Evaluation of the impact of non-inpatient IV antibiotic treatment for acute infections on the hospital, primary care services and the patient

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The aim of this study was to assess the feasibility of providing IV antibiotic therapy outside hospital. The main outcome measures were the direct costs of providing IV antibiotic therapy in the community compared with standard hospital treatment and the perceptions of patients and General Practitioners (GPs). A total of 29 patients entered the study, of whom 15 received teicoplanin and 14 ceftriaxone. The costs of drugs exceeded the cost of the estimated alternative treatments (median £208 and £126 respectively) and this was only partially compensated for by a small reduction in costs of consumables. The staff time required to train patients was compensated for by savings in drug preparation and administration. Sensitivity analysis showed that these conclusions were sensitive to drug and patient selection, and that treatment of skin and soft tissue infections outside hospital with ceftriaxone was likely to have similar variable costs to treatment in hospital with drugs such as flucloxacillin. Non-inpatient IV (NIPIV) therapy was estimated to save a total of 532 bed days in the year of the study. Patients strongly preferred non-inpatient treatment to hospital treatment. GPs identified a number of potential disadvantages, mainly concerning safety and lack of support for patients at home. Following the study a strategy for development of NIPIV services in Tayside has been developed with local GPs and a plan has been agreed for funding a community liaison nurse based on the impact of NIPIV therapy on future bed requirements in Dundee Teaching Hospitals Trust.

Introduction

Following the development of the Rochester needle by Thomas Massa in 1950, IV administration of fluids, drugs and nutrients became common in hospitals. Over 20 years were to pass before the first report of community-based IV treatment of 13 patients with osteomyelitis.\textsuperscript{5} Further experience documented substantial financial savings to the hospital from community IV therapy,\textsuperscript{2-5} making it popular with third party payers.\textsuperscript{6} However, patients also benefited through decreased hospital stay\textsuperscript{7} with consequent reduction in hospital-acquired infections\textsuperscript{8} and improvement in quality of life.\textsuperscript{9} Practical problems can be solved by selecting drugs which only require once-daily administration\textsuperscript{10} or mechanical devices which facilitate administration.\textsuperscript{11,12} The majority of publications on community IV therapy are from the USA, where it is now a multi-million dollar business catering for patients with acute or chronic infection.\textsuperscript{6} In contrast, experience in the UK tends to be restricted to home IV services for chronic or recurrent infections, such as osteomyelitis, exacerbations of cystic fibrosis and secondary infections in patients with HIV/AIDS.\textsuperscript{13} The aim of the present study was to evaluate the potential for home and outpatient IV treatment of infections referred to a regional infectious diseases unit.

Patients and methods

Setting

The Infectious Diseases Unit (IDU) is at Kings Cross Hospital, Dundee and receives admissions from Tayside, a region in Eastern Scotland with a population of about 400,000. At the time of the study there were 54 beds on the...
unit housed on three wards, two for the management of community-acquired infection and one for the management of infection complicating surgery.

Selection of patients
From December 1993 to December 1994 all new admissions to the IDU were screened by a Consultant in Infectious Diseases for clinical suitability for home or outpatient treatment. The patients were interviewed by a Research Pharmacist, frequently in the presence of relatives. The purpose of interview was to ensure that the patient was willing and motivated to participate, that they had sufficient support at home (in particular, that they had access to a telephone) and to provide detailed information about both outpatient and home iv treatment. At this point written informed consent to take part in the study was obtained.

Study drugs
Patients were treated with a single daily injection of either ceftriaxone, 1 or 2 g, or teicoplanin, 6 mg/kg. Patients with infections that were either confirmed or suspected to be caused by Gram-negative bacteria were treated with ceftriaxone. Patients with infections caused by methicillin-resistant Gram-positive bacteria were treated with teicoplanin. The remaining patients were allocated to provide an even distribution of the total patients between the two drugs.

Organization of iv treatment
Outpatient treatment. Patients were provided with a printed information sheet explaining about the drugs to be used, the duration of treatment and the need to return to the ward daily to receive treatment. Outpatient treatment was administered on one of the wards, by a member of nursing or medical staff. During this visit the patient’s clinical progress was also briefly assessed by this member of staff.

