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innovation in health care

# The HITH Review

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contents



This issue of the HITH Review includes four recent abstracts including a publication which reviewed the appropriateness of vancomycin dosing in patients according to their BMI category and concluded that the majority of obese patients were inadequately dosed. Several relevant recently published articles on HITH are also listed include some articles in non-English journals.

Most of the articles listed in this review are available from libraries in Australia or journal websites. Copies of articles with an asterisk (★) can be requested from ACA if required for educational or research purposes by using the order form available on the website.

We hope you find the HITH Review to be a valuable resource. Any contributions or feedback is welcome.

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## Relevant abstracts from Medline and Cinahl

### Vancomycin Dosing

Hall II RG, Payne KD, Bain AM, et al. Multicenter evaluation of vancomycin dosing: Emphasis on obesity. *Am J Med* 2008; 121:515-8. ★

***Background:*** There is a paucity of data available regarding dosing of antimicrobials in obesity. However, data are available demonstrating that vancomycin should be dosed on the basis of actual body weight.

***Methods:*** The study was conducted at 2 tertiary care medical centers that did not have pharmacy-guided vancomycin dosing programs or other institutional vancomycin dosing policies or protocols. Patients who received vancomycin between 1 July 2003 to 30 June 2006, were stratified by body mass index (BMI) and randomly selected from the computer-generated queries. Patients ≥18 years with a creatinine clearance of at least 60 mL/min who received vancomycin for at least 36 hours were included.

***Results:*** Data were collected on a random sampling of 421 patients, stratified by BMI, who met the inclusion criteria. Most patients in each BMI category received a fixed dose of vancomycin 2 g daily divided into 2 doses (underweight 82%, normal weight 90%, overweight 86%, and obese 91%). Adequate initial dosing (≥10 mg/kg/dose) was achieved for 100% of underweight, 99% of normal weight, 93.9% of overweight, and 27.7% of obese patients ($P < 0.0001$). Ninety-seven percent of underweight, 46% of normal weight, 1% of overweight, and 0.6% of obese patients received ≥15 mg/kg/dose recommended by several Infectious Diseases Society of America guidelines. Pharmacists also failed to correct inadequate dosing because only 3.3% of patients receiving less than 10 mg/kg/dose had their regimen changed in the first 24 hours of therapy.

***Conclusion:*** In this multicenter pilot study, obese patients routinely received inadequate empiric vancomycin using a lenient assessment of dosing. Greater efforts should be undertaken to ensure patients receive weight-based dosing because inadequate dosing can lead to subtherapeutic concentrations and potentially worse clinical outcomes.

### Staff Safety: Needlestick Injuries

Gershon RRM, Pogorzelska M, Quureshi KA, Sherman M. Home health care registered nurses and risk of percutaneous injuries: A pilot study. *Am J Infect Contol* 2008; 36:165-72.★

***Background:*** Home health care is the fastest-growing sector in the health care industry, expected to grow 66% over the next 10 years. Yet data on occupational health hazards, including the potential risk of exposure to blood and body fluids, associated with the home care setting remain very limited. As part of a larger study of bloodborne pathogen risk in non-hospital-based registered nurses (RNs), data from 72 home health care nurses were separately analysed to identify risk of blood/body fluid exposure.

***Methods:*** A 152-item self-administered mailed risk assessment questionnaire was completed by RNs employed in home health care agencies in New York State.

***Results:*** Nine (13%) of the home health care nurses experienced 10 needlesticks in the 12-month period before the study Only 4 of the needlesticks were formally reported to the nurse's employer. The devices most frequently associated with needlesticks were hollow-bore and phlebotomy needles, and included 3 needles with safety features. Exposure was most commonly attributed to patient actions, followed by disposal-related activities.

***Conclusions:*** These data suggest that home health care nurses may be at potential occupational risk for bloodborne pathogen exposure. Risk management strategies tailored to the home health care setting may be most effective in reducing this risk.

### Stem-Cell Transplant Patients

Svahn B-M, Remberger M, Heijbel M, et al. Case-control comparison of at-home and hospital care for allogeneic hematopoietic stem-cell transplantation: The role of oral nutrition. *Transplantation* 2008; 85:1000-7.

