

Urgent Care Project

Urgent Care Project: Best Practice Review

Summary

Introduction

The aim of this review is to identify and create an inventory of all sources of best practice information around vertical integrated care models including similar organisations nationally and internationally, academic studies and central sources. The rationale behind this is to assist with the “design and test of a new urgent care system in Birmingham East & North and Solihull together with a reimbursement system which will incentivise providers in the best interests of patients.”

Methods

The best practice review aims to address the following objectives;

- What are the key features of Kaiser Permanente model that should be incorporated into the proposed vertical integrated unscheduled care system?
- To identify processes and strategies used by other organisations and learned from their experiences (UK and internationally).
- To establish an evidence base to support the development of options for the model in order to be able to predict which will be the most successful to pilot.
- To support the development of a ‘shared vision.’

To address these questions we have examined existing work that incorporates systematic reviews, trials and comparative studies and large observational studies, that has been undertaken locally, nationally and internationally from which we are able to learn from. “Urgent care was defined as the range of responses that health and care services provide to people who require-or who perceive the need for – urgent advice, care, treatment or diagnosis. People using services and carers should expect 24/7 consistent and rigorous assessment of the urgency of their care need and an appropriate and prompt response to that need.” The focus of this review was the reduction on unplanned hospital admissions,

Urgent Care Project

reduction of attendances and waits in the Emergency Departments and unscheduled care in emergency care.

Results

Reducing unplanned hospital admissions – What does the literature tell us?

A range of initiatives have been explored to identify initiatives that may reduce unscheduled admissions. Table 1, 2 & 3 summarises the evidence about the interventions which target the following four main areas: the way care is organised, specific programmes or methods of care, tools to facilitate more effective care and the strategies for involving people in their own care.

There is some evidence to suggest that the following initiatives may reduce unplanned hospitalisations and readmissions.

- Self-management education
- Self-monitoring
- Group visits to primary care
- Broad managed care programmes
- Integrating social and health care
- Multidisciplinary teams in hospitals
- Discharge planning
- Multidisciplinary teams after discharge
- Care from specialist nurses
- Nurse –led clinics
- Telecare
- Telemonitoring

Urgent Care Project

There is some evidence that the following interventions may reduce length of stay in hospital:

- Self-management education
- Telecare
- Multidisciplinary teams in hospital
- Discharge planning
- Home hospitalisation
- And educating professionals

In addition these interventions may reduce length of subsequent hospital stays:

- Targeting people at high-risk
- Self-management education
- Telemonitoring
- Multi-disciplinary teams in hospital
- Multi-disciplinary teams after discharge
- Nurse-led clinics and nurse-led follow up
- Targeted assertive case management
- And home visits.

Urgent Care Project

Table 1: The way care is organised

Type of care	Evidence	References
<p>Broad managed care programmes;</p> <p>Managed care involves co-ordinating a range of services in the community and the hospital.</p>	<p>There is evidence that broad managed care programmes may reduce healthcare resource use, including unplanned hospital admissions and length of stay in hospital.</p> <p>All but one of the five reviews and three additional trials identified found that managed care can reduce unplanned admissions. One additional review suggested that managed care reduced the average length of hospital stay.</p>	<ul style="list-style-type: none"> • Wagner E. Preventing decline in function: evidence from randomised trials around the world. <i>West J Med</i> 1997; 167 (4): 295-8 • Bodenheimer T, Wagner EH, Grumbach, K. Improving primary care for patients with chronic illness: the Chronic Care Model, Part 2, <i>JAMA</i> 2002; 288 (15): 1909 –14 • McAlister FA, Lawson, FM, Teo KK, Armstrong PW. Randomised trials of secondary prevention programmes in coronary heart disease: systematic review. <i>BMJ</i> 2001; 323 (73198): 957-62. • Philbin EF. Comprehensive multidisciplinary programs for the management of patients with congestive heart failure. <i>J Gen Int Med</i> 1999; 14 (2): 130-5 • Rich MW, Heart failure disease management: a critical review. <i>J Card Fail</i> 1999; 5: 64-75 • Rich MW, Rich MW, Beckham V, Wittenberg C et al. A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. <i>N Engl JMed</i> 1995; 333: 1190-5. • Rich MW, Vinson JM, and Sperry JC et al. Prevention of readmission in elderly patients with congestive heart failure: results of a prospective, randomized pilot study. <i>J Gen Intern Med</i> 1993; 8(11): 585-90. • Philbin EF, Rocco TA, Lindenmuth NW, et al. The results of a randomized trial of a quality improvement of intervention in the care of patients with heart failure. <i>Am J Med</i> 2000; 109(6): 443-9. • Bodenheimer T. Interventions to improve chronic illness care: evaluating their effectiveness. <i>Dis Manag</i> 2003; 6(2): 63-71.

Urgent Care Project

<p>Targeting people at 'high risk'.</p> <p>Organise care by targeting services at people at high risk of hospitalisation focusing particularly on case management.</p>	<p>Just one randomised trial was identified assessing whether focusing services on people at 'high risk' would make case management more effective in the US. When people were divided according to whether they were at 'high risk' of using healthcare services after discharge people at high risk receiving case management had a significantly shorter stay in hospital (three days less than usual care).</p>	<ul style="list-style-type: none"> Hickey ML, Cook EF, Rossi LP et al. Effect of case managers with a general medical patient population. <i>J Eval Clinical Practice</i> 2000; 6(1): 23-9.
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Urgent Care Project

<p>Shared Care provided by family doctors, hospitals and community groups in partnership</p>	<p>There is little evidence that shared care between GPs and hospitals reduces unplanned admissions. Three reviews and three trials found no evidence that shared care impacts on unplanned admissions or readmission rates. One trial suggested that shared care may reduce the length of subsequent hospital stays.</p>	<ul style="list-style-type: none"> • Feachem RGA, Sekhri NK, White KL. Getting more for their dollar: a comparison of the NHS with California's Kaiser Permanente. <i>BMJ</i> 2002; 324: 135-43. • Ham C, York N, Sutch S, Shaw R. Hospital bed utilization in the NHS, Kaiser Permanente, and the US Medicare programme: analysis of routine data. <i>BMJ</i> 2003; 327. • Briggs CJ, Capdegelle P, Garner P. Strategies for integrating primary health services in middle- and low income countries: effects on performance, costs and patient outcomes. <i>In The Cochrane Library, Issue 2, 2004</i>. Chichester, UK: John Wiley & Sons. • Mitchell G, Del Mar C, Francis D. Does primary medical practitioner involvement with a specialist team improve patient outcomes: a systematic review. <i>Brit J Gen Pract</i> 2002; 52(484): 934-9. • Eastwood AJ, Sheldon TA. Organisation of asthma care: what difference does it make? A systematic review of the literature. <i>Qual Health Care</i> 1996; 5(3): 134-43. • Schraeder C, Shelton P, Sager M. The effects of a collaborative model of primary care on the mortality and hospital use of community-dwelling older adults. <i>J Gerontol A Biol Sci Med Sci</i> 2001; 56(2): 106-12. • Naji S, Cameron I, Russell I ET al. Integrated care for diabetes: Clinical, psychosocial, and economic evaluation. <i>BMJ</i> 1994; 308(6938): 1208-1212. • Doughty RN, Wright SP, Pearl A, et al. Randomized, controlled trial of integrated heart failure management: The Auckland Heart Failure Management Study. <i>Eur Heart J</i> 2002; 23: 139-46 • Overhage JM, Dexter PR, Perkins SM, et al. A randomized, controlled trial of clinical information shared from another institution. <i>Ann Emerg Med</i> 2002; 39(1): 14-23. • Gill JM; Mainou AG III, Nsereko M. The Effect of Continuity of Care on Emergency Department Use. <i>Arch Fam Med</i>. 2000; 9:333-338. • Johnson LA, Derlet RW: Conflicts between managed care organizations and emergency departments in California. <i>West J Med</i> 1996; 164:137-142)
<p>Shared care between GPs and hospitals.</p>	<p>The Kaiser model reduced days in hospital compared to the NHS, the major reason being argued was integrated care. The Kaiser model has integrated inpatient and outpatient care which enables people with long-term conditions to move between hospitals and the community, or into nursing facilities if needed. Medical specialists work alongside general practitioners in multidisciplinary medical groups rather than being 'tied' to specific hospitals. Doctors have rapid access to diagnostic services in the outpatient setting so many patients do not need to stay in hospital. Some concerns have been expressed about philosophical conflicts between HMOs and emergency care.</p>	