Home iv treatment. Patients were provided with a printed information sheet explaining about the drugs to be used and the duration of treatment. Patients or their carers were trained to prepare and administer the injections on the ward and observed to ensure correct practice on two occasions. They were provided with instructions to take home. These instructions listed the supplies required, provided a quick reference reminder followed by detailed instructions for preparation and administration, outlined possible complications to watch out for and provided a list of contact telephone numbers. Patients were asked to return to the ward at least weekly to review iv access and clinical condition.

Support for patients while at home. Patients were told to contact one of the Infectious Diseases wards or to ask the telephonist to page the doctor on call for Infectious Diseases. The Infectious Diseases unit maintained a 24 h on-call rota, with no cross-cover from other units.

Quantification of resources required for non-inpatient iv (NIPIV) treatment and comparison with usual care
The consumables required for preparation and administration of the study drugs were set by the standards written for home administration. The time required for training and supervision of each patient was recorded.

Patients were offered a taxi service to bring them to the hospital for their injections and/or assessments. If they declined this service the mileage which they travelled up to the end of treatment was recorded.

The drug therapy which the patient would have received under usual care was estimated independently by two Infectious Diseases consultants. It was assumed that the patient would have followed the standard written antibiotic policies in the unit, which include guidelines about switching from iv to oral therapy. The length of hospital stay was assumed to be the duration of iv antibiotic treatment plus 48 h, to allow for assessment of patients after transfer to oral therapy. Any differences of opinion were resolved by discussion. The consumables and staff time required for each iv bolus injection or infusion were estimated from previous studies.14,15

Valuation of resources required for non-inpatient treatment and comparison with usual care
Drug costs were obtained from the Monthly Index of Medical Specialities, July 1994. Unit costs for consumables required for preparation or administration of injections were obtained from the Pharmacy Department and the Supplies Department at Ninewells Hospital. The average hourly cost of nursing time (£10) was obtained from the Personnel Department at Dundee Teaching Hospitals Trust, 1994. The costs of transport by taxi were recorded. For the remaining patients transportation costs were estimated at £0.26 per mile (figure supplied by Royal Automobile Club, 1994).

Survey of opinions about NIPIV treatment in general practices
Questionnaires were distributed to a random sample of 61 of the 91 practices in Tayside. Randomization was carried out by selecting every second and third practice listed on a computer-generated list of practices supplied by Tayside Health Board. Those selected were contacted by telephone by one of the study team to ask if they would
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discuss the issues raised by the questionnaire and report back the practice’s opinions in a subsequent telephone interview. The questionnaire asked the practices to say whether they thought there were any advantages or disadvantages of home iv therapy either from the perspective of the practice or from the perspective of the patient. The practices were then asked whether they would support NIPIV therapy depending on whether they or the hospital had to pay for the drugs, and on whether they or the hospital maintained clinical responsibility for the patient.

Patient preferences

Patient preferences were assessed by asking the patients to complete a questionnaire on entry to the study and then again at the end of their treatment. Additional information was obtained by inviting nine patients to attend a focus group meeting which was conducted by University of Bradford staff who had not previously met the patients.

Statistical methods

Data were analysed with Excel 4.0 and Minitab 10.0 for Windows. Non-parametric methods were used to analyse the differences between costs, because of their highly skewed distributions. Both median and mean are presented as estimates of the central tendency of cost distributions. The median is the cost incurred by at least 50% of the sample, whereas the mean is influenced by outlying patients with unusually high costs, therefore the median is the centre of the distribution, whereas the mean is a better guide to total cost over a period of time. The estimated difference between the population medians and its 95% confidence intervals were calculated with a method based on calculation of Walsh averages.

Results

Clinical activity in the Infectious Diseases Unit in the year of the study

The unit had 54 beds giving a total of 19,710 bed days for the year of the study. There were 1057 admissions to the unit in 1994. Of the 1057 admissions in 1994, only 53% (559/1057) received antibiotics; only 24% (255/1057) received antibiotics by the iv route.

Clinical details and estimated variable costs of care (drugs, consumables and staff time)

A total of 29 patients entered the study, of whom 15 received teicoplanin and 14 ceftriaxone. This represented 5.2% of the total inpatients who received any antibiotic, and 11% of the total who received any iv antibiotic. The reasons for non-recruitment of the remaining patients were: short-term need for parenteral antibiotics (186/255), unstable medical condition (20/255) and other reasons, such as unsuitable social circumstances (20/255). The infections that were thought to be suitable for NIPIV therapy were predominantly cellulitis and orthopaedic infections (Table I).

