



Royal College  
of Physicians

Quality Improvement  
and Patient Safety

# Medication safety at hospital discharge

## Improvement guide and resource



Endorsed by  
**ROYAL  
PHARMACEUTICAL  
SOCIETY**

 Royal College  
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This resource has been endorsed by the Royal College of Nursing until 30 October 2024. Endorsement only applies to the professional content of the resource.

## Declaration

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# Overview

## Medication safety and hospital discharge

When a patient moves between physical locations for the purpose of receiving healthcare, or their care provider changes, we call this a transition of care – a well-known risk factor for medication-related harm.<sup>1</sup> As part of their global patient safety challenge, Medication Without Harm, the World Health Organization (WHO) have identified transitions of care as a key action area to reduce harm.<sup>1</sup>

The WHO have identified five key priorities for improving medication safety at transitions of care, which we have adapted for the hospital discharge transition and have used to inform the suggested areas for improvement within this guide:<sup>1</sup>

- > Implementing formal structured processes for medicines reconciliation when patients are being discharged from hospital.
- > Partnering between patients, caregivers and healthcare professionals at hospital discharge.
- > Prioritising patients at high risk of medication-related harm around hospital discharge.
- > Implementing collaborative medicines optimisation at hospital discharge.
- > Improving the quality and availability of medication-related information at hospital discharge.

The Royal College of Physicians (RCP) has previously published learning resources around the topic of medication safety and hospital discharge<sup>2</sup> and the aim of this guide is to further raise awareness and to help organisations implement improvement projects, with input from patients, carers and colleagues from across health and social care sectors. The guide is aimed primarily at project team leaders but will be a useful resource for the rest of the team.

## What does this guide do?

This guide has been created from a combination of expert opinion, review of the literature and the author's and contributors' own experiences. Many NHS trusts (see [Acknowledgements](#)) volunteered to be involved in the pilot phase, where they tested and provided feedback on this resource.

It explores the quality improvement (QI) journey, using the Model for Improvement<sup>3</sup> – a QI approach commonly used in healthcare. There are many other QI approaches available, however, and this guide can be used alongside whichever you and your organisation prefer. This guide has been structured in a logical order to support the delivery of your project and we have hand-picked the QI tools we think will be most helpful. We have included quotes from the RCP's Patient and Carer Network that highlight issues relating to medication safety at hospital discharge.

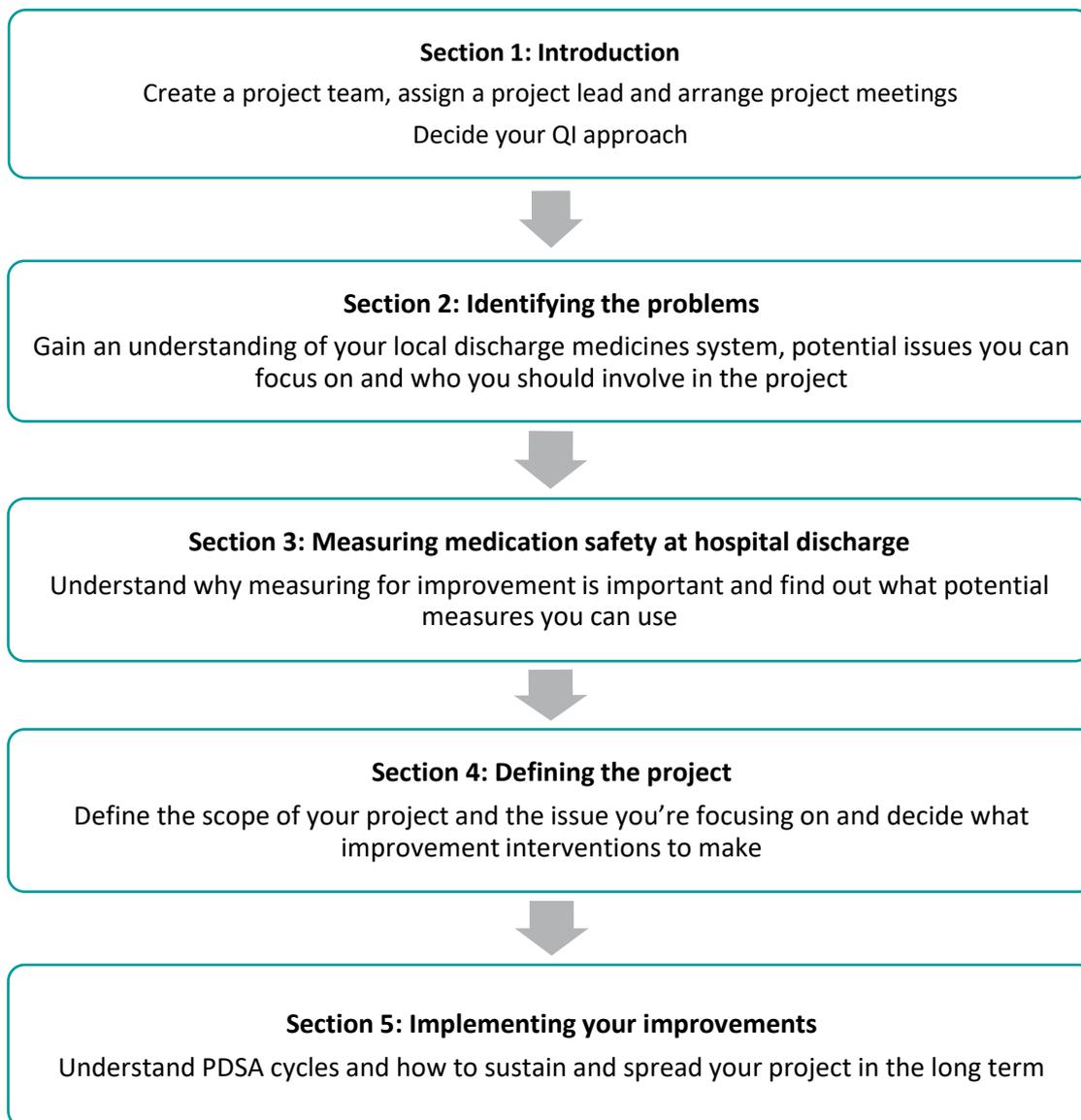
It is important to fully understand the discharge medicines system, diagnose any problems and identify the impact of potential improvements before trying to make any changes. This guide takes you through this journey from beginning to end. By the end of this guide, you and your project team should be able to describe your local discharge medicines system, have defined some key local issues and have a plan to implement improvements and monitor their effects.

The guide focuses on the hospital elements of the discharge process but it is key that representatives from other health and social care sectors are included in your project, to ensure the whole process is understood and that these stakeholders can support and 'own' the development of successful interventions.

# How to use this guide

Start by reading through the headings included in sections 1–5 to orientate yourself with the guide. Then return to the beginning to start working through the guide, page by page.

Figure 1: How to use this guide



*Tip: How to use this guide (Figure 1) is represented linearly but you may find that you visit sections in a different order and return to them at different points. This is normal and encouraged, as it'll help you to continuously adapt your project as it progresses.*

# Section 1

## Introduction

### Who is this guide for?

This guide is for anyone looking to improve medication safety when patients leave hospital. It is aimed at the project team leader and their team and intended to be used as a table-top exercise with the whole project team. The team members will likely have varying levels of QI experience and anyone new to QI or needing a refresher may find the resources in [Useful resources 1](#) helpful, before using the rest of the guide.

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#### Create a project team and assign a project lead

##### Exercise 1

If you haven't already, gather a few people who will become your core project team. Prior improvement experience is not compulsory, but they must have the drive to make changes to the discharge medicines system and have time to do the work for this project. Throughout the project you can discuss who else you'd like to involve (see [The team](#)).

Agree who will be your project lead, although you will ultimately work as a team to ensure success of the project. For professionals in training, educational supervisors should support project leaders throughout the project (see also the RCP's *Supervising quality improvement projects: A guide for supervisors*<sup>4</sup>).

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### Why should you use it?

Medication-related harms are among the most common adverse events after discharge from hospital.<sup>5</sup> The processes involved with discharge medication can be complex and error-prone and targeting this transition to improve medication safety has been a subject of interest for at least a decade.<sup>1,6-11</sup> However, medication errors and adverse drug events following hospital discharge still frequently occur.<sup>12</sup> It is estimated that 50% of adult patients are affected by medication errors and almost 20% experience an adverse drug event post-hospital discharge.<sup>12</sup>

Improving medication safety at transitions of care is a key priority in the WHO's Global Patient Safety Challenge, Medication Without Harm, and we have adapted their five key strategies for improving medication safety at care transitions<sup>1</sup> for hospital discharge (Table 1).

Table 1: Key strategies for improving medication safety at hospital discharge

1. Implementing formal structured processes for medicines reconciliation when patients are being discharged from hospital
2. Partnering between patients, caregivers and healthcare professionals at hospital discharge
3. Prioritising patients at high-risk of medication-related harm around hospital discharge
4. Implementing collaborative medicines optimisation at hospital discharge
5. Improving the quality and availability of medication-related information at hospital discharge

This guide will help you to identify and implement medication safety improvement projects that support these key strategies. You and your team may already have your own ideas but it is important that you go through the process of diagnosing the problems, defining your measurements and interventions and ensuring the sustainability and spread of your project to achieve a successful outcome.

## Using a QI methodology

QI is a systematic process to improve quality, involving identifying areas for improvement, understanding the problem, testing solutions and measuring and evaluating any changes.<sup>13</sup> It is commonly used in healthcare when looking to make improvements. According to the levels of QI experience in your team, you may find it helpful to schedule in a QI education session towards the beginning of your project or signpost the team to information sources (see [Useful resources 1](#)).

### Useful resources 1

- > *ABC of quality improvement in healthcare*<sup>13</sup>
- > *RCPQI: RCP quality improvement resources* – Royal College of Physicians<sup>14</sup>
- > *Improving improvement* (toolkit) – University of Cambridge<sup>15</sup>
- > *Quality improvement made simple* – The Health Foundation<sup>16</sup>
- > *How to get started in quality improvement* (article)<sup>17</sup>
- > *Institute for Healthcare Improvement (IHI)*<sup>18</sup>
  - > If you are a clinician in training, you can register for IHI Open School<sup>19</sup>
- > *The improvement hub* – NHS England<sup>20</sup>

There are many QI approaches available and we have highlighted some commonly used ones below.