Urgent Care Project

<p>Shared Care - Integrated social and healthcare</p>	<p>There is limited evidence about the effect of integrating health and social care on admissions and length of stay in hospital. For example in Italy, a randomised trial or integrated social and medical care for frail elderly people living in the community found that integrated care was associated with fewer admissions to hospital or nursing homes. The estimated financial savings were about £1125 per year of follow-up.</p>	<ul style="list-style-type: none"> • Bernabei R, Landi F, Gambassi G et al. Randomised trial of impact of model of integrated care and case management for older people living in the community. <i>BMJ</i> 1998; 316 (7141): 1348-51. • Sommers LS, Marton KI, Barbaccia JC, Randolph J. Physician, nurse, and social worker collaboration in primary care for chronically ill seniors. <i>Arch Intern Med</i> 2000; 160(12): 1825-33.
<p>Shared Care- Working with community groups involves making links with community organisations or the voluntary sector.</p>	<p>There is limited evidence about the effect of working with community groups, although one trial found reduced unplanned admissions. The trial found that providing services in community venues may reduce unplanned admissions. The initiative involved running a disability prevention and self-management programme at a community senior centres in the US with eight nurse-led sessions over a one year period.</p>	<ul style="list-style-type: none"> • Leveille SG, Wagner EH, Davis C et al. Preventing disability and managing chronic illness in frail older adults: a randomized trial of a community-based partnership with primary care. <i>J Am Geriatr Soc</i> 1998; 46(10): 1191-8.

Urgent Care Project

<p>Multidisciplinary Teams</p>	<p>There is inconsistent evidence about multidisciplinary care in relation to reducing people's length of stay in hospital and avoiding subsequent readmissions.</p> <p>Evidence about the effects of multidisciplinary teams after discharge is generally more positive.</p>	<ul style="list-style-type: none"> • Rich MW, Vinson JM, and Sperry JC, et al. Prevention of readmission in elderly patients with congestive heart failure: results of a prospective, randomized pilot study. <i>J Gen Intern Med</i> 1993; 8(11): 585-90. • Slaets JP, Kauffmann RH, Duivenvoorden HJ, et al. A randomized trial of geriatric liaison intervention in elderly medical inpatients. <i>Psychosom Med</i> 1997; 59(6):585-91. • Koproski J, Pretto Z, Poretsky L. Effects of an intervention by a diabetes team in hospitalized patients with diabetes. <i>Diabetes Care</i> 1997; 20(10): 1553-5. • Davison J, Bond J, Dawson P et al. Patients with recurrent falls attending Accident & Emergency benefit from multifactorial intervention - a randomized controlled trial. <i>Age Ageing</i> 2005; 34(2): 162-8.
<p>Nurse-led care</p>	<p>Few studies have examined the specific impact of nurse-led care on unplanned admissions. Those that have focus on the role of specialist nurses, nurse-led clinics and nurse-led follow up. There is insufficient evidence about the effects of nurse led clinics and the effects of nurse-led follow-up after discharge.</p> <p>A randomised trial found that specialist asthma nurses in general practices in the UK reduced unscheduled visits for asthma compared to usual care but a review and additional trial disagreed. Two trials suggested lower readmission rates but there is limited evidence about effects on days in hospital.</p>	<ul style="list-style-type: none"> • Loveman E, Royle P, Waugh N. Specialist nurses in diabetes mellitus (Cochrane Review). In <i>The Cochrane Library</i>, Issue 2, 2004. Chichester, UK: John Wiley & Sons. • Tjihuis GJ, Zwiderman AH, Hazes JM, et al. Two-year follow-up of a randomized controlled trial of a clinical nurse specialist intervention, inpatient, and day patient team care in rheumatoid arthritis. <i>J Adv Nurs</i> 2003; 41(1): 34-43. • Griffiths C, Foster G, Barnes N, et al. Specialist nurse intervention to reduce unscheduled asthma care in a deprived multiethnic area: the east London randomized controlled trial for high risk asthma (ELECTRA). <i>BMJ</i> 2004; 328(7432): 144. • Blue L, Lang E, McMurray JJ et al. Randomised controlled trial of specialist nurse intervention in heart failure. <i>BMJ</i> 2001; 323(7315): 715-8.

Urgent Care Project

Table 2: Specific ways of providing care

Specific programmes or services	Evidence	References
<p>Case management</p>	<p>Inconsistent evidence about the effects of case management on unplanned admissions and length of stay although most evidence is negative.</p>	<ul style="list-style-type: none"> • Ferguson JA, Weinberger M. Case management programs in primary care. <i>J Gen Int Med</i> 1998; 13(2): 123-6. • Hutt R, Rosen R, McCauley J. Case managing long-term conditions. What impact does it have in the treatment of older people? <i>London: Kings Fund, 2004.</i> • Wadhwa S, Lavizzo-Mourey R. Do innovative models of health care delivery improve quality of care for selected vulnerable populations: a systematic review. <i>Joint Commission J Quality Imp</i> 1999; 25(8): 408-21. • Egan E, Clavarino A, Burridge L et al. A randomized control trial of nursing-based case management for patients with chronic obstructive pulmonary disease. <i>Lippincott's Case Management</i> 2002; 7(5): 170-9. • Egan E, Clavarino A, Burridge L, et al. A randomized control trial of nursing-based case management for patients with chronic obstructive pulmonary disease. <i>Lippincotts Case Manag</i> 2002; 7(5): 170-9. • Lim WK, Lambert SF, Gray LC. Effectiveness of case management and post-acute services in older people after hospital discharge. <i>Med J Aust</i> 2003; 178(6): 262- • Laramie AS, Levinsky SK, Sargent J et al. Case management in a heterogeneous congestive heart failure population: a randomized controlled trial. <i>Arc Int Med</i> 2003; 163(7): 809-17. • Boulton C, Rassen J, Rassen A et al. The effect of case management on the costs of health care for enrollees in Medicare plus Choice plans: a randomized trial. <i>J Am Geriatrics Soc</i> 2000; 48(8): 996-1001.