For the study population as a whole, the cost of drugs for NIPIV therapy tended to exceed the cost of the estimated alternative treatments, whereas the cost of consumables was significantly lower in the NIPIV group (Table II). Staff time was almost equivalent between NIPIV and usual care, because the time required to train patients was balanced by estimated savings from reduced numbers of injections. Nonetheless, for the study population as a whole the total variable cost of NIPIV treatment was generally higher than usual care (Table II). However, the existence of two potential biases within the study may have substantially contributed to this result. Firstly, costs were disproportionately high in the patients with orthopaedic infections, because of the prolonged

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Teicoplanin</th>
<th>Ceftriaxone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no. of patients</td>
<td>duration of treatment (days)</td>
</tr>
<tr>
<td>Cellulitis</td>
<td>9</td>
<td>1-18</td>
</tr>
<tr>
<td>Osteomyelitis, septic arthritis or prosthetic joint infection</td>
<td>3</td>
<td>61-81</td>
</tr>
<tr>
<td>Line sepsis</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lung abscess</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fever of unknown origin</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table I. Diagnosis, antibiotic used for treatment in study population, and duration of treatment
duration of treatment. Secondly, there was a disparity in the daily acquisition costs of the two antibiotics used for NIPIV care (daily acquisition cost was £52.10/400 mg for teicoplanin and £11.46/1 g for ceftriaxone).

Exclusion of the orthopaedic infections from the NIPIV study group substantially reduced the median overall variable treatment costs for both NIPIV and comparative usual care (Table III). Even so, the costs of NIPIV care remained somewhat higher than usual treatment. The costs of treatment for orthopaedic infections (Table III, condition 3) were more than ten times other infection treatment costs, both for NIPIV care and usual care.

Although an equal number of patients was treated with each of the study antibiotics, all but two patients who received teicoplanin could have received ceftriaxone. Both of these patients had infections caused by coagulase-negative staphylococci that were resistant to methicillin and macrolides. Preferential use of ceftriaxone would have substantially reduced the overall variable treatment costs of NIPIV care to a point at which they were somewhat lower than those of usual care (Table III, condition 4).

Excluding the orthopaedic patients, and using ceftriaxone where possible for the remaining NIPIV patients, further reduced the median cost of treatment (Table III, condition 5) in both care settings. Substitution of ceftriaxone where possible for the orthopaedic patients made little impact on the costs of treatment (Table III, condition 6) because the patients were either not suitable for treatment with ceftriaxone or were already being treated with this drug.

Of the 29 patients, 14 requested or required the taxi transportation offered, the remainder (15) chose to use their own transport. Although the patients using their own transport had the opportunity for travel reimbursement to the hospital, no patient decided to take advantage of this. Where taxi transportation was provided, the mean cost

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**Table II.** Comparison of costs of non-inpatient therapy with estimated usual therapy

<table>
<thead>
<tr>
<th>Component of cost</th>
<th>Median (mean) cost of therapy (£)</th>
<th>Point estimate of difference between medians (95% CI)&lt;sup&gt;a&lt;/sup&gt;</th>
<th>P&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NIPIV</td>
<td>usual therapy</td>
<td></td>
</tr>
<tr>
<td>Drugs</td>
<td>208 (594)</td>
<td>126 (346)</td>
<td>£52 (-£20 to +£197)</td>
</tr>
<tr>
<td>Consumables</td>
<td>3 (16)</td>
<td>6 (51)</td>
<td>£6 (-£18 to −£4)</td>
</tr>
<tr>
<td>Staff</td>
<td>25 (46)</td>
<td>13 (37)</td>
<td>£2 (-£7 to +£12)</td>
</tr>
<tr>
<td>Total</td>
<td>235 (655)</td>
<td>169 (427)</td>
<td>£44 (-£28 to £182)</td>
</tr>
</tbody>
</table>

<sup>a</sup>A plus sign in the difference in median costs indicates that NIPIV is more expensive, while a minus sign indicates that NIPIV is less expensive.

<sup>b</sup>The Mann-Whitney test was used to assess the significance of differences between medians.

