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This tenth issue of the HITH Review includes two Australian articles: our own article on length of stay and the management of venous thrombosis at home and Pauline Dobson's article on a model for home infusion therapy. We also provide commentaries on the management osteomyelitis, febrile neutropenia and wound care.

Most of the articles listed in this review are available from libraries in Australia with some available from journal websites eg Home Health Care Consultant <http://www.mmhc.com/hhcc/>. Copies of articles with an asterisk (★) required for educational or research purposes can be requested from VCACI when they are not available from your library. An order form is available on our website.

We appreciate receiving your feedback on The HITH Review and would welcome any contributions you may wish to share with other practitioners. Please contact us if you wish to be included on our mailing list. The HITH Review is available free of charge in hard copy from the VCACI or can be accessed on the VCACI Web page. Those preferring to receive The HITH Review in electronic format should forward their E-mail address to us.

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Osteomyelitis

Alexander Padiglione

Bernard L, El-hajj, Pron B et al. *Outpatient parenteral antimicrobial therapy (OPAT) for the treatment of osteomyelitis: evaluation of efficacy, tolerance and cost.* J Clin Pharm Ther 2001; 26:445-51. ★

These authors evaluated 39 adult patients with osteomyelitis receiving parenteral antibiotics at home. Clinical efficacy, adverse effects and quality of life were recorded. The most commonly used antibiotics were vancomycin (51%) and beta-lactams (44%). Portable elastomeric pumps were used in 38 patients. Thirty patients had at least 12 months of follow-up. Twenty-eight (93%) were considered cured. Adverse effects among the study patients were rare. The program resulted in a potential saving of US \$1,873,885 compared to inpatient treatment.

comment

Much of the HITH literature lacks credibility, because it is largely descriptive and prone to considerable sources of bias. The devil truly is in the detail, and this paper is no exception! The authors report on a wide variety of patients, lumping together acute and chronic (they have very different outcomes), a multitude of organisms (from sensitive *Staphylococci* to multi-resistant *Pseudomonii*) and a variety of treatments {"...vancomycin.. ceftazidime, cefepime....16 (patients) were treated with 2 antibiotics, 3 (patients) with 3 antibiotics...occasionally, oral antibiotics (such as rifampicin or fluoroquinolones) were used in addition.."}. Their 93% reported success rate becomes almost impossible to interpret in the face of such a diverse mix of patients and treatments. The cost analysis is also subject to question as they chose a relatively simplistic model for inpatient costs. Perhaps the most valuable part of the paper is the reported low rate of adverse effects. We need real "head to head" comparisons in carefully defined groups before we can conclude that HITH treatment matches standard inpatient therapy. Unfortunately these studies may never be done. This paper can only suggest that in

carefully selected cases (sensitive organism, non-allergic highly motivated patient) HITH treatment seems to have reasonably good outcomes. In some senses the practice of medicine has surpassed the research, since many of our readers could easily put together larger and more consistent series of osteomyelitis patients on HITH than this paper reports.

Other relevant articles from the VCACI Resource Database: ★

Eisenberg JM, Kitz DS. *Savings from outpatient antibiotic for osteomyelitis: economic analysis of a therapeutic strategy.* JAMA 1986; 255:1584-8.

Nathwani D. *Non-inpatient use of teicoplanin.* Int J Clin Pract 1998; 52:577-81.

Rehm S, et al. *Successful administration of quinupristin/ dalfopristin in the outpatient setting.* J Antimicrob Chemother 2001; 47:639-45.

Tice AD. *Outpatient parenteral antibiotic therapy. Management of serious infections. Part II: Amenable infections and models for delivery. Osteomyelitis.* Hospital Practice 1993; 28 (Suppl 2):36-9; 60-1.

Tice, A., *Outpatient parenteral antimicrobial therapy for osteomyelitis.* Infect Dis Clinics Nth Am 1998; 12:903-19.

Tice A. *The use of outpatient parenteral antimicrobial therapy in the management of osteomyelitis: Data from the outpatient parenteral antimicrobial therapy outcomes registries.* Chemotherapy 2001; 47(Suppl 1): 5-16.

