Home administration of intravenous diuretics to heart failure patients: Increasing productivity and improving quality of care

Provided by: British Heart Foundation

Publication type: Proposed quality and productivity example

Sharing QIPP practice: What are ‘Proposed Quality and Productivity’ case studies?

The QIPP collection provides users with practical case studies that address the quality and productivity challenge in health and social care. All examples submitted are evaluated by NICE. This evaluation is based on the degree to which the initiative meets the QIPP criteria of savings, quality, evidence and implementability.

Proposed quality and productivity examples are predominantly local case studies that meet most of the QIPP criteria but are yet to be fully implemented. This may be because they are at an early stage of implementation and further evidence is forthcoming. These proposed examples may still be of interest. Additional information will be requested within a year from the date of publication. A summary of findings is provided below along with comments and recommendations about how this case study may be developed.

Overview
The British Heart Foundation is piloting and evaluating a 2-year programme to assess safe and effective ways for existing specialist nursing teams to administer intravenous (IV) diuretics to people at home or in a day-care setting. The pilot is being delivered across 10 NHS sites located within diverse sites across the UK, where heart failure specialist nurses (HFSNs) are developing and delivering community-based IV diuretic services as part of existing heart failure services varying in delivery models based on individual site infrastructure.

NICE comment
The anticipated savings will be a mixture of real cash savings and improved productivity. These will be achieved by using specialist nurses to administer IV diuretics to people at home or in an appropriate community/day care setting instead of as an in-patient.

At this early stage the findings indicate that there is the potential for significant cost savings for individual patients treated at home rather than as an in-patient, but this will depend on the number of patients using this service.

Further cost savings are expected through reduction in consultant time compared with time supporting the service within the hospital and reduction in ambulance costs for admissions.
Details of initiative

Purpose
Two-year pilot programme to assess safe and effective ways for specialist nursing teams to administer intravenous (IV) diuretics to people at home or in a day-care setting preventing hospital admissions and improving patient experience. Without this service patients would be admitted to hospital to receive IV diuretics.

Description (including scope)
Heart failure is a debilitating disease that affects more than 750,000 people in the UK (Scarborough 2010). People with heart failure often experience breathlessness. As the condition worsens, fluid accumulates in the lower limbs and eventually in the abdomen. Diuretic tablets help reduce fluid retention, but as the disease progresses oral diuretics are not enough to control symptoms. To relieve symptoms at this stage, the patient is admitted to hospital and treated with IV diuretics.

The pilot is being delivered across 10 NHS sites in the UK, where existing heart failure specialist nurses are developing and delivering community-based IV diuretic services as part of their existing heart failure services. Patients would not be able to wait for treatment if they had decompensated heart failure. There is anecdotal evidence that when patients are reluctant to be admitted to hospital they may be willing to see a nurse within their own home. The evaluation has included examples where people have refused to be admitted to hospital.

The British Heart Foundation steering group provided guidance on patient eligibility and dosing protocol. While this guidance provided parameters for treatment, each site has developed a locally adapted version of the protocol that is subject to local governance. However, there are a number of core aspects of the guidance that are fixed for all sites:

- all patients must already have a diagnosis of heart failure
- diuretics must be administered intravenously
- patients may receive their IV diuretics in established treatment locations such as their home or other community/day care settings such as a hospice, or community hospital day care
- The service does not operate over night but patients are given a patient information leaflet and contact telephone number in case there are any problems.

The aims of the service are to:

- enhance patient care through better symptom control
- reduce the distress caused by unplanned hospital admissions
- deliver care at home in a timely manner
- offer patients more participation and choice about where they will be cared for, especially in the end stages of their condition
- provide a safe, cost-effective service that is strongly focused
on the needs of service users

- relieve increasing pressures on acute hospital beds and
- focus on delivering care closer to home.

### Topic

End of life care, long-term conditions, right care, right care for patients – shared decision making and safe care.

### Other information

As part of the pilot programme, the British Heart Foundation commissioned BrightPurpose, an independent evaluation company, to evaluate the IV diuretic service with the aim of demonstrating the safety, effectiveness and cost benefits of a community IV diuretic service. The findings within this case study are based on the interim evaluation report.

The pilot sites differ in their approaches to implementation partly because of the variation in local infrastructure and geography. Some pilot sites are incorporating the service using their existing resources while others are using the evidence of cost saving to expand services. However it is unlikely that sites would have a full time HFSN working solely on the service and would not develop a new HF service to deliver IV Diuretics. Therefore the costings are based on time taken to deliver the service.