### Model for Improvement

The Model for Improvement is based on three questions:<sup>3</sup>

- > What are we trying to accomplish?
- > How will we know that a change is an improvement?
- > What change can we make that will result in improvement?

It also utilises Plan–Do–Study–Act (PDSA) cycles as a way of testing and adapting changes on a small scale to understand their effects,<sup>3</sup> before introducing changes on a larger scale (see [Section 5](#)).

### Lean

This approach focuses on continuous and systematic elimination of anything that does not add value to the patient or process, where value is observed from the patient's perspective.<sup>13</sup> It can lead to improvements in patient satisfaction and experience, as well as eliminating unnecessary work and improving the flow of healthcare processes, ultimately resulting in improvements in safety.<sup>13</sup>

### Experience based co-design (EBCD)

This approach uses patient and staff stories about their experiences to co-design solutions to identified issues.<sup>21</sup> You can use this approach alongside other QI methods to gain qualitative data, which provides rich insights into patients' experiences of the discharge process.<sup>21</sup> For further details see *EBCD: Experience-based co-design toolkit*<sup>22</sup> by The Point of Care Foundation (free registration required to access).

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**Exercise  
2**

**Decide which QI approach you will use**

Your organisation may use a range of QI approaches so find the one that's suitable for your project by asking your QI team or educational supervisors. Make sure everyone in the team is familiar with it and find out if local training is available.

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## How long will the project take?

QI is about continuous improvement and there are no set timescales. We have put together a suggested meeting plan below (see [Table 2](#)) but every team's schedules will be different as it depends on many factors, such as team member availability, resources and project complexity.

Table 2: Suggested meeting plan

Meeting 1	Team introductions, identify QI methodology and stakeholders	Pages 5 to 11
Meeting 2	Understand the system	Pages 12 to 14
Meeting 3	Define the measurements	Pages 15 to 17
Meeting 4	Outline the scope of your project	Pages 18 to 21
Meeting 5	Define improvement initiatives	Pages 22 to 26
Meeting 6	Agree implementation, spread and sustainability	Pages 27 to 29

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**Exercise  
3**

**Arrange project meetings**

Start by arranging six initial meetings (see [Table 2](#)) at least a few weeks apart. You may need longer between some meetings to collect information and the meeting length will depend on whether you choose to complete activities within or between meetings.

You will likely need more meetings than this but getting these initial ones in the diary now should give you and the team the momentum to continue with regular meetings.

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### End of section checklist

By now, you should know:

- > why improving medication safety at the hospital discharge transition is important
- > how this guide can help you on your journey to improve medication safety
- > which QI methodology you will use
- > the dates of your first team meetings.

# Section 2

## Identifying the problems

### Hospital discharge

Hospital discharge involves transferring the patient from hospital to their next destination and care provider. Throughout this project, it is important to ensure that medicines are not considered in isolation but as part of the whole discharge process.

There are four main stages when patients are discharged from hospital:

-  > **Preparing** the patient, their medicines and information about their previous and ongoing care for discharge
-  > **Communicating** discharge plans to patients, carers, families and other health and social care staff
-  > **Transferring** the patient, their medicines and their information
-  > **Receiving** of information by the next care providers, and arrival of the patient and their medicines at the next destination

### The team

A collaborative approach between everyone involved in hospital discharge is key to improving medication safety. It provides an excellent opportunity for teamworking, not just within the hospital but also between healthcare sectors, and for including patients, carers and families at every step. Having a knowledge and appreciation of others' roles in the discharge medicines system is an important step in improving the systems in place.



### Stakeholders

A stakeholder is anyone who will be impacted by, important to or interested in your work. These people will have different roles within your project, depending on their influence and interest, and you will engage with them in different ways. In this section, we will ask you to identify a list of stakeholders, analyse their role in your project and create an engagement plan. Stakeholders to consider involving in your project are shown in [Figure 2](#) but you will be able to come up with more.

**Figure 2: Potential stakeholders**

- > Service users, patients, carers and families
- > Patient experience teams
- > Pharmacy staff
- > Medical staff
- > Nursing staff
- > Medication safety officer
- > Medication safety or patient safety committee
- > Discharge coordinator
- > Social care representatives
- > Allied health professionals
- > Residential home staff
- > Hospital porter
- > Hospital ward clerk
- > Community pharmacy staff
- > General practice staff
- > Integrated care teams (or equivalent)
- > Quality improvement teams (or equivalent)
- > People who can help with data and measurements eg informatics teams, quality improvement experts, data analysts
- > Managers and executive staff



## Stakeholder analysis

This tool helps identify those who need to be involved as well as those who will be affected by your project, allowing you to assess how much time and resource to give to each of them.<sup>23</sup> The stakeholder analysis (see example in [Figure 3](#)) is populated with your stakeholders, allocating them to the sections that most represents their level of influence and interest in the project.

### Useful resources 2

- > [Stakeholder analysis template](#)
- > *Stakeholder analysis* – NHS Education for Scotland<sup>24</sup>

**Figure 3: Example stakeholder analysis<sup>24</sup>**

<b>Influence of stakeholders</b> 	<p><b>Engage and address needs and concerns [2]</b>                      eg hospital executives, commissioners, clinical directors, heads of nursing, chief pharmacist</p>	<p><b>Key players to involve in the project [1]</b>                      This is your core project team and others playing a big role in your project, eg staff and some patients in the area you're making improvements</p>
	<p><b>Keep informed [4]</b>                      eg members of the public, other hospital staff</p>	<p><b>Keep engaged and involve where needed [3]</b>                      eg patients, carers and colleagues from other areas not in your project team, such as staff from different wards, GP, community pharmacy, district nursing and social care</p>
<p><b>Interest of stakeholders</b> </p>		

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### Complete a stakeholder analysis

#### Exercise 4

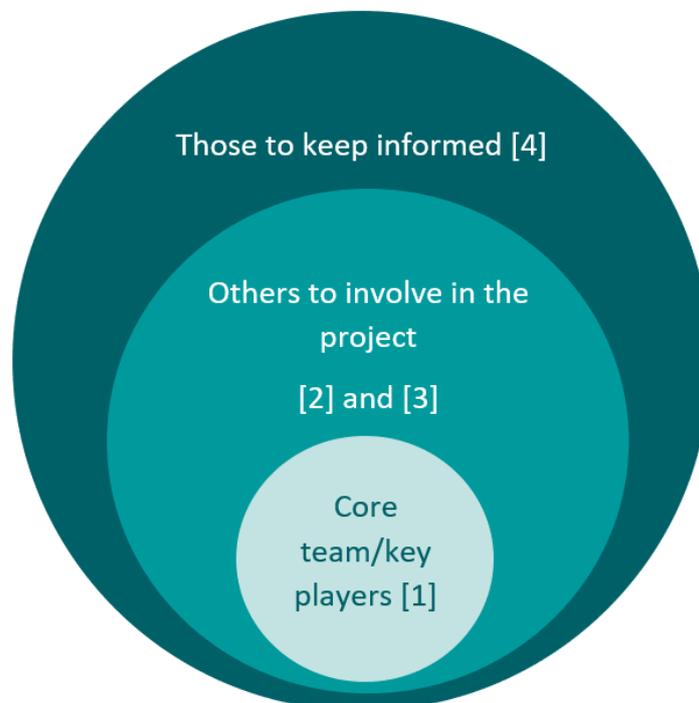
List your stakeholders, using pen and paper or a computer. Think about who is involved in or affected by discharge medicines, including those inside and outside the organisation (see [Figure 2](#) for ideas).

Next, place these stakeholders in the most appropriate category in the stakeholder analysis (see [Figure 3](#)) and add them to your own, using the [template](#). Complete this with your project team and revisit it as your project develops (we will remind you to do this later in the guide) as your stakeholders and their roles may change.

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#### Figure 4: Project stakeholders

This diagram shows how the different groups from the stakeholder analysis relate to each other.



### The core project team

Your core project team are those who are invested in this project and will work as a team to ensure the project is a success (see [Exercise 1](#)). You want to involve people with a range of perspectives and experiences and as a minimum to include those who are integral to or have technical expertise in the process; this is likely to include a doctor, a member of pharmacy staff, a nursing colleague and a patient or patient representative (patient involvement is vital to improving medication safety at care transitions<sup>25</sup> and so patients are essential members of your project team).



*Tip: At this point, ask yourselves – have we included everyone that we need? Revisit this question at various points throughout your improvement journey (see [Exercise 4](#)), remembering that it's OK to include people in the project after you've started.*

---

## Stakeholder needs statements

Completing stakeholder needs statements will help you to understand the discharge medicines system from the perspective of those involved. Speak to your stakeholders and ask each of them to complete this statement, thinking about what they need from the discharge medicines system (you and the team can do this theoretically if you're short on time).

'As a ... I need ... so that ...'<sup>15</sup>

To ensure understanding of the whole transition, make sure you ask stakeholders from outside the hospital and include the needs of patients and carers once they leave hospital. Discuss the answers within your team.

### Useful resources 3

> *Improving improvement* (toolkit)<sup>15</sup>

(See **resources > service users/service stakeholders/service improvers** for more information on creating stakeholder needs statements for your different stakeholders)

## Engaging with stakeholders

To engage your stakeholders, you will need to communicate effectively with them throughout your project.<sup>13</sup> Different stakeholders will need different types of communication, so spend time thinking about how you're going to do this, who will do it and how this will fit in with your project. To help ensure a successful and sustainable project, plan how to embed your work within your organisation's priorities. Involve your medication safety and patient safety teams and others, such as local audit teams, to identify the best way to do this and align to national or local initiatives where possible.

### Create a stakeholder engagement plan

**Exercise 5** Think about the four different groups from your stakeholder analysis in [Exercise 4](#), and decide how you'll communicate with them (eg face-to-face meetings, email, newsletters), who will communicate with them and how often.<sup>26</sup> Write this down in a plan that everyone in the team can access.

