Pharmacy management and nurse-led medicines ordering: To improve efficiency and aid patient discharge

Provided by: Taunton & Somerset NHS Foundation Trust

Publication type: Quality and productivity example

Sharing good practice: What are ‘Proven Quality and Productivity’ case studies?

The NICE Quality and Productivity 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 NICE Quality and Productivity criteria: savings, quality, evidence and implementability. The assessment of the degree to which this particular case study meets the criteria is represented in the summary graphic below.

Proven Quality and Productivity examples are case studies that show evidence of implementation and can demonstrate efficiency savings and improvements in quality.

Evidence summary

Originally published: March 2013
Last reviewed: April 2016
Last updated: April 2016

This document can be found online at: https://www.nice.org.uk/localPractice/collection
**Changes since the previous version**

Published Quality and Productivity case studies are reviewed annually. One year after the case study has been published in the Local Practice Collection, the submitter of the case study is contacted to ask if there is further information relevant to the case study, and the case study updated as required. The case study has been amended to meet NICE style and any additional changes to this case study are outlined in the table below.

<table>
<thead>
<tr>
<th>Case study section</th>
<th>Update</th>
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<tbody>
<tr>
<td>Introduction</td>
<td>No changes</td>
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<tr>
<td>Savings</td>
<td>No changes</td>
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<tr>
<td>Quality</td>
<td>No changes</td>
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<tr>
<td>Evidence</td>
<td>No changes</td>
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<tr>
<td>Implementation</td>
<td>No changes</td>
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## Details of initiative

<table>
<thead>
<tr>
<th>Purpose</th>
<th>To speed up the delivery of medicines to patients on acute hospital wards to aid patient discharge. This initiative improves quality and produces productivity savings. The initiative needed to ensure that one-stop dispensing (or dispensing for discharge) was implemented without any increase in pharmacy staffing levels.</th>
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</table>
| Description (including scope) | Since the publication of ‘A spoonful of sugar: medicines management in NHS hospitals’ (Audit Commission, 2001), most trusts in the UK have aimed to introduce a one-stop dispensing system, which involves dispensing medicines for patients earlier in their stay. This is combined with the use of patients' own drugs that may be brought into hospital at the time of (or shortly after) their admission.

Taunton and Somerset foundation trust redesigned their pharmacy services demonstrating that no extra staffing was required for financial reasons.

Because the ward-based nurse responsible for administering drugs to the patients was likely to be the first person to know that a drug needed ordering (for example, a drug had just been prescribed or just run out), having them place the order was the most efficient method.

At the same time, drugs remained on the ward with the patient until their discharge. Safety steps were required to ensure that any discontinued medicines were not given to the patient at discharge: this remained a nursing responsibility.

The result of this nurse-led ordering system is that the pharmacy department has not needed additional staff to do this work. It was estimated that one staff member would be needed for every two to three wards to collect the required prescriptions. Additionally, work would only arrive in the dispensary after being collected, resulting in sub-optimal use of dispensary resources at the beginning of the day and late dispensary finish times.

The benefits of this initiative are:

- the significant contribution to more timely patient discharge
- the removal of a factor believed to contribute to missed and delayed medicines doses (because of unavailability)
- patient experience is improved for both inpatients and outpatients (because outpatient waiting times were equally favourably affected)
- staffing requirements fell marginally despite the significant increase in workload.

Performance has been enhanced further since the initiative was developed by the introduction of minor changes to the way the dispensing system operates. This has focused on ensuring that staff resources are matched to the dispensing workload. Most of the daily dispensing workload is now completed by 1pm. |
The changes involve pharmacy staff and portering staff collecting dispensing work from wards at key times. Collection times were determined by monitoring the work completed throughout the working day. Outcomes were then measured.

The average prescription turnaround time is now about 20 minutes from receipt. Peak work flow occurs around 10.30am and by 1pm 70% of the total daily work is complete. This represents > 95% of all available work for the day. The remaining 30% is dealt with by nursing staff after 1pm.

**Savings delivered**

**Amount of savings delivered**
No detailed financial data were provided in the submission. However, during subsequent correspondance it was discovered that there are some skill-mix savings of two band 4 to band 2 staff. The grade of staff required in the dispensary was reviewed and fewer band 4 technicians were seen to be needed. Therefore as staff turnover continued, replacements were made at lower grades. However, the purpose was not solely to make savings (in an already small department) but to make the actual system efficient and to address quality and productivity issues.