Wilson A, Grunenberg R. *Use of teicoplanin in community medicine.* Eur J Clin Microbiol Infect Dis 1994;13: 701-10.

Febrile neutropaenia – early discharge and self-administration

Alex Padiglione

Johansson E, Bjorkholm M, Wredling R et al. *Outpatient parenteral antibiotic therapy in patients with haematological malignancies - a pilot study of an early discharge strategy.* Support Care Cancer 2001; 9:619-24. ★

The authors report on eleven adult patients with acute leukaemia or aggressive non-Hodgkin lymphoma who completed their therapy for suspected infection as outpatients. All patients received initial parenteral antibiotic therapy in the hospital before they continued self-administration at home, after appropriate education. Most commonly used antibiotic was cefepime. Patient education took 3 hours on average, and home therapy lasted a median of 4 days (range: 1-12 days). None of the patients developed recurrent fever or required readmission. Patient acceptance and assessment of the pilot program was very high.

comment

There is an ever widening spectrum of diseases where HITH is being considered. High grade haematological malignancies require aggressive chemotherapy, and are commonly associated with febrile neutropaenia and poor outcomes, so there is limited experience with putting such patients on HITH. The good initial results reported in this pilot study needs to be interpreted with caution. As with all other areas of HITH, careful patient selection is critical to good outcomes: these authors carefully picked patients who were highly motivated, educated them at length (up to 4.5 hours) then sent them home only when their neutropaenia had largely resolved (median neutrophil count at discharge: 0.9). Three earlier series of HITH patients with haematological malignancies had less favourable results, with up to 1/3 of patients requiring readmission after discharge to HITH. Importantly, results in real life are almost without exception worse than in clinical studies. The authors plan to proceed to a larger, multicentre study, and I would be happier to wait for the results before advocating widespread adoption of HITH for these patients, as their results may assist us in developing better guidelines for patient selection in these high risk patients.

Other relevant articles from the VCACI Resource Database: ★

Castagnola E et al. *Clinical and laboratory features predicting a favorable outcome and allowing early discharge in cancer patients with low-risk febrile neutropenia: A literature review*. Hematotherapy Stem Cell Research 2000. 9:645-649.

Egerer G et al. *Efficacy of continuous infusion of ceftazidime for patients with neutropenic fever after high-dose chemotherapy and peripheral blood stem cell transplantation*. Int J Antimicrob Agents 2000; 15:119-23.

Escalante C, Rubenstein E, Rolston K. *Outpatient antibiotic treatment in low-risk febrile neutropenic cancer patients*. Support Cancer Care 1996; 4:358-363.

Estrada B. *Treatment of febrile neutropenia: The next frontier*. Infections in Medicine, 1999; 16:699-700.

Holdsworth MT, Duncan MH. *Health care outcomes case study: Febrile neutropenia*. Am J Health-Syst Pharm 1995; 52:S15-S18.

Karthaus M et al. *Ceftriaxone in the outpatient treatment of cancer patients with fever and neutropenia*. Eur J Clin Microbiol Infect Dis 1998; 17: 501-4.

Karthaus M et al. *New strategies in the treatment of infectious complications in haematology and oncology: is there a role for out-patient antibiotic treatment of febrile neutropenia?* Chemotherapy 1998; 44:427-35.

Mullen C et al., *Economic and resource utilization analysis of outpatient management of fever and neutropenia in low-risk pediatric patients with cancer*. J Ped Hematol Oncol 1999; 21: 212-8.

Mullen C et al. *Outpatient treatment of fever and neutropenia for low risk pediatric cancer patients*. Cancer 1999; 86:126-34.

Papadimitris C, et al. *Outpatient treatment of neutropenic fever with oral antibiotics and granulocyte colony-stimulating factor*. Oncology, 1999; 57:127-30.

Petrilli A et al. *Oral ciprofloxacin vs. intravenous ceftriaxone administered in an outpatient setting for fever and neutropenia in low-risk pediatric oncology patients: Randomized prospective trial*. Medical Pediatr Oncol 2000; 34: 87-91.