***Background:*** Acute graft-versus-host disease (GVHD) was reduced using home care compared with hospital care after allogeneic hematopoietic stem-cell transplantation (ASCT).

***Methods:*** Between March 1998 and December 2006, 601 patients underwent ASCT at our unit. Requirements for at-home ASCT were fulfilled by 76 patients. A control group of 76 patients treated in the hospital were matched for age, sex, diagnosis, stage of disease, conditioning, stem-cell source, type of donor, and immunosuppression. Oral nutrition was determined as median kcal/kg/day for the first 21 days after ASCT.

***Results:*** The home-care patients received more oral nutrition per day than hospital controls (P<0.05). Number of days at home correlated with oral nutrition (P=0.004). In multivariate analysis, acute GVHD of grades II to IV was associated with poor oral nutrition (P=0.003) and hospital care (P=0.06). Transplant-related mortality was associated with acute GVHD grades II to IV (P<0.0001) and bacteremia (P=0.004). In addition to acute GVHD and bacteremia, death was associated with absence of chronic GVHD (P=0.012). Five-year survival was 65% in patients treated at home, when compared with 47% in the controls (P=0.04).

***Conclusion:*** Better oral nutrition may be one reason for the reduced probability of acute GVHD and better survival with at-home care than with hospital care.

### Pulmonary Embolus: LOS and Mortality

Aujesky D, Stone; RA, Kim S, et al. Length of hospital stay and postdischarge mortality in patients with pulmonary embolism: A statewide perspective. *Arch Intern Med* 2008; 168:706-12.

***Background****:* The optimal length of stay (LOS) for patients with pulmonary embolism (PE) is unknown. Although reducing LOS is likely to save costs, the effects on patient safety are unclear. We sought to identify patient and hospital factors associated with LOS and assess whether LOS was associated with postdischarge mortality.

***Methods****:* We evaluated patients discharged with a primary diagnosis of PE from 186 acute care hospitals in Pennsylvania (January 2000 through November 2002). We used discrete survival models to examine the association between (1) patient and hospital factors and the time to discharge and (2) LOS and postdischarge mortality within 30 days of presentation, adjusting for patient and hospital factors**.**

***Results****:* Among 15 531 patient discharges with PE, the median LOS was 6 days, and postdischarge mortality rate was 3.3%. In multivariate analysis, patients from Philadelphia were less likely to be discharged on a given day (odds ratio [OR], 0.82; 95% CI, 0.73-0.93), as were black patients (OR, 0.88; 95% CI, 0.82-0.94).The odds of discharge decreased notably with greater patient severity of illness and in patients without private health insurance. Adjusted postdischarge mortality was significantly higher for patients with an LOS of 4 days or less (OR, 1.55; 95% CI, 1.21-2.00) relative to those with an LOS of 5 to 6 days**.**

***Conclusion:*** Several hospital and patient factors were independently associated with LOS. Patients with a very short LOS had greater post-discharge mortality relative to patients with a typical LOS, suggesting that physicians may inappropriately select patients with PE for early discharge who are at increased risk of complications.

## List of Medline, Cinahl and other relevant published articles

### Adverse Events

Chung AH, Watson K. Cefazolin-induced hypoprothrombinemia. *Am J Health-System Pharm* 2008; 65:823-6. ★

Tripathi S, Kaushik V, Singh V. Peripheral IVs: Factors Affecting Complications and Patency-A Randomized Controlled Trial. *J Infusion Nursing* 2008; 31:182-8. ★

### Anaphylaxis

Simons FER. Emergency treatment of anaphylaxis. Revised UK guidelines are a concise evidence based resource. *BMJ* 2008; 336:1141-2.

### Blood Disorders

Bowen T, Cicardi M, Bork K, et al. Hereditary angiodema: a current state-of-the-art review, VII: Canadian Hungarian 2007 International Consensus Algorithm for the Diagnosis, Therapy, and

Management of Hereditary Angioedema. *Ann Allergy Asthma Immunol* 2007; 100(suppl 2):30-40.