### Savings anticipated

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<tr>
<th>Amount of savings anticipated</th>
<th>This case study demonstrates a saving of £52,000 for a population of 715,500. This equates to around £7270 per 100,000 population.</th>
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<td>A business case from one of the pilot sites shows that for a cohort of 628 patients under the care of heart failure consultants, 44 will be admitted per year for IV diuretic therapy (average stay of 9.4 days).</td>
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<td>An admission without complications (typically a 25 day stay) for a patient with heart failure costs £2,411. Therefore 44 x £2,411 = £106,084. If this cost is compared to the costs associated with a community IV diuretic service this would total £53,900 for staff salary costs for a full 7 days service. This would result in a saving of £52,184 for a population of approximately 715,500 within the site's catchment area. It is not anticipated that a nurse will be needed to work full shifts nor every weekend so the cost is likely to be less.</td>
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<td>Even when adding in the cost of petrol, IV Furosemide and equipment a large saving in comparison to a hospital admission remains. Only the number of days the patient received the treatment requires costing (for instance 9.4 days rather than 25).</td>
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<td>Type of saving</td>
<td>A mixture of real cash savings and improved productivity. This is achieved by using specialist nurses to administer IV diuretics to</td>
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people at home or in a day-care setting instead of as an in-patient.

### Any costs required to achieve the savings

May need extra training costs as part of set up depending on existing knowledge skills available. Change also requires additional recurrent costs for the specialist nurse and consumables.

The evaluation is already showing cost savings based on the HFSN time taken to deliver the service. Patients and pilot sites have been positive about the pilots and some sites are being sustained or incorporated into existing services due to the reduction in admissions.

The reoccurring costs for running the service (consumables and training) would be the same within the hospital so have not been included. The cost of the time that it takes for a HF nurse to deliver the service has been included within the cost savings. Further potential savings are possible where IV is being delivered within the community already and therefore not as much training would be required.

### Programme budget

Circulation problems.

### Supporting evidence

To date a cost analysis has only been completed for the pilot site in Leeds which has a service model based on IV diuretics provision being managed solely by the heart failure nurse service. In the next stage of the evaluation a costing analysis will be completed for all sites, including pilots using a more complex model, those involving a heart failure nurse overseeing the pilot and those with a mix of staff from different bandings with potentially greater savings.

After completion of the fieldwork for the interim evaluation, the site had treated 10 patients, an average of 2 patients a month. It is expected that this average will increase and the pilot lead estimates an annual throughput of 44 patients as capacity is built with heart failure nurse colleagues. This potential has been demonstrated, with the pilot delivering the IV diuretics to 4 patients in September 2012.

The cost analysis and potential savings within this case study are therefore based on the possible savings of the pilot delivering to 44 patients per year.

At this early stage the findings indicate that there is the potential for significant cost savings for an individual patient treated at home rather than in hospital, but this will depend on the number of patients using this service.

Further cost savings are expected through reduction in consultant time compared with time supporting the service within the hospital and reduction in ambulance costs for admissions.

A full breakdown of costs to achieve the savings can be found within the interim evaluation that was used as part of the cost
Proposed Quality and Productivity topics

reviews. Costs vary across the sites that will implement the service. Other sites will reconfigure resources and some sites have a business case for further resources based on the evidence. The evaluation highlights that although variation exists across the pilot sites the service is cost effective to deliver compared to hospital admissions.

Quality outcomes anticipated

| Impact on quality of care or population health | Improved quality of care resulting in better patient or population outcomes. Better self-management and patient/carer knowledge. The time to deliver the service including education of patients has been included within the cost of delivering the service. Due to the time it would take to deliver the service an additional outcome includes patient education. Staff across the pilots indicated that being in the patient’s home while administering the IV diuretics gives them more time to discuss the treatment and wider condition management with the patient and carer. An example of this from 1 site is when treatment of a patient in their home led to a package of social care being arranged, along with installation of a pendant alarm service, referral to day hospice and adaptations within the home. This may not have been identified as part of a hospital admission. |
| Impact on patients, people who use services and/or population safety | Improved safety, such as reducing the risk of adverse events. No complications that were experienced during the pilot were particularly different from those that can be experienced when IV diuretics are provided in hospital. Only 1 intervention led to a patient having a mild phlebitis and this was only for 1 day of the intervention. Next steps include a comparison of safety levels in those patients receiving care in hospital, including rates of healthcare-associated infections. The out-of-hours contact telephone number (which is now 111) is provided on the patient information leaflet in case of any problems. Patients can contact the IV diuretic team during office hours. |
| Impact on patients, people who use services, carers, public and/or population experience | Significant improvement in patient, carer and public experience is anticipated with service reconfiguration to provide care at home. 100% of patients and carers who completed the survey (based on 8 patients and 6 carers) found the treatment preferable to hospital admission and said if they need IV diuretics again they would choose to have it at home rather than in hospital. Their main reasons were: • home-based treatment was less disruptive for themselves, |
their family and carers
- patients could enjoy home comforts
- patients received excellent clinical care and
- staff were friendly and understanding.

