Electronic Discharge Summary Systems Self-Evaluation Toolkit

September 2011

Clinical Handover
ACSQHC

AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

Electronic Discharge Summary Systems:
Self Evaluation Toolkit, 2011

ISBN Print
978-0-9870617-2-0

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Suggested citation
Australian Commission on Safety and Quality in Health Care (2011), *Electronic Discharge Summary Systems Self-Evaluation Toolkit*, ACSQHC, Sydney.

Acknowledgements
This report is based on work prepared for the Australian Commission on Safety and Quality in Healthcare by KPMG Australia.

The Commission wishes to thank the National E-Health Transition Authority, the lead sites in Victoria and the ACT and the participants that attended the Self-Evaluation Toolkit Validation Workshop for their significant contribution in the drafting of this Toolkit. The involvement and willingness of all concerned to share their experience and expertise is greatly appreciated.

The Commission also gratefully acknowledges the kind permission of St Vincent's Hospital and Mater Health to reproduce a number of the images in this Toolkit.

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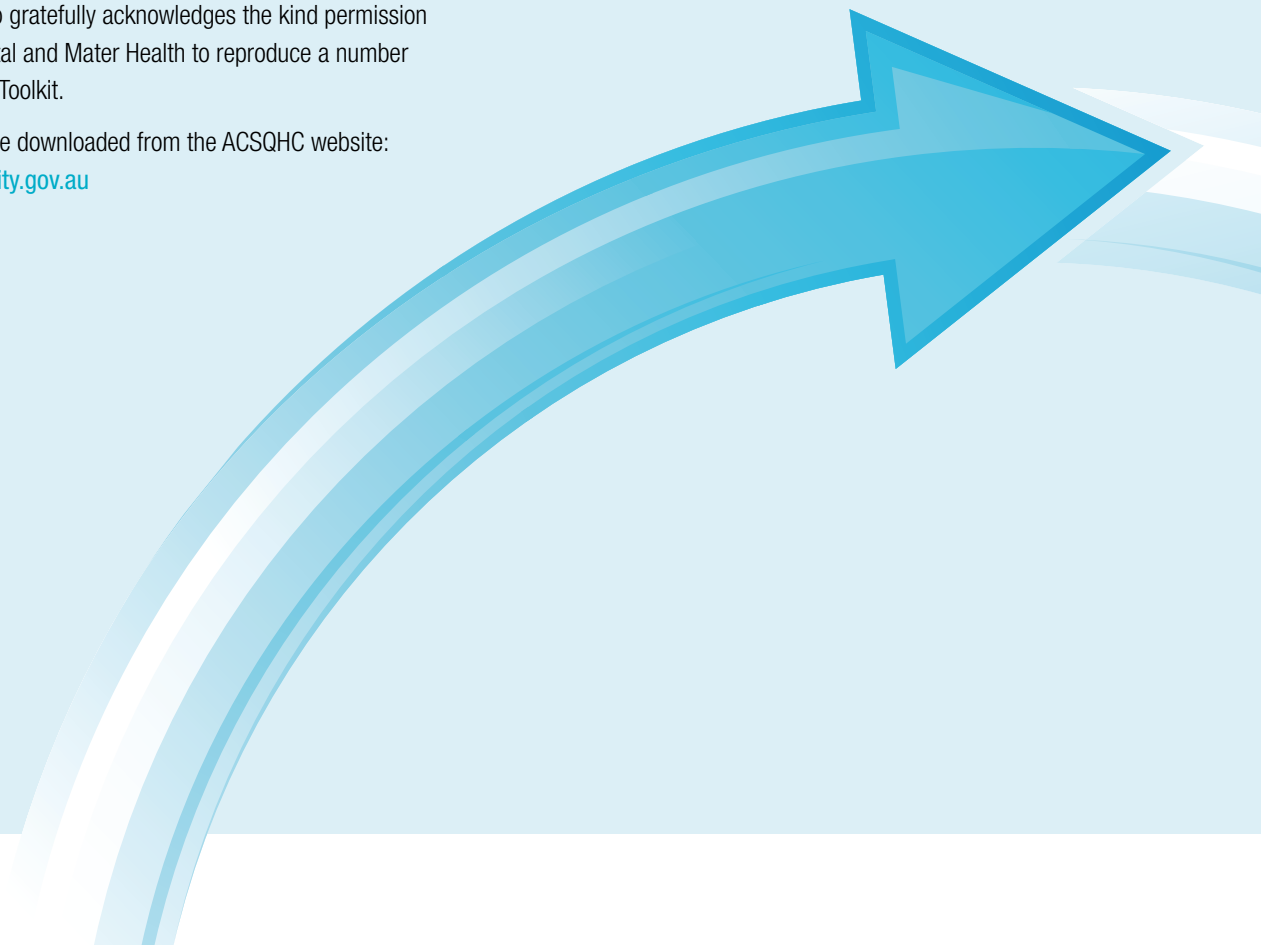


Preface

There is a high level of evidence in the literature that, within health care settings, the **clinical handover** of a patient is a point of potential risk for the patient. Research has also shown that the handover from the acute to community setting (i.e. discharge from the hospital to the community) is a high-risk scenario in clinical handover. Unlike handover at many other points in patient care (i.e. where information is commonly transferred between clinicians verbally), clinical handover at the point of discharge generally occurs via a written document, usually in the form of a **discharge summary**.

Key problems identified with discharge summaries include delays between patient discharge and the discharge summary being sent, the inclusion of inaccurate information, and the omission of information that is deemed to be important for the patients' safety and wellbeing. These problems may be associated with adverse events for patients, including those events relating to medication errors.

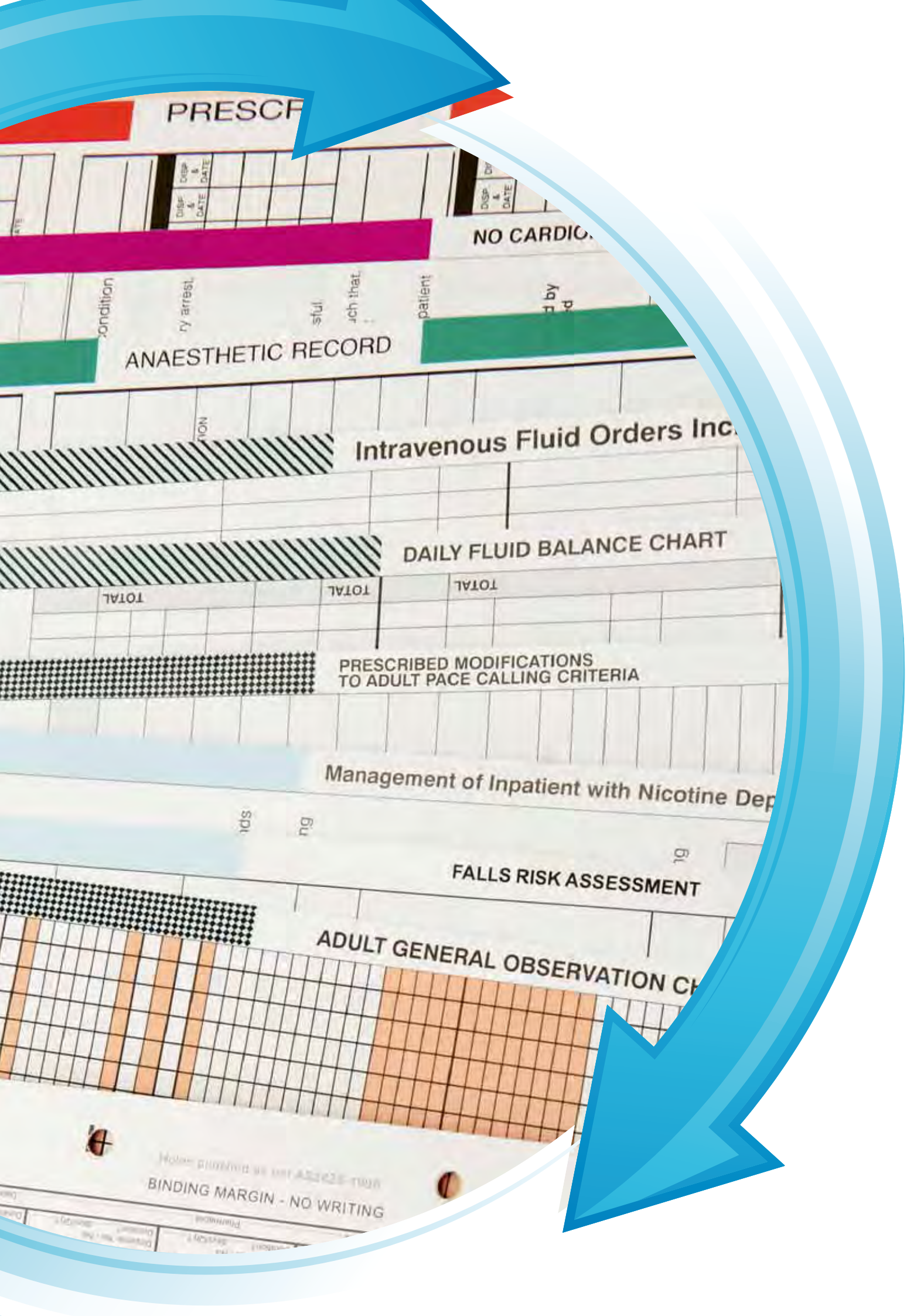
Electronic Discharge Summaries (EDS) **can improve the timeliness, legibility and content** (completeness and accuracy) of discharge summaries. EDS systems have been shown to be acceptable for GPs and other community based healthcare professionals (e.g. allied health, specialists) and an effective way to transmit information to the community setting.

While a well implemented and designed EDS system can improve the clinical handover process, it also has the **potential to adversely impact the safety and quality of patient care** if not properly implemented or poorly designed. To date, there has been limited research on the safety and quality impacts of implementing EDS systems. However, given the national move towards introducing e-health systems (i.e. such as unique national patient identifiers, personally controlled electronic health records (PCEHR) as well as EDS systems), the release of this Toolkit was seen as timely for sites both intending to and in the process of implementing an EDS system.

