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A Standardized Algorithm for Peritonitis Surveillance

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Introduction: Retrospective identification and characterization of infection episodes requires design and application of standardized definitions, business rules, and reporting methodologies to a clinical database. While definitions and terminology for episodes of peritonitis in patients undergoing peritoneal dialysis (PD) have been proposed,^{1,2} little has been done to promote the standard application of case definitions and business rules to achieve reliable surveillance of peritonitis across the nation.

Methods: Using industry standards as a starting point, we defined an episode of peritonitis according: 1) hospitalization with discharge diagnosis of peritonitis; 2) IP antibiotics with diagnosis of peritonitis; or 3) a dyad combination of positive PD fluid culture, abdominal pain, or white blood cells > 100 with $\geq 50\%$ polys. Then, we defined the rules for antibiotic therapy and for association to the episode. We then used industry convention to assign business rules to distinguish the initial episode from subsequent peritonitis episodes. Algorithm development and execution was done using a combination of Microsoft SQL, Python, and SAS software, using existing data from the electronic medical record (EMR).

Results: Algorithm-generated reporting was made available to 945 dialysis facilities in August 2013. Peritonitis rates and patient observations were validated by PD nurses and found to be accurate and reliable. Algorithm application reduced clinician time needed for reporting, exposed data entry errors correctable in the EMR, and permitted standardized surveillance of peritonitis in dialysis facilities.

Discussion: Surveillance algorithms like this offer the PD dialysis community a needed standardized approach to peritonitis surveillance.

References:

1. Vas S. Microbiologic aspects of chronic ambulatory peritoneal dialysis. *Kidney Int.* 1983;23:83-92.
2. International Society of Peritoneal Dialysis: Peritoneal dialysis-related infections recommendations: 2010 update. *Peritonitis Dialysis Int.* 2010;30:393-423.

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