Rolston K. *Expanding the options for risk-based therapy in febrile neutropenia*. *Diagnost Microbiol Infect Dis* 1998; 31: 411-6.

Svahn B et al. *Is it safe to treat allogeneic stem cell transplant recipients at home during the pancytopenic phase? - A pilot trial*. *Bone Marrow Transplantation* 2000; 26:1057-60.

Tice A. *Is it time to redefine the therapy for febrile neutropenia? a look at outpatient therapy*. *Home Healthcare Consultant* 1998; 5(9). <http://www.mmhc.com/hhcc/articles/HHCC9809/tice.html>

Tice A. *Outpatient parenteral antibiotic therapy for fever and neutropenia*. *Infect Dis Clinics Nth Am* 1998; 12:963-77.

Turgeon-Lanes P Randolph S. *Home care management of febrile neutropenia: creating a pilot program*. *Home Health Care Consultant* 2000; 7: 1A-6A.

A HITH infusion model

Lisa Demos

Dobson PM. *A model for home infusion therapy initiation and maintenance*. *J Infusion Nursing* 2001; 24:385-94. ★

comment

This comprehensive article provides a useful summary of the factors that need to be considered when setting up a home infusion program. The model assists nurses make a comprehensive patient assessment, plan patient and carer education and assist patients to completing their therapy.

The eight primary factors included in the model that has been developed for nursing staff are patient, nursing, medical, caregiver, equipment, environment and legal issues. These are then subdivided into areas that are relevant to the management plan eg patient factors include allergies, assessments, body image, children, compliance and responsibility, cognition, culture and language, emergency management, hygiene, injecting drug use, needle phobia, restrictions and sensory and motor function.

Wound care

Nick Santamaria

Fishman TD, Rubin JK. *Assessment and documentation of diabetic foot wounds*. *Home Health Care Consultant* 2002; 9:20-4 ★

The *diabetic foot* presents clinicians with a significant management challenge in terms of prevention of complications, assessment and documentation. The article provides an overview of the *diabetic foot* and common wounds seen in individuals with diabetes. Wounds that are described include; diabetic neuropathic ulcers and ischaemic ulcers. Charcot's foot is also briefly described. Key points of documentation are listed with the rationale for each area. A concise list of wound assessment points is also provided for the reader.

comment

This article is a useful introduction to the practitioner who may be new to the assessment of the diabetic foot and commonly seen wounds experienced by patients with diabetes. The article is concise, well written and stresses important areas of the care of these individuals. The epidemiological data provided at the start of the article focuses on the incidence of diabetes in the USA population. However, it is interesting to note the differences found in discrete ethnic populations. One is reminded of the significantly higher rates of diabetes in the Australian Aboriginal population. This article stresses the importance of photographic evidence being used in the assessment process of the diabetic foot particularly from the medico-legal perspective but also from the perspective of developing a more comprehensive patient record.

Ovington LG. *Battling bacteria in wound care*. *Home Healthcare Nurse* 2001; 19:622-30.

This article describes effective wound cleansing and debridement particularly in the colonised or infected wound. Some advanced dressings are discussed, dressing change procedures and the appropriate use and understanding of topical antimicrobial agents.

comment

The author provides a clear and concisely focussed article on the problem of bacterial contamination of wounds and the range of possible management options for the wound care clinician. Wound cleansing and debridement are given particular emphasis and it is pleasing to note the importance given to simple hand washing by health care staff as the most important factor in preventing wound contamination. The use of iodine and silver as topical antimicrobial agents are reviewed and accompanied by the relevant research data on the two agents. Overall this is a useful, concise and well-written paper of relevance to nurses involved in home wound care.

Length of stay and management of DVT

Kaylene Fiddes

Ioannides-Demos LL, Addicott R, Santamaria NM et al. *Management of venous thrombosis in hospital or at home: comparing length of stay*. Intern Med J 2001; 31:571-3. ★

This is the second article from the VCACI team reviewing the length of stay for the common conditions managed in Victorian HITH programs. The previous article reviewed the most common condition ie cellulitis and this reviews the second most common condition (venous thrombosis).