This Self-Evaluation Toolkit is intended to be a **useful resource for sites** still to implement EDS, as well as those that have already implemented an EDS. The purpose of the Toolkit is to:

- Provide guidance to health services about a consistent approach and appropriate tools to **facilitate local evaluation** of the safety and quality impacts of implementing an EDS system.
- Provide health services with **Pre-Implementation Planning** guidance based on the lessons learned from other Australian health services that have recently implemented an EDS system (and were part of the Australian Commission on Safety and Quality in Health Care EDS Evaluation, conducted by KPMG).

The Self-Evaluation Toolkit should be read with this context in mind. To ensure currency, this document will also be updated at regular intervals in electronic format on the ACSQHC website.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Contents

1 INTRODUCTION 2

1.1 Overview 3
1.2 Principles underpinning the Toolkit 3
1.3 Scope of the Toolkit 3
1.4 Electronic Discharge Summaries 4
1.5 Structure of the Toolkit and other important information 5

2 PRE-IMPLEMENTATION PLANNING 6

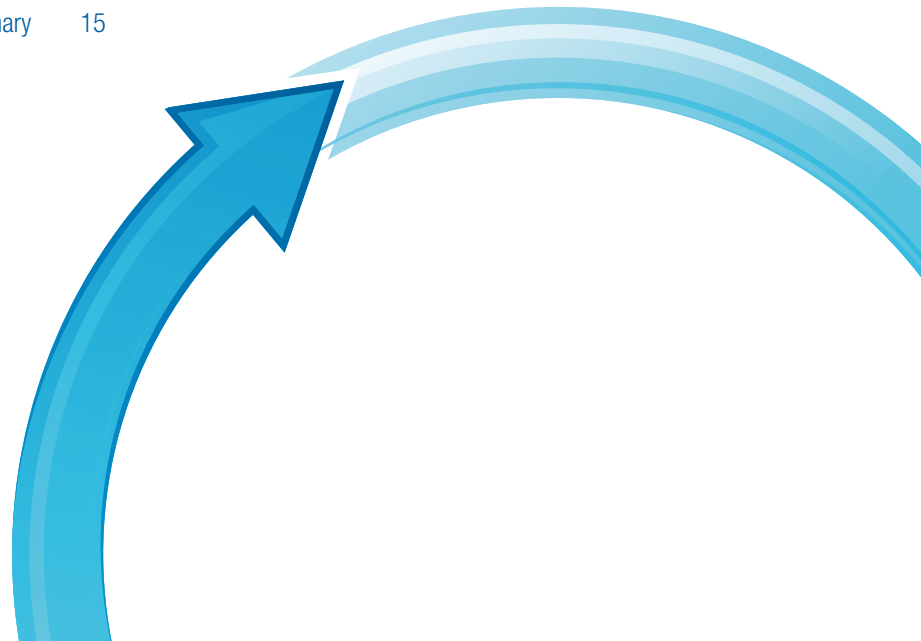
2.1 Establish project governance 7
2.2 Consider the current context 8
2.3 Identify and engage stakeholders 8
2.4 Establish project parameters 10
2.5 Identify benefits and risks of implementation 11
2.6 Consider user work practice changes & training 12
2.7 Select the system 12
2.8 Examine the system interactions 13
2.9 Test the system and associated processes 14
2.10 Measure the impact of EDS systems 15
2.11 Pre-Implementation Planning summary – key actions 15

3 EVALUATION ACTIVITIES 16

3.1 What is evaluation and why do we do it? 17
3.2 Key evaluation stages 17

A APPENDICES 26

A. Surveys 27
B. Medical file and EDS desktop audit tool 35
C. Quality review tool 39
D. Workflow mapping example template 42
E. Benefits register 43
F. Risk and issues logs 44
G. Potential quality and safety measures 45
H. Glossary 50



1 Introduction

1 Introduction

Clinical handover is a key point of risk for the patient, especially when being discharged from the acute to the community setting. The discharge summary is the key document in which this risk can be minimised or magnified for the patient.

The Australian Commission on Safety and Quality in Health Care (ACSQHC) engaged KPMG to undertake a safety and quality evaluation of electronic discharge summary (EDS) systems. EDS systems at two lead sites in the ACT and Victoria were the focus of the evaluation, with the learnings from implementation also considered from a third jurisdiction, Queensland. The evaluation also reviewed the recent research on EDS systems and, where available, incorporated 'lessons learned' from other Australian health services' that have implemented EDS systems.

The evaluation produced two key documents: a Final Report (available on the ACSQHC website: www.safetyandquality.gov.au) and this Self-Evaluation Toolkit (the Toolkit).

1.1 Overview

This Toolkit provides health services with a reference document that outlines:

- a guide or check for sites planning to implement their own EDS system, based on the learnings of the lead sites
- a 'how to' guide for health services to conduct their own self-evaluation, including evaluation process, design, potential analysis techniques and EDS quality and safety measures
- potential evaluation tools to support the self-evaluation activities, such as surveys and a file review EDS audit template.

1.2 Principles underpinning the Toolkit

This Toolkit has been developed to support local evaluation of the EDS systems selected and subsequently implemented at health services across Australia. In comparison to regions such as the Middle East and North America, the e-health solutions currently being implemented across Australia are often independent and may differ significantly between health services. To date, many **EDS systems implemented have varied** from locally developed systems and templates through to 'off the shelf' systems. Commonly within the Australian context, the EDS systems implemented may or may not interact with a number of other ICT systems in place within health services, such as: pathology, radiology, pharmacy, prescribing, medications management, emergency department, outpatient, Patient Administration System's (PAS), maternity and mental health.

With this in mind, a series of principles have been identified to underpin the development of the Toolkit, as described in Box 1.

Box **1**:

Principles underpinning the Self-Evaluation Toolkit

- **Universal utility** – the Toolkit is relevant for use in all Australian health services and will be applicable regardless of the particular software used by the health service.
- **Applicable** – the Toolkit is applicable to all clinicians/ community based healthcare professionals[1] who are likely to receive or have involvement in developing an EDS system.
- Tailored to the **Australian context** – the Toolkit is applicable and appropriate for the Australian healthcare context.
- **Evidence based** – the advice contained in the Toolkit should, where available, be informed by published literature and/or Australian experiences in implementing and operating EDS systems.
- **Future focussed** – the focus of the Toolkit is to inform future local evaluation activities at health service sites across Australia.

These principles, in addition to a series of key learnings from the conduct of the ACSQHC EDS Evaluation, form the basis of the Toolkit. The learnings from the participating evaluation lead sites have been adapted within Section 2 of this Toolkit ('Pre-Implementation Planning'). While these lessons should provide health services with a useful reference, they are not meant to be exhaustive and should not replace a formal EDS implementation process.

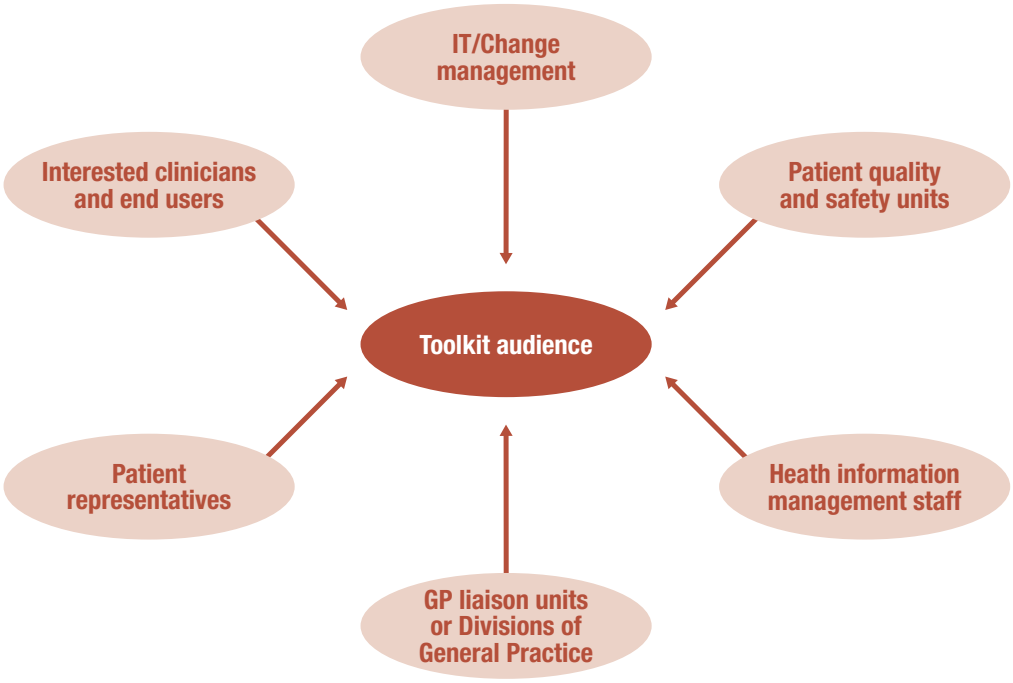
1.3 Scope of the Toolkit

This Toolkit focuses on the evaluation of the safety and quality impacts of implementing EDS systems. As such, the technical requirements and systems design elements are not formally considered. For readers wanting to understand the more detailed technical elements required to support an effective EDS system, the NEHTA website provides a useful reference at http://nehta.gov.au/e-communications-in-practice/edischarge-summaries

1 Community based healthcare professionals include a patient's nominated General Practitioner, specialist/s and allied health professional/s.

The potential audience for the Toolkit is varied and vast, and may include those groups described in Figure 1 as well as others.

Figure 1: Audience for the self evaluation Toolkit



The aim of the Toolkit is to understand the safety and quality impacts of implementing an EDS system. To date within the Australian context, these systems have been implemented at the acute health service level, with a focus on enabling the hospital staff to send an 'electronic discharge summary' to the patient's nominated community based healthcare professional.

As a patient's General Practitioner (GP) is the most common recipient of an EDS, this Toolkit has been written focusing on the EDS being sent from the hospital to the GP. This focus is also due to the fact that the current EDS systems used by the sites that participated in the evaluation are tailored to the GP as the primary recipient. However, it must be noted that any reference made to a GP in this Toolkit could also apply to other community based healthcare professionals (such as a patient's nominated specialist or allied healthcare professional).

As the key recipient of the EDS, the views and feedback from GP and GP representatives (such as GP Divisions or hospital GP liaison units) need to be captured to properly inform any EDS evaluation.