Urgent Care Project

<p>Telephone support or case solely by telephone</p>	<p>Inconsistent evidence. Five trials found telephone support was associated with fewer unplanned admissions but one trial found no effect. Two trials suggested telephone support reduced the number of days in hospital but one trial found no effect.</p>	<ul style="list-style-type: none"> • GESICA Investigators. Randomised trial of telephone intervention in chronic heart failure: DIAL trial. <i>BMJ</i> 2005; 331(7514): 425. • Riegel B, Carlson B, Kopp Z et al. Effect of a standardized nurse case-management telephone intervention on resource use in patients with chronic heart failure. <i>Arch Int Med</i> 2002; 162(6): 705-12. • Krumholz HM, Amatruda J, Smith GL. Randomized trial of an education and support intervention to prevent readmission of patients with heart failure. <i>J Am Coll Cardio</i> 2002; 39(1): 83-9. • Dunagan WC, Littenberg B, Ewald GA et al. Randomized trial of a nurse-administered, telephone-based disease management program for patients with heart failure. <i>J Card Fail</i> 2005; 11(5): 358-65. • DeBusk RF, Miller NH, Parker KM, et al. Care management for low-risk patients with heart failure: a randomized, controlled trial. <i>Ann Intern Med</i> 2004; 141(8): 606-13. • Fitzgerald JF, Smith DM, Martin DK et al. A case manager intervention to reduce readmissions. <i>Arch Int Med</i> 1994; 154(15): 1721-9.
<p>Telemonitoring</p>	<p>Most evidence about telemonitoring is positive. Two reviews and two additional trials found that telemonitoring reduced unplanned admissions. One trial found no effect. One review and two additional trials suggested that telemonitoring reduced unplanned days in hospitals.</p>	<ul style="list-style-type: none"> • Louis AA, Turner T, Gretton M et al. A systematic review of telemonitoring for the management of heart failure. <i>Eur J Heart Fail</i> 2003; 5(5): 583-90. • Benatar D, Bondmass M, Ghitelman J et al. Outcomes of chronic heart failure. <i>Arch Intern Med</i> 2003; 163: 347- 52. • Cleland JG, Louis AA, Rigby AS et al. Noninvasive home telemonitoring for patients with heart failure at high risk of recurrent admission and death: the Trans-European Network-Home-Care Management System (TEN-HMS) study. <i>J Am Coll Cardiol</i> 2005; 45(10): 1654-64. • Scalvini S, Capomolla S, Zanelli E et al. Effect of home based telecardiology on chronic heart failure: costs and outcomes. <i>J Telemed Telecare</i> 2005; 11 Suppl 1: 16-8.

Urgent Care Project

<p>Group visits to primary practice</p>	<p>Limited evidence about the effect on unscheduled admissions of group visits to primary care. (Chronic care clinics). Two trials suggested group visits reduced unplanned admissions. One trial found no impact on days in hospital.</p>	<ul style="list-style-type: none"> • Wagner EH, Grothaus LC, Sandhu N et al. Chronic care clinics for diabetes in primary care: a system-wide randomized trial. <i>Diabetes Care</i> 2001; 24: 695-700. • Coleman EA, Eilertsen TB, Kramer AM et al. Reducing emergency visits in older adults with chronic illness. A randomized, controlled trial of group visits. <i>Eff Clin Pract</i> 2001; 4(2): 49-57. • Beck A, Scott J, Williams P et al. A randomized trial of group outpatient visits for chronically ill older HMO members: the cooperative health care clinic. <i>J Am Geriatr Soc</i> 1997; 45(5): 543-9. • Scott JC, Conner DA, and Venohr I, et al. Effectiveness of a group outpatient visit model for chronically ill older health maintenance organization members: a 2-year randomized trial of the cooperative health care clinic. <i>J Am Geriatr Soc</i> 2004; 52(9): 1463-70.
<p>Specialist clinics in primary care</p>	<p>Little evidence to suggest that specialist clinics reduce hospitalisation.</p>	<ul style="list-style-type: none"> • Gruen RL, Weeramanthri TS, Knight SE, Bailie RS. Specialist outreach clinics in primary care and rural hospital settings. (Cochrane Review). In <i>The Cochrane Library</i>, Issue 2, 2004. Chichester, UK: John Wiley & Sons. • Ram FSF, Jones A, Fay JK. Primary care based clinics for asthma (Cochrane Review). In <i>The Cochrane Library</i>, Issue 2, 2004. Chichester, UK: John Wiley & Sons. • Williams JG, Cheung WY, Russell IT et al. Open access follow up for inflammatory bowel disease: pragmatic randomised trial and cost effectiveness study. <i>BMJ</i> 2000; 320: 544-8.

Urgent Care Project

<p>Hospital clinics and units</p>	<p>Inconsistent evidence about the effect on unscheduled admissions of hospital clinics held before or after discharge.</p>	<ul style="list-style-type: none"> • Cooke MW, Higgins J, Kidd P. Use of emergency observation and assessment wards: a systematic literature review. <i>Emerg Med J</i> 2003; 20(2): 138-42. • Scott I. Optimising care of the hospitalised elderly: a literature review and suggestions for future research. <i>Aust NZ J Med</i> 1999; 29(2): 254-64. • Applegate WB, Miller ST, Graney MJ et al. A randomized, controlled trial of a geriatric assessment unit in a community rehabilitation hospital. <i>N Engl J Med</i> 1990; 322(22): 1572-8. • Diem SJ, Prochazka AV, Meyer TJ, Fryer GE. Effects of a post discharge clinic on housestaff satisfaction and utilization of hospital services. <i>J Gen Intern Med</i> 1996;11(3): 179-81 • Atienza F, Anguita M, Martinez-Alzamora N, et al. Multi-center randomized trial of a comprehensive hospital discharge and outpatient heart failure management program. <i>Eur J Heart Fail</i> 2004; 6(5):643-52. • Mayo PH, Richman J, Harris HW. Results of a program to reduce admissions for adult asthma. <i>Ann Intern Med</i> 1990; 112(11): 864-71.
<p>Discharge planning</p>	<p>There is limited evidence about the impact of discharge planning on unplanned readmissions or subsequent days in hospital. However, one trial suggested discharge planning could reduce the length of hospital stay and one review suggested that discharge planning could reduce the rate of unplanned readmissions.</p>	<ul style="list-style-type: none"> • Phillips CO, Wright SM, Kern DE et al. Comprehensive discharge planning with postdischarge support for older patients with congestive heart failure: a meta-analysis. <i>JAMA</i> 2004; 291(11): 1358-67. • Moher D, Weinberg A, Hanlon R, Runnalls K. Effects of a medical team coordinator on length of hospital stay. <i>CMAJ</i> 1992; 146(4): 511-5.
<p>Home Hospitalisation</p>	<p>Limited evidence – one review found that home hospitalisation reduced the length of hospital stay but one trial found home hospitalisation had no effect on rehospitalisations.</p>	<ul style="list-style-type: none"> • Shepperd S, Iliffe S. Hospital at home versus in-patient hospital care. <i>Cochrane Database Syst Rev</i> 2001; (3): CD000356. • Hernandez C, Casas A, Escarrabill J et al. Home hospitalisation of exacerbated chronic obstructive pulmonary disease patients. <i>Euro Respiratory J</i> 2003; 21(1): 58-67