## Roles and responsibilities matrix

Thinking about who does what will help you to gain a greater understanding of your discharge medicines system. This tool lists the key steps of the process, allowing you to match them to the individuals who are currently responsible. You can allocate more than one individual to a role, although think about why multiple people are doing the same thing and whether this is necessary or a duplication of work.

### Complete a roles and responsibilities matrix

**Exercise 6** Use this [template](#), which has been pre-populated with key steps and individuals in the discharge medicines system, for you to adapt and complete with your team. Involve as many people as you can and use it as a learning opportunity, allowing everyone to understand the roles that others play in the current process.

## Mid-section checklist

By now, you should know:

- > who your stakeholders are and what their roles are within the project
- > how you'll engage with your different stakeholders throughout the project
- > the main roles and responsibilities involved in your discharge medicines system.

# Understanding the system

Defining and understanding how your discharge medicines system currently works is an important initial step in your QI journey. One way to do this is using a technique called process mapping (also known as a flow chart).

## Process mapping

This involves drawing out (or mapping) the processes and steps that make up the discharge medicines system, enabling you and the team to create a visual picture of how it currently works and how it interacts with other elements of the wider hospital discharge system.<sup>27</sup> [Figure 5](#) gives an example of a process map.

The best way to do this is by observing the system in practice but if you don't have time to do this, use the knowledge and experience of those who know how it works to complete the map. Make sure you think about the system as it currently is, not how you'd like it to be, at this stage.



*Tip: Speak to colleagues in the area(s) you're looking to make improvements in – they will be aware of how the system works, will have come across problems previously and be able to offer valuable advice, or even get involved in your project.*

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Process maps need a defined start and end point (see [Figure 5](#)). Even though you are looking to make improvements around hospital discharge, it is helpful to start the process map at the point of admission. Focus on medicines use but also include other relevant parts, such as making referrals and booking transport, as this allows a greater appreciation of all elements involved in the discharge system.

In [Figure 5](#), we end the process map where the patient is back in their own home and their medicines have been reconciled by their healthcare providers in primary care. You can change this depending on what you want to focus on, which may be a particular destination or outcome.

### Useful resources 4

- > *Improvement tools: flowchart* – University of Cambridge<sup>28</sup>
- > *Flow charts (part 1)* – Institute for Healthcare Improvement<sup>29</sup> (free registration required to access some content)



*Tip: You can create this on paper or electronically. If you're having virtual meetings, some platforms allow multiple people to use an interactive whiteboard at the same time, which could be useful when producing your process map.*

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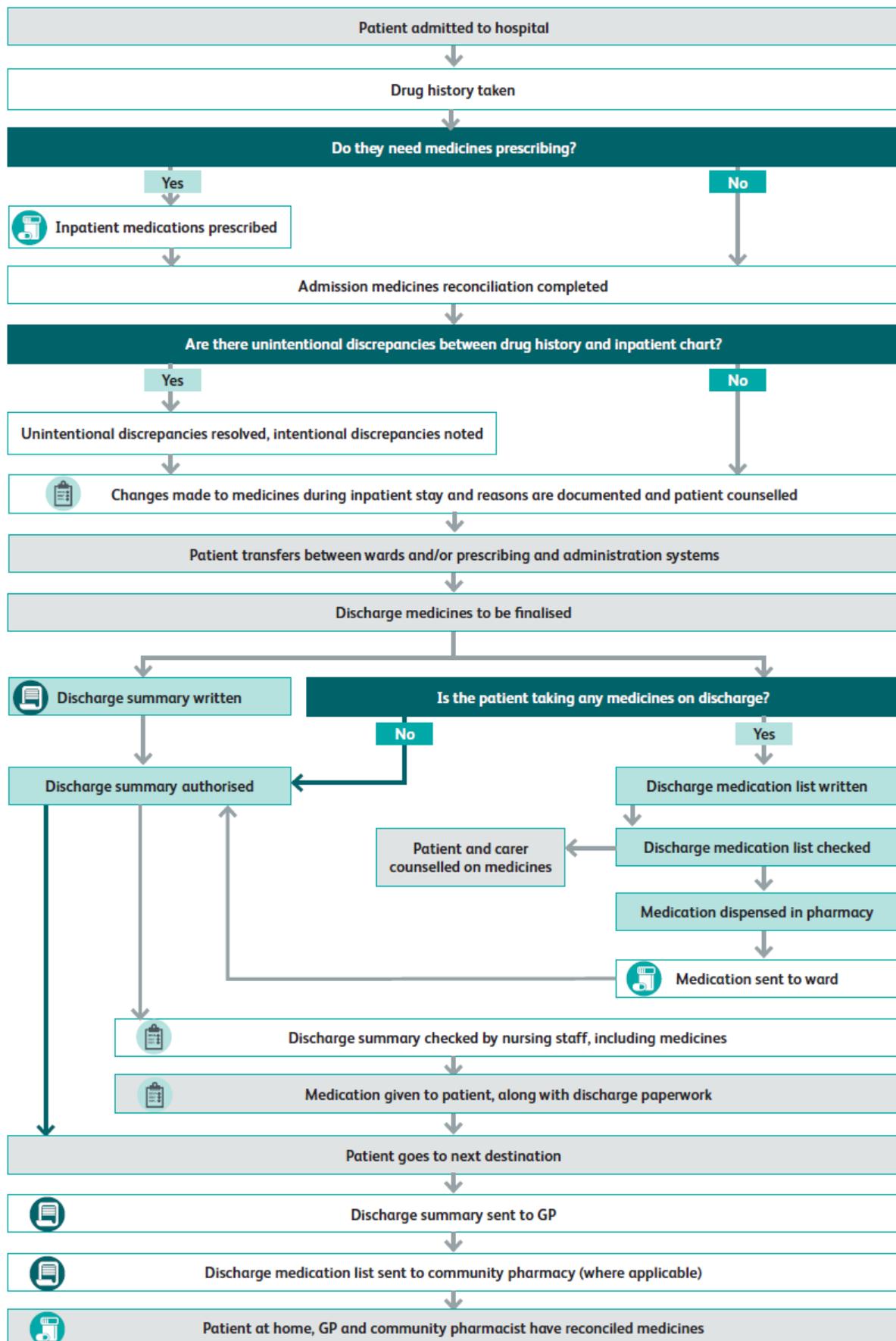
### Exercise 7

#### Create a process map

Get input from a wide range of individuals and resources to fully understand your discharge medicines system. You don't need to go into too much detail at this stage (see [Figure 5](#)) but having an appreciation of the whole process will be useful when it comes to identifying areas to focus on.

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Figure 5: Process map example for hospital discharge medicines system





*Tip: When creating your process map, think about the following:*

- > *Are there any other parts of the discharge process, that may not be directly related to medicines, that are also relevant here (eg making referrals and booking transport)?*
  - > *Are there any other relevant decisions being made? Where do these happen?*
  - > *Where is the patient at each step in the journey?*
  - > *Where are the gaps in your knowledge and who do you need to ask to complete this part of the process?*
- 

## What else can help you to understand the system?

Many of the tools and resources you already have can help you to understand your discharge medicines system, and information from these sources can be added to your process map. These might include:

- > audits and QI projects – find out if any recent audits have been undertaken and review the findings
  - > narrative from patient and staff stories, complaints, compliments and incident reports
  - > previous incident investigations
  - > routinely collected data: ask your informatics and patient experience teams (or equivalent) about hospital discharge data that is already captured, such as medication-related readmissions, medication-related discharge delays and electronic prescribing data.
- 



*Tip: By completing a process map you'll also identify some points of interest or risk. To understand these points in greater detail, you may want to gather your own data by undertaking audits or using other measures – ask your local audit and QI teams for help.*

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See [Section 3](#) for more information on measures. You may find that the data you use to understand the system will be the same data you use to measure improvement.

### End of section checklist

By now you should have:

- > created a process map and have an understanding of your overall discharge medicines system
- > explored the use of data to inform your process map
- > started to identify some areas for improvement (and possibly have agreed an area of focus).

# Section 3

## Measuring medication safety at hospital discharge

The second question in the Model for Improvement asks: ‘How will we know that a change is an improvement?’<sup>3</sup> Measurement is an important part of any QI project and will enable you to see whether any changes you make are resulting in improvements over time.

Once you know the general problem you’re trying to solve, start to think about what you can measure to show whether there is any improvement. There will be people in your organisation who can help with this – find out whether you have local audit teams, QI teams, data analysts or others who can support you at this stage.

There are three types of measures that you will need for your QI project:

- Outcome measures:** reflect the impact on the patient and show the result of your improvement work<sup>30</sup>
- Process measures:** reflect the way your systems and processes work to deliver the intended outcome<sup>30</sup>
- Balancing measures:** reflect what may be happening elsewhere in the system because of the change<sup>30</sup>

You should use a few different measures, from a range of quantitative and qualitative data sources, for your outcome, process and balancing measures.<sup>13</sup> Your measures should reflect what you are trying to achieve<sup>13</sup> (ie your aim statement – see [Section 4](#)) but will also depend on the resources available to you to access and analyse the data.

You will also need to think about measuring things other than safety, such as use of resources, eg costs and staff time, and overall patient and staff experience.

To minimise workload, embed measurement into routine processes where possible, such as through regular audits and utilising existing data sets<sup>1</sup> – speak to colleagues in your informatics and patient experience departments (or equivalent) to find out what data are already available.



*Tip: During the project, keep a note of any events such as major incidents, ward closures, staffing changes and other improvement projects occurring at the same time, including the dates they happen, as these may influence your measures.*

### Useful resources 5

- > *ABC of quality improvement in healthcare*<sup>13</sup> – see Chapter 9: Measurement
- > Making data count – NHS Improvement<sup>31</sup>

**Table 3: Examples of ways to measure medication safety at hospital discharge**

See [Appendix 1](#) for more information on each of the measures listed below. Find out which of these are available in your organisation and how the data is collected. Depending on your project aim, these measures may be process, outcome or balancing measures and you'll be able to come up with your own measures too.