Similarly, the views and input of the patient and the patient perspective needs to be given due consideration in the evaluation of EDS systems. This will be of particular relevance where patients are discharged from hospital without an identified GP, such as transient populations, overseas visitors, students and even those who may not identify with a specific GP but rather a practice or clinic. As such patients, carers or their representative/s should also be included when establishing local EDS evaluation governance structures.

1.4 Electronic Discharge Summaries

Factors contributing to the effectiveness of the discharge summary, which in turn reduce the risk to the patient, include timeliness of receipt of the discharge summary, inclusion of all relevant information and legibility. There are however, a number of elements relating to discharge summaries that are associated with negative outcomes. These include poor design of the discharge summary template, errors and omissions on completing the discharge summary, and issues surrounding community medical centres' capabilities in receiving the discharge summary (including possession of the appropriate software).

The literature (as described in the literature review undertaken as part of the ACSQHC EDS Evaluation)[2] identifies items necessary for inclusion in a discharge summary. In addition to basic demographic information (e.g. name, date of birth, MRN), some of the most common items identified as necessary are outlined in Box 2 below.

The EDS Literature Scan is available on the ACSQHC website: www.safetyandquality.gov.au

2 Available from www.safetyandquality.gov.au

Box **2**:

Items considered necessary for inclusion in a discharge summary

- Accurate primary diagnosis and relevant secondary diagnoses
- Physical examination findings and laboratory results
- Investigations
- Procedures
- Complications, adverse reactions and drug allergies
- Hospital follow up arrangements
- Medical and/or including social issues requiring follow up
- Discharge medications
- Dates of admission and discharge.

These items are all included in the National E-Health Transition Authority's (NEHTA's) discharge summary (version 2.1)[i]. NEHTA's discharge summary requires information to be provided in the broad categories of **event, medications, health profile**, and **plan**, with the facility for reports and additional documents to be included as necessary.

Importantly, the **self-evaluation tools** developed as part of this Toolkit, such as the EDS and medical record review (Appendix B), **are aligned with the NEHTA standards** for EDS.

1.5 Structure of the Toolkit and other important information

The Toolkit is structured into three sections and two appendices, as shown below.

- Section 2 provides a series of considerations for health services at the early EDS system planning stages.
- Building on the lessons learned, Section 3 provides health services with suggested approaches to the evaluation of the quality and safety impacts of implementing an EDS system. This section covers evaluation planning and design through to documenting and reporting the evaluation findings.
- Augmenting the guidance in this Toolkit is a number of evaluation tools located in Appendices A – F and a series of potential measures to inform the EDS system evaluation at Appendix G.

Resource

Throughout this Toolkit, you will see these boxes which contain references for useful RESOURCES or TOOLS, which are provided within the Appendices.

Self Evaluation Toolkit – Implementation of an EDS

1 Introduction

- Scope of the Toolkit
- Principles underpinning the Toolkit
- Introduction to an EDS
- Overview of Toolkit structure.

2 Pre-Implementation Planning

High-level planning considerations for health services implementing an EDS system, based on lessons learnt from the evaluation sites and in the literature.

3 Evaluation Activities

Suggested approaches to the evaluation of the quality and safety impacts of implementing an EDS system.

A Appendix

Evaluation tools and templates

- Survey templates for both staff implementing the EDS and professionals receiving a completed EDS
- Benefits register
- Issues and risks log
- Desktop audit tool – comparison between medical file / record and EDS
- EDS quality review tool
- Workflow mapping example.

B Appendix

Potential quality and safety outcome measures for the implementation of an EDS.

2

Pre-Implementation Planning

2 Pre-Implementation Planning

The purpose of this section is to provide health services with direction in relation to some of the essential activities to be undertaken and issues to consider prior to the implementation of an EDS system.

Implementing an EDS system is complex and requires a comprehensive implementation study prior to implementation. As such, it is important to note that the information provided in this Toolkit is not comprehensive in nature and should not be viewed as an all-inclusive checklist. Rather, this section has been developed based on the key lessons learned from the evaluation sites (see section 2.3 for further details) and, as such, represents guidance based on these learnings. A summary of the lessons learned is included below in Table 1 followed by a more detailed description of each.

Sites considering EDS system implementation may also find useful the '*Electronic medication management systems: a guide to safe implementation*' also available on the Commission's website: www.safetyandquality.gov.au. This may be particularly pertinent for sites implementing an EMM (Electronic Medications Management) system concurrently with an EDS system. Whilst the document is focused on EMM implementation, many principles are relevant to other systems, including EDS systems.

Table 1: EDS overview of Pre-Implementation Planning lessons learned

EDS Pre-Implementation Planning	
Establish project governance	Consider end user work practice changes
Consider the current context	Select the system
Identify and engage stakeholders	Examine the system interactions
Establish project parameters	Test the system and processes
Identify benefits and risks of implementation	Measure the impact of EDS systems.

2.1 Establish project governance

Establishing the right mechanism and people to be involved in the governance of the project is a critical element to project success. Good project governance will provide leadership, clarity in decision making, and transparency in roles and responsibilities throughout the project.

A two-tiered approach to project governance is recommended to oversight an EDS system project. This may include an EDS project governance committee and project team as discussed below.

EDS project governance committee

The main purpose of the governance committee is to:

- provide oversight of critical milestones
- review and respond to project risks and approve risk mitigation strategies
- provide oversight and approve the project's budget.

The group should ideally consist of an EDS project sponsor, a member of the hospital executive, a minimum of one senior medical staff member, a senior nursing representative, a pharmacy representative, a general practice representative (e.g. from a local Division of General Practice or the hospital GP liaison unit), a senior IT services representative, a patient representative and a senior member from the safety and quality unit or clinical governance unit.

Ensuring ownership of EDS projects has been identified as a key challenge. Given the EDS is a whole of health service initiative, no one particular clinical stream is likely to take leadership of the project. Ensuring executive and senior medical staff commitment from the outset and involvement in an ongoing oversight is therefore a critical element in driving the planning stage, and in turn the process of implementation.

EDS project team

The purpose of the EDS project team is to undertake all aspects of the planning for the system's implementation and, when ready, to undertake the implementation itself. If necessary, the EDS project team may establish working groups to undertake specific tasks (for example to conduct user acceptance testing).

The EDS project team should include a project manager, a representative from the hospital's GP liaison unit, a senior medical staff member, a junior medical staff member, a hospital IT representative (including clinical systems representatives), a medical records representative, a change manager/district coordinator (if applicable), a member of the safety and quality unit, a representative from the software vendor, education and training coordinators, nursing, and allied health including pharmacy.

The EDS project team should report regularly and formally to the EDS governance committee to ensure that the appropriate issues are raised for review. Reports should focus on the achievement (or otherwise) of milestones, emerging risks and suggested risk mitigation strategies and project financial status.

2.2 Consider the current context

A local environment and operating context review should be conducted and subsequently inform activities in the pre-implementation phase. These 'contextual' elements should be examined as part of the development of the project plan to guide both system procurement and implementation activities.

A number of factors associated with the projects local context have been identified as important in influencing the ease and success of the systems implementation. Based on these lessons learned, it is recommended that project managers and project teams consider the questions described in Box 3 as part of the Pre-Implementation Planning phase.

2.3 Identify and engage stakeholders

Identification and involvement of relevant stakeholders is a critical activity which should be undertaken early in the pre-implementation process. **It is important to ensure that all those who will be impacted by the proposed system receive relevant and regular information about the project and have the opportunity to provide input into the various project activities**. The literature highlights that organisation support and commitment, as well as full stakeholder engagement, is essential for the implementation and sustainability of changes.[ii iii iv]

2.3.1 Who should be involved?

Whilst the specific individuals to be involved will vary across sites, there are a number of stakeholder types who are likely to be important in the development and implementation of all EDS systems. Examples are provided in Box 4.

Box **3**:

Questions to assist in the consideration of the current context

- What is the desired end point? How is it different to the current system?
- What is the scope of the changes which need to be made to achieve the desired system? What is not to be changed/ included in the EDS project?
- What are the relevant policies and programs already in place which relate to the proposed system (considering those at a local, state/territory and national level)?
- What are the factors (including systems, policies, stakeholders) which cannot be changed (for example, the health service cannot change Commonwealth policy)?
- What are the existing governance systems in place or entities which need to be engaged or that may impact on the project, such as existing clinical advisory committees, GP liaison officer units or established working groups with local divisions of general practice?
- Who are the key leaders, particularly clinician leaders, whose views about the proposed system will likely influence others even if they do not hold a formal position in the health services hierarchy?
- What expectations might stakeholders have about the EDS systems impacts? How might these be managed?
- How can relationships with key individuals and groups be made effective so as to minimise barriers to change?
- What will be the major clinical 'hooks' to use to communicate to clinicians about the benefits of the system and the need for change (for example, was there a recent clinical incident relating to communication at the time of discharge)?
- What are the cost implications and benefits associated with implementing an EDS system?

Box **4**:

Example of key stakeholders for EDS system projects

- Hospital medical staff, including both senior (consultants and registrars) and junior (interns, RMOs) doctors from a range of clinical areas
- Hospital executive
- Hospital IT and clinical systems staff
- Quality and safety unit
- Hospital GP liaison
- Local divisions of general practice
- Medical records unit
- GPs and other community based health professionals
- Representative general practice staff, including practice nurses
- Patient representatives
- Nursing
- Allied health, including pharmacy
- Ward clerks
- Administrative staff

2.3.2 How and when should stakeholders be involved?

Stakeholder engagement strategies should also consider the issue of **when** stakeholders should be involved. Maintaining stakeholder interest over the entire project period can be very challenging, particularly for clinician stakeholders. Targeting their involvement to specific stages will increase the likelihood that individuals will agree to provide their input and minimise engagement fatigue.

Considering **how** stakeholders should be involved will facilitate both the maintenance of stakeholder interest as well as assist project managers in harnessing the most relevant information for the project. A variety of engagement techniques should be used, each relevant to the stakeholder. For example, involving junior doctors in testing software in a practical, workshop setting will likely be more effective than asking them to attend monthly project team meetings.