There were 61 episodes of venous thrombosis managed during 1998-99 at a large Melbourne teaching hospital and 54 of these were evaluated. There was a significant difference in the average length of stay between the patients managed in hospital, those managed entirely by HITH and those managed by a combination of hospitalisation and HITH (5.7 days, 7.1 days and 11.4 days respectively; $p=0.007$). However there was no significant difference between the three treatment groups in the mean days until $INR \geq 2$ for 2 consecutive days ($p=0.43$) or the mean number of days of treatment with low molecular weight heparin ($p=0.27$). The authors also demonstrate that the patients receiving treatment at home were significantly younger than patients receiving all or part of their treatment in the hospital ($p=0.13$).

comment

The Victorian Government audits have raised some concerns about some HITH treatments resulting in longer courses than if patients were managed in hospital. In their previous review the authors were able to demonstrate that the longer length of stay for cellulitis was an artefact related to clinical coding. In the case of DVT there was insufficient documentation to enable any firm conclusions. However, it appears that the length of stay for the HITH patients could have been shorter. This article further highlights the need to carefully evaluate HITH programs.

HITH outcomes registries

Lisa Demos

Nathwani D. Tice A. *Ambulatory antimicrobial use: the value of an outcomes registry*. J Antimicrob Chemother 2002; 49(1):149-154. ★

comment

This article from UK and US practitioners provides useful information on the Outpatient Parenteral Antimicrobial Therapy (OPAT) outcome-based registry. Although OPAT provides many potential advantages to the patient, hospital and clinician, including quality of life, cost savings and reduced risk of hospital-acquired infections. The value of OPAT is in doubt because of the lack of published information concerning outcomes and its impact on patient care.

The outcome-based registry of patients has been developed to examine the quality of OPAT programs. The core outcomes measures include clinical effectiveness, eradication of bacteria and adverse antibiotic events. The registry may also be adapted for benchmarking for quality assurance, surveying performance of new antimicrobials, cost effectiveness studies and comparisons of different antibiotics and their side effects.

List of Medline, Cinahl and other relevant published articles

Adverse Events

Crisler KS, Richard AA. *Using case mix and adverse event outcome reports for outcome-based quality monitoring.* Home Healthcare Nurse 2001; 19:613-21. ★

Krulich LH. *Getting started with OBQM: analyzing case mix and adverse events.* Home Healthcare Nurse 2001; 19:642-51. ★

Cancers

Berenson JR. *Advances in the biology and treatment of myeloma bone disease.* Am J Health Syst Pharm 2001;58:16-20. ★

Davidson TG. *Conventional treatment of hypercalcemia of malignancy.* Am J Health System Pharm 2001; 58(suppl):8-15. ★

Johansson E, Bjorkholm M, Wredling R et al. *Outpatient parenteral antibiotic therapy in patients with haematological malignancies- a pilot study of an early discharge strategy.* Support Care Cancer 2001; 9:619-24. ★

Stein KD, Tomlins RL, Cole BT. *Assessment and management of cancer-related fatigue.* Home Health Care Consultant. 2001; 8:8-15.

Case Management

Aronson J, Sinding C. *Home care users' experiences of fiscal constraints: challenges and opportunities for case management.* Care Manage J 2000; 2:220-5.

Catheters

Fry C, Aholt D. *Local anesthesia prior to the insertion of peripherally inserted central catheters.* J Infusion Nursing 2001; 24:404-8. ★

Diabetes

Linekin PL. *How the OASIS could include diabetes.* Home Healthcare Nurse 2001; 19:659-61. ★

Linekin PL. *The challenge of diabetes as a secondary diagnosis.* Home Healthcare Nurse 2001; 19:7 12-9. ★

Discharge Planning

Zuber R Friedman. *Home health coordination versus discharge planning: where is the line?* Home Healthcare Nurse 2001; 19:652-5. ★

Economics

Bendekovits R. NAON news. *Cost-effective home care affected by new policies.* Orthop Nurs 2000; 19:87.