Manea P, Loustaud-Ratti V, Mondary D, et al. Evaluation of at-home phlebotomy for iron overload: Feasibility and satisfaction of patients and healthcare workers. *Gastroenterologie Clinique et Biologique* 2008; 32:172-9.

Payne KA, Desrosiers M-P, Caro JJ, et al. Clinical and economic burden of infused iron chelation therapy in the United States. *Transfusion* 2007; 47:1820-9.★

## Catheters

Hertzog DR, Waybill PN. Complications and controversies associated with peripherally inserted central catheters. *J Infusion Nursing* 2008; 31:159-63.★

Leone M, Dillon L. Catheter outcomes in home infusion. *J Infusion Nursing* 2008; 31:84-91. ★

Tripathi S, Kaushik V, Singh V. Peripheral IVs: Factors Affecting Complications and Patency-A Randomized Controlled Trial. *J Infusion Nursing* 2008; 31:182-8. ★

## Chronic Heart Failure

Brügemann J, de Jonge-Weber AT, Rienstra M et al. Dobutamine therapy at home under the guidance of a nurse practitioner, either as a bridge to cardiac transplantation or as destination therapy in severe heart failure [Dutch]. *Ned Tijdschr Geneeskd* 2007; 151:2460-5.

Irabrgui BAE, Muniz J, Rodriguez-Fernandez JA, et al. Randomized controlled clinical trial of a home care unit intervention to reduce readmission and death rates in patients discharged from hospital following admission for heart failure [Spanish]. *Rev Espanola De Cardiologia* 2007; 60:914-22.

Mehra MR, McCluskey T, Barr M, et al. Rationale, design, and methods for the Transplant-Eligible Management of Congestive Heart Failure (TMAC) trial: A multicenter clinical outcomes trial using nesiritide for TMAC. *Am Heart J* 2007; 153:932-40. ★

Ypenburg C, Verwey HF, van der Wall EE. Infusion of inotropic agents at home in patients with severe heart failure: an important role for the nurse practitioner [Dutch]. *Ned Tijdschr Geneeskd* 2007; 151:2426-8.

## Enzyme Replacement Therapy

Cousins A, Lee P, Rorman DH, et al. Home-based enzyme infusion therapy for patients with Fabry disease-the collective experience. *Clin Therapeutics* 2008; 30(Suppl B):S69.

Katz R, Burton B. A home infusion protocol for MPS II patients on enzyme replacement therapy (ERT). *Molecular Genetics Metab* 2008; 93:25-6.

Mauer M, Najafian B. Implications of early renal changes in fabry disease. *Clin Therapeutics* 2008; 30(suppl 2):S40.

Pringle S, Milligan A, Bruce R, et al. Successful management of Pompe disease using enzyme replacement therapy-referral patterns and logistics of treatment, with home infusion now planned. *Clin Therap* 2008; 30(Suppl A):34.

Ramaswami U, Wendt S, Pintos-Morell G, et al. Enzyme replacement therapy with agalsidase alfa in children with Fabry disease. *Acta Paediatrica* 2007; 96:122-7.

Ramaswami U. Fabry disease during childhood: clinical manifestations and treatment with agalsidase alfa. *Acta Paediatrica* 2008; 97(s457):38-40.

Schiffmann R, Askari H, Timmons M, et al. Weekly enzyme replacement therapy may slow decline of renal function in patients with Fabry Disease who are on long-term biweekly dosing. *J Am Soc Nephrol* 2007; 18:1576-83. ★

## Immunoglobulin

Gardulf A , Borteb M, Ochs HD, et al. Prognostic factors for health-related quality of life in adults and children with primary antibody deficiencies receiving SCIG home therapy. *Clin Immunol* 2008; 126:81-8.

## Infections and Antibiotic Therapy

Hall II RG, Payne KD, Bain AM, et al. Multicenter evaluation of vancomycin dosing: Emphasis on obesity. *Am J Med* 2008; 121:515-8. ★

Laghzaoui F, Murcia J, Llorens P, Portilla J. Continuous ceftazidime infusion in the treatment of Pseudomonas aeruginosa infections in a Hospital at Home Unit [Spanish]. *Enferm Infecc Microbiol Clin* 2007; 25:71-2.