To assist the identification and effective engagement of stakeholders, sites may benefit from using a tool such as a simple matrix in Table 2 illustrated below. This type of tool can be used not only in the Pre-Implementation Planning phase, but also throughout the entire project.

Table 2: Example stakeholder engagement matrix

Stakeholder role	Activities to be involved in	Timing of engagement
e.g. GP liaison – GP liaison unit	User acceptance testing Project management group/governance structures	Pre-Implementation Implementation
e.g. Clinician (such as JMO)	Tenderer presentations of software User acceptance testing workshop	System selection Pre-Implementation
e.g. GP	User acceptance testing in the GP setting Project management group/governance structures	Pre-Implementation Implementation
e.g. Quality and Safety Unit representative	Project management group/governance structures	System selection Pre-Implementation Implementation Maintenance

2.3.3 Engaging clinicians

Clinicians are the ultimate users of the system. Critical in the success of the project is not only getting the system right, but also the process of assisting clinicians to understand the benefits of the system, support the need for change and then change their practices once the system is in place.

Engaging and maintaining the input of clinicians in the planning and implementation of an EDS system is a key challenge for health services and requires particular and concerted attention. Challenges experienced at the evaluation sites related to:

- keeping interest sustained over lengthy periods of time whilst multiple iterations of system templates were developed and refined
- lack of clinical leadership for the system overall
- ensuring senior medical staff oversight the quality of discharge summaries
- the general 'busyness' and time constraints of Junior Medical Officers (JMOs), who have limited discretionary time to spend testing and providing feedback on e-health systems.

Engaging clinicians must occur on at least two levels – senior medical staff and JMOs. Box 5 below provides some suggestions in relation to how to engage clinicians.

2.4 Establish project parameters

As part of any project, decisions must be made with respect to the size and scope of the venture. These elements are usually determined at the outset, and specified in the project plan. In the context of EDS systems, an important part of the scoping exercise involves determining the **range of clinical areas** within which the system is to be implemented. Generally, the greater the number of clinical streams involved the higher the complexity of the project.

In general, many of the core clinical inpatient streams may present similar requirements, however there may be a number of likely exceptions. These 'exceptions' are clinical areas where the pre existing discharge summaries may be currently customised, usually to deal with either the:

- specific needs of the patient cohort
- use of specialised clinical systems to record patient results or progress
- number of patients flowing through the area.

As a result, it is likely that these same areas will find a standardised EDS template inadequate for their purposes. Areas that may require specialised EDSs include those such as: same day surgery, dialysis suite, mental health, emergency department and maternity.

Box **5**:

Mechanisms to assist in engaging clinicians

- Through all activities ensure that you communicate the impact of the new system focusing on the clinical benefits to the patient – i.e. demonstrate why the new system is better and how it will improve patient care
- Engage individual clinicians for specific tasks (e.g. to attend a particular end user testing workshop), rather than provide ongoing feedback over an indeterminate period
- Provide incentives to attend – simple gestures like catering are often adequate
- Recruit JMOs who work for clinician leaders who are interested in the EDS system
- Establish a clinical advisory group involving a range of clinical stakeholders (e.g. medical, pharmacy and nursing) who are interested in e-health. This group could provide advice on other e-health initiatives, if appropriate
- Where input from a larger group is necessary, piggyback the activity on top of a mandatory existing meeting (e.g. compulsory training sessions)
- For consultants – identify the benefits of the system which will directly improve the clinical performance for their area
- For consultants – ask clinician leaders to engage with their colleagues.

When considering the issue of scope, sites should not only consider the **consequences of scope with respect to the demands on the system, but also other issues relating to the delivery of care in each clinical area**. For example, a hospital may consider not including day stay patients for EDS system roll out due to the likelihood they may need a specialised template. Consideration however, should be given to the possible large volumes of discharges occurring in this area – i.e. day surgery may represent a sizeable proportion of the facility's patients, and as such warrant a care focus on the quality of discharge summaries.

As part of the project scoping and planning stage, sites implementing an EDS need to give careful consideration to the desired scope of the system. The determination of scope will then inform the need for system flexibility, an essential determinant during the system procurement stage. System flexibility is discussed further in Section 2.5 below.

2.5 Identify benefits and risks of implementation

2.5.1 Benefits

Identification of project risks and benefits should also occur during pre-implementation. There are a range of benefits associated with EDS systems reported in the literature as well as through the site evaluations which preceded the development of this Toolkit. Examples of these benefits include[v vi]:

- improved timeliness of receipt of the discharge summary by GPs
- increased legibility of the discharge summary
- improvements in the quality (including accuracy) of the discharge summary's content
- more secure transmission of the document between the hospital and the GP.

A benefits register is one tool which can be used to ensure the benefits of the system are recognised. This is particularly important with a project such as the implementation of an EDS system where some of the benefits may be less tangible or difficult to measure. A benefits register can be used to log all of the benefits recognised from the outset with additional benefits added as they are recognised during the project.

Resource – Benefits register

Presented at Appendix E is a template for a benefits register.

While the identification of benefits should have occurred as part of the development of the business case, the promotion of these benefits, and the continued identification of emerging benefits, should continue throughout the entire project. Promotion of benefits is important as it provides project teams and governance bodies with clear goals for their efforts, and if chosen carefully can be an effective tool in engaging clinical stakeholders by providing clinically relevant reasons for their interest and changes in work practice.

2.5.2 Risks

Implementation of an EDS system is a complex and challenging undertaking involving multiple stakeholder groups working across specialities and between acute and community health sectors. While the potential positive quality and safety impacts have already been highlighted there are also other potential risks to consider. Ideally, these risks should be fully considered pre-implementation.

Like the assessment of benefits, risk assessment is an essential component of project planning, beginning at the business case stage. In addition, NEHTA recommends the reviewing of the implementation planning against the international standard ISO 80001[viii]. Risk identification and management can take many forms, and will include consideration of financial, organisational and clinical risk. Standards such as *AS/NZS ISO 31000:2009 Risk management – Principles and Guidelines* on risk management provide a comprehensive and practical approach for organisations looking for guidance on the identification, assessment and management of risk. Most health services will also have an organisation wide approach to risk management to promote local consistency in identifying and managing project risks. These risk management approaches should include, but not be limited to, the identification and assessment of risks as well as the development and implementation of risk mitigation strategies.

Learnings from the evaluation sites and the experiences documented in the literature point to a number of potential risks associated with the implementation of an EDS system[vii]. Examples of these risks are provided in Box 6.

Given the concerns around the potential of new technologies within major changes to work practice, it is recommended that a full *Clinical Safety Assessment*[ix] be incorporated into implementation planning. The introduction of new technologies within core health care processes should also be accompanied by a review, testing or detailed consideration of the human factors elements of new systems. This is best done through specifically designed user testing of candidate systems. This is further discussed on Section 2.9.

Box **6**:

Examples of EDS system project risks

- Unintended consequences leading to patient safety threats – e.g. increased number of incomplete discharge summaries, increased number of inaccurate medication prescriptions
- Inadequate buy-in from users resulting in resistance to change work practices or reversion to previous practices
- Insufficient user training and ongoing user support
- Inadequate pre-implementation examination of the impact of the system on existing work processes of users (including not understanding the time it takes to complete an EDS using the new system) – leading to resistance to change
- Lack of executive level sponsorship
- Lack of clinical champions to support and drive implementation
- Insufficient project team resources (e.g. team too small or under skilled)
- Inadequate interactions between the EDS system and other systems (e.g. PAS, pathology results, radiology results, pharmacy systems)
- Increased medication transcription errors.

Resource – Risk/issues log

Presented at Appendix F is a template for a risk/issues log.

2.6 Consider user work practice changes & training

The effect of the new system on the users and their workflow is important to consider prior to implementation. Whilst the intention with e-health initiatives is generally to improve the efficiency and effectiveness of health care, the implementation of the system into the hospital environment may result in unforeseen workflow consequences. New systems require health care workers to act in new ways, if these new processes are considered to be overly burdensome they may resist the change.

It is vital that workflow issues are identified early, prior to implementation. Early identification allows for solutions to be developed prior to roll out and, as such, maximises the chances that clinicians' interactions with the system are positive and that early adoption occurs. Pre-Implementation processes, such as workflow mapping and user testing are therefore critical. As highlighted elsewhere in this section, testing across the full breadth of clinical areas is important, as the demands on the system placed by different clinical streams may vary. Early testing should also be followed through with ongoing monitoring, particularly the impact on time required for clinicians to complete the discharge summary and subsequently the EDS as well as the likely demand placed on hardware due to the introduction of the new system.

Training is key to the success of any change in practice. The results collected from testing of the work practices prior to implementation should directly feed back into the design of the training program. Having tailored and timely training provided from the outset will maximise the users experience of the new process and minimise frustration. Evaluation sites reported that making training a requirement to receive a log-in to the system is an effective mechanism to facilitate the uptake of training. In developing training modules consideration should be given to not only including instruction on how users are to access the system but also on the quality of the content. Evaluation sites reported that using GP feedback about discharge summaries they had received or real (de-identified) cases were powerful training tools in relation to the quality of discharge summary content.

Resource – Workflow map template

Presented at Appendix D is a template for undertaking a workflow mapping exercise.

2.7 Select the system

Whilst this pre-implementation guide does not focus on the procurement process, the site evaluations highlighted an important element for consideration by health services looking to purchase and implement an EDS system. The key learning from the evaluation in relation to the system purchase related to the **level of understanding** the project team had of the system and its **flexibility at the time of purchase**. The EDS project team needs to have a comprehensive understanding of the EDS system prior to final selection.