Urgent Care Project

<p>Intermediate Care</p>	<p>Little good quality evidence about the effect of intermediate care on unplanned admissions. Most available evidence is negative.</p>	<ul style="list-style-type: none"> • Harrison MB, Browne GB, Roberts J et al. Quality of life of individuals with heart failure: a randomized trial of the effectiveness of two models of hospital-to-home transition. <i>Medical Care</i> 2002; 40(4): 271-82. • Young JB, Robinson M, Chell S et al. A whole system study of intermediate care services for older people. <i>Age Ageing</i> 2005; 34(6): 577-83. • Brand CA, Jones CT, Lowe AJ et al. A transitional care service for elderly chronic disease patients at risk of readmission. <i>Aust Health Rev</i> 2004; 28(3): 275-84. • Walker L, Jamrozik K. Effectiveness of screening for risk of medical emergencies in the elderly. <i>Age Ageing</i> 2005; 34(3): 238-42. • Mion LC, Palmer RM, Meldon SW et al. Case finding and referral model for emergency department elders: a randomized clinical trial. <i>Ann Emerg Med</i> 2003; 41(1): 57- 68.
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<p>Home Visits</p>	<p>There is evidence to suggest that home visits following hospital discharge may reduce subsequent unplanned admissions and days in hospital. Five trials found that home visits reduced unplanned admissions and two trials found no effect. Furthermore, one review and three additional trials found that home visits following discharge could reduce subsequent days spent in hospital.</p>	<ul style="list-style-type: none"> • Hughes SL, Ulasevich A, Weaver FM et al. Impact of home care on hospital days: a Meta analysis. <i>Health Services</i> 1997; 32(4): 415-32. • Townsend J, Piper M, Frank AO et al. Reduction in hospital readmission stay of elderly patients by a community based hospital discharge scheme: a randomised controlled trial. <i>BMJ</i> 1988; 297: 544-8. • Williams H, Blue B, Langlois PF. Do follow-up home visits by military nurses of chronically ill medical patients reduce readmissions? <i>Mil Med</i> 1994; 159(2):141-4. • Naylor MD, Brooten D, Campbell R et al. Comprehensive discharge planning and home follow-up of hospitalized elders: a randomized clinical trial. <i>JAMA</i> 1999; 281(7):613-20. • Young W, Rewa G, Goodman SG et al. Evaluation of a community-based inner-city disease management program for post myocardial infarction patients: a randomized controlled trial. <i>CMAJ</i> 2003; 169(9): 905-10. • Sinclair AJ, Conroy SP, Davies M, Bayer AJ. Post-discharge home-based support for older cardiac patients: randomized controlled trial. <i>Age Ageing</i> 2005; 34(4): 338-43. • Hansen FR, Spedtsberg K, Schroll M. Follow-up home visits to elderly patients after hospitalization. A randomized controlled study. <i>Ugeskr Laeger</i> 1994; 156(22): 3305-7, 3310-1. • Hermiz O, Comino E, Marks G, et al. Randomised controlled trial of home based care of patients with chronic obstructive pulmonary disease. <i>BMJ</i> 2002; 325(7370): 938. • Smith BJ, Appleton SL, Bennett PW, et al. The effect of a respiratory home nurse intervention in patients with chronic obstructive pulmonary disease (COPD). <i>Aust NZ J Med</i> 1999; 29(5): 718-25.
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Urgent Care Project

<p>Rehabilitation services</p>	<p>Inconsistent evidence about the effects of rehabilitation programmes. For example, One trial suggested that rehabilitation could reduce the subsequent length of stay in hospital but the found no effect.</p>	<ul style="list-style-type: none"> • Langhorne P, Taylor G, Murray G et al. Early supported discharge services for stroke patients: a meta-analysis of individual patients' data. <i>Lancet</i> 2005; 365(9458): 501-6. • Early Supported Discharge Trialists. Services for reducing duration of hospital care for acute stroke patients. <i>Cochrane Database Syst Rev</i> 2005; (2): CD000443. • Anderson C, Ni Mhurchu C, Brown PM, Carter K. Stroke rehabilitation services to accelerate hospital discharge and provide home-based care: an overview and cost analysis. <i>Pharmacoeconomics</i> 2002; 20(8): 537-52. • Anderson C, Rubenach S, Mhurchu CN et al. Home or hospital for stroke rehabilitation? Results of a randomized controlled trial: health outcomes at 6 months. <i>Stroke</i> 2000; 31(5): 1024-31. • Applegate WB, Miller ST, Graney MJ et al. A randomized, controlled trial of a geriatric assessment unit in a community rehabilitation hospital. <i>N Engl J Med</i> 1990; 322(22): 1572-8. • Engelhardt JB, Toseland RW, O'Donnell JC et al. The effectiveness and efficiency of outpatient geriatric evaluation and management. <i>J Am Geriatr Soc</i> 1996; 44(7): 847-56. • Hogan DB, MacDonald FA, Betts J et al. A randomized controlled trial of a community-based consultation service to prevent falls. <i>CMAJ</i> 2001; 165(5): 537-43. • Ward D, Severs M, Dean T, Brooks N. Care home versus hospital and own home environments for rehabilitation of older people (Cochrane Review). In <i>The Cochrane Library, Issue 2, 2004</i>. Chichester, UK: John Wiley & Sons. • Mottram P, Pitkala K, Lees C. Institutional versus at home long-term care for functionally dependent older people (Cochrane Review). In <i>The Cochrane Library, Issue 2, 2004</i>. Chichester, UK: John Wiley & Sons. • Fleming SA, Blake H, Gladman JR et al. A randomized controlled trial of a care home rehabilitation service to reduce long-term institutionalisation for elderly people. <i>Age Ageing</i> 2004; 33(4): 384-90.
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Urgent Care Project

Table 3: Involving people in their care

Initiatives	Evidence	References
Involving people in decision-making	No evidence suggests that involving people in making decisions about their care had an impact on hospital admissions or length of stay.	
Providing accessible information	Inconsistent evidence – one trial suggests that written information materials including decision aids, guidebooks and printed educational materials could reduce unplanned admissions and two others indicate reduced readmission however other studies found no effect on readmissions.	<ul style="list-style-type: none"> • Gibson PG, Powell H, Coughlan J et al. Limited (information only) patient education programs for adults with asthma (Cochrane Review). In <i>The Cochrane Library, Issue 2</i>, 2004. Chichester, UK: John Wiley & Sons. • Sethares KA, Elliott K. The effect of a tailored message intervention on heart failure readmission rates, quality of life, and benefit and barrier beliefs in persons with heart failure. <i>Heart Lung 2004</i>; 33(4): 249-60. • Fries JF, Harrington H, Edwards R et al. Randomized controlled trial of cost reductions from a health education program: the California Public Employees' Retirement System (PERS) study. <i>Am J Health Promot 1994</i>; 8(3): 216-23. • Osman LM, Abdalla MI, Beattie JAG et al. Reducing hospital admission through computer supported education for asthma patients. <i>BMJ 1994</i>; 308(6928): 568-71. • Montgomery EB Jr, Lieberman A, Singh G, Fries JF. Patient education and health promotion can be effective in Parkinson's disease: a randomized controlled trial. PROPATH Advisory Board. <i>Am J Med 1994</i>; 97(5): 429-35.