**Table III.** Sensitivity analysis of the costs of non-inpatient iv therapy (NIPIV) in comparison with usual therapy under different conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Therapy</th>
<th>Median cost (£)</th>
<th>Point estimate of difference between medians (95% CI)&lt;sup&gt;a&lt;/sup&gt;</th>
<th>P&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>NIPIV</td>
<td>usual therapy</td>
</tr>
<tr>
<td>1</td>
<td>as per study</td>
<td>29</td>
<td>235</td>
<td>169</td>
</tr>
<tr>
<td>2</td>
<td>as per study, minus orthopaedic infection patients</td>
<td>24</td>
<td>160</td>
<td>83</td>
</tr>
<tr>
<td>3</td>
<td>as per study, for orthopaedic infection patients</td>
<td>5</td>
<td>2754</td>
<td>1106</td>
</tr>
<tr>
<td>4</td>
<td>using ceftriaxone where possible for NIPIV study patients</td>
<td>29</td>
<td>106</td>
<td>169</td>
</tr>
<tr>
<td>5</td>
<td>using ceftriaxone where possible for NIPIV study patients minus orthopaedic infection patients</td>
<td>24</td>
<td>83</td>
<td>83</td>
</tr>
<tr>
<td>6</td>
<td>using ceftriaxone where possible for NIPIV orthopaedic infection patients</td>
<td>5</td>
<td>2754</td>
<td>1106</td>
</tr>
</tbody>
</table>

<sup>a</sup>A plus sign in the difference in median costs indicates that NIPIV is more expensive, while a minus sign indicates that NIPIV is less expensive.

<sup>b</sup>The Mann-Whitney test was used to assess the significance of differences between medians.

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was £114, median £61 and range £12–450. Costs to the
patients who used their own transport were a mean of £14,
median £11 and range £1–36.

Likely impact of NIPIV therapy on hospital stay

It was estimated that NIPIV therapy resulted in a net
saving of 532 bed days, representing an average of 18 bed
days saved per patient. This figure is skewed by the five
orthopaedic patients who accounted for about 60% (316)
of these bed days. The mean number of bed days saved per
non-orthopaedic patient was 9 days (median 5.5 days)
compared with a mean of 63 days (median 62 days) for
orthopaedic patients.

Bed days saved represented only 2.7% of the total
capacity of 19,710 bed days in the IDU in 1994. Con-
siderable rationalization of the Infectious Diseases service
has taken place and in 1996 the number of inpatient
beds was reduced to 28, a total of 10,220 bed days.
Nonetheless, at the level of 29 patients per year, NIPIV
therapy would still have a minimal effect, because a saving
of 532 bed days still only represents 5.2% of the total
capacity.

Survey of general practitioners’ opinions about
NIPIV therapy

Of the 61 practices who were asked to participate, 38
(62%) agreed (Table IV). A large proportion of GPs
(76%) saw no advantage to themselves and 70% saw a
substantial disadvantage in the form of an increased work-
load. However, most GPs (94%) thought that patients
would benefit from being able to be in their own
environment.

Patient preferences

The majority of patients (23/29; 79%) said that the free-
dom of being at home was the main reason that they

Table IV. A dvantages and disadvantages for the GP and the patient of home iv therapy from the perspective
of primary care practice. Questionnaires were completed by 38 primary care practices in Tayside