## Quantitative measures

- > Percentage of patients receiving medicines reconciliation at admission or discharge<sup>1,32</sup>
- > Percentage of patients with at least one outstanding unintentional discrepancy on the discharge medication list<sup>1</sup>
- > Proportion of discharge summaries with complete medication information fields
- > Mean time taken to process discharge medication lists
- > Mean time between the individual being ready for discharge and authorisation of discharge medication
- > Proportion of discharge medication lists sent to pharmacy for screening and/or dispensing after a certain time
- > Proportion of patients with at least one error in the discharge medicines bag

### Hospital-wide measures

- > Proportion of medication-related readmissions after X days of discharge<sup>33</sup>
- > Proportion of emergency department (ED) visits or hospital admissions for medication-related problems<sup>33</sup>
- > Length of patient stay
- > Number of discharge delays and reasons

### Measures requiring data from other organisations

- > Proportion of patients attending follow-up appointments relating to medicines, eg heart failure clinic for medication review
- > Timeliness of first dose administration after hospital discharge<sup>34</sup>
- > Number of eligible patients successfully referred to or attending a community discharge medicines review (see [Discharge medicine community reviews](#))
- > The proportion of patients on medicines discharged from a care setting who have a reconciled list of their medicines within 1 week of the GP practice receiving the information<sup>35</sup>
- > Accuracy and promptness of actioning medication changes suggested by the hospital<sup>36</sup>
- > Proportion of patients experiencing adverse drug events after hospital discharge

## Qualitative measures

Qualitative measures cannot be used to measure prevalence or incidence of medication errors or medication-related harm,<sup>1</sup> but they are useful in giving narrative to your findings and will complement quantitative measures. We've suggested some examples of qualitative data sources below, although you may find some can also provide quantitative data:

- > Patient and/or staff satisfaction surveys<sup>33</sup>
- > NHS Patient Surveys<sup>37</sup>
- > Medication incident reports<sup>1</sup>
- > Morbidity and mortality reviews<sup>1</sup>
- > Patient or family complaints<sup>1</sup>
- > Coroner's reports
- > Informal feedback channels, eg from clinicians in other sectors, patients and families

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### Scope out potential measures

At this point, you may not know all the measures you'll need but you can start scoping out potential measures if you know the general area you'll be making improvements in. Thinking about measures now can also help to inform your process map (see [Exercise 7](#)) and identify potential interventions.

#### Exercise 8

Discuss potential measures at your next team meeting and record a measurement plan (you can do this on a computer or on paper), including:<sup>38</sup>

- > name of measure
  - > type of measure (process, outcome, balancing)
  - > definition
  - > why you're measuring it
  - > how often data will be collected
  - > the calculation you're using (numerator, denominator)
  - > how data will be collected (including source)
  - > who will be collecting the data.
- 

## Recording your measures

When you know what you're going to measure, you'll need to collect and present the data.

- > Start collecting data before you implement your interventions (this is known as baseline data). It doesn't matter if this is collected retrospectively but you need this to be able to see whether improvements are being made once you've implemented your interventions.
- > Use continuous data (rather than just recording data before and after) as this will make it easier for changes to be detected.<sup>13</sup> Presenting data like this will also help to keep your stakeholders engaged, as they can clearly see any changes over time.
- > Two common ways of presenting continuous data are a run chart or a statistical process control (SPC) chart.<sup>13</sup> Refer to [Useful resources 5](#) for more information.
- > Automate data collection where possible. This makes it easier to continually monitor improvement and therefore develop your improvement project and inform the direction of future improvement initiatives.

### End of section checklist

By now you should have:

- > knowledge of the differences between outcome, process and balancing measures, alongside quantitative and qualitative data and why you should include them all
- > a general idea of the measures you will use in your project.

# Section 4

## Defining the project

### Defining the scope of your project

You need to be specific when defining the remit of your QI project to ensure it's manageable. Many QI projects fail because they're not specific enough and try to do too much at once. When defining the scope of your project, think about:

- > The [five key strategies](#) – these are key areas of focus for improvements in medication safety at hospital discharge
- > The clinical area – are you focusing on a particular physical location, condition or medication?
- > The part of the discharge medicines system you have decided to focus on – you've already looked at the whole process but which part of the process is your problem most likely to be originating from? Start by deciding if it is within preparing, communicating, transferring or receiving.

### Generating ideas

These tools can help you and the team come up with ideas for an area of focus for your project and start identifying potential improvements. Read through all the tools below and use those that you think will be helpful. You may find that you come up with ideas for potential interventions at the same time so make sure you keep a note of these, to come back to later in the guide.

#### Self-assessment tool

A specific [self-assessment](#) for medication safety at hospital discharge has been designed to help project teams identify areas for potential improvements.

#### Swimlane diagram

A swimlane diagram is a more detailed process map, allowing you to focus on a specific part of the discharge medicines system and understand the roles of individuals. Use your roles and responsibilities matrix (see [Exercise 6](#)) to help you with this tool. By working to understanding parts of the discharge medicines system in more detail, this can highlight potential areas for improvement.

#### Useful resources 6

- > [Institute for Healthcare Improvement](#)<sup>18</sup> > [Swimlane diagram](#)
- > [Improving improvement \(toolkit\)](#) – University of Cambridge<sup>15</sup> > [Swimlane diagram](#)

#### Other ways to generate ideas:

- > Use information from other QI tools in this guide eg process map, interviews (if using [EBCD](#)).
- > Brainstorm – one resource is available from East London NHS Foundation Trust.<sup>39</sup>
- > Look at what your measures are telling you (see [Section 3](#)).
- > Create a driver diagram (see [Exercise 10](#)).



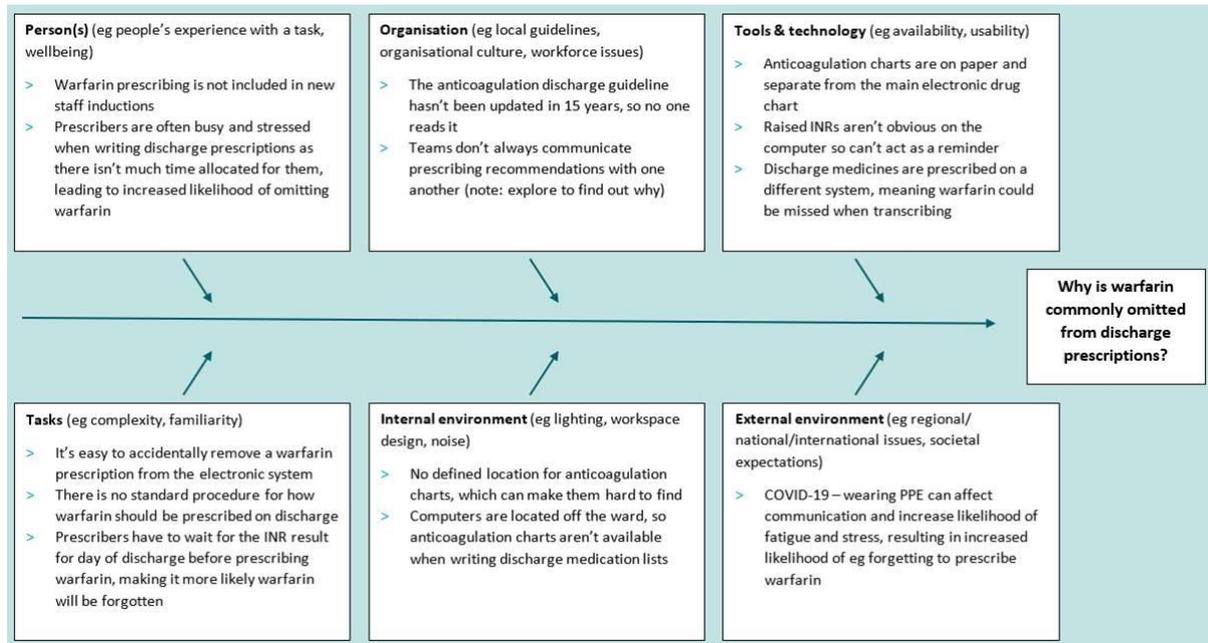
*Tip: You may find that you are coming up with improvement ideas as you identify potential issues. This is great: make sure you keep a note of them as a team, to revisit when you're ready to start planning your improvement initiatives.*

---

## Cause-and-effect diagram (also known as a fishbone diagram)

When you know which problem you're trying to solve, this tool will help you to investigate the reasons why the problem might be happening in more detail, which can lead to identifying potential solutions. If you have identified multiple problems and aren't yet sure which to focus on, complete a cause-and-effect diagram for each problem and discuss these with your team.

**Figure 6: Example cause-and-effect diagram – potential reasons why warfarin may be commonly omitted from discharge medication lists in an inpatient medical ward**



The headings used in Figure 6 are taken from the Systems Engineering Initiative for Patient Safety (SEIPS) 2.0 framework.<sup>40</sup> Figure 6 portrays the problem in a simplified version so it can be easily visualised, but it's important to remember that all parts of the system (person(s), organisation, tools and technology, task, internal environment and external environment) are interlinked.

### Useful resources 7

- > [Cause and effect diagram \(fishbone\)](#) – resource from East London NHS Foundation Trust<sup>41</sup>
- > [Cause and effect diagram template](#)

## Plan on a page

Now is the time to collate your ideas and all the work you've done so far and document a plan for your project. First, you should define the aim of your project.

### Aim statement

Your aim statement is a specific statement about what you want the project to achieve. It's important that you make it SMART (Specific, Measurable, Attainable, Realistic, Time-framed).<sup>42</sup> Think about what you want the outcome of your project to be and the processes involved, ensuring these are things you're able to measure (see [Section 3](#)).