Urgent Care Project

<p>Self-Management Education</p>	<p>There is evidence to suggest that self-management education may reduce unplanned admissions and length of hospital stay. Seven trails found that self-management education reduced unplanned readmissions. One review found no effect. Two trials found reduced length of hospital stay.</p>	<ul style="list-style-type: none"> • Bourbeau J, Julien M, Maltais F, et al. Reduction of hospital utilization in patients with chronic obstructive pulmonary disease: a disease-specific self-management intervention. <i>Arch Intern Med</i> 2003; 163(5): 585-91. • Wheeler JR, Janz NK, Dodge JA. Can a disease self management program reduce health care costs? The case of older women with heart disease. <i>Med Care</i> 2003; 41(6): 706-15. Choy DK, Tong M, Ko F et al. Evaluation of the efficacy of a hospital-based asthma education programme in patients of low socio-economic status in Hong Kong. <i>Clin Exp Allergy</i> 1999; 29(1): 84-90. Fu D, Fu H, McGowan P et al. Implementation and quantitative evaluation of chronic disease self management programme in Shanghai, China: randomized controlled trial. <i>Bull World Health Organ</i> 2003; 81(3): 174-82. • Monninkhof E, van der Valk P, van der Palen J et al. Self-management education for patients with chronic obstructive pulmonary disease: a systematic review. <i>Thorax</i> 2003; 58(5): 394-8.
<p>Self-Monitoring</p>	<p>Insufficient evidence in regards to the effect of self-monitoring on unplanned admissions and length of hospital stay. Reduced hospitalisation was shown in one review and one trial when using electronic devises or written plans reduced hospitalisation. One review found no effect for this and one review also found no effect on length of hospital stay.</p>	<ul style="list-style-type: none"> • Celler BG, Lovell NH, Basilakis J. Using information technology to improve the management of chronic disease <i>Med J Aust</i> 2003; 179(5): 242-6

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Reducing Attendances and Waits in Emergency Departments –A Systematic Review

A large amount of literature has been published concerning the international problems of waits and delays in emergency departments. The results of a systematic review relating to reducing attendances at emergency departments and reducing waits in emergency departments are summarised in Table 4. The systematic review particularly highlights that within the emergency department the key areas where innovations have reduced waits are the introduction of near-patient testing and fast-track systems for minor injuries. Systems of diverting people away from emergency departments (for example triage out, co-payment) can be effective but their safety is as yet unproven. In addition there is evidence that attendance rates among the chronically ill, older people and high users could be reduced through various educational, social and medical interventions. Little research has been undertaken in the areas of bed management, innovations to reduce delayed discharges, working practices and workforce numbers.

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Table 4: Reducing attendances and waits in emergency departments

Initiatives in reducing attendances and waits in Emergency Departments	Evidence	References
<p>Out of hospital care</p> <ul style="list-style-type: none"> • Diversion of non serious 999 calls to a system of nurse advice • Ability of ambulance crew to treat people at the scene and then discharge them • Use of alternative destinations to emergency department 	<ul style="list-style-type: none"> • Evidence in this area is generally poor and most refers to the American system, where ambulance staff receive different training. • It is possible to divert some 999 calls to advice lines but the safety of such systems is still being evaluated. • The evidence has not defined the role of ambulance crews in either discharging patients at the scene or transporting them to other destinations. The present triage and prioritisation systems in use do not detect which patients may be suitable for alternative care and high rates of error have been detected in various studies that raise concerns over the safety of such systems. • Because of the planned expansions in the roles of paramedics that are already occurring, it is important that prospective studies are undertaken to ensure the safety and effectiveness of discharging patients from the scene of incidents. 	<ul style="list-style-type: none"> • Dale, J., Higgins, J., Williams, S., Foster, T., Snooks, H., Crouch, R., Hartley-Sharpe, C., Glucksman, E., Hooper, R. and George, S. 2003. 'Computer assisted assessment and advice for "non-serious" 999 ambulance service callers: the potential impact on ambulance dispatch.' <i>Emergency Medicine Journal</i> 20:178-183. • Schmidt, T., Neely, K.W., Adams, A.L., Newgard, C.D., Wittwer, L., Muhr, M. and Norton, R. 2003. 'Is it possible to safely triage callers to EMS dispatch centers to alternative resources?' <i>Prehospital Emergency Care</i> 7:368-374. • Asplin, B.R. 2001. 'Under triage, over triage or no triage?' <i>Annals of Emergency Medicine</i> 38:282-285. • Marks, P.J., Daniel, T.D., Afolabi, O., Spiers, G., Nguyen-Van-Tam, J.S. 2002. 'Emergency (999) calls to the ambulance service that does not result in patient being transported to hospital: an epidemiological study', <i>Journal of Accident and Emergency Medicine</i> 19:449-452 • Snooks, H., Dale, J., Kearsley, N., Halter, M. and Redhead, J. 2001. 'Development and impact of emergency ambulance "treat and "refer" protocols for non-serious 999 patients', London: London Ambulance Service.