The level of staffing per finished consultant episode (FCE) is approximately 40 per cent less than the average figure for English strategic health authorities in 2010. The department consists of 51 whole time equivalent staff providing full pharmaceutical services to a 700-bed acute hospital that completed 89,000 FCEs in 2010. The hospital catchment population is estimated to be about 370,000.

**Type of saving**
There is little evidence of cash savings, but there are significant improvements in productivity and service delivery.

The initiative allows the pharmacy department to avoid employing additional pharmacy staff to generate discharge prescriptions. This is a major factor in having a pharmacy department that is 40% smaller than the national average, but that still meets all medicines management targets. The saving came from the shorter production run times, which equates to approximately 1 whole time equivalent staff member.

**Any costs required to**
Minimal additional resources required to implement this case.
Quality outcomes delivered

Impact on quality of care or population health
Clinical quality is improved because despite the increase in prescriptions the number of dispensing errors is unchanged. Conditions are treated quickly because of the improved dispensing of medicines. Error rates (expressed as errors per 100,000 dispensed items) demonstrate that while the workload is increasing, the error rates are not.

Impact on patients, people who use services and/or population safety
Seventy per cent of total daily work is now completed by 1pm, enabling quicker delivery of drugs to wards and earlier patient discharge. Drug unavailability has been reduced further leading to less missed doses.

Impact on patients, people who use services, carers, public and/or population experience
Inpatients, ward staff, outpatients and their relatives/representatives now experience markedly reduced waiting times. Patient discharge is no longer delayed by waits for drugs.

Supporting evidence
This nurse-led prescription ordering system, in combination with frequent and sustainable clinical pharmacy visits and an improved service dispensary, have maintained low levels of dispensing errors and allowed rapid prescription turnaround, with the majority of work being completed earlier in the day rather than much later. It affects missed doses and timely discharge, both of which are important quality factors.

Nurse-led prescription ordering avoids the need for additional pharmacy staff, and allows clinical pharmacists to focus on complex clinical issues rather than transcribing prescriptions (which can be done better by a photocopier). Required work is presented to the dispensary more quickly, making better use of staffing resources earlier in the day and avoiding the need for...
Quality and Productivity: Proven Case Study

By not requesting that all dispensed medicines revisit the dispensary for a final pre-discharge check, the responsibility for discharging patients with the correct medicines belongs to nursing staff. We do not think this is unusual because the correct medicines have been checked with each administration to patients during their stay.

Evidence of effectiveness

<table>
<thead>
<tr>
<th>Evidence base for case study</th>
<th>The nurse-led ordering part of the initiative was underpinned by 'A spoonful of sugar: medicines management in NHS hospitals' (Audit Commission, 2001).</th>
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<tbody>
<tr>
<td>Evidence of deliverables from implementation</td>
<td>There has been systematic follow-up of the results of the initiative and results have been published in Beard and Wood (2010). See contacts and resources for details.</td>
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<tr>
<td>Where implemented</td>
<td>Other UK, voluntary sector, independent healthcare. The need to improve the efficiency of hospital dispensaries is widespread. Many trusts in the South West have begun implementing these changes.</td>
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<tr>
<td>Degree to which the actual benefits matched assumptions</td>
<td>More than expected. Nurse-led prescription processing, rapid prescription turnaround and efficient clinical pharmacy services unhindered by the need to either address transcription or supply issues, reviewing more than 95% prescriptions per day. The aim was to reduce the prescription turnaround time to less than an hour in the first instance. Within 10 weeks it had reduced to 27 minutes (median). Over 2 years later the average turnaround time is about 20 minutes and this is despite an increase of about 40% in dispensing workload over that time.</td>
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<tr>
<td>If initiative has been replicated how frequently/widely has it been replicated</td>
<td>Other organisations have implemented similar initiatives, but how widely is not known.</td>
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<tr>
<td>Supporting evidence</td>
<td>No further information was provided.</td>
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Details of implementation

| Implementation details | Simple lean processes were employed to assess what changes were needed to make the dispensary services more |

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efficient. The steps in the change process included:

1. Process and value mapping.
2. Failure Mode and Effects Analysis (FMEA) to assess risk and reliability.
4. Quick implementation of these changes.
5. Management of resistance to change by a high-level sponsor (the chief pharmacist).
6. Introduction of simple, visual key priorities for implementation and run charts.

The changes were implemented in a single dispensary. A test ward was chosen and a photocopier installed for ward staff to photocopy prescriptions.

The initial test ward had the full support of the ward manager and a desktop photocopier was placed in the ward. The pilot study was completed and presented to the board via the Medicines Management Group together with a business case and relevant Standing Operating Procedures, which were accepted and the initiative was rolled out across all wards.