### Useful resources 8

- > [RCP Quality Improvement hub](#)<sup>14</sup> > Quality Improvement Tools > Setting a SMART question – Royal College of Physicians
- > [Aim statements](#) – NHS Lothian<sup>43</sup>

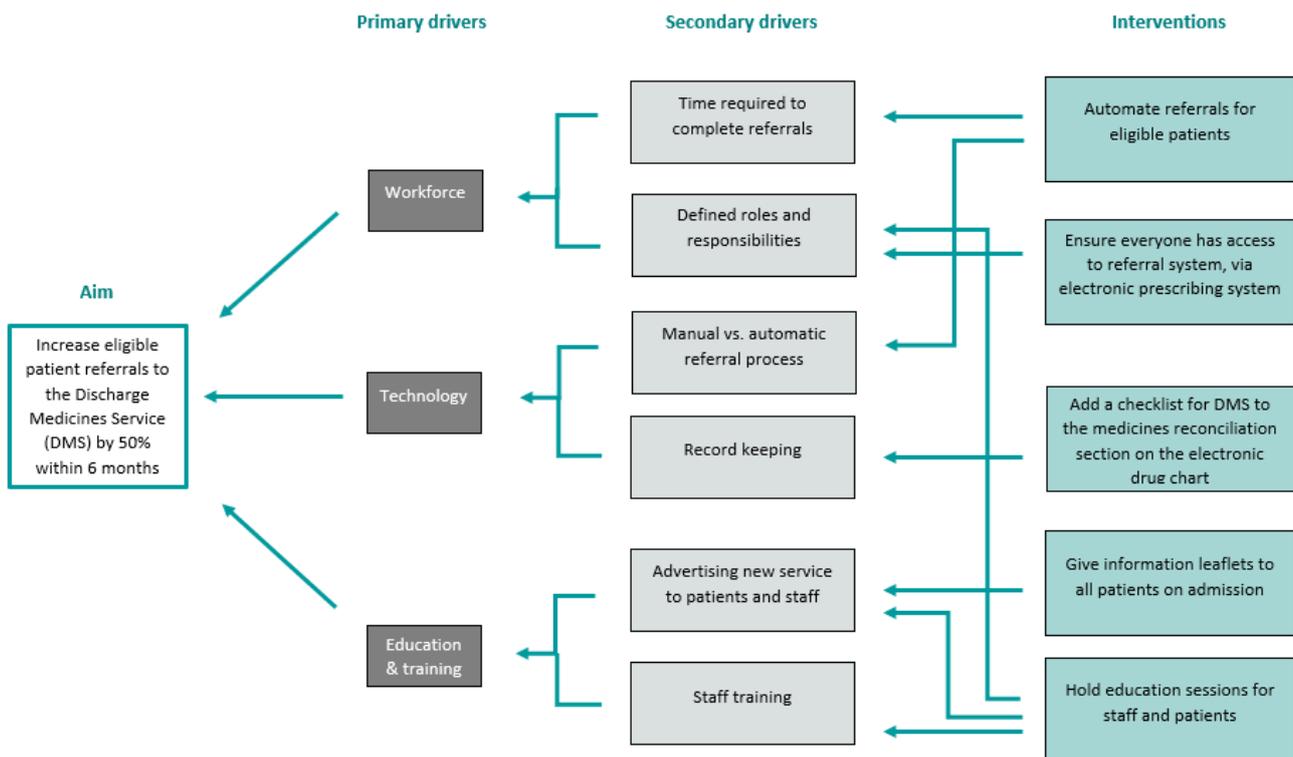
<b>Exercise 9</b>	<b>Define your aim statement</b> Define the scope of your project by bringing together your ideas, previous QI tools and all the other information you've gathered so far and creating your aim statement.
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### Driver diagram

Once you have an aim statement, you can start populating a driver diagram. This diagram will be a useful summary of your whole project ('plan on a page') and will also help when generating ideas for potential interventions.

It is a way of visually describing what the team thinks will 'drive', or contribute to, achieving the project aim by looking at the relationship between the aim, the primary drivers (the things that directly contribute to achieving the aim), the secondary drivers (relevant components of the primary drivers) and the specific improvement ideas for each secondary driver.<sup>44</sup>

**Figure 7: Example driver diagram**



### Useful resources 9

- > *QI toolkit: driver diagrams* – West of England Academic Health Science Network<sup>45</sup>
- > *Driver diagrams* – East London NHS Foundation Trust<sup>46</sup>

---

### Create your driver diagram

#### Exercise 10

Create your own driver diagram, using [Figure 7](#) as an example. You can do this on the computer or on a piece of paper but make sure you complete it as a team. You may find you can only fill in some parts at this point but you can add to the driver diagram as your project develops. Revisit your driver diagram at the end of Section 4, to populate your interventions.

---

### Mid-section checklist

By now, you should have:

- > an agreed area of focus within the discharge medicines system
- > defined SMART project aim(s)
- > started to populate a driver diagram for your project, with primary and secondary drivers.

# Making improvements

Your interventions are the changes you will introduce to try to make improvements. To get you started, we've included ideas below within the five key strategies for improving medication safety at hospital discharge, although you'll find many will overlap a few of these key strategies. See [Appendix 2](#) for further ideas and case studies.

You may already have ideas for interventions, but aim to use a few different ones in your project. The number of interventions you have will depend on your project aim and the resources available to you but make sure you plan a few different interventions, even if they change as your project progresses.

## 1. Implementing formal structured processes for medicines reconciliation when patients are discharged from hospital

Medicines reconciliation (MR, also known as medication reconciliation) is the process of creating the most accurate list possible of a person's medicines and comparing this list against what is currently prescribed, with the aim of providing correct medicines to patients at all transition points.<sup>47</sup> MR can identify discrepancies and mitigate the risk of harm occurring.<sup>35</sup>

Discharge MR involves using the patient's drug history (the list of medicines the patient was taking before admission) and inpatient drug chart to create a list of medicines the patient should be taking when they leave hospital (discharge medication list). This includes ensuring any intentional discrepancies are accounted for and any unintentional ones resolved, listing any new medicines, ensuring appropriateness and safety and communicating this information effectively to patients and carers and the patient's next care provider(s).<sup>48</sup>

***'A written note, in language the patient and carer can understand, about diagnosis and medication is vital both at discharge and for subsequent care; not everyone can access an electronic version especially in an emergency, eg ambulance crew'*** – RCP Patient and Carer Network member

Discharge medication lists rely on accurate MR processes at all stages of the hospital stay, so interventions to improve MR at any transition can improve medication safety at the hospital discharge transition.

Successful MR interventions will typically:<sup>1,49</sup>

- > involve multidisciplinary collaboration, including intensive pharmacy staff involvement
- > target interventions to patients at high risk of medication-related harm
- > involve the patient and address communication between healthcare professionals and patients
- > address communication between healthcare providers, including the use of technology.

### Useful resources 10

- > Ideas and case studies – [Appendix 2](#)
- > *Improving the quality of medicines reconciliation. A best practice resource and toolkit*<sup>50</sup>
- > WHO high 5s project – medication reconciliation<sup>51</sup>

## 2. Partnering between patients and caregivers and healthcare professionals at hospital discharge

Partnering between patients, families, carers and healthcare professionals is essential for improving medication safety, enabling agreement on medication treatment plans and ensuring medicines can be managed safely and patients have accurate medication lists.<sup>1</sup>

***'If the patient requires, is there someone who can monitor and help with medication?'***

– RCP Patient and Carer Network member

Changes to medicines in hospital can lead to patients experiencing disruption to knowledge, routine and capability, which can affect how they manage their medicines.<sup>52</sup> Not everyone is provided with the necessary information about their medicines when leaving hospital, including what the medicine is for, how to take it and explanations of the side effects,<sup>53</sup> and a common request after discharge from hospital is for medication education or information.<sup>54</sup>

### Useful resources 11

- > Ideas and case studies – [Appendix 2](#)
- > *Using patient experience for improvement* (toolkit) – Point of Care Foundation<sup>55</sup>

## 3. Prioritising patients at high risk of medication-related harm around the hospital discharge transition

It is important that where necessary you prioritise those at high risk of medication-related harm for medicines reconciliation or enhanced support, such as post-discharge care.<sup>1</sup> Clinical judgement is required when identifying such patients but local organisations can help, for example by developing referral criteria for services such as the NHS Discharge Medicines Service (see [Appendix 2](#)), taking into account the needs of the local populations.<sup>56</sup>

Those considered most vulnerable during transitions from hospital to primary care are older and frail patients and patients with multiple conditions and on multiple medicines.<sup>57</sup> Medicine classes most commonly reported with adverse drug events post-hospital discharge are cardiovascular, analgesic, antibiotic and antidiabetic medicines.<sup>12</sup> Do you know which medicines are associated with the most harm when patients are discharged from your organisation? If not, finding out could help you understand your discharge medicines system better (see [What else can help you to understand the system?](#)).

Also consider others who would benefit from greater support or changes to the way things are usually done, such as those with hearing or visual impairments, those who have trouble remembering lots of information, or those who experience a language barrier.

Evidence shows that useful interventions to promote successful care transitions for older people typically:

- > bridge the care transition (ie start during hospital admission and are continued post-discharge), as they are more likely to support successful transitions and reduce adverse outcomes, including reducing hospital readmissions<sup>58</sup>
- > have multiple components, as they are significantly more effective than single components, with sustained effects<sup>58</sup>
- > use self-management coaching or education.<sup>58</sup>

#### Useful resources 12

- > Ideas and case studies – [Appendix 2](#)
- > *NHS Discharge Medicines Service: Toolkit for pharmacy staff in community, primary and secondary care.*<sup>56</sup>

## 4. Implementing collaborative medicines optimisation at hospital discharge

Medicines optimisation is a person-centred approach to safe and effective medicines use, to ensure patients obtain the best possible outcomes from their medicines.<sup>11</sup> Medicines optimisation requires input from many members of the team, so interprofessional collaboration is essential, and it's important that everyone's views and perspectives are considered when making improvements. Pharmacy professionals are experts in using medicines and should be involved, but the discharge medicines system depends on many more individuals with diverse roles (see [The team](#)).