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<p>Primary Care</p> <ul style="list-style-type: none"> • GPs working in the emergency department • Interventions in primary care • Walk-in centres and minor injuries units • NHS Direct and nurse telephone advice 	<ul style="list-style-type: none"> • There is no evidence around the effects on waiting times of GPs working in emergency departments. • Primary care gatekeeping can reduce emergency department attendance but its safety is unknown and one study has highlighted potential serious consequences. • Walk-in centres and NHS Direct have the potential to divert patients away from the emergency department but this has not been demonstrated to reduce attendances at emergency departments. 	<ul style="list-style-type: none"> • Dale, J., Green, J., Reid, F., Glucksman, E. and Higgs, R. 1995a. 'Primary care in the accident and emergency department: II. Comparison of general practitioners and hospital doctors', <i>British Medical Journal</i> 311:427-430. • Dale, J., Lang, H., Roberts, J.A., Green, J. and Glucksman, E. 1996. 'Cost effectiveness of treating primary care patients in accident and emergency: a comparison between general practitioners, senior house officers, and registrars', <i>British Medical Journal</i> 312:1340-1344. • Beales, J. 1997. 'Innovation in Accident and Emergency management: establishing a nurse practitioner-run minor/injuries/primary care unit', <i>Accident and Emergency Nursing</i> 5:71-75. • Gibney, D., Murphy, A.W., Barton, D., Byrne, C., Smith, M., Bury, G., Mullan, E., Plunkett, P.K. 1999. 'Randomized controlled trial of general practitioner versus usual medical care in a suburban accident and emergency department using an informal triage system', <i>British Journal of General Practice</i> 49:43-44. • Murphy, A.W., Plunkett, P.K., Bury, G., Leonard, C., Walsh, J., Lynham, F. and Johnson, S. 2000. 'Effect of patients seeing a general practitioner in accident and emergency on their subsequent re-attendance: Cohort study', <i>British Medical Journal</i> 320:903-904. • Rosenblatt, R.A., Wright, G.E., Baldwin, L., Chan, L., Clitherow, P., Chen, F.M. and Hart, L.G. 2000. 'The effect of the doctor-patient relationship on emergency department use among the elderly', <i>American Journal of Public Health</i> 90:97-102. • Christakis, D.A., Mell, L., Koepsell, T.D., Zimmerman, F.J. and Connell, F.A. 2001. 'Association of lower continuity of care with greater risk of emergency department use and hospitalization in children', <i>Pediatrics</i> 107:524-529. • G P Young, R A Lowe. Adverse outcomes of managed care gate keeping. <i>Academic Emergency Medicine</i> 4(12):1129-1136.
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<p>Emergency Department</p> <ul style="list-style-type: none"> • Registration and administration • Triage and initial assessment • Triage out • Co-payment and financial systems • Fast track for minors • Other fast tracks • Emergency department clinical changes • Frequent attendees • Social care in the emergency department • Altering patient perception of waits. 	<ul style="list-style-type: none"> • Triageing out of the emergency department can reduce numbers but more work is required to assess the safety of such systems. • Co-payment systems reduce attendances but may equally reduce attendances by those requiring emergency care. • Fast track systems for minor illnesses and injuries reduce waits • . <p>Ideal configurations include senior staff. Attendance by the elderly, those with chronic disease and those with multiple attendances may be reduced by various interventions. Trials are needed in this area, including the role of social workers.</p>	<ul style="list-style-type: none"> • Derlet, R.W., Nishio, D., Cole, L.M. and Silva, J.Jr. 1992. 'Triage of patients out of the emergency department: three-year experience', <i>American Journal of Emergency Medicine</i> 10:195-199. • Derlet, R.W. and Nishio, D. 1990. 'Refusing care to patients who present to an emergency department', <i>Annals of Emergency Medicine</i> 19:262-267. • Kelly, K.A. 1994. 'Referring patients from triage out of the emergency department to primary care settings: one successful emergency department experience', <i>Journal of Emergency Nursing</i> 20: 458-463. • Selby, J.Y., Firman, B.H. and Swain, B.E. 1996. 'Effect of a copayment on use of the emergency department in a health maintenance organisation', <i>New England Journal of Medicine</i> 334:635-641. • Cardello, D.M. 1992. 'Implementation of a one-hour fast-track service: One hospital's experience', <i>Journal of Emergency Nursing</i> 18:239-243. • Gamboa Antinolo, F., Gomez Camacho, E., Villar Conde Ed, E., Vega Sanchez, J., Lopez Alonso, R. and Polo, J. 2002. 'The special attention to re-admitted patients can be effective. Cost-benefit analysis of a new health care model', <i>Revista Clinica Espanola</i> 202:320- • Okin, R.L., Boccellari, A., Azocar, F., Shumway, M., O'Brien, K., Gelb, A., Kohn, M., Harding, P. and Wachsmuth, C. 2000. 'The effects of clinical case management of hospital service use among ED frequent users', <i>American Journal of Emergency Medicine</i> 18:603-608. • Poncia, H.D.M., Ryan, J. and Carver, M. 2000. 'Next day telephone follow up of the elderly: A needs assesment and critical incident monitoring tool for the accident and emergency department', <i>Emergency Medicine Journal</i> 17:337-340 • Powell, D. and Peile, E. 2000. 'Joint working. It's a stitch up', <i>Health Service Journal</i> 110:24-25.
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<p>Patient Education</p>	<ul style="list-style-type: none"> • Effects of patient education have been highly variable; no studies of leaflets had an effect. Education of those with chronic disease has been more successful. • Phoning for advice before going to the emergency department may reduce attendances. 	
<p>Diagnostics</p> <ul style="list-style-type: none"> • Laboratory tests • Imaging • Nurse ordering of x-rays • Emergency department performed imaging 	<p>Point of care testing/satellite laboratories produces quicker results.</p> <p>Nurse ordering of x-rays may speed up processes where fast track does not operate.</p> <ul style="list-style-type: none"> • Emergency department staff undertaking ultrasounds may reduce delays for those individuals. • Results delivery needs more investigation as some IT solutions may delay it. 	<ul style="list-style-type: none"> • Thurston, J. and Field, S. 1996. 'Should accident and emergency nurses request radiographs? Results of a multicentre evaluation', <i>Emergency Medicine Journal</i> 13:86-89. • Lindley-Jones, M. and Finlayson, B.J. 2000. 'Triage nurse requested xrays are they worthwhile?' <i>Journal of Accident and Emergency Medicine</i> 17:103-7. • Brenchley, J., Sloan, J.P. and Thompson, P.K. 2000. 'Echoes of things to come. Ultrasound in UK emergency medicine practice', <i>Accident and Emergency Medicine</i> 17:170-175.

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<p>Admission avoidance</p> <ul style="list-style-type: none"> Heart failure DVT Thrombolysis Observation units Social care supporting discharge Hospital at home 	<ul style="list-style-type: none"> Specialist nurse care in heart failure, COPD and DVT can reduce hospital admissions Home support (medical and social) can reduce hospital admissions. Observation wards may reduce length of stay and avoid admission. 	<ul style="list-style-type: none"> Hanumanthu, S., Butler, J., Chomsky, D., Davis, S. and Wilson, J.R. 1997. 'Effect of a Heart failure program on hospitalization frequency and exercise tolerance', <i>Circulation</i> 96:2842-2848. Rich, M.W., Beckham, V., Wittenberg, C., Leven, C.L., Freedland, K.E. and Carney, R.M. 1995. 'A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure', <i>New England Journal of Medicine</i> 333: 1190-1195. Singh, P. 1995. 'Managing chronic congestive heart failure in the home', <i>Home Healthcare Nurse</i> 13:11-13. Brillman, J., Mathers-Dunbar, L., Graff, L., Joseph, T., Leikin, J., Schultz, C., Severance, H. and Werne, C. 1995. 'Management of observation units', <i>Annals of Emergency Medicine</i> 25:823-830. Cooke, M.W., Arora, P. and Mason, S. 2003. 'Discharge from triage: modelling the potential in different types of emergency department', <i>Emergency Medicine Journal</i> 20:131-125.
<p>Bed management</p> <ul style="list-style-type: none"> Discharge lounges Nurse-led discharge Discharge planning 	<ul style="list-style-type: none"> Lack of evidence supporting any innovations in bed management Weak evidence that allowing direct admission by the emergency team will reduce waits and has no negative effect. 	<ul style="list-style-type: none"> Cowdell, F., Lees, B. and Wade, M. 2002. 'Discharge planning. Armchair fan', <i>Health Service Journal</i> 112:28-29. Parsons, P.L. and McMurtry, C.T. 1997. 'Short communications. In response: NP care/discharge planning saves money', <i>Nurse Practitioner</i> 22:238-240.
<p>Delayed discharges</p>	<ul style="list-style-type: none"> Lack of evidence about innovations to reduce delayed discharges from hospital. Most evidence looks at the causes of delays rather than solutions. 	<ul style="list-style-type: none"> Glasby, J. 2003. <i>Hospital discharge: integrating health and social care</i>. Abingdon: Radcliffe Medical Press.

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<p>Multi-component studies</p>	<p>More common that institutions are undertaking a wide array of changes simultaneously in an effort to reduce their waiting times.</p> <ul style="list-style-type: none"> Multi-component studies are useful in that they reflect the methods commonly used in healthcare. They illustrate problems encountered by health care providers and this is reflected by the wide variety of solutions that can produce improvement. Also illustrates that several routes, for example increasing staffing or changing processes, can improve waits and delays. 	<ul style="list-style-type: none"> Nolan, T.W., Schall, M.W., Berwick, D.M. and Roessner, I. 1996. Reducing Delays and Waiting Times throughout the Healthcare System. Boston: Institute for Healthcare Improvement. [Anon]. 1998a. 'These novel strategies decrease ED delays', RN 61:24. Miro, O., Sanchez, M., Espinosa, G., Coll-Vinent, B., Bragulat, E., Milla, J. and Wardrope, J. 2003. 'Analysis of patient flow in the emergency department and the effect of an extensive reorganisation', Emergency Medicine Journal 20:143-148.
<p>Staffing</p> <ul style="list-style-type: none"> Senior staff Nurse practitioners Specialist nurses Emergency care practitioners Allied health professionals 	<ul style="list-style-type: none"> Teams of staff available for unpredicted surges in activity may reduce delays. Rotational allocation of patients may be better than clinician self determination. Senior staff may reduce admissions and delays. Nurse practitioners are safe and effective but their effect on waits is unknown. The role of other health care professional in emergency care needs evaluation. 	<ul style="list-style-type: none"> Anon]. 2000b. 'Teamwork helps cut ED wait times', Healthcare Benchmarks7:40-41. Wanklyn, P., Hosker, H. and Pearson, S. 1997. 'Slowing the rate of acute medical admissions', <i>Journal of the Royal College of Physicians</i> 31:173-176.