<table>
<thead>
<tr>
<th>A dvantages and disadvantages identified for GPs and patients</th>
<th>Number (% total for each group)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A dvantages identified for GPs by 9/38 (23.7%) respondents:</strong></td>
<td></td>
</tr>
<tr>
<td>saves hospital admissions, frees beds for other patients</td>
<td>3 (33.3)</td>
</tr>
<tr>
<td>GP maintains responsibility</td>
<td>2 (22.2)</td>
</tr>
<tr>
<td>patient can be managed at home</td>
<td>2 (22.2)</td>
</tr>
<tr>
<td>reduces hospital billing to GP</td>
<td>1 (11.1)</td>
</tr>
<tr>
<td>faster access to hospital</td>
<td>1 (11.1)</td>
</tr>
<tr>
<td><strong>Disadvantages identified for GPs by 29/38 (76.3%) respondents:</strong></td>
<td></td>
</tr>
<tr>
<td>increased workload</td>
<td>20 (70.0)</td>
</tr>
<tr>
<td>concern about safety of iv access at home</td>
<td>7 (24.1)</td>
</tr>
<tr>
<td>costs to GP budget</td>
<td>4 (13.8)</td>
</tr>
<tr>
<td>lack of patient supervision, distance from hospital</td>
<td>4 (13.8)</td>
</tr>
<tr>
<td>loss of clinical responsibility</td>
<td>2 (6.9)</td>
</tr>
<tr>
<td><strong>A dvantages identified for patients by 35/38 (82.1%) respondents:</strong></td>
<td></td>
</tr>
<tr>
<td>able to be in own environment</td>
<td>33 (94.3)</td>
</tr>
<tr>
<td>relatives do not have to travel</td>
<td>2 (5.7)</td>
</tr>
<tr>
<td>patients will get better more quickly</td>
<td>1 (2.9)</td>
</tr>
<tr>
<td>better contact with GP</td>
<td>1 (2.9)</td>
</tr>
<tr>
<td>less stressful for patient</td>
<td>1 (2.9)</td>
</tr>
<tr>
<td>relatives happier</td>
<td>1 (2.9)</td>
</tr>
<tr>
<td><strong>Disadvantages identified for patients by 25/38 (65.8%) respondents:</strong></td>
<td></td>
</tr>
<tr>
<td>distance from hospital, lack of support and nursing care</td>
<td>17 (68.0)</td>
</tr>
<tr>
<td>relatives may worry</td>
<td>4 (16.0)</td>
</tr>
<tr>
<td>patients who are that ill should be in hospital</td>
<td>3 (12.0)</td>
</tr>
<tr>
<td>patients will not comply</td>
<td>3 (12.0)</td>
</tr>
<tr>
<td>anxiety of patient</td>
<td>2 (8.0)</td>
</tr>
<tr>
<td>clinical outcome worse</td>
<td>2 (8.0)</td>
</tr>
<tr>
<td>risk of infection of iv site</td>
<td>1 (4.0)</td>
</tr>
</tbody>
</table>

*aPercentage of the number of respondents who identified at least one advantage or disadvantage for each group. Totals for each group
may be >100% because some respondents identified more than one advantage or disadvantage.*
agreed to participate in the study. Other reasons included less family disruption (9/29, 31%) and increased social contact (6/29, 21%). Of the 26 patients who completed the end-of-study questionnaires, 24 (92%) were very much in favour of NIPIV therapy and said that they would repeat this form of therapy. A problem was reported by eight (33%) patients, but six (75%) of these problems were of a minor, remedial nature that related either to the speed of injection or to the discomfort caused by the IV access. Two patients (8%) experienced hypersensitivity-type reactions, one immediate and one delayed. Both patients were receiving their antibiotic administration as outpatients.

The results of the questionnaire were supported by the consensus attained by the patient discussion group in that all patients participating stated that they would repeat this form of therapy and felt that treatment out of hospital improved their quality of life.

Patient outcome

Of the 29 patients enrolled on to the programme, it was considered that 23 had complete resolution of their infection. The remaining six were indeterminate for the following reasons: the diagnosis for one patient was changed to glandular fever, antibiotic treatment was stopped for one patient pending further review, one HIV patient died, one patient was admitted for a lobectomy and a further two for surgical exploration.

Fifteen patients completed their NIPIV treatment with oral antibiotics. Eleven of these patients had cellulitis, six completing their treatment with 4–14 days of oral clindamycin and the remaining five with 4–6 days of oral flucloxacillin. One patient received a combination of metronidazole and cefixime until re-admission to hospital for a lobectomy, one patient was prescribed long-term oral ciprofloxacin for an infected prosthesis, one patient received oral clindamycin until surgical debridement and the remaining patient received 4 days of oral erythromycin for glandular fever.

Discussion

What is the need for community IV antibiotic treatment in the UK? In Britain about 60% of all antibiotics in hospital are administered orally, whereas in much of Europe and the USA, the majority of antibiotics in hospital are given intravenously. Furthermore, only 30% of UK patients are receiving antibiotics when they are discharged from hospital and these antibiotics are predominantly administered orally. Therefore, if community IV antimicrobial therapy is to become more common in the UK, there has to be considerable change in treatment philosophy with respect to serious infection.

As is common in the USA, this study used a multi-disciplinary healthcare team and showed that it is possible to use the same methods to select and successfully treat patients with varied acute infections in the non-inpatient setting. However, the number of patients selected over the 11 month period was relatively small, mainly as a result of the selection procedure which required that patients were likely to require antibiotics for ≥5 days. Seventy-three percent (186/255) of patients in the IDU received IV antibiotics for <5 days, but were medically suitable for NIPIV therapy. It is entirely possible, therefore, that the recruitment rate could have been substantially higher.

