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Infection Control Current Awareness: November 2014

Analysis of ventilator-associated pneumonia infection route by genome macrorestriction-pulsed-field gel electrophoresis and its prevention with combined nursing strategies.

Wang X, Wang J, Li J, Wang J
Exp Ther Med 2014 Dec, vol 8, no 6, p1922-1926

Abstract

The aim of the present study was to explore the infection route of ventilator-associated pneumonia (VAP) and assess the effectiveness of a combined nursing strategy to prevent VAP in intensive care units. Bacteria from the gastric juice and drainage from the hypolarynx and lower respiratory tracts of patients with VAP were analyzed using genome macrorestriction-pulsed-field gel electrophoresis (GM-PFGE). A total of 124 patients with tracheal intubation were placed in the intervention group and were treated with a combined nursing strategy, comprising mosapride (gastric motility stimulant) administration and semi-reclining positioning. A total of 112 intubated patients were placed in the control group and received routine nursing care. The incidence rate of VAP, days of ventilation and mortality rate of patients were compared between the two groups. The GM-PFGE fingerprinting results of three strains of *Pseudomonas aeruginosa* from the gastric juice, subglottic secretion drainage and drainage of the lower respiratory tract in patients with VAP were similar across groups. The number of days spent on a ventilator by patients in the intervention group (7.37 ± 5.32 days) was lower compared with that by patients in the control group (12.34 ± 4.98 days) ($P < 0.05$). The incidence rate of VAP was reduced from 40.81 to 21.25% following intervention with the combined nursing strategy ($P < 0.05$); furthermore, the mortality rate of intubated patients in the intervention group was 29.46%, a significant reduction compared with the 41.94% mortality rate observed in the control group ($P < 0.05$). Gastroesophageal reflux (GER) was confirmed as one of the infection routes for VAP. The combined nursing strategy of gastric motility stimulant administration and the adoption of a semi-reclining position was effective in preventing VAP by reducing the occurrence of GER.

Breast milk and Group B streptococcal infection: vector of transmission or vehicle for protection?

Le Doare K, Kampmann B.
Vaccine. 2014 May 30, vol 32, no 26, p3128-32.

Abstract

Invasive Group-B streptococcal (GBS) disease is a leading cause of infant mortality and morbidity worldwide. GBS colonises the maternal rectum and vagina and transmission of bacteria from a colonized mother to her infant at birth is an important risk factor for GBS

disease. GBS disease has also been associated with case reports of transmission via infected breast milk raising questions about mode of acquisition and transmission of this enteric pathogen and the development of neonatal disease. However, most breastfed infants remain unaffected by GBS in breast milk. Mechanisms associated with transmission of GBS in breast milk and potential factors that may protect the infant from transmission remain poorly understood. Understanding factors involved in protection or transmission of GBS infection via breast milk is important both for premature infants who are a high-risk group and for infants in the developing world where breastfeeding is the only sustainable infant feeding option. In this review we discuss the proposed mechanisms for GBS colonization in breast milk on one hand and its immune factors that may protect from transmission of GBS from mother to infant on the other. Innate and adaptive immune factors, including serotype-specific antibody and their significance in the prevention of infant disease are presented. We further report on the role of human oligosaccharides in protection from invasive GBS disease. Advances in our knowledge about breast milk and immunity in GBS disease are needed to fully appreciate what might mitigate transmission from mother to infant and protect neonates from this devastating disease and to contribute to the development of novel prevention strategies, including maternal immunization to prevent infant disease.

Breastfeeding and risk of infections at 6 years.

Li R, Dee D, Li CM, Hoffman HJ, Grummer-Strawn LM
Pediatrics. 2014 Sep;134 Suppl 1:S13-2

Abstract

BACKGROUND:

Previous studies have shown that breastfeeding is associated with reductions in the risk of common infections among infants; however, whether breastfeeding confers longer term protection is inconclusive.

METHODS:

We linked data from the 2005-2007 IFPS II (Infant Feeding Practices Study II) and follow-up data collected when the children were 6 years old. Multivariable logistic regression was used, controlling for sociodemographic variables, to examine associations of initiation, duration, exclusivity of breastfeeding, timing of supplementing breastfeeding with formula, and breast milk intensity (proportion of milk feedings that were breast milk from age 0-6 months) with maternal reports of infection (cold/upper respiratory tract, ear, throat, sinus, pneumonia/lung, and urinary) and sick visits in the past year among 6-year-olds (N = 1281).

RESULTS:

The most common past-year infections were colds/upper respiratory tract (66%), ear (25%), and throat (24%) infections. No associations were found between breastfeeding and



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colds/upper respiratory tract, lung, or urinary tract infections. Prevalence of ear, throat, and sinus infections and number of sick visits differed according to breastfeeding duration, exclusivity, and timing of supplementing breastfeeding with formula ($P < .05$). Among children ever breastfed, children breastfed for ≥ 9 months had lower odds of past-year ear (adjusted odds ratio [aOR]: 0.69 [95% confidence interval (95% CI): 0.48-0.98]), throat (aOR: 0.68 [95% CI: 0.47-0.98]), and sinus (aOR: 0.47 [95% CI: 0.30-0.72]) infections compared with those breastfed > 0 to < 3 months. High breast milk intensity ($> 66.6\%$) during the first 6 months was associated with lower odds of sinus infection compared with low breast milk intensity ($< 33.3\%$) (aOR: 0.53 [95% CI: 0.35-0.79]).