Patients were satisfied with the service and felt that they and their carer could cope at home while being treated. Feedback from carers suggests that they were reassured by the dedicated treatment provided and particularly satisfied with the information provided regarding the pilot, which helped them understand what would be required of them and who to contact in an emergency.

Supporting evidence
No additional information provided.

Evidence of effectiveness

**Evidence base for case study**
The initiative is informed by published research evidence such as systematic review or non-accredited guidance. The BrightPurpose evaluation report that is available on request is the first systematic review of this service.

**Evidence to date of deliverables from implementation**
The initiative is at an early stage, so only 1 site has complete data on deliverables from implementation.

Supporting evidence
No additional information provided.

Feasibility of implementation

**Implementation details**
The service models and implementation vary across the programme sites. The following service model is based on the site for which the economic evaluation was completed. The lead nurse at the site set up a comprehensive consultation process with heart failure patients that identified the need for the service. It was evident from patient feedback that they prefer this service rather than being admitted to hospital.

The IV diuretics service is offered to patients in their own home as an alternative to hospital admission when they are failing to respond to oral diuretics. Patients are rigorously assessed by the heart failure nurse specialist to ensure they are suitable candidates for home IV diuretic therapy. These nurses are also responsible for prescribing and administering the therapy, and monitoring the patient during treatment.

The service is delivered entirely by the heart failure nurse service, with no support from other community nurses such as district nurses because of commissioning restrictions. At present only the 2 lead nurses are able to administer IV diuretics, although the plan is to train other nurse prescribers in the team.
Clinical responsibility lies with the heart failure nurses working with the BHF guidance adapted to local governance. Anything that falls outside of this, or any complex patients, can be discussed with the cardiology registrar on call. A patient does not necessarily have to be seen by a cardiologist before starting IV diuretic treatment at home. All treatment changes and decisions are communicated to the GP surgery. The GPs have had very little input with the service. All GPs were informed about the service by a memo before the service was launched and again after it was commissioned to continue. GPs have been very supportive of the project and recognise the value of the service to patients that the IV diuretic service provides.

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<th>Time taken to implement</th>
<th>The initiative can be implemented in the medium term: 4 months to 1 year.</th>
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<td>Ease of implementation</td>
<td>Affects a whole organisation across a number of teams or departments.</td>
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<td>Level of support and commitment</td>
<td>Good buy-in from the start as cardiologists are involved from the beginning and patients feedback (as described in the implementation details) are positive from the start as they would prefer to be at home. Feedback to date has been positive particularly from patients and carers. Support from cardiologists who are happy to provide advice as needed.</td>
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| Barriers to implementation | Operating environment: It is important to recognise the pilots have been developing the IV diuretics service against a backdrop of major restructuring, fragmented services and variation across localities. This is making collaborative working and securing buy-in challenging. Solutions have included:  
  - securing the commitment of senior staff to act as champions for the pilot, to help get their peers on board  
  - presenting details of the service at conferences and forums  
  - presenting details of the service at CPD/learning events (for example, GP learning events)  
  - producing and disseminating literature (for example, 1 site has produced an information leaflet specifically for GPs). |
| Risks                   | None provided.                                                          |
| Supporting evidence     | No additional information provided.                                     |

**Further evidence**

**Capabilities and competence:** Refresher training is being delivered by the pilots for staff to gain competence, but there is a challenge in maintaining this if patient numbers are low. Solutions have included staff maintaining competence by inserting cannulas for...
patients either within hospital wards or with paramedic teams. One site has opted to use butterfly needles instead of cannulation as a solution to this challenge.

Contacts and resources

If you require any further information please email: qipp@nice.org.uk and we will forward your enquiry and contact details to the provider of this case study. Please quote QIPP reference 12/0019 in your email.


BrightPurpose (2013) Evaluation of home-based IV Diuretics Pilot Phase 2 report for British Heart Foundation June 2012 (available on request)


Other documents

NICE has published evidence-based guidance for healthcare professionals. This QIPP case study goes beyond the scope of these guidelines. Links to the guidance have been included here for information and to support you in the development of evidence-based services:


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