It is strongly recommended that as part of the system selection process sites:

- specifically examine the flexibility of the software, particularly any templates for EDSs which may sit within the software
- consider the degree of change they may wish to make to the standard software and whether different clinical areas may require different specifications

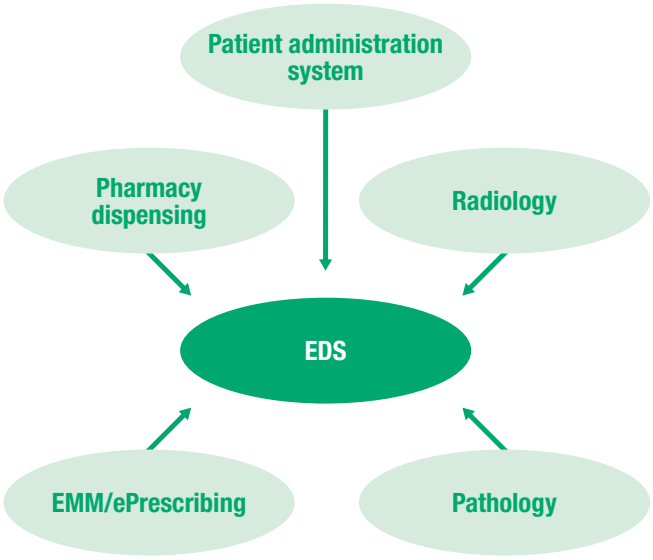
- confirm with the software vendor those elements of the system which can be easily adapted by hospital staff and those which require further input from the vendor – and if vendor input is required, the cost of this input
- identify other health facilities who may have implemented the software and conduct site visits to at least one such health facility to identify the challenges (and benefits) associated with the implementation of the EDS system.

2.8 Examine the system interactions

2.8.1 Interactions with hospital systems

Regardless of the system selected at procurement, there is likely to be the need for the EDS system to interact with other, existing hospital systems. Typical system interactions with EDS systems include those described in the following figure.

Figure 2: Typical interactions between EDS and other hospital systems



Examining these interactions is a crucial part of the Pre-Implementation Planning phase. Depending on the particular EDS system chosen, some of the information in these systems might be immediately accessible to the user within the actual EDS program. This is ideal, as it allows quick access to patient information and minimises the number of possible errors that may occur. Currently, not all EDS systems are likely to link with other systems. This means that to populate the EDS, the user must open each application, find the relevant information for that patient, and copy the relevant text and 'paste' it back into the EDS. This process leaves room for additional error (e.g. selecting the wrong patient's results), is more time consuming and requires additional log-in processes.

2.8.2 Interaction with General Practice systems

Not only does the EDS system interact with these hospital-based systems, but also with the transmittal system, which transmits the EDS to the GP and into the GPs software. Commonly, the resulting information received by GPs is identified as being problematic. Whilst the information was legible and received in a timely manner, a number of concerns have been raised by GPs in relation to the content, layout and labelling of the EDS document. Examples of these concerns can be found in Box 7.

Box **7**:

Typical concerns raised in the evaluation by GPs in relation to EDS documentation

- A loss of formatting, resulting in headings not being bolded, spacing between sections missing and the loss of column alignment, all resulting in increased difficulty for the GP to scan the document, locate and then read the relevant information.
- Absence of critical information, such as patient name and details, being left off the final discharge summary document received by the GP.
- When received into the GPs inbox, the discharge summary document not being named, so that it needed to be opened in order to be identified.
- The inability of the GP to electronically annotate the EDS, thus requiring the GP to undertake these tasks (e.g. asking practice staff to call the patient in for an appointment) manually.

It should be noted that the experience of GPs will differ depending on the particular software used by the practice.

2.8.3 Recommendations

There is no simple 'fix' for these system interaction concerns. Each hospital system and GP practice will provide a different operating environment and pose unique challenges. The essential recommendation for EDS project teams is that they should:

- work with EDS software vendors and hospital IT staff to identify issues early and streamline processes where possible
- consider the likely workflow effects on users of having problematic system interactions, and identify solutions
- ensure that comprehensive testing (discussed further below in section 2.9) occurs with software used by general practices early in the pre-implementation phase
- allocate and prioritise project time to address these issues before implementation.

2.9 Test the system and associated processes

To prepare for the implementation of any e-health system, extensive testing of the system and the underpinning processes (i.e. not just the hardware and software testing, but also the processes associated with the system) usually comprises a significant part of the pre-implementation phase. There will be a range of functional and non-functional testing required.

Whilst non-functional testing will test elements such as system capacity and resilience, functional testing will focus on the experience of the user, through user acceptance testing.

2.9.1 User Acceptance Testing

User Acceptance Testing (UAT) should consist of:

- Development of test cases that are based on real life scenarios and developed by clinical staff. Test case examples should be developed for all clinical areas, and include complex cases with high risks for error, as well as examples for areas where there are high volumes of discharges.
- Testing of the EDS completion process using the new system, which follows a formal process that determines the success of the end to end EDS development and transmittal process.
- A process of defect management that ensures that failed test cases are managed to a successful conclusion.

The UAT process may consist of several iterations as the software is refined and issues are resolved. As identified in section 2.3.3, engagement fatigue for clinicians can be a significant issue. As such, to maintain interest and engagement, project managers should consider recruiting new clinicians for different test runs.

2.9.2 Who should test?

UAT should be completed by a range of stakeholders. Prior to the testing being undertaken users should be provided with training in using the software. Stakeholders to include in the testing process are described in Box 8.

Box **8**:

Stakeholders to include in the User Acceptance Testing

- IT or clinical systems staff
- EDS project management staff
- Selection of users (clinicians), including both JMOs and more senior medical staff
- A selection of recipients, including GPs and GP representatives
- Pharmacy staff (if the discharge scripts are to be developed as part of the EDS).

2.9.3 Undertake a human factors risk assessment

Undertaking human factors assessment early and iteratively throughout EDS development can improve user performance and usability, as well as identify any new quality and safety issues resulting from the introduction of a redesigned discharge summary. Human factors assessment should also include pre-implementation simulation usability testing with both novice and experienced clinicians who will use the system to assess the impact of the redesign of the system. Identified risks should then be addressed prior to implementation.

2.9.4 Testing in the General Practice setting

At most sites, it is likely that general practices in the local area use a number of different software packages. The range of software used should be identified early on in the pre-implementation phase, and the testing conducted on all of these packages.

It is preferable that general practices be resourced to test the EDS output and other functionality. However, where practices cannot support active and iterated testing, the project team should test the EDS themselves on each GP system brand and version in use in the hospital or network catchment.

2.9.5 Clinical Safety Assessment

The essential elements of Clinical Safety Assessment comprise a detailed mapping of the intended new workflows, accompanied by formal risk assessment at each point for each user.[viii,x,xi,xii] NEHTA currently uses a proprietary clinical risk management system to identify and then mitigate.

2.10 Measure the impact of EDS systems

Measuring the new system's performance is a critical aspect of the implementation of any new e-health system. Performance monitoring is essential as, if managed effectively, it will provide ongoing feedback about the system and assist the EDS project team in identifying problematic issues early, and direct system refinement.

At the pre-implementation phase, baseline indicators must be established so that the project team is able to identify the impact of introducing the new system. Given that each EDS system is implemented in a different environment, the exact indicators chosen may differ slightly between sites. However, project teams should consider the following when establishing their indicators:

- What are the likely benefits of the system?
- What are the likely risks or issues associated with the system?
- What might be the likely impacts on clinicians' behaviour?

Resource – Potential quality and safety measures and underpinning indicators for the implementation of an EDS

Presented at Appendix G are examples of potential quality and safety outcome indicators that a site considering implementing an EDS system may use.

Where practical, these measures and indicators could be used by the health service as baseline indicators for an EDS system implementation.

2.11 Pre-Implementation Planning summary – key actions

A summary of the Pre-Implementation Planning actions based on the lessons learned from sites that have implemented EDS systems is provided as below.

Table 3: EDS Pre-Implementation Planning – action list

EDS Pre-Implementation Planning – action list	
Establish project governance	Consider end user work practice changes
○ establish a project governance committee ○ establish an EDS project team	○ conduct workflow process mapping for end users ○ consider pre and post EDS changes (based on UAT) ○ training plan
Consider the current context	Select the system
○ describe local environment and operating context ○ define the desired end state ○ change management planning/change readiness assessment	○ examine flexibility of the software against local need ○ clarify benefits/limitations with vendors and other sites
Identify and engage stakeholders	Examine the system interactions
○ complete a stakeholder engagement matrix ○ identify who, how and when to engage clinicians	○ consider the hospital systems (PAS, pharmacy, etc) ○ consider GP systems and the end product
Establish project parameters	Test the system and processes
○ define the scope of clinical areas for the EDS	○ test clinical scenarios from clinical areas identified ○ conduct UAT internally and externally
Identify benefits and risks of implementation	Measure the impact of EDS systems
○ create a benefits register for the EDS project ○ develop a risk log, including mitigation strategies	○ establish baseline measures pre-implementation ○ identify potential benefits, risks and issues

3

Evaluation Activities

3 Evaluation Activities

3.1 What is evaluation and why do we do it?

Put simply, evaluation is the systematic process of understanding whether or not, and to what extent, a program or project has met or is meeting its objectives.[xiii,xiv] Evaluation will enable health services to understand whether or not the implementation of an EDS system is achieving the desired outcomes (e.g. improved patient care through better continuity of care between acute and primary health settings). Done well, it will also help to understand which, how and to what extent the strategies, processes and outputs adopted during the implementation of the EDS system contributed to meeting the desired outcomes.

This understanding makes it possible to:

- make informed decisions regarding how the EDS system can be improved into the future (as there is always room for improvement)
- identify the lessons learned for future projects and e-health system implementation (both internally and for other health services or hospital sites)
- enable constructive feedback to be provided to the implementation project team
- maintain the integrity of the EDS implementation project – i.e. whether it was implemented according to what was planned, what changes were made and how they were justified.

When should an evaluation occur?

Evaluation should be an integral part of the implementation project and needs to be managed from the beginning, with an evaluation plan and framework developed as part of the project plan and to assist with decision making over the term of the project. If the evaluation is to be a post-implementation review, this should occur at a point which allows enough time for the system to be effectively bedded in, but not too much time that stakeholders forget their user experience, become familiar with the benefits of the EDS system and forget the discharge summary processes that were in place prior to the implementation of the EDS system.

3.2 Key evaluation stages

Whilst there are a variety and range of ways to undertake an evaluation, they generally all involve four key stages, as shown in Figure 3 below.