#### Useful resources 13

- > Ideas and case studies – [Appendix 2](#)
- > [Roles and responsibilities matrix template](#)
- > *Modern ward rounds – good practice for multidisciplinary inpatient review*<sup>59</sup>
- > *ASHP-APhA medication management in care transitions best practices*<sup>6</sup>

***'It is important to raise questions about medicines with the patient before discharge, such as where they will store their medicines and if they have a list of current medication that is updated and kept to hand at all time? I find these sorts of more personal questions are also great at uncovering wider issues for their understanding of medicines, including how and when they should take them.'*** – RCP Patient and Carer Network member

## 5. Improving the quality and availability of medication-related information at hospital discharge

Improving the quality and availability of information at hospital discharge is another key aspect of improving medication safety.<sup>1</sup> An England-wide audit, looking at the quality of information provided on discharge summaries, found that only 49% of newly started medicines, 39% of dose changes and 57% of stopped medicines in hospital had a reason documented.<sup>60</sup>

***'There is nothing worse than exiting a hospital with a bulging bag of medicines, each with their own mini label of instructions, but no overall guide'*** – RCP Patient and Carer Network member

Improving the quality of discharge summaries can reduce medication errors<sup>9</sup> and you should be able to share complete and accurate information about medicines between patients, carers and healthcare providers, allowing them to receive, document and act upon the information.<sup>11</sup> Examples of ways to do this include use of patient-held medication records, information technology systems to facilitate reconciliation processes and electronic health records.<sup>1</sup>

***'While the move to electronic records is in many ways an improvement, the lack of records available for family members and patients created extra stress for us. There were times when my Dad took the odd extra tablet because of this'*** – RCP Patient and Carer Network member.

Many hospitals use paper-based systems for prescribing and recording medicines administration but, even as many hospitals are moving towards electronic systems, local processes should be robust

enough to ensure quality information is always provided at hospital discharge, even when electronic systems are unavailable.

Medication changes should always be explicitly stated on the discharge summary. Equally if no changes are made, it is good practice to state this, to avoid confusion and help identify any unintended changes. You may find this is a good opportunity to review the content and layout of your discharge summaries.

#### Useful resources 14

- > Ideas and case studies – [Appendix 2](#)
- > *Improving discharge summaries – learning resource* – Royal College of Physicians<sup>2</sup>
- > *Keeping patients safe when they transfer between care providers – getting the medicines right* – Royal Pharmaceutical Society<sup>7</sup>
- > *EDischarge summary standard v2.1* – Professional Record Standards Body<sup>61</sup>

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#### Exercise 11

##### Gather potential interventions

As a team, discuss all potential interventions and add these to your driver diagram. Use the tools we've covered so far to help you bring together ideas in your discussion.

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## Impact matrix

This is a tool to help you decide which interventions to focus on, by comparing the effort required to implement the intervention with the predicted impact of the intervention.<sup>62</sup> Each potential intervention is plotted on a matrix, comparing effort required and predicted impact (see [template](#)), helping you and the team to decide which interventions to implement.

---

#### Exercise 12

##### Complete an impact matrix

Plot all your potential interventions on an impact matrix (use our template [here](#)). If it gets quite crowded, you may find it easier to assign each intervention a number, which you can plot on the grid instead.

---

When deciding which interventions to implement first, focus on just two or three to begin with. You can add more later but having too many at any one time might make the project too complex and make it harder to identify which ones are leading to improvements.

---

#### Exercise 13

##### Decide interventions

As a team, decide which interventions you're going to implement, using the impact matrix and your driver diagram to help.

---

## Forcefield analysis

Now you know which interventions you're going to implement, you'll want to make them as successful as possible. Using a forcefield analysis can help you to do this by identifying factors that will work for (driving forces) and against (restraining forces) a proposed change.<sup>63</sup>

By identifying these forces, you can look to reinforce driving forces and reduce restraining forces,<sup>63</sup> which will help you to understand how to make your interventions more successful.

## Useful resources 15

- > *Force field analysis* – West of England Academic Health Science Network<sup>63</sup>

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### Review the project so far...

- > Now you know your interventions, you need to decide what you're going to measure to show improvement. Return to your measurement plan from [Exercise 8](#), making sure your measures are continuous, able to be measured and relevant to your aim

#### Exercise 14

This is also a good opportunity to review and adapt your:

- > driver diagram – *do your interventions address the problem you're trying to solve?*
- > stakeholders – *do you have the right people involved?*
- > methods used to engage stakeholders – *are you sharing the right information in the best way?*

---

## End of section checklist

By now you should:

- > know which interventions you are going to implement
- > have reviewed and optimised your driver diagram, project stakeholders and stakeholder engagement plan
- > have completed versions of all QI tools from this guide that are relevant to your project
- > have a completed measurement plan.

# Section 5

## Implementing your improvements

### Testing and adapting

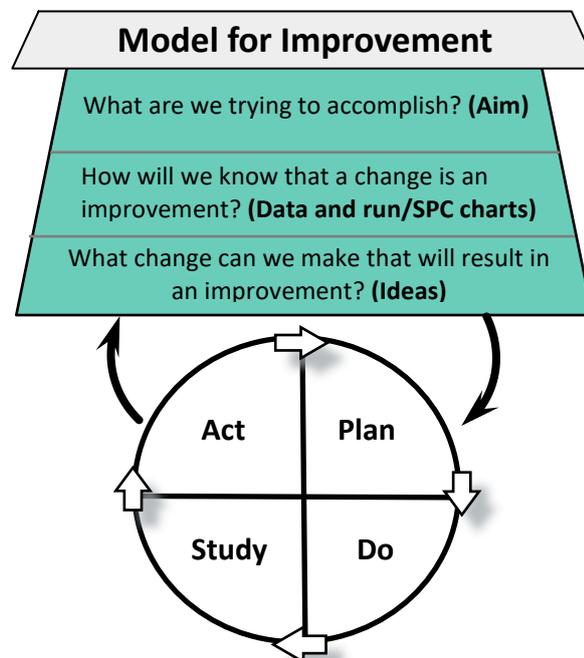
By now you'll have an idea of what you're trying to improve, how you'll measure improvement and the interventions you'll put in place to do this – so it's time to put your ideas into practice.

#### PDSA cycles

Plan–Do–Study–Act (PDSA) cycles are a useful method for testing and adapting your interventions. They enable you to start on a small scale, seeing if the interventions work and if any changes are needed before implementing on a larger scale. [Figure 8](#) shows how they fit into the Model for Improvement but PDSA cycles can be used with many other QI approaches.

- > **Plan:** What will happen if you test doing something different? Think about what you predict will happen, how you'll test the intervention and how you'll collect data.<sup>13</sup>
- > **Do:** Try out the intervention. Document any problems and observations and collect data.<sup>13</sup>
- > **Study:** Did what happened fit what you expected? Analyse your data and summarise what you've learnt.<sup>13</sup>
- > **Act:** Based on what you've learnt, what comes next? Think about the next cycle – what needs to be changed? Are you ready to test on a broader scale?<sup>13</sup>

Figure 8: Model for Improvement and PDSA cycles<sup>64</sup>



#### Testing interventions on a larger scale

As you learn more about your interventions, you will develop new PDSA cycles and test your interventions on larger scales ([Figure 9](#)). Make sure to keep a record of what happens at each stage of the cycle, including what you learnt and why changes were made.

**Figure 9: PDSA cycle evolution for one intervention<sup>64</sup>**

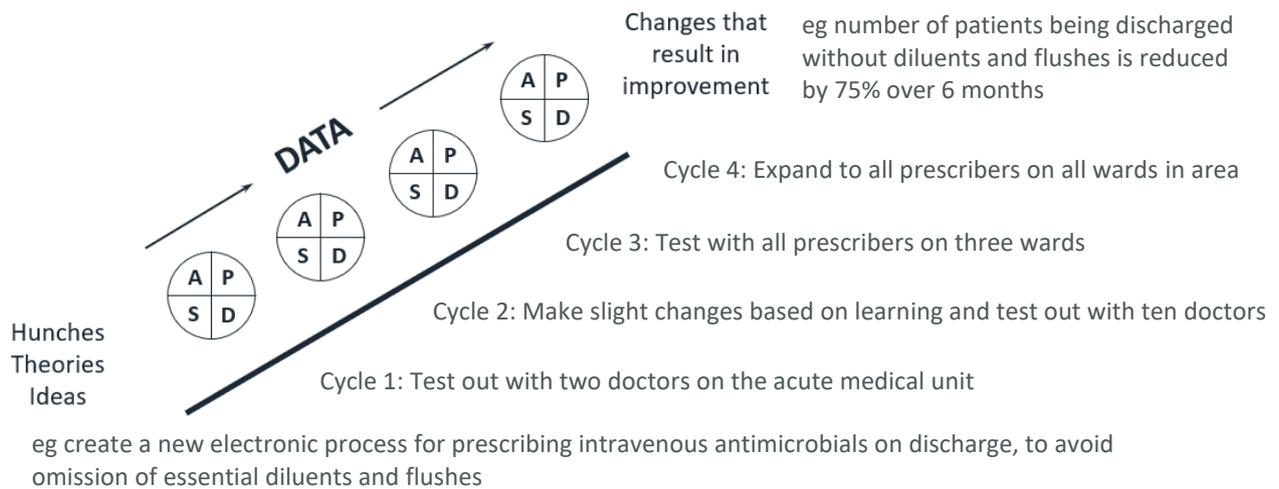
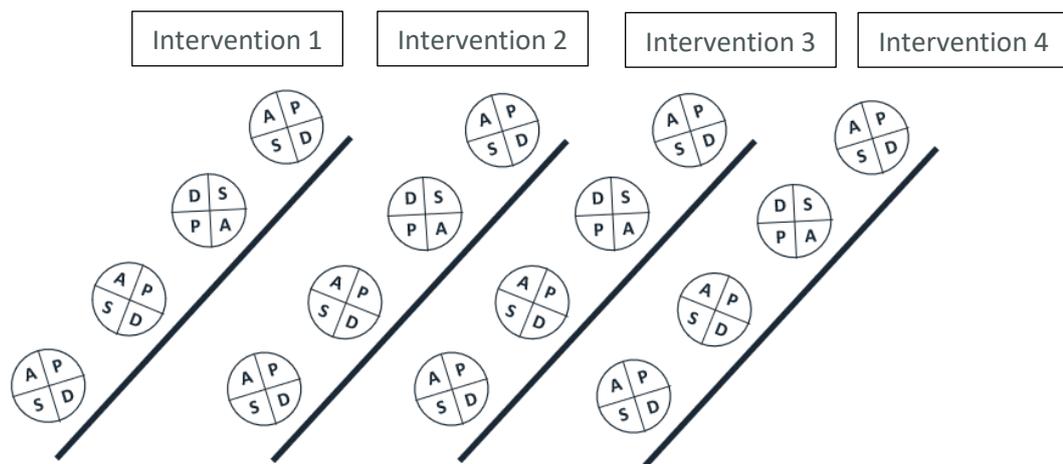


Figure 9 shows an example of how PDSA cycles can evolve, but with your multiple interventions you'll eventually end up with something that looks more like Figure 10. Make sure you stagger your interventions, rather than starting them all at once, otherwise it will be hard to identify which ones are responsible for changes in your measurements.