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Unscheduled care –selected reviews of the literature

Table 5 lists a collection of systematic reviews and important evidence in emergency care that examine areas that could reduce unplanned admissions and unscheduled readmissions.

Table 5: Unscheduled care

Evidence in emergency care	Reports & Systematic reviews	Comment
Ambulance dispatch	A Systematic Review of the evidence supporting the use of priority dispatch of emergency ambulances. (Cooke, Morrell, Bridge & Allen, 2002).	<ul style="list-style-type: none"> There is very little evidence to support the effect of the prioritization of emergency ambulances on patient outcome.
Change management	http://www.sdo.nihr.ac.uk/files/adhoc/change-management-developing-skills.pdf http://www.sdo.nihr.ac.uk/files/adhoc/change-management-review.pdf http://www.sdo.nihr.ac.uk/files/adhoc/change-management-booklet.pdf http://www.sdo.nihr.ac.uk/files/adhoc/change-management-survey.pdf	

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<p>Children –alternatives to hospital</p>	<p>Hospital based alternatives to acute paediatric admission: a systematic review (D Ogilvie, 2005)</p>	<p>Systematic review of studies of interventions for children with acute medical problems. Main outcome measures were: admission or discharge, unscheduled returns to hospital, satisfaction of parents and general practitioners, effects on health service activity, and costs.</p> <p>Current evidence supports a view that acute paediatric assessment services are a safe, efficient, and acceptable alternative to inpatient admission, but this evidence is of limited quantity and quality. Further research is required to confirm that this type of service reorganisation does not disadvantage children and their families, particularly where inpatient services are withdrawn from a hospital</p>
<p>Decision support</p>	<p>http://www.bmj.com/cgi/content/abstract/330/7494/765</p>	
<p>Discharge process</p>	<p>Discharge planning from hospital to home (Cochrane review)</p> <p>Shepperd S, Parkes J, McClaran J, Phillips C, 2000</p>	<p>Discharge planning is the development of an individualised, discharge plan for the patient prior to leaving hospital for home, with the aim of containing costs and improving patient outcomes. It has been suggested that discharge planning can reduce unplanned readmission to hospital.</p> <p>The studies showed mixed results, which may reflect the different study populations and the different ways the intervention was implemented. There is some evidence that discharge planning may lead to reduced hospital length of stay, and in some cases reduced re-admission to hospital. There is also some evidence that discharge planning increased patient satisfaction. There was no evidence that discharge planning reduced health care costs: however few studies conducted a formal economic analysis.</p>

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ECPs	<p>Gray & Walker: Avoiding admissions from the ambulance service: a review of elderly patients with falls and patients with breathing difficulties seen by emergency care practitioners in South Yorkshire, Emergency Medicine Journal 2008: 25: 168-171</p>	<ul style="list-style-type: none"> • To determine the true impact of emergency care practitioners (ECPs) on admissions relative to emergency department (ED) attendance. • ECPs help to prevent attendances and admissions by delivery of clinical care and assessment at point of access to health care beyond that traditionally provided by UK ambulance services. This study was limited in scope owing to the difficulties in ensuring an accurate comparison group.
Patient Education	<p>http://www.bmj.com/cgi/content/abstract/308/6928/568</p> <p>http://www.chsrf.ca/mythbusters/pdf/boost10_e.pdf</p>	<ul style="list-style-type: none"> • An asthma education programme based on computerised booklets can reduce hospital admissions and improve morbidity among hospital outpatients. • Self-management education to optimise health and reduce hospital admissions for chronically ill patients.

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<p>Emergency Department attendance</p>	<p>Systematic review NZHTA; This report aims to examine the key literature that has assessed the appropriateness of attendance at the emergency department.</p>	<ul style="list-style-type: none"> • Without a valid and reliable measure of inappropriate ED attendance, the absolute effectiveness of interventions to reduce these attendances cannot be accurately assessed. • The evidence for the relative effectiveness of alternatives to ED-based care was found to be patchy in coverage and quality. Relatively little research has been undertaken to evaluate major new developments in primary or secondary care that have an important bearing on the interface between these levels of care. These new developments include: new deputising arrangements for out-of hours GP care, and the provision of minor injury units located in a variety of settings and staffed by a range of different professionals. • Available (although generally poor quality) evidence suggests that the following interventions are ineffective at reducing the number of inappropriate ED attendance: triage, patient education and changes in the characteristics of GP services. • Several major changes in service delivery such as the provision of out-of-hours GP clinics and the development of hospital-based minor injuries clinics have somewhat remarkably not been evaluated in regard to their effect on ED usage. • Interventions to reduce non-urgent visits to the ED need to be multi-faceted to account for the wide range of determinants that lead patients to seek care at that venue. Single interventions are unlikely to be successful whereas those that involve multiple strategies that include the patient, physician and system changes are more likely to be successful.
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Emergency Medical Admissions/admission avoidance	Hospital at home versus in-patient hospital care (cochrane review) Shepperd. S. Iliffe S.	Despite increasing interest in the potential of hospital at home services as a cheaper alternative to in-patient care, this review provides insufficient objective evidence of economic benefit. Early discharge schemes for patients recovering from elective surgery and elderly patients with a medical condition may have a place in reducing the pressure on acute hospital beds, providing the views of the carers are taken into account. For these clinical groups hospital length of stay is reduced, although this is offset by the provision of hospital at home. Future primary research should focus on rigorous evaluations of admission avoidance schemes and standards for original research should aim at assisting future meta-analyses of individual patient data from these and future trials.
Emergency Primary Care	http://www.library.nhs.uk/emergency/ViewResource.aspx?resID=37244	
ENPs		
UK Government Policy relating to emergency care	EMERGENCY CARE POLICY White Paper in January 2006 - (Sections 4.48-4.52) Taking healthcare to the patient, 2005 Transforming emergency care in England, 2004	

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GPs in A&E	A collaborative approach to reducing avoidable hospital admissions Journal of Diabetes Nursing, March 2006 by Dionne Wamae and Sara Da Costa	
Helicopters	The costs and benefits of helicopter emergency ambulance services in England & Wales: J Public Health Med 1996 Mar; 18(1): 67-77	The analysis suggests that Helicopter Emergency Ambulance Services are costly, the health benefits are small, and there are limited circumstances in which the pre-hospital performance of an ambulance service in England and Wales can be improved.
Mental Health	Crisis resolution and home treatment teams NLH	NHS in England spent over £8 billion on mental health in 2006-07. Recent years Crisis Resolution Home Treatment (CRHT) services have been developed to provide acute care for mental health service users living in the community and experiencing a severe crisis requiring emergency treatment. Previously, such treatment could only have been provided by admitting the service user to an inpatient ward. Main aim was to provide service users with the most appropriate and beneficial treatment possible. But CRHT was also intended to reduce inpatient admissions and bed occupancy, support earlier discharge from inpatient wards and reduce out-of-area treatments.