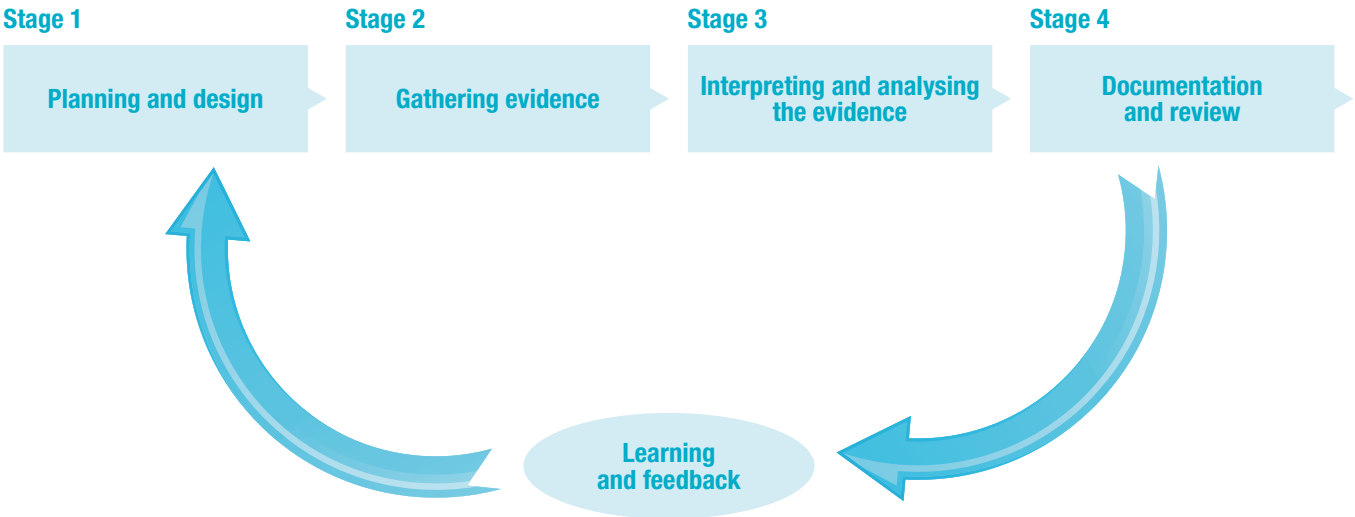
Each of these four stages are described in further detail below.

Please note, whilst this has been stated previously, it is important to emphasise that the information presented within this Toolkit is intended to be a guide only. Health services are encouraged to apply evaluation approaches and methodologies that will meet their needs, using this Toolkit as a starting point or reference document.

3.2.1 Stage 1: Evaluation planning and design

Good planning and design is essential to undertaking a successful evaluation and will help to better understand not just the evaluation but also the EDS implementation project. Figure 4 shows the purpose, key activities and outputs of evaluation planning and design.

Figure 3: Key evaluation stages[3]



3 Please note: unless stated otherwise, all diagrams and figures have been developed by KPMG (2010).

Figure 4: Stage 1 – Evaluation planning and design

PURPOSE	**To identify:** • what it actually is you want to know about your project in relation to its objectives • how you will know whether the project is doing what was planned and if it is meeting its objectives (i.e. the indicators/measures of success) • the information you will need to determine whether the project is meeting its objectives • the best way to gather, organise and report the information you require.
KEY ACTIVITIES	• Develop a project logic and evaluation plan or framework • Establish an evaluation governance structure (which may be the same as the project governance structure), that includes clinical, change management, HIM, GP and executive participation • Review existing available health service data and information, and develop tools to fill any evaluation data or information gaps (as defined by the indicators in the evaluation framework or plan) • Allocate responsibility for data collection and monitoring activities, and timelines.
OUTPUTS	• Project evaluation logic • Evaluation framework or plan, which is endorsed by the Executive.

Understanding the EDS implementation project

The first step in planning the evaluation is to understand what the overarching goal of the implementation of the EDS is and the specific objectives that will help to meet that goal. These are then used to define the purpose of the evaluation and the key areas of focus during the evaluation.

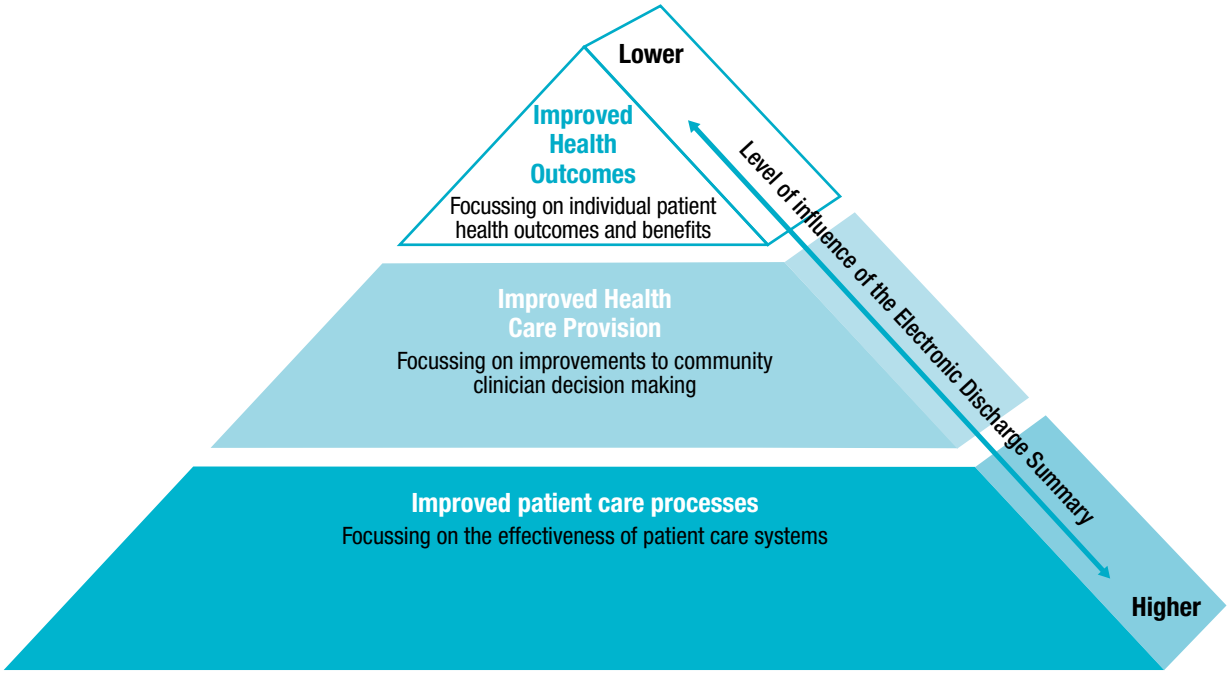
Before commencing an EDS system evaluation it is important that the following activities are undertaken:

- define and clarify the overall goals of the implementation of the EDS system (*the broad approach*)
- identify the stakeholders and their roles – including hospital executive, patient representatives, clinicians, GPs, IT, change management, HIM
- identify key policy documents, background information and baseline data
- identify other projects and activities (both existing and planned) that will affect the implementation of the EDS system or its outcomes (*context*)
- determine a series of key questions (and possibly sub-questions) that the evaluation is set to answer, based on the objectives and desired outcomes of the EDS system implementation (e.g. has the EDS improved patient safety)
- define the scope of the evaluation, describing what it will seek to answer and what it will not
- identify any changes that have occurred or will occur between now and the anticipated implementation timeframe of the EDS (*policy, procedural, staff, technology prior to or since the project has started, etc*)
- identify environmental factors that may affect the implementation of an EDS system (*changes in management, machinery of government changes, legislation, reviews, political/media issues, etc*).

Recognition of the level of influence of the implementation of an EDS system

As shown in the following figure, the implementation of an EDS system aims to achieve three 'levels' of outcomes, with the EDS system having varying levels of influence on the achievement of the outcomes within each level. In designing an evaluation, it is important that this is taken into consideration, particularly in designing the evaluation approach and identifying the measures and indicators that will be used to assess the success of the implementation.

Figure 5: Influence of the implementation of an EDS system on expected outcomes



The ultimate aim of implementing an EDS system is to contribute to improving the health outcomes of individual patients, an outcome that is achieved through a number of different mechanisms and not just through the implementation of an EDS system.

However, it is important to note that for the levels with a lower influence (e.g. improved health outcomes), the more specific the outcome, the more difficult it is to identify measures or indicators that can be directly attributed to the implementation of an EDS system. This creates the need to examine proxy measures or indicators, such as GP satisfaction.

Establishing evaluation governance arrangements

It is important that, at the start of an evaluation, an evaluation governance committee (or similar) is established. This group can act as a sounding board at each step of the evaluation and can assist with developing materials to communicate the outcomes of the evaluation. This group may have the same membership as the project reference group.

Table 4 presents potential participants and the role of an evaluation governance committee.

Table 4: Example evaluation governance committee

Possible membership	Role of evaluation governance committee
• GPs and GP liaison officers • Health Information Management (HIM) • Health services executive • IT and systems • Pharmacy • Clinicians (JMOs and SMOs)	• Provide input into and endorse project logic and evaluation approach • Oversee evaluation activities • Support and encourage the participation of relevant stakeholders in the evaluation • Review evaluation outcomes and report to stakeholders (including health services executive)

Developing the evaluation approach

To assist with the evaluation development, a useful concept to apply is **project logic**[4]. An example project logic is shown in Figure 6.

Project logic is a tool for describing how the project is expected to work, which in this case is the implementation of an EDS system. The project logic focuses on the processes and activities that take place and the consequences (outputs and outcomes) that are expected to flow from them. It is a powerful tool for identifying the key outcomes a project should be evaluated against, and for developing evaluation questions to investigate outcomes. In addition, it is very useful as an aid in designing a project.

Analysing the project logic helps to:

- clarify the project's objectives and assess whether objectives are achievable and measurable
- identify and map the project's major processes, outputs, impacts and outcomes[5]
- order these in a way that reflects the expected cause and effect relationships between them[6]
- identify how successful achievement of each impact and outcome will be measured
- define for each impact and outcome, the project and external (environmental and contextual) factors likely to affect its achievement
- identify potential confounding issues or factors for the evaluation, for example, there may be other quality improvement projects in place focussing on discharge
- identify what performance information will be required, to measure outcomes and to determine whether they were caused by the project or by external factors.