**Figure 10: PDSA cycle evolution for multiple interventions<sup>64</sup>**



**Useful resources 16**

- > Plan, Do, Study, Act (PDSA) cycles and the model for improvement > NHS England and NHS Improvement<sup>65</sup>

This may look daunting at first but remember, you are in control of the timeline of your project, including when to introduce new PDSA cycles. Start with one PDSA cycle and subsequent cycles will naturally follow, depending on what you discover along the way.

**Exercise 15**

**Start PDSA cycles**

Draw out a PDSA cycle for your first intervention and populate the Plan section. Fill in the Do, Study and Act sections as your project progresses.

Repeat this for each intervention and remember to keep a note of what you learn from each PDSA cycle and your decisions.

When you're confident that your intervention is effective, it is important to maximise the chance of this being maintained by planning how the intervention will be sustained in the long-term.

## Sustaining improvement

Sustainability is when a change becomes normal practice.<sup>66</sup> Some points to consider when planning your project, to help ensure sustainability:<sup>13</sup>

- > What is the hook? Consider why this project is important, what it adds and who it helps.
- > Highlight the positives and focus on benefits to patients and staff.
- > Publicise your work, making sure people know the important points and how they can help.
- > Align the project to organisational (or national) priorities where possible.
- > Automate data collection where possible and share the results.
- > Continually seek feedback from stakeholders and review how you're engaging with them.
- > As your project grows, you may need more or different people. Ensure you have the right people on board by continually reviewing who is involved in your project.
- > Recruit people to champion the interventions in local areas and at senior management level.
- > Make the interventions as simple as possible for those involved and try to embed them into routine practice.
- > Identify and manage barriers to implementation and sustainability.

You'll also need a long-term plan for when your interventions are ready to become normal practice. Consider the following when discussing this with your team:

- > What will the next phase of the project look like?
- > Will someone else take over the project and develop new interventions?
- > What measures are you going to use for continuous tracking of your interventions?
- > Who will be responsible for collecting and analysing data?
- > Where will the data from these measures be reported?
- > How will any issues be escalated, and to who, when needed?

### Useful resources 17

- > *Ensuring success and sustainability of a quality improvement project* (journal article)<sup>66</sup>
- > *The spread and sustainability of QI in healthcare* – East London NHS Foundation Trust<sup>67</sup>
- > *ABC of quality improvement in healthcare*<sup>13</sup> – see chapter on 'Embedding and sustaining a solution'

Continue to have regular project team meetings, reviewing data and adapting your project where needed and enjoy making a difference in your local areas, for your colleagues and for your patients.

## Writing up your project

Find out how your organisation prefers to write up QI projects and ensure the project team are familiar with what's required in the early stages of the project. This will also help you to identify any parts you may have missed. An example of a useful template for QI projects is the Revised Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0).<sup>68</sup>

### End of section checklist

By now you should:

- > know how you are going to implement your interventions
- > know how to use PDSA cycles to test and adapt your interventions
- > have plans in place to ensure sustainability of your improvement project.

# Acknowledgements

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## Task and finish group

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Gemma Wareing, chief pharmaceutical officer's clinical fellow 19/21

Dr Katharine Weetman, research fellow, University of Warwick

## Pilot sites

Glan Clwyd Hospital, Betsi Cadwaladr University Health Board

Gloucestershire Hospitals NHS Foundation Trust

Great Ormond Street Hospital for Children

Guy's and St Thomas' NHS Foundation Trust

Leeds Teaching Hospitals NHS Trust

Sheffield Teaching Hospitals NHS Foundation Trust

University College London Hospitals NHS Foundation Trust

## Other contributors

Focus group attendees

Thames Valley Higher Specialty Training Trainee Physician Committee

# Appendices

## Appendix 1: Measurements of medication safety at hospital discharge

Quantitative measures		
Summary	How to measure	Useful information
Percentage of patients receiving medicines reconciliation (MR) at a care transition <sup>1,32</sup>	$\frac{\text{Number of eligible patients receiving MR}}{\text{Number of eligible patients admitted}} \times 100$	<ul style="list-style-type: none"> <li>&gt; Measure at any care transition (eg admission, discharge) as they can all provide insight into how well prepared you are for discharge</li> <li>&gt; Eligibility for MR depends on local guidelines</li> <li>&gt; This data may already be available, eg from quality indicators that focus on MR at admission to an acute care setting and at the GP surgery after hospital discharge<sup>35</sup></li> </ul>
Percentage of patients with at least one outstanding unintentional discrepancy on the discharge medication list <sup>1</sup>	$\frac{\text{Number of patients in sample with at least one outstanding unintentional discrepancy}}{\text{Number of patients in sample}} \times 100$	<ul style="list-style-type: none"> <li>&gt; Unintentional discrepancies can include errors of omission, commission and description<sup>51</sup></li> <li>&gt; Define those that you're measuring, eg omitted medicines or instructions, wrong dose, wrong drug</li> <li>&gt; A random sample of at least 30 patients is suggested<sup>1</sup></li> <li>&gt; May require extensive resources to measure</li> </ul>
Proportion of discharge summaries with complete medication information fields	$\frac{\text{Number of discharge summaries with appropriately completed medication information fields}}{\text{Total number of discharge summaries}} \times 100$	<ul style="list-style-type: none"> <li>&gt; Appropriate completion should be compared to Professional Record Standards Body standards<sup>61</sup> or your organisation's own standards</li> <li>&gt; Requires an independent review and may be resource intensive</li> <li>&gt; You can adapt this measure for other types of information and it can be used as a process or a balancing measure</li> </ul>
Mean time taken to process discharge medication lists	$\frac{\text{Time taken (in hours) for all discharge medication lists}}{\text{Total number of discharge medication lists}}$	<ul style="list-style-type: none"> <li>&gt; Specify the start and end points of the process you're measuring, eg from entering to leaving the pharmacy dispensary</li> <li>&gt; Many pharmacies will already collect this data, either electronically or through audits</li> </ul>
Mean time between being ready for discharge and authorisation of discharge medication	$\frac{\text{Total time taken for all patients}}{\text{Number of patients}}$	<ul style="list-style-type: none"> <li>&gt; Define time assessed as ready for discharge – this could be the time verbal consensus was obtained on the ward round or documented in the medical notes – but your approach must be consistent</li> <li>&gt; Many electronic systems will record the time that discharge medication lists and summaries are authorised and either can be used as your end point</li> </ul>

Summary	How to measure	Useful information
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Proportion of discharge medication lists sent to pharmacy for screening and/or dispensing after a certain time in the day	$\frac{\text{Number of discharge medication lists dispensed in pharmacy after a certain time}}{\text{Total number of discharge medication lists dispensed in pharmacy at any time of the day}} \times 100$	<ul style="list-style-type: none"> <li>&gt; When a large proportion of discharge medication lists are processed in pharmacy later in the day, eg after 4pm, when there are usually less staff available, this can lead to increased pressure on pharmacy services and knock-on effects on patient's discharges</li> <li>&gt; Use pharmacy tracking system data (where available)</li> </ul>
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Proportion of patients with at least one error in the discharge medicines bag	$\frac{\text{Number of patients with at least one error in discharge medicines bag}}{\text{Number of patients included}} \times 100$	<ul style="list-style-type: none"> <li>&gt; You will need to compile a list of the errors to include in data collection, eg wrong drug, wrong/no instructions, wrong quantity, wrong patient</li> </ul>
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### Hospital-wide measures

These measures may be most useful as balancing measures and you will need help with obtaining this data. Speak to your informatics teams to work out the best measures for your project.

Summary	How to measure	Useful information
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Proportion of medication-related readmissions after X days of discharge <sup>33</sup>	$\frac{\text{Number of re-admissions for medication-related reasons}}{\text{Number of all admissions}} \times 100$	<ul style="list-style-type: none"> <li>&gt; Use specific ICD-10 codes (discuss with clinical coders) to identify those admitted for medication-related reasons</li> <li>&gt; You'll need to standardise your definition of readmission but a common definition is 30 days since previous admission<sup>69</sup></li> </ul>
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Proportion of emergency department (ED) visits or hospital admissions for medication-related problems <sup>33</sup>	$\frac{\text{Number of visits to ED/hospital admissions for medication-related reasons}}{\text{Number of all visits to ED/hospital admissions}} \times 100$	<ul style="list-style-type: none"> <li>&gt; There are specific codes (eg ICD-10 or Emergency Care Data Set – discuss with clinical coders) to identify those attending for medication-related reasons</li> </ul>
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Length of patient stay	This data will already be routinely collected by your organisation. Speak to your informatics team (or equivalent)	<ul style="list-style-type: none"> <li>&gt; Any changes to the discharge process may influence the amount of time patients spend in hospital so you may find this useful as a balancing measure</li> </ul>
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Number of discharge delays and reasons	This data will already be routinely collected by your organisation. Speak to your informatics team (or equivalent)	<ul style="list-style-type: none"> <li>&gt; Any changes to the discharge process may influence the time taken for patients to be discharged so you may find this useful to include as a balancing measure</li> </ul>
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## Qualitative data

Data source	Comments
Patient and/or staff satisfaction surveys <sup>33</sup>	Find out which surveys are routinely undertaken in your organisation and whether they include any medication-related questions
NHS Patient Surveys <sup>37</sup>	The National Inpatient Survey includes questions about patient's medicines. Use medication-related question results for your Trust. Results published annually but questions may change between years so may not be comparable
Medication incident reports <sup>1</sup>	Most organisations have incident reporting systems which can be used to review medication incidents that have been reported. Speak to your local medication safety officer or patient safety team. Focus on recurring themes or potentially harmful incidents, rather than numbers of reports, as reporting rates will vary
Morbidity and mortality reviews, <sup>1</sup> coroner's reports	These can be accessed through your local governance or patient safety teams
Patient or family complaints <sup>1</sup>	These can be accessed through your local governance or patient safety teams
Other feedback mechanisms	Your organisation may have informal channels of gathering information from primary care colleagues (eg feedback from GPs, <sup>70</sup> pharmacists and care home staff) on medication issues on discharge. Speak to colleagues to see if this information is available