Emergency Department

McCusker J, Verdon J, Tousignant P et al. *Rapid emergency department intervention for older people reduces risk of functional decline: results of a multicenter randomized trial.* J Am Geriatr Soc 2001. 49:1272-81. ★

Sinclair D, Ackroyd-Stolarz S. *Home care and emergency medicine: A pilot project to discharge patients safely from the emergency department.* Acad Emerg Med 2000. 7:951-4. ★

Hypercalcaemia

Davidson TG. *Conventional treatment of hypercalcemia of malignancy.* Am J Health System Pharm 2001; 58(suppl):8-15. ★

Infections and Antibiotic Therapy

Bernard L, El-hajj, Pron B et al. *Outpatient parenteral antimicrobial therapy (OPAT) for the treatment of osteomyelitis: evaluation of efficacy, tolerance and cost.* J Clin Pharm Ther 2001; 26:445-51. ★

Dong SL, Kelly KD, Oland RC et al. *ED management of cellulitis: a review of five urban centers.* Am J Emergency Medicine 2001; 19:535-540. ★

Johansson E, Bjorkholm M, Wredling R et al. *Outpatient parenteral antibiotic therapy in patients with haematological malignancies- a pilot study of an early discharge strategy.* Support Care Cancer 2001; 9:619-24. ★

Kastango ES, Hadaway L. *New perspectives on vancomycin use in home care, part 1.* Intern J Pharmaceutical Compounding 2001; 5:465-9. ★

Nathwani D, Tice A. *Ambulatory antimicrobial use: the value of an outcomes registry*. J Antimicrob Chemotherapy 2002; 49:149-54. ★

Tice A. *Safety of Outpatient Parenteral Antimicrobial Therapy for Endocarditis*. Clin Infect Dis 2002; 34:419-20. ★

Tice AD, Nolet BR. *Update on outpatient antimicrobial therapy*. Home Health Care Consultant 2001; 8:22-29. ★

Inflammatory Diseases

Schaible T. *Infliximab therapy in patients with rheumatoid arthritis and Crohn's disease*. Infusion 2001. 7:1-13.

Legal Issues

Collins SE. *Litigation risks for infusion specialists*. J Infusion Nursing 2001; 24:375-80. ★

Long Term Care

Jones KC. *Maintaining infusion therapy services in the long-term care setting*. J Infusion Nursing 2001; 24:381-4. ★

Miscellaneous

Gray J. *Home care in Ontario: the case for copayments*. Health Law Journal 2000; 8:177-97. ★

Hanchett M. *What you need to know about consumer-directed home care*. Home healthcare Nurse, 2001. 19:681-6. ★

Lloyd J, Davies GP, Harris M. *Integration between GPs and hospitals: lessons from a division-hospital program*. Aust Health Rev 2000; 23:134-41.

Smith BM, Maloy KA, Hawkins DJ. *An examination of Medicare home health services: a descriptive study of the effects of the Balanced Budget Act interim payment system on access to and quality of care*. Care Manage J. 2000; 2:238-47.

Vladeck BC. *The storm before the calm before the storm: Medicare home care in the wake of the Balanced Budget Act*. Care Manage J. 2000; 2:232-7.

Models

Dobson PM. *A model for home infusion therapy initiation and maintenance*. J Infusion Nursing 2001; 24:385-94.

Sobolewski S, Marren J. *Home care and the new economy: creating a new model for service delivery*. Care Manage J 2000; 2:248-52.

Nursing and Nursing Aids

Dawson SL, Surpin R. *The home health aide: scarce resource in a competitive marketplace*. Care Manage J 2000; 2:226-31.

Kiratli BJ, Smith AE, Nauenberg T et al. *Preventing home health nursing assistant back and shoulder injuries*. JT Comm J Qual Improv. 2000; 26:587-600.