The initiative took about 2 months to implement during which normal daily work continued. A basic understanding of lean principles together with some experience of process and value mapping, FMEA and PDSA testing proved very useful in the relatively quick implementation. The impact of a pragmatic approach and discipline should not be underestimated.

This was not considered to be difficult to achieve. There may be issues in that implementation can easily be held back by non-cooperation of staff who resist the changes. This is easily overcome by high-level sponsorship (usually the chief pharmacist being involved operationally).

<table>
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<tr>
<th>Time taken to implement</th>
<th>This initiative took 2 months to implement (June to July).</th>
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<td></td>
<td>• Baseline turnaround times were gathered retrospectively starting at 1 January 2008.</td>
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<td>• The first PDSA tests of change began on 11 June 2008.</td>
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<td>• By mid July mean daily turnaround times were 90 minutes.</td>
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<td>• By October they were consistently below 60 minutes.</td>
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<td>• By November they were around 30 minutes.</td>
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<tr>
<th>Ease of implementation</th>
<th>The implementation of this initiative affects the whole trust because the initiative is about improving the dispensing of medicines.</th>
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<tr>
<th>Level of support and commitment</th>
<th>Mixed reception because, although this initiative improves the dispensing of products, there is a working change in all areas</th>
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throughout the trust that requires buy-in from staff. Up-front, buy-in from pharmacists was high because it standardised the type of work they did (clinical checking and tracking system logging) and reduced low-value work (not clarifying ambiguous prescriptions and just returning them with a brief explanatory note). The technicians needed more convincing because they felt that their jobs were being eroded, but in this small department it actually allowed more time for other duties and professional development. The introduction of the supervisor was a problem because staff felt this impinged on their professional freedom. This was overcome with high-level sponsorship and the knowledge that the supervisor reported directly back to the chief pharmacist when there were significant supervision problems. Ward staff were very pleased from the start because delays in drug delivery were reduced very quickly.

### Barriers to implementation

There was resistance from the dispensary team; resistance to change was overcome by PDSA testing and documented results (‘spoiling arguments with facts’) and high-level sponsorship. Organisations might assume that transferring this work to ward-based nursing staff would be resisted. However, the organisational support for such a change might be high if the result was to streamline staffing levels in pharmacy. Such a change may also be unpopular with many chief pharmacists.

### Risks

The main risk was increased dispensing errors; near miss monitoring was already in place and no evidence of any increase in dispensing errors was seen, even when the workload increased.

The introduction of photocopiers immediately reduced the workload by avoiding the need for transcription into a stock book and then organising a discharge prescription that is not dealt with by the pharmacy. The rationale for this decision is that the discharge letter is a letter from a doctor to another doctor, and so it should not require further intervention from pharmacy staff.

### Supporting evidence

In May 2008 the median turnaround time for dispensing medicines to wards in Taunton was over 3 hours. This time represented time taken to clinically check, electronically log, dispense and perform a final technical (accuracy) check before allowing the medicines to be delivered to wards. It excluded the time taken for the prescription to arrive in the pharmacy and the time associated with delivery back to the ward.

The original system caused significant stress for dispensary staff. The department was unable to close at the designated time. Overtime payments were significant. The performance of the dispensary was frequently cited as a contributory factor to delayed patient discharge, delayed medicines administration and missed medicine doses.

Through the application of various ‘lean’ systems change
management techniques, this turnaround time was reduced from over 3 hours to a median of 27 minutes within a couple of months. Over 2 years later, the average turnaround time is about 20 minutes. During this period the Taunton dispensary workload increased by nearly 40%.

Further evidence

Dependencies

The system depends on the quick presentation of work to the dispensary. This is achieved by nursing staff using ward-based photocopiers to produce prescriptions to be sent/collected and dispensed. This is a very different model to that encountered in many hospitals in which pharmacy staff go and transcribe this information. Therefore ward manager cooperation is required to fully implement the changes.

Contacts and resources

Contacts and resources

If you require any further information please email: qualityandproductivity@nice.org.uk and we will forward your enquiry and contact details to the provider of this case study. Please quote reference 11/0028r2 in your email.


NICE has produced guidance on medicines adherence and reconciliation:

National Institute for Health and Clinical Excellence (2009) Medicines adherence: involving patients in decisions about prescribed medicines and supporting adherence. NICE guideline (CG76)

National Institute for Health and Care Excellence (2015) Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes. NICE guidelines (NG5)