## Appendix 2: Making improvements – ideas and case studies

### 1. Implementing formal structured processes for medicines reconciliation when patients are discharged from hospital

Medicines reconciliation reminders <sup>71</sup>	
<b>Discharge location</b>	Gastrointestinal surgery ward in a teaching hospital in Scotland
<b>Aim</b>	To improve the quality and safety of discharge communications produced by junior doctors
<b>Changes made</b>	<p>Introduction of a green sticker on the medicines reconciliation section of the paper drug chart, requiring completion by a junior doctor at point of discharge to confirm that the junior doctor has</p> <ul style="list-style-type: none"> <li>&gt; reviewed the patient's list of admission medicines and used it as a source to reconcile the contents of the discharge prescription</li> <li>&gt; clearly communicated any changes in the patient's medication history to the GP in the discharge document</li> <li>&gt; discussed the contents of the discharge prescription with the patient</li> </ul>
<b>Results</b>	Discharge prescription accuracy increased from 45% to 96% on pilot ward

Multi-intervention strategy to improve medicines reconciliation <sup>10</sup>	
<b>Discharge location</b>	Acute teaching hospital in England
<b>Aim</b>	To improve the provision of information and documentation of medication lists
<b>Interventions</b>	<ul style="list-style-type: none"> <li>&gt; Interprofessional training sessions on medicines reconciliation, including junior doctor champions to help deliver training</li> <li>&gt; Changing electronic prescribing system colours to distinguish between reconciled and unreconciled medication lists</li> <li>&gt; Introduction of templates for medication-related information on discharge summaries, co-designed with patient representatives, including addition of a specific 'information for patient' section, to include relevant counselling points specific to their medicines and signposting to hospital medicines information helpline</li> </ul>
<b>Results</b>	A decrease in unreconciled medicines and an increase in pharmacist involvement in discharge medicines reconciliation was seen, alongside improvements in the number of medicines prescribed in error or omitted from the discharge prescription

## 2. Partnering between patients, caregivers and healthcare professionals at hospital discharge

### Promoting patient and carer involvement

Enabling patients to play a proactive role in creating safer medicines optimisation and come up with their own strategies is important when reducing the risk of medication errors occurring.<sup>72</sup>

### Post-discharge support

- > Arrange telephone follow up appointments for certain patient groups.<sup>11,58</sup>
- > Organise medication reviews post-discharge.<sup>11,73–75</sup>
- > Ensure patients are supported with tasks (eg picking up medication) by utilising local voluntary organisations.<sup>76</sup>
- > Signpost to the hospital medicines information helpline on the discharge summary.<sup>10</sup>

### Supporting patients discharged from acute mental health settings

The transition from mental health inpatient settings to community care is a particularly vulnerable time for patients and involves multiple professionals and agencies. The SAFERPlus intervention is a modified version of the NHS Improvement SAFER patient flow bundle, adapted for mental health settings. Developed by researchers within the NIHR Greater Manchester Patient Safety Translational Research Centre, [Figure 11](#) summarises the SAFERPlus discharge pathway.

A SAFERPlus approach would include:

- > a process in which pharmacy is notified 48 hours before expected discharge, enabling ‘to-take-out’ medicines to be prepared and helping to prevent discharge delays
- > Patient written discharge plans are completed with a healthcare professional of the patient’s choice to support a patient-centred approach to discharge planning. The plan should contain information about mental health and non-mental health medication which is written in plain English, eg ‘Why am I taking this medication? How much must I take? How do I take this medication?’
- > Discharge summaries sent to primary care contain appropriate detail in plain language; for example, whether a monitored dosing system is filled by patient, family or pharmacy, and where further supplies of medication may be obtained (eg hospital pharmacy – for clozapine, depot clinic – rather than the GP)

Source: NIHR Greater Manchester Patient Safety Translational Research Centre. Further information on this project can be found at [www.patientsafety.manchester.ac.uk/research/themes/safer-care/](http://www.patientsafety.manchester.ac.uk/research/themes/safer-care/)

Figure 11: SAFER-Plus discharge pathway infographic

## Safer plus



Source: NIHR Greater Manchester Patient Safety Translational Research Centre. Further information can be found at [www.patientsafety.manchester.ac.uk/research/themes/safer-care/](http://www.patientsafety.manchester.ac.uk/research/themes/safer-care/)

### Utilising medication-related tools

- > Produce checklists for patients and/or carers to help ensure they have all required medication-related information before leaving hospital
- > Encourage patients and carers to prepare their own lists of questions to obtain answers that would support their medicines use practices after leaving hospital<sup>52</sup>

### Medicines, side effects and reporting a Yellow Card

On discharge, it is good practice to discuss what medicines the patient needs to take, why and how they need to take them, as well as discussing potential side effects or interactions. You should encourage your patients to read the patient information leaflet to better familiarise themselves with their medication, as well as pointing out that they can also self-report any suspected side effects they experience to the Yellow Card scheme.

Yellow Card reports of suspected side effects received from patients and healthcare professionals helps the Medicines and Healthcare products Regulatory Agency (MHRA) monitor the safe use of medicines to protect public health and lead to improvements in medication safety. Every report is important and can help prevent future harm to others. Yellow Cards are used to identify new side effects or problems and gain more information about known side effects from medicines in clinical practice, such as warnings given to people taking or giving them or changing how a medicine can be used.

Reporting suspected side effects is easy using the Yellow Card website<sup>77</sup> or the free Yellow Card app, available in the [Apple App Store](#) or [Google Play Store](#).

Parents and carers are also able to report side effects on behalf of someone they are caring for. For anyone who does not have online access to report a suspected side effect to the Yellow Card scheme, they can call 0800 731 6789 for free, Monday to Friday between 9am and 5pm. You can leave a message outside of these hours and one of the MHRA team will get back to you.

Source: Medicines and Healthcare products Regulatory Agency (MHRA)

### 3. Prioritising patients at high risk of medication-related harm around the hospital discharge transition

#### Specific patient or medication groups

When defining the scope of your project, you may want to focus on specific patient, condition or medication groups. For example, the Improving the Safety and Continuity Of Medicines management at Transitions of care (ISCOMAT) programme focuses on improving medicines use at the interface between hospital and community for patients with heart failure.<sup>78</sup>

#### Discharge medicine community reviews

Community pharmacy is becoming increasingly involved in post-discharge medicines support for patients, enabling them to help resolve medication-related problems.<sup>54</sup> When patients are discharged from hospital, they can be referred to their community pharmacy for a medicines review. In Wales this is called the Discharge Medicines Review<sup>73</sup> and in England, the NHS Discharge Medicines Service.<sup>74</sup> As part of NHS Scotland's NHS Recovery Plan, a similar hospital discharge and medicines reconciliation service will be established.<sup>79</sup>

The NHS Discharge Medicines Service<sup>74</sup> was launched in February 2021 across England. It is an essential community pharmacy service and all patients referred into it will be offered a medicines reconciliation, review and consultation with a community pharmacist.

- > NHS Discharge Medicines Service Toolkit<sup>56</sup>

Your organisation may already have processes in place to refer patients to these services but if not, you could consider this when planning your interventions.

### 4. Implementing collaborative medicines optimisation at hospital discharge

#### Optimising multidisciplinary roles

- > Create roles to enable staff to focus on single wards.<sup>80</sup>
- > Include pharmacy staff in the multidisciplinary team carrying out post-discharge community assessments to improve medication use in the community.<sup>76</sup>
- > Create multidisciplinary clinics where patients are seen soon after discharge for review, including medication. This enabled one team to identify medication-related errors post-discharge and see a reduction in 30-day readmission rates.<sup>81</sup>

#### Education and training

- > Set up interprofessional training to improve medicines optimisation at discharge. Topics can include assembling discharge medicines, writing discharge prescriptions, interviewing patients about medication-related support required at home, etc.
- > Create checklists for discharge medicine tasks, eg assembling discharge medicines.<sup>82</sup>

#### Utilising discharge lounges

If you have a discharge lounge, can you optimise it to become an integral part of the discharge process, including providing pharmacy resources, and facilitating smoother transition between healthcare providers?

## 5. Improving the quality and availability of medication-related information at hospital discharge

### Improving discharge summaries and medication lists

- > Providing education and feedback to improve the quality of discharge documentation.<sup>83</sup>
- > Using QI to review and improve how clinical letters are written.<sup>84</sup>
- > Involving patients in discharge communication.<sup>85</sup>

Standardising information through letter templates <sup>70</sup>	
<b>Discharge location</b>	Emergency department in an NHS hospital trust
<b>Aim</b>	Develop effective handover communication between a frailty team and primary care colleagues, where patients are assessed and discharged from the emergency department
<b>Interventions</b>	Creation of a letter template for primary care, focusing on the key themes in a geriatrics assessment, including medication. When patients were seen by a frailty doctor, a letter was created according to the template and sent to the GP, along with a copy of the questionnaire
<b>Measures</b>	GPs' satisfaction with the letter regarding its usefulness. Feedback was received via questionnaire and verbal discussion

### Patient portals

A patient portal integrated with the hospital's electronic patient record allowing patients electronic access to their healthcare information.<sup>86</sup>

### Discharge medication tools

Tools such as checklists and forms are useful for improving transitions of care,<sup>1</sup> for example:

- > templates eg to standardise content of discharge summaries
- > checklists to help ensure all parts of a task are completed, eg discharge summary sections.

### Care home residents

When residents are transferred between care homes and hospital, the Red Bag scheme can help provide safe and efficient transfer of care.<sup>87</sup> A dedicated red bag will include information necessary for the patient's hospital admission, including pre-admission medicines, and when they are ready to be discharged from hospital, useful documents such as the discharge summary are put into the red bag so they can be found easily.<sup>87</sup>

- > Red Bag guidance<sup>87</sup>

### Patient-held information

Message in a bottle – a scheme which encourages people to keep an up-to-date list of their medicines in an easy to find location (ie the fridge) when they are at home, in case needed in an emergency.<sup>88</sup>

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