## Miscellaneous

Hughes DA, Mlilligan A, Mehta A. Home therapy for lysosomal storage disorders. *Br J Nursing* 2007; 16:1384, 86-9.

## Oncology

Dahan M, Paule B, Vordos D, et al. Home hospitalisation in urological cancer: assessment of the first 5 years and a satisfaction survey. *Progres En Urologie* 2007; 17:855-9.

Wagner LM, McAllister N, Goldsby RE, et al. Temozolomide and intravenous irinotecan for treatment of advanced Ewing sarcoma. *Pediatr Blood Cancer* 2008; 48:132-9.

## Paediatrics

Yellin AE, Johnson J, Higareda I, et al. Ertapenem or ticarcillin/clavulanate for the treatment of intra-abdominal infections or acute pelvic infections in pediatric patients. *Am J Surg* 2007; 194:367-74.★

## Quality & Standards

Gorski LA. Implementing home health standards in clinical practice: An overview of the updated standards. *Home Healthcare Nurse* 2008; 26:308-16.★

Hunt S. Data Management in Home Care: Using Data to Drive Acute Care Hospitalizations. *Home Health Care Management Practice* 2008; 20:175-9.

## Safety

Gershon RRM, Pogorzelska M, Quureshi KA, Sherman M. Home health care registered nurses and risk of percutaneous injuries: A pilot study. *Am J Infect Contol* 2008; 36:165-72.★

Simon M, Tackenberg P, Nienhaus A, et al. Back or neck-pain-related disability of nursing staff in hospitals, nursing homes and home care in seven countries-results from the European NEXT-Study. *Internat J Nursing Studies* 2008; 45:24-34.

Sowell MW, Lovelady CL, Brogdon BG, et al. Infant death due to air embolism from peripheral venous infusion. *J Forensic Sci* 2007; 52:183-8. ★

## Stem Cell Transplants

Svahn B-M, Remberger M, Heijbel M, et al. Case-control comparison of at-home and hospital care for allogeneic hematopoietic stem-cell transplantation: The role of oral nutrition. *Transplantation* 2008; 85:1000-7.

## Telemedicine and Technology

Clemensen J, Larsen SB. Cooperation versus coordination: using real-time telemedicine for treatment at home of diabetic foot ulcers. *J Telemed Telecare* 2007; 13(suppl 3):32-5.

Dobke MK, Bhavsar D, Gosman A, et al. Pilot trial of telemedicine as a decision aid for patients with chronic wounds. *Telemed e-Health* 2008; 14:245-9. ★

Fazzi R, Ashe T, Doak L. Telehealth and technology in home care: part I. Insights from the Philips National Study on the Future of Technology and Telehealth in Home Care. *Caring* 2007; 26:40-2, 44-7.

Lorentz MM. Telenursing and home healthcare: The many facets of technology. *Home Healthcare Nurse* 2008; 26:237-43. ★

## Thrombosis

Aujesky D, Stone; RA, Kim S, et al. Length of hospital stay and postdischarge mortality in patients with pulmonary embolism: A statewide perspective. *Arch Intern Med* 2008; 168:706-12.★

Brotman DJ, Lindenauer PK. Length of stay and mortality in pulmonary embolism: High time for evidence-based discharge criteria. *Arch Intern Med* 2008; 168:683-684. ★

Groce JB. Initial management of deep venous thrombosis in the outpatient setting. *Am J Health Syst Pharm* 2008; 65:866-74. ★

Hodge K, Janus E, Sundararajan V, Taylor S. Coordinated anticoagulation management in a rural setting. *Aust Fam Physician* 2008; 37:280-3. ★

## Wound Management

Blume PA, Walters J, Payne W, et al. Comparison of negative pressure wound therapy using vacuum-assisted closure with advanced moist wound therapy in the treatment of diabetic foot ulcers: A multicenter randomized controlled trial. *Diabetes Care* 2008; 31:631-6.★

Clemensen J, Larsen SB. Cooperation versus coordination: using real-time telemedicine for treatment at home of diabetic foot ulcers. *J Telemed Telecare* 2007; 13(suppl 3):32-5.

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