Although NIPIV therapy was an entirely new concept, very few patients or relatives had concerns about participating in the programme. In fact, at the end of treatment patients expressed a consistent, distinct preference for this form of therapy when compared with the alternative of hospital inpatient care. Most problems experienced by patients were of a minor nature and did not deter the patient from continuing on the programme or from expressing their intention that they would readily participate again. A previous study reported that adverse drug reactions occur no more often in the NIPIV setting than in the hospital setting and that the incidence of phlebitis is actually lower than in the hospital. Two patients in the present study had symptoms compatible with hypersensitivity-type reactions, one immediate and one delayed. However, both reactions were mild and did not require treatment. Despite extensive experience with NIPIV in the USA, there are few reports of adverse effects and most of these are minor.

The notion of what constitutes acceptable risk deserves exploration in the further development of NIPIV care in the UK.

In the UK, the NHS Management Executive has directed that GPs should not initiate prescriptions for drugs at home when these drugs require specific packages of care, as is undoubtedly true of NIPIV therapy. Instead, Health Authorities have been charged with making financial and contractual arrangements for this type of patient with an NHS or commercial supplier. This directive has effectively excluded individual GPs from further participation in the supply of NIPIV care, so to some extent the negative perspective adopted by the GPs (Table IV) is understandable. However, groups of GPs could become involved in the commissioning of NIPIV care in partnership with the Health Authorities.

There have been two other reports of provision of NIPIV antibiotic care in the UK, one in Oxford and the other in Newcastle. As in our study, both report service feasibility and patient acceptance. They differ, however, in that these services catered for a different type of patient and were not costed. A t the time of the Dundee study the ‘hotel cost’ per bed day in the IDU was estimated to be £313.43 It could be argued, therefore, that £166,516 (532 bed days saved x £313) had been saved by the study. However, the study reduced bed day consumption by only 5% because of the large capacity of the present IDU. 

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Consequently the actual financial savings arising from early discharge of these patients are likely to be much smaller.31-33 Estimating the financial savings which arise from shortening length of stay is a complex issue, even in the USA where hospitals are reimbursed per patient treated.34 This study demonstrated that a 30% reduction in the average length of stay for knee arthroplasty reduced fixed costs by a more modest 13%. The examination of financial costs in this NPIP study has therefore focused on the direct, variable treatment costs as these can be readily identified and valid comparisons made between alternative forms of treatment.

In The Netherlands, a country whose healthcare system is based on a strong primary care structure similar to that in the UK, provision of community iv therapy is already well established.35 A detailed study concluded that the cost of home therapy of patients with cystic fibrosis was 48-63% less than the same treatment in hospital in the Netherlands.36 Providers and purchasers must develop a business plan for community iv therapy which includes realistic estimates of the short-term and long-term consequences for their budgets. However, the principal motive for community iv treatment should be better care of the patient, not reduction in healthcare costs. The majority of patients in the present study were motivated by a strong desire to return to a more normal lifestyle and several were prepared to incur costs to themselves. Nonetheless, unless agreed standards are established for quality of care, this form of therapy is unlikely to be adopted by patients, providers or purchasers and the reputation of community services will suffer.37 There is much available information on which to base practice, for example, the standards developed by the Dutch Council for Home Care of Cancer Patients,38 the Joint Commission on Accreditation of Health Care Organizations (JCAHO), Home Infusion Therapy Indicators,39 and Quality Indicator Group Systems (QIGS) for Intravenous Infusion Therapy40 from the USA. Quality assurance models must incorporate standards for the structure through which care is given, the process of selecting, assessing, training and treating patients and indicators of satisfactory clinical outcome.41 In the USA, a new jargon is evolving to describe the potential problems of community iv therapy. For example, the adjective nosohuishal (home-acquired) has been suggested as a parallel term to nosocomial (hospital-acquired) in the descriptions of infections.42 Guidelines for control of infection at home need to be incorporated into quality assurance models.43 The real challenge for NPIP therapy in the UK is to show that an effective service for acute infections can be established. The model should be the services that already exist in the USA, where outpatient therapy is seen as an alternative to hospital admission rather than a cumber-some method for shortening hospital stay. Real progress is going to require better co-operation between hospital and community services. The study in Dundee has led to development of a plan for management of skin and soft tissue infections at home which is supported by local GPs and Dundee Teaching Hospitals Trust, who will fund a nurse to co-ordinate the program. A n important catalyst for progress was the planned move of the IDU to the Ninewells Hospital site, with consequent reduction in capacity of inpatient beds.

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References


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