Outcomes

Crisler KS, Richard AA. *Using case mix and adverse event outcome reports for outcome-based quality monitoring*. Home Healthcare Nurse 2001; 19:613-21. ★

Nathwani D, Tice A. *Ambulatory antimicrobial use: the value of an outcomes registry*. J Antimicrob Chemotherapy 2002; 49:149-54. ★

Paediatrics

Beauman SS. *Didactic components of a comprehensive pediatric competency program*. J Infusion Nursing 2001; 24:367-74. ★

Pain Medication and Palliative Care

Slade D, de Kock I, Fainsinger R. *Death with dignity: sedation for intractable symptoms in the home*. Home Health Care Consultant. 2002; 9:10-16. ★

Whitecar P. *Pain management at the end of life*. Home Health Care Consultant 2001; 8:16-24. (www.mmhc.com/hhcc/) ★

Patient Satisfaction

Stricklin MLV, Lowe-Phelps K, McVey R. *Home care patients' responses to point of care technology*. Home Healthcare Nurse 2001; 19:774-8. ★

Vista AA. *An exploratory study of the relationship between home health patient satisfaction and patient outcomes*. Walden University ** 2000 Ph.D.

Respiratory Diseases

Bernier L. *Assessing respiratory status from a distance*. Home Healthcare Nurse 2001; 19: 632-40. ★

Farrero E, Escarrabill J, Prats E et al. *Impact of a hospital-based home care program on the management of COPD patients receiving long term oxygen therapy*. Chest 2001; 119:364-9. ★

Findeisen M. *Long-term oxygen therapy in the home*. Home Healthcare Nurse 2001; 19:692-9. ★

Telemedicine and Technology

Bernier L. *Assessing respiratory status from a distance*. Home Healthcare Nurse 2001; 19: 632-40. ★

Elfrink V. *A look to the future: How emerging information technology will impact operations and practice*. Home Healthcare Nurse 2001; 19: 751-7. ★

Hockenjos GJ, Wharton A. *Point of care training: strategies for success*. Home Healthcare Nurse 2001; 19:766-73. ★

Skolnik NS. *Medical information in the palm of your hand: eReferences for home care on Palm™ operating system devices*. Home Health Care Consultant 2002; 9:17-19. ★

Struk C. *Critical steps for integrating information technology in home care: one agency's experience*. Home Healthcare Nurse 2001; 19:758-65. ★

Tanguay P. *Home infusion software: a provider's perspective*. Infusion 2001; 7:33-41. ★

Thoman J, Struk C, Spero MO, Stricklin MLV. *Reflections from a point of care pilot nurse group experience*. Home Healthcare Nurse 2001; 19: 779-84. ★

Willis JL. *Long-distance house calls: telemedicine moves into the home*. FDA CONSUM. 2000; 34(3):2p.

Venous Thrombosis

Bauer KA. *Fondaparinux sodium: a selective inhibitor of factor Xa*. Am J Health Syst Pharm 2001; 58(suppl):14-7. ★

Brown DFM. *Treatment options for deep venous thrombosis*. Emerg Med Clinics North Am 2001; 19:913-23. ★

Ioannides-Demos LL, Addicott R, Santamaria NM et al. *Management of venous thrombosis in hospital or at home: comparing length of stay*. Intern Med J 2001; 31:571-3. ★

Kinsella A. *Technology today: Graduating to smart home health delivery*. Home Healthcare Nurse 2001; 19:607-10. ★

Perry DJ. *Treating venous thromboembolism: enoxaparin*. Hospital Medicine 2001. 62:757-64. ★

Rose P, Bell D, Green ES et al. *The outcome of ambulatory DVT management using a multidisciplinary approach*. Clin Lab Haem 2001; 23:301-6. ★

Rubins JB, Nowbar S, Rice K. *Diagnosis and treatment of venous thromboembolism*. Home Health Care Consultant 2001; 8:8-15 (www.mmhc.com/hhcc/) ★

Wound Management

Fishman TD, Rubin JK. *Assessment and documentation of diabetic foot wounds*. Home Health Care Consultant 2002; 9:20-4. ★

Ovington LG. *Battling bacteria in wound care*. Home Healthcare Nurse 2001; 19: 622-30. ★

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Whilst every effort is made to reliably report the data and comments from the journal articles reviewed, no responsibility is taken for the accuracy of articles appearing in The HITH Review, and readers are advised to refer to the original papers for full details of the research.