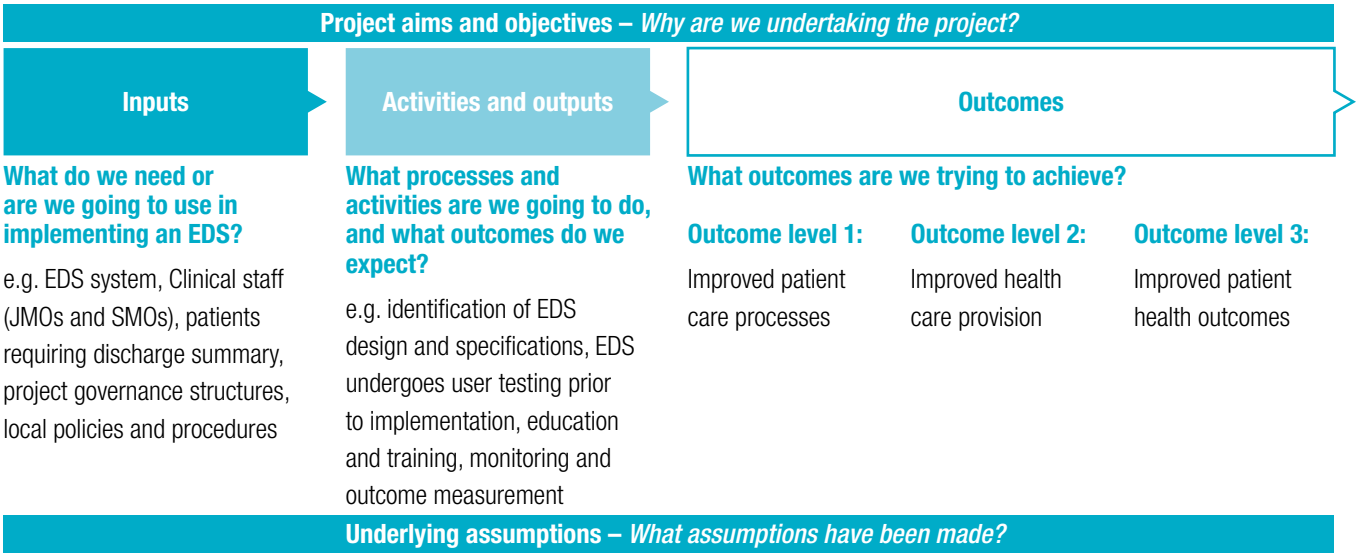
The project logic will need to be adapted depending on the local context and intended outcomes; however these are not likely to be too divergent across settings. As such, the following high-level project logic diagram is included to provide context to what the focus and levels of influence the EDS system implemented may have on intended outcomes.

A workshop can be a good way to develop the project logic. Drawing the project logic onto a large chart (or using an electronic white board) is useful and will enable involvement of the project team or evaluation reference group. The chart also provides a conceptual record of the project, which can be useful to revisit for reflection at key project stages (i.e. to assess "how are we going?", "are we on track?", "what/who have we missed?").

Identifying the quality and safety measures and underpinning indicators

The next step is identifying how to measure whether the implementation of the EDS system is meeting (or on track to meeting) its objectives. This means identifying the actual quality and safety measures and underpinning indicators that will be used to answer each of the evaluation questions.

Figure 6: Example project logic



4 Project logic is commonly known as "program logic" in the evaluation literature.

5 Mapping the project's major processes, outputs, impacts and outcomes enables each to be distinguished from the effects they are intended to produce and, consequently, help separate efficiency issues from effectiveness issues.

6 Establishing the relationships between processes, outputs, impacts and outcomes identifies those that must be achieved before others can be achieved. This will help to decide what effects should be evaluated at any particular stage in the life of the project.

A **measure of success** is a high level descriptor of key areas that indicate success in the EDS project (e.g. the EDS is delivered to a GP in a timely manner); with the **indicators** enabling quantitative assessment against the measure (e.g. the proportion of EDS delivered to a GP within 48 hours of patient discharge). A measure will likely have more than one indicator, with an indicator commonly associated with more than one measure of success.

Evaluation resource – Potential quality and safety measures for the implementation of an EDS

- Appendix G presents proposed quality and safety measures and underpinning indicators, for the implementation of an EDS.

Once the overarching quality and safety measures for the EDS project have been identified, indicators for each measure will need to be developed that enable assessment of current performance against each measure. For example, for the measure of "timeliness", a possible indicator is the proportion of EDSs sent to the GP within 24 hours.

In identifying the measures and indicators, it can be useful to ask:

- *How will we know we have implemented what we said we would do, in the way we said we would?* The answer to this question involves identifying the measures of the outputs or processes for each of the strategies/activities you are using to achieve the objective.
- *How will we know whether each strategy had an impact or achieved the desired outcomes?* This relates to measuring the impact of the strategies that relate to the overall objective.
- *Is the measure reliable, accurate, relevant and timely?*

The number of indicators/measures for each evaluation question will depend on how specific your question is, and the actual strategies you are implementing to meet the objective (that the question relates to).

Identifying how the information will be captured

Once the quality and safety measures and underpinning indicators have been identified, the next step is to identify the information that is needed for each, how this information is best collected, who is best placed to collect it and whether any data collection tools or systems need to be developed. For example, if the measure of success is "EDS is sent to a GP within 24 hours", then the information needed is the time and date that a patient was discharged and the time and date that an EDS was sent to a GP.

Table 5 shows some of the key considerations in the identification and collection of evaluation data.

Table 5: Key considerations in the collection of evaluation data

What data/information?	• Determined by the outcome measures of success and the indicators identified previously
How?	• What is the best way for the data/information to be collected (considering the time and effort required against the benefit from the data)? • What data or information is already collected, and how can the collection approach be improved? • What (if any) approvals are needed to collect, store or report the information? • What is the best way for the data/information to be reported? • How to store the information securely (in consideration of privacy and ethical requirements)?
Who?	• Who is responsible for the collection, analysis and reporting of the data/information (can be more than one person)? • Who is responsible for any actions identified through the data analysis or reporting?
What is needed?	• What are the resource requirements? • What tools or templates need to be developed to support the collection, analysis and reporting of the data/information?
When?	• How often is the data/information collected and analysed (daily, weekly or annually)? • How often is the data/information reported (daily, weekly or annually)? • What is the timing of any evaluation reports that will need to include the information collected? • Is all the data used or snapshots?

Types of evaluation evidence

In deciding how to collect the evaluation evidence, it is important to consider which type of evidence you can collect. Broadly, there are two types of evidence:

- **Quantitative evidence** – this is numerical, i.e. it provides numbers in relation to your evaluation question, and may be collected in a variety of ways
- **Qualitative evidence** – this is evidence that cannot be expressed in numbers – for example, observations, documents, photographs, a personal story.

It is important the evaluation of the implementation of an EDS collects both types of evidence. For example, qualitative evidence can be helpful in interpreting the quantitative evidence by enabling a deeper understanding of the numbers to be gained.

The next section outlines some of the ways you can collect the different types of evidence.

3.2.2 Stage 2: Gathering the evaluation evidence

Choosing which approach to use will depend on the evidence needed for the measure of success or indicator, mix and type of data collection activities adopted and the impact or burden on stakeholders.

A summary of the purpose, key activities and outputs from this stage is presented in Figure 7.

Quantitative approaches

There are a number of approaches or instruments that can be used to collect quantitative evidence.

A common approach is through a **survey**. Surveys are an important tool, and can be used to collect information from both stakeholders involved in completing the EDS (e.g. JMOs) and those that receive the final output (e.g. GPs).

Consider using a survey in a number of different ways, for example:

- timing:
  - survey the target population before the project's activities/ programs commence (i.e. baseline survey for comparison purposes), and then re-do the survey at certain points in time over the lifetime of the project
  - survey participants with particular roles (e.g. junior medical officers, senior medical officers and consultants, GPs) at certain points in time
  - track a sample of participants over time, by using the same survey at set points in time (e.g. 6 months, 12 months, 2 years, 5 years)
- sampling approach:
  - census survey of the entire population of stakeholders
  - random sampling
  - targeted sampling, based on identified areas when information or data is needed

Figure 7: Stage 2 – Gathering the evaluation evidence

PURPOSE	To gather the evidence that will be used to inform and develop the evaluation findings. The evidence is gathered in such a way that it is reliable, accurate, relevant and timely.
KEY ACTIVITIES	• Collecting the evidence in line with the agreed approaches identified within the evaluation planning stage, ensuring alignment with the project logic • Appropriate engagement of stakeholders that have access to the data or information that comprises part of the evaluation evidence • Using a number and range of approaches to collecting the data, both qualitative and quantitative • Evidence collected both systematically and once off • Continuous review to ensure the evidence being collected meets the needs of the evaluation, with regular input from the evaluation governance committee • Quality assurance mechanisms established to ensure the accuracy of the data/information.
OUTPUTS	• Evidence being collected • Regular status updates to the evaluation governance committee and possibly for key stakeholders, as required.

- length and the mix and balance of questions used
  - to minimise the burden on potential respondents (thus increasing the likelihood of a response), it is important that the survey is easy for respondents to complete and that they do not need to collect or source information to answer the questions. This needs to be balanced with ensuring the survey collects relevant and useful information
  - the mix and balance between questions using a Likert scale and those asking for open ended responses is important, as it impacts on the time taken for respondents to complete
- administration method:
  - using an electronic survey tool such as 'Survey Monkey'
  - paper-based only
  - mixed method.

Evaluation tool – Surveys

Appendix A presents an example survey for administration to GPs and one for clinicians involved in the development of an EDS. These tools are intended to capture key information, primarily using Likert scales so the information can be quantitatively analysed and compared over time and across populations.

Other examples of quantitative approaches may include:

- **Use of secondary data** from internal hospital systems including the EDS system, using existing automated data already captured or readily available for capturing will minimise the burden of manual collection. New measures also available (for example, through the audit trail built into the EDS system) may provide useful process related measures such as time taken from first log on to EDS completion, the number of times the EDS is saved as a draft, or the number of final EDS revised after finalising.
- **Medical record and EDS audit** – this involves conducting physical audits of a sample of patient admissions, using a structured audit tool to determine the level of consistency between the information in the medical record and the EDS across a number of specified domains.

Evaluation tool – Medical records and EDS audit tool

Presented at Attachment B is a sample medical record and EDS audit tool, which align with the NEHTA core components of a discharge summary.