CONCLUSIONS:

This prospective longitudinal study suggests that breastfeeding may protect against ear, throat, and sinus infections well beyond infancy.

MRSA care in the community: why patient education matters.

Robinson J, Edgley A, Morrell J.

Br J Community Nurs. 2014 Sep, vol 19, no 9, p436-8, 440-1.

Abstract

In primary care, patients are prescribed decolonisation treatment to eradicate meticillin-resistant *Staphylococcus aureus* (MRSA). This complex treatment process requires the patient to apply a topical antimicrobial treatment as well as adhering to rigorous cleaning regimens to ensure the environment is effectively managed. A pilot study was carried out that involved developing an enhanced, nurse-delivered education tool, training a community nurse to use it, then testing its use with a patient. Three interviews were carried out: one with a patient who received usual care, one with a patient who received the enhanced education and one with the community nurse who delivered the enhanced education tool. The patient who received the enhanced education reported better knowledge and understanding of the application of treatment than the patient who did not. These results are interesting and point the way forward for larger research studies to build on the learning from this limited exploration and develop more effective management of MRSA in primary care.

Reducing catheter-associated urinary tract infections: a quality-improvement initiative.

Davis KF, Colebaugh AM et al

Pediatrics. 2014 Sep, vol 134, no 3, p:e857-64.

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Abstract

BACKGROUND:

Catheter-associated urinary tract infections (CAUTIs) are among the most common health care-associated infections in the United States, yet little is known about the prevention and epidemiology of pediatric CAUTIs.

METHODS:

An observational study was conducted to assess the impact of a CAUTI quality improvement prevention bundle that included institution-wide standardization of and training on urinary catheter insertion and maintenance practices, daily review of catheter necessity, and rapid review of all CAUTIs. Poisson regression was used to determine the impact of the bundle on CAUTI rates. A retrospective cohort study was performed to describe the epidemiology of incident pediatric CAUTIs at a tertiary care children's hospital over a 3-year period (June 2009 to June 2012).

RESULTS:

Implementation of the CAUTI prevention bundle was associated with a 50% reduction in the mean monthly CAUTI rate (95% confidence interval: -1.28 to -0.12; $P = .02$) from 5.41 to 2.49 per 1000 catheter-days. The median monthly catheter utilization ratio remained unchanged; ~90% of patients had an indication for urinary catheterization. Forty-four patients experienced 57 CAUTIs over the study period. Most patients with CAUTIs were female (75%), received care in the pediatric or cardiac ICUs (70%), and had at least 1 complex chronic condition (98%). Nearly 90% of patients who developed a CAUTI had a recognized indication for initial catheter placement.

CONCLUSIONS:

CAUTI is a common pediatric health care-associated infection. Implementation of a prevention bundle can significantly reduce CAUTI rates in children.

Shingles vaccination: background and advice for community nurses.

Purssell E.

Br J Community Nurs. 2014 Sep, vol 19, no 9, p442-6.

Abstract

Shingles (or zoster) is a reactivation of an existing varicella-zoster virus (VZV) infection. During the initial infection, VZV causes a systemic disease known as varicella or chickenpox, and this initial infection normally occurs early in childhood in the absence of routine vaccination. Although varicella is normally a mild disease, shingles is associated with significant morbidity and some mortality, particularly in older people. The most significant severe consequence is post-herpetic neuralgia. There is an effective vaccine available for this, known as Zostavax, which is a live-attenuated VZV vaccine. Guidelines in the UK recommend that this is offered to everyone when they become 70 years of age, plus those aged 79 years as part of a catch-up campaign, with those between these ages not being

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eligible. It is important for all health-care professionals, including district and community nurses, to proactively promote this vaccine, so that those eligible can make an informed decision about whether to receive it.

Skin and soft tissue infection management, outcomes, and follow-up in the emergency department of an urban academic hospital.

Seeleang K, Manning ML, Saks M, Winstead Y.

Adv Emerg Nurs J. 2014 Oct-Dec, vol 36, no 4, p348-59.

Abstract

Skin and soft tissue infections (SSTIs) are among the most common infections treated by emergency department clinicians. The emergence of community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) as the cause of these infections prompted the Centers for Disease Control and Prevention and the Infectious Disease Society of America to publish guidelines for the outpatient management of SSTIs. This study describes the management and outcomes of emergency department patients treated for uncomplicated SSTIs who returned within 30 days of the initial visit. The study found that of 857 eligible patients, only 17.6% returned and of these, 80% had their wound checked or packing removed. The clinicians prescribed antibiotics for the majority of patients, and the selection of antibiotics typically was active against CA-MRSA. Of 91 lesions drained, 24 specimens were obtained for culture and sensitivity. The majority of the initial treatment of patients consisted of incision and drainage with antibiotic prescription.

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