TITLE: Intravenous Administration of Medications in Home Care Settings: Clinical Evidence and Guidelines

DATE: 22 December 2014

RESEARCH QUESTIONS

1. What is the clinical evidence regarding the safety of intravenous (IV) administration of medications or hydration therapy to patients in home care settings?

2. What are the evidence-based guidelines regarding IV administration of medications or hydration therapy to patients in home care settings?

KEY FINDINGS

One systematic review and five non-randomized studies were identified regarding the safety of IV administration of medications or hydration therapy to patients in home care settings. One evidence-based guideline was identified regarding IV administration of medications or hydration therapy to patients in home care settings.

METHODS

A limited literature search was conducted on key resources including MEDLINE, PubMed, The Cochrane Library (2014, Issue 12), University of York Centre for Reviews and Dissemination (CRD) databases, CINAHL, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and December 9, 2014. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Any patient (adult or pediatric) in a home care setting (e.g., personal residences, long-term care and retirement facilities, ambulatory care)
Intervention	Intravenous medication (anti-emetics, antibiotics, diuretics, blood products) or hydration therapy in the home
Comparator	IV administration of medication or hydration therapy in hospital
Outcomes	Safety, evidence-based guidelines
Study Designs	Health technology assessment reports, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, guidelines

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

One systematic review and five non-randomized studies were identified regarding the safety of IV administration of medications or hydration therapy to patients in home care settings. One evidence-based guideline was identified regarding IV administration of medications or hydration therapy to patients in home care settings. No relevant health technology assessment reports, meta-analyses, or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One systematic review[1] and five non-randomized studies[2-6] were identified regarding the safety of IV administration of antibiotics to patients in home care settings versus hospital settings. The studies[1-6] were conducted in several patient populations and reported on a range of safety outcomes including: adverse events,[1] general complications and morbidity,[1,2,5] time to readmission,[1] rate of readmission,[2,3] duration of treatment,[5] time between courses of treatment,[6] change of IV lines,[1] line infection rates,[4] and other condition-specific morbidities.[1,3,6] Detailed study findings are presented in Table 2.

Table 2: Summary of Outcomes

First Author, Year	Population, number (n)	Intervention, Comparator	Outcome
Systematic Reviews			
Balaguer, 2012[1]	Cystic fibrosis patients (adults and children) One study, n = 17	IV antibiotics at home IV antibiotics in hospital	• No differences in the rate of adverse events, complications, change of intravenous lines, dyspnea, emotional state, and time to next admission. • Fatigue and mastery were worse for the home group.

Table 2: Summary of Outcomes			
First Author, Year	**Population, number (n)**	**Intervention, Comparator**	**Outcome**
Non-Randomized Studies			
Bedi, 2014[2]	Non-cystic fibrosis bronchiectasis n = 116	IV antibiotics at home (unsupported) or IV antibiotics at home (supported) IV antibiotics in hospital	• Higher rate of morbidity and readmission to hospital in the unsupported home group (no tests of statistical significance presented). • No deaths in any group.
Rodriguez-Cerrillo, 2013[3]	Elderly patients with uncomplicated diverticulitis n = 52	IV antibiotics at home IV antibiotics in hospital	• Lower proportion of free fluid observed in patients treated at home. • No transfers to hospital in the home group.
Barr, 2012[4]	Patients receiving IV antibiotics n = unspecified	IV antibiotics at home IV antibiotics in hospital	No difference in the rate of line infections associated with home administration.
Brugha, 2012[5]	Children with preseptal cellulitis n = 63	IV antibiotics administered on an ambulatory basis IV antibiotics in hospital	No difference in duration of treatment or rate of complications between groups.
Collaco, 2010[6]	Patients with cystic fibrosis n = 1,535	IV antibiotics at home IV antibiotics in hospital	• Long term decline in FEV1 observed in both groups. • No difference in time between courses of antibiotic treatment between groups.

FEV1 = forced expiratory volume in the first second; IV = intravenous.