Qualitative approaches

There are a number of different ways in which qualitative evidence can be collected. Examples of approaches include:

- **Interviews** – this approach can be useful when evidence is needed from a small number of stakeholders, or a deeper understanding is needed (which is not available through other means such as a survey, or when it is not possible or appropriate to survey people)
- **Focus groups** involve exploring key themes or broad questions with a small group of stakeholders
- **Case studies** – this approach could be helpful in developing individual illustrations of the implementation of the EDS system, which may help to 'humanise' the evaluation findings
- **Quality review of EDS** – this involves a sample of EDS being reviewed by clinicians using a systematic tool and the results presented at clinical review meetings.

Evaluation tool – Quality review tool

Presented at Attachment C is a sample quality review tool.

Figure 8: Stage 3 – Interpreting the evaluation evidence

PURPOSE	Identify the key findings for the evaluation, based on the evidence collected. Analysis needs to be done at two levels: • whether the EDS project is achieving the outcomes you had expected to achieve • which, how and to what extent the strategies, processes and outputs adopted by your EDS implementation project contributed to meeting the desired outcomes.
KEY ACTIVITIES	• Analysis and synthesis of the evidence collected (e.g. thematic analysis of interviews, quantitative analysis of data and survey responses) – analysis methods will depend on the type of evidence, collection method and volume of information • Draft findings identified and documented • Draft findings validated with key stakeholders • Findings endorsed by the evaluation governance committee.
OUTPUTS	• Summary of the key evaluation findings, for endorsement by the evaluation governance committee.

3.2.3 Stage 3: Interpreting and analysing evaluation evidence

The third evaluation stage is to interpret and analyse the evidence gathered. The purpose, key activities and outputs from this stage are described in figure 8.

To interpret the evidence collected, it is important to view the information as objectively as possible. It may help to:

- combine the qualitative and quantitative information collected for each evaluation question
- assess the key messages contained in the evidence and compare to the project logic
- ask questions such as:
  - Can the qualitative information be used to help understand the quantitative information?
  - What is the change over time, and why?
  - Are there any unexpected findings (both positive and negative), and is there anything that helps to explain this (e.g. has something changed in the broader context outside the scope of the project)?
  - Does the information highlight any changes that need to be made to the EDS or other implementation projects into the future?

Once a draft set of findings has been developed, a workshop with a cross-section of key stakeholders can be useful to validate the draft findings. Participants should include members of the evaluation governance committee as well as other stakeholders who have been heavily involved in the evaluation and who would provide valuable feedback.

3.2.4 Documenting and reporting the evaluation findings

The last and final evaluation stage is to document and report the evaluation findings. The purpose, key activities and outputs from the stage are described in the following figure.

Documenting the evaluation findings is basically telling or presenting the evidence in a way that is meaningful. It sets out what the EDS implementation set out to achieve, the activities used to meet its objectives and what the evaluation evidence indicates about how successful or otherwise the EDS implementation has been. It is important to include not just the positive news, but also the things that did not work as well as expected, and the challenges or barriers to success. These findings are just as important as the project's achievements. The audience will also influence how the evaluation findings are documented – e.g. whether it is a report to the project's funder, the national evaluator or local stakeholders.

Figure 9: Stage 4 – Documenting and reporting the evaluation findings

PURPOSE

To document the evaluation findings, which is used to help make decisions regarding how the EDS can be improved into the future (as there is always room for improvement), the lessons learned for future projects and e-Health system implementation both within your health service and for other health services or hospital sites, and provides constructive feedback to the project team.

KEY ACTIVITIES

- Report structure developed in collaboration with members of the evaluation governance committee
- Draft report developed and reviewed by the evaluation governance committee
- Final report developed, incorporating feedback and comments
- A summary report may also be developed for informing the health service Executive, which is 3–5 pages long.

OUTPUTS

- Evaluation report that is endorsed by the evaluation governance committee and disseminated to the health service Executive and possibly to other important stakeholders (as determined by the Executive).

Appendices

Provided below are the following Appendices:

A Surveys 27

B Medical file and EDS desktop audit tool 35

C Quality review tool 39

D Workflow mapping example template 42

E Benefits register 43

F Risk and issues logs 44

G Potential quality and safety measures 45

H Glossary 50

A. Surveys

The surveys and following appendices present a number of tools that health service project teams may wish to use to support evaluation of their EDS implementation.

It is important to note that they are provided as a guide, for health services to tailor based on the needs of their evaluation.

Survey – Health service staff using the EDS

Provided below is an example survey for administration to health services staff using the EDS. The survey has been developed with a focus on ensuring that:

- it is easy for respondents to complete (both in terms of number of questions, the answers they are required to answer, and that they do not need to research information);
- it is easy to quantitatively analyse the responses through the use of Likert scales (e.g. 70% of respondents were satisfied with the quality of the EDS)
- giving respondents the opportunity to provide more details, via free text fields. These would need to be thematically analysed.

It is recommended that the survey is administered annually to all health service staff who would have been involved in the completion of an EDS (i.e. both JMOs and SMOs).

Electronic Discharge Summary (EDS) Evaluation Survey of Health Service Staff using the EDS

About this survey

The aim of this survey is to seek your feedback relating to your experience with electronic discharge summaries (EDS). It provides an important opportunity for us to identify the safety and quality impacts associated with the introduction of EDS.

Your participation is voluntary and you do not need to complete this survey if you do not wish to do so. Responses are confidential and you will not be identified in the survey or any reports based on the survey.

Why your participation is important

Your participation is needed to help us understand, specifically:

- the safety and quality impacts (both positive and negative) associated with the introduction of EDS
- your experience with EDS
- what the enablers were for the safe implementation and ongoing use of EDS
- any particular barriers experienced to the safe implementation of EDS.

What we will do with the information

We will use the survey responses to evaluate the impacts the EDS has had on the safety and quality of patient care.

Information gathered in this survey will be considered together with our findings from direct stakeholder consultations, and from clinical data analysis.

Completing the survey

Questions are completed by simply selecting the box next to the comment or score that most reflects your response.

For example:

Are you male or female?

◯ Male

⊗ Female

or write your comments in the free text field.

Completing the questionnaire

Once you have completed the survey, simply click on the 'submit' button on the last page of the survey for your responses to be recorded with us.

For more information

For any questions in relation to this survey, or if you would like to discuss any components of the EDS evaluation, please contact:

[name] .....

[Title/role] .....

[Phone] .....

If you have any concerns or issues about the way in which this survey has been carried out and you do not feel comfortable communicating with the staff conducting this survey, please contact XXXX.

These questions tell us

ABOUT YOU

1 Please indicate your current unit/speciality area (if you work across more than one area, please indicate the work area where you are most involved in discharge planning):

select from a drop down list of options (such as emergency department, cardiology, general medicine, oncology etc…)

2 Please select your profession:

select from a drop down list of options (such as medicine, nursing, occupational therapy, pharmacy, physiotherapy, psychology, social work, administration/clerk)

3 When did you commence employment at [xx] Hospital?

4 What is your current role and unit/speciality?

5 In the last month, on average how many discharge summaries have you had involvement with each week?

- ○ 0
- ○ 1 to 4
- ○ 5 to 9
- ○ 10+

These questions are about

PLANNING AND IMPLEMENTATION OF EDS TO SUPPORT PATIENT SAFETY

6 Please describe the mechanisms that were put in place to support users in their transition to the new process (consider training, policies and procedures and publicising activities).

7 In your view, how effective were these mechanisms (please indicate on the scale from 1–5 below)?

- ○ 1) Ineffective
- ○ 2) Somewhat effective
- ○ 3) Neither ineffective nor effective
- ○ 4) Effective
- ○ 5) Very effective

8 Do you have any suggestions on how this training may be improved?

9 In your view, what were the most significant barriers faced at implementation?

10 In your view, what factors facilitated progress through this phase?

These questions are about

USE AND MANAGEMENT OF EDS TO SUPPORT PATIENT SAFETY

11 How would you rate the quality of current EDS (please indicate on the scale from 1–5 below)?

- ○ 1) Poor
- ○ 2)
- ○ 3) Good
- ○ 4)
- ○ 5) Excellent

12 How would you rate the quality of discharge summaries prior to the implementation of EDS (please indicate on the scale from 1–5 below)?

- ○ 1) Poor
- ○ 2)
- ○ 3) Good
- ○ 4)
- ○ 5) Excellent

13 What effect has the EDS system had on discharge summaries, with respect to:

a) discharge summary content, including the accuracy?

- ○ 1) Less accurate
- ○ 2)
- ○ 3) No change
- ○ 4)
- ○ 5) More accurate

b) discharge summary content, including the completeness?

- ○ 1) Less complete
- ○ 2)
- ○ 3) No change
- ○ 4)
- ○ 5) More complete

c) the length of discharge summaries?

- ○ 1) Too short
- ○ 2)
- ○ 3) About right
- ○ 4)
- ○ 5) Too long

14 Approximately how long does it take on average for you to complete an EDS?

- ○ <10 minutes
- ○ 10–20 minutes
- ○ 20–30 minutes
- ○ more than 30 minutes

15 Have you used the EDS support systems available (for example technical support services)?

- ○ Yes
- ○ No
- ○ Not sure

16 If so, what did you require support for?

.....

.....

.....

17 In your opinion, does the EDS system meet the needs of all patients?

- ○ Yes
- ○ No
- ○ Not sure

18 If not, why and for which patients could it be improved?

.....

.....

19 Have there been any other unintended consequences of the EDS?

.....

.....

Thank you for your time and for your comments.

Please ensure to press submit once you have completed the survey questions or place your completed survey in the reply paid envelope.

Survey – GPs/community based healthcare professionals that receive a completed EDS

Provided below is an example survey for administration to health professionals who receive a completed EDS (e.g. GPs and allied health professionals in the community, specialists and clinicians from other hospital sites). The survey has been developed with a focus on ensuring that:

- it is easy for respondents to complete (both in terms of number of questions, the answers they are required to answer, and that they do not need to research information)
- it is easy to quantitatively analyse the responses through the use of Likert scales (e.g. 70% of respondents were satisfied with the quality of the EDS)
- giving respondents the opportunity to provide more details, via free text fields. These would need to be thematically analysed.

While the survey