Healthcare-associated Infections Surveillance (NNIS) System. Healthcare-associated infections in surgical patients in the United States, January 1986-June 1992. *Infect Control Hosp Epidemiol* 1993;14:73-80.