One evidence-based guideline[7] developed by the British Society for Antimicrobial Chemotherapy and the British Paediatric Allergy, Immunity and Infection Group was identified regarding administration of IV antibiotics to pediatric outpatients. This guideline states support for administering IV antimicrobial therapy at home if possible, based on evidence suggesting a benefit for various psychosocial, productivity, health-related and cost outcomes.[7] It also contains guidance on: roles and responsibilities; patient suitability and indications (infants with fever, children with endocarditis or meningitis, children discharged from emergency departments); device selection and care; drug selection, delivery, and patient monitoring; clinical governance and outcome monitoring; and developing a business case for funding.[7]

REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses

1. Balaguer A, Gonzalez de Dios J. Home versus hospital intravenous antibiotic therapy for cystic fibrosis. Cochrane Database Syst Rev. 2012 Mar 14;3:CD001917.
PubMed: PM22419283

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies

2. Bedi P, Sidhu MK, Donaldson LS, Chalmers JD, Smith MP, Turnbull K, et al. A prospective cohort study of the use of domiciliary intravenous antibiotics in bronchiectasis. NPJ Prim Care Respir Med. 2014 Oct 23;24:14090.
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4. Barr DA, Semple L, Seaton RA. Self-administration of outpatient parenteral antibiotic therapy and risk of catheter-related adverse events: a retrospective cohort study. Eur J Clin Microbiol Infect Dis. 2012 Oct;31(10):2611-9.
PubMed: PM22526869

5. Brugha RE, Abrahamson E. Ambulatory intravenous antibiotic therapy for children with preseptal cellulitis. Pediatr Emerg Care. 2012 Mar;28(3):226-8.
PubMed: PM22344208

6. Collaco JM, Green DM, Cutting GR, Naughton KM, Mogayzel PJ Jr. Location and duration of treatment of cystic fibrosis respiratory exacerbations do not affect outcomes. Am J Respir Crit Care Med [Internet]. 2010 Nov 1 [cited 2014 Dec 19];182(9):1137-43. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3001256
PubMed: PM20581166

Guidelines and Recommendations

7. Patel S, Abrahamson E, Goldring S, Green H, Wickens H, Laundy M. Good practice recommendations for paediatric outpatient parenteral antibiotic therapy (p-OPAT) in the UK: a consensus statement. J Antimicrob Chemother. 2014 Oct 19.
PubMed: PM25331058

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APPENDIX – FURTHER INFORMATION:

Non-Randomized Studies

No Comparator

8. Veilleux RP, Wight JN, Cannon A, Whalen M, Bachman D. Home diuretic protocol for heart failure: partnering with home health to improve outcomes and reduce readmissions. Perm J [Internet]. 2014 Summer [cited 2014 Dec 19];18(3):44-8. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4116264
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PubMed: PM23453619

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PubMed: PM23070203

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PubMed: PM22153541

12. Baharoon S, Almodaimeg H, Al Watban H, Al Jahdali H, Alenazi T, Al Sayyari A, et al. Home intravenous antibiotics in a tertiary care hospital in Saudi Arabia. Ann Saudi Med [Internet]. 2011 Sep-Oct [cited 2014 Dec 19];31(5):457-61. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3183678
PubMed: PM21911981

13. Shin JH, Chang EY, Chang HK, Kim SM, Han SJ. Home intravenous antibiotic treatment for intractable cholangitis in patients with biliary atresia following Kasai portoenterostomies. J Korean Surg Soc [Internet]. 2011 May [cited 2014 Dec 19];80(5):355-61. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3204694
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PubMed: PM20797356

Alternate Comparator

16. Shrestha NK, Mason P, Gordon SM, Neuner E, Nutter B, O'Rourke C, et al. Adverse events, healthcare interventions and healthcare utilization during home infusion therapy with daptomycin and vancomycin: a propensity score-matched cohort study. J Antimicrob Chemother. 2014 May;69(5):1407-15.
PubMed: PM24398341

Clinical Practice Guidelines

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http://www.rbht.nhs.uk/healthprofessionals/clinical-departments/paediatrics/childrencf/
See: 6.2c Home IV antibiotics, page 68.

18. Petroff BJ, Filibeck D, Nowobilski-Vasilios A, Olsen RS, Rollins CJ, Johnson C. ASHP guidelines on home infusion pharmacy services. Am J Health Syst Pharm [Internet]. 2014 Feb 15 [cited 2014 Dec 19];71(4):325-41. Available from:
http://www.ashp.org/DocLibrary/BestPractices/SettingsGdlHomeInfusion.aspx
PubMed: PM24481158
See: Patient care, page 462.

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See: Suitability for I.V. Antibiotic Therapy via a PVC within the H@H, page 2.
Administration of Medicines by H@H staff, page 3.

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See: 1.2 Patient and caregiver education, page 8.

2.7 Safe use and disposal of sharps and hazardous material, page 13.
8.9 Intravenous immunoglobulin therapy, page 55.

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See: Support System/Resources (Level IV), page 24.

Additional References

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