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Minor Injury Units	http://jtt.rsmjournals.com/cgi/content/abstract/14/3/132	Telemedicine for MIUs has been repeatedly reported in the medical literature as being successful, but widespread usage of this technique remains to be achieved.
Models of service delivery	http://www.sdo.nihr.ac.uk/projbytheme.html	
NHS Direct	Evaluating models - The costs and benefits of managing low priority 999 ambulance calls by NHS Direct nurse advisors http://www.sdo.nihr.ac.uk/sdo432003.html	Transferring non-urgent 999 calls for further advice and assessment provides a safe and cost-effective service for some of these calls. The number of calls that can be managed by this process is a small proportion of the 999 workload. Previous estimates have made an assumption that referring calls for telephone advice would result in a cancelled ambulance. We have found this not to be the case and almost half of calls are returned to the ambulance service for an ambulance response indicating that, although non-urgent, many of these calls are for patients who need transport or some form of face to-face assessment. In future it may be better to view this service as being one which can solve some cases but which also provides an enhanced triage system to aid the increasingly complex decisions around which emergency care resources to send and when.

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<p>Non-A&E acute care alternatives</p>	<p>http://www.bmj.com/cgi/content/full/319/7217/1127</p> <p>http://www.institute.nhs.uk/quality_and_value/high_volume_care/ambulatory_emergency_care.html</p>	<p>Changes in diagnostic and treatment technologies, rather than policy interventions, are the most potent force leading to the substitution of one form of healthcare service for another</p> <p>Many inpatient bed days and admissions are deemed inappropriate but the appropriateness of admission to hospital can tell us nothing about whether patients would be more cost effectively cared for outside hospital</p> <p>Several services that attempt to be substitutes for hospital care either by preventing admission or by hastening discharge have been experimented with. Many apparent substitutes for hospital care seem, in the United Kingdom, to increase overall demand for services, with little impact on overall hospitalisation or costs.</p>
<p>Older people in A&E</p>	<p>http://journals.cambridge.org/download.php?file=%2FRCG%2FRCG14_01%2FS0959259804001236a.pdf&code=2584f310a89f7bea3395fd739ff44a29</p>	<p>In the US, the more radical thinkers in this field have suggested the development of completely new models of emergency care for older people. Indeed, one hospital already has an emergency department staffed by geriatricians. In spite of the high proportion of older people in A&E populations, and the growing acceptance of their specialist needs, radical ideas do not appear to be under consideration in the UK. Service developments to date still concentrate on supplementing what a traditional A&E service has to offer rather than re-evaluating the core nature of the A&E service.</p> <p>Given the challenges set out in the NSF for older people, perhaps the time has come to think again about A&E.</p>

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<p>Out of Hours System</p>	<p>A systematic review of the effect of different models of after hours primary medical care services on clinical outcome, medical workload and patient and GP satisfaction. Ruth Leibowitz, Susan Day and David Dun 2003. http://fampra.oxfordjournals.org/cgi/content/abstract/20/3/311</p>	<p>The rapid growth in telephone triage and advice services appears to have the advantage of reducing immediate medical workload through the substitution of telephone consultations for in-person consultations, and this has the potential to reduce costs. However, this has to be balanced with the finding of reduced patient satisfaction when in-person consultations are replaced by telephone consultations. These findings should be borne in mind by policy makers deciding on the shape of future services.</p>
<p>Paramedics</p>	<p>The costs and benefits of paramedic skills in pre-hospital trauma care. http://www.hta.ac.uk/execsumm/summ217.shtml</p>	<p>There was no evidence from this study to support the view that a substantial proportion of pre-hospital deaths are avoidable, as suggested by previous studies.</p> <p>The authors conclude that the protocols used by paramedics increase the mortality from serious trauma involving bleeding injuries, but may also lead to better outcomes for survivors. The observed increase in mortality may be due to factors such as delays on scene and inappropriate pre-hospital fluid infusion.</p>
<p>Pharmacist care of A&E attenders</p>	<p>Expanding the roles of outpatient pharmacists: effects on health services utilisation, costs, and patient outcomes: Beney J, Bero LA, Bond C http://www.cochrane.org/reviews/en/ab000336.html</p>	<p>In recent years pharmacists' roles have expanded from packaging and dispensing medications to working with other health care professionals and the public. The objective was to examine the effect of expanding outpatient pharmacists' roles on health services utilisation, costs and patient outcomes.</p>

Urgent Care Project

<p>Primary care substituting for secondary care in urgent care</p>	<p>Can primary care and community-based models of emergency care substitute for the hospital accident and emergency (A & E) department? Health Policy, Volume 44 Issue 3, Pages 191 - 214 E. Roberts, N. Mays</p>	<p>The evidence on other interventions such as telephone triage, minor injuries units and general practitioner out of hours co-operatives was sparse despite the fact that these interventions are growing rapidly in the UK. Quantifying the scope for substitution in any one health system is difficult since the evidence comes from international research studies undertaken in a variety of very different health settings. Simply transferring interventions which succeed in one setting without understanding the underlying process of change is likely to result in unexpected consequences locally. Nevertheless, the review findings clearly demonstrate that shifting the balance of care is possible.</p>
<p>Reconfiguration of services</p> <p>Studying health care organisations</p>	<p>http://www.library.nhs.uk/HealthManagement/ViewResource.aspx?resID=250712</p>	<p>Today's NHS needs to put behind it the dividing line that stems from 1948, where hospitals and community services were regarded as being in different sectors to be separately managed and run. The fragmentation of services that resulted can still be seen plainly in too many places.'</p>
<p>Short stay units in ED</p>	<p>Short-stay units and observation medicine: a systematic review https://www.mja.com.au/public/issues/178_11_020603/dal10608_fm.pdf</p>	<p>SOU's have the potential to increase patient satisfaction, reduce length of stay, improve the efficiency of emergency departments and improve cost effectiveness. However, SOUs have commonly been implemented alongside new clinical protocols, and it is not possible to distinguish the relative benefits of each. As demand increases, providing effective and cost-efficient care will become increasingly important. SOUs may help organisations that are attempting to streamline patient care while maintaining their quality of service delivery.</p>

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Specialist Geriatric Acute Care	<p>What is the evidence for the effectiveness of specialist geriatric services in acute, post-acute and sub-acute settings?</p> <p>Peter Day & Patricia Rasmussen 2004 http://nzhta.chmeds.ac.nz/publications/geriatric_services.pdf</p>	
Trauma system effectiveness	http://emj.bmj.com/cgi/content/extract/17/3/216	
Waits in A&E	http://www.longwoods.com/product.php?productid=18130&cat=439	
Walk-in-centres	<p>The impact of co-located NHS walk-in centres on emergency departments Chris Salisbury, Sandra Hollinghurst, Alan Montgomery, Matthew Cooke, James Munro, Deborah Sharp¹, Melanie Chalder; <i>Emergency Medicine Journal</i> 2007;24:265-269; http://emj.bmj.com/cgi/content/full/24/4/265</p>	<p>Objective was to determine the impact of establishing walk-in centres alongside emergency departments (EDs) on attendance rates, visit duration, process, costs and outcome of care.</p> <p>Findings: Most hospitals in this study implemented the walk-in centre concept to a very limited extent. Consequently, there was no evidence of any effect on attendance rates, process, costs or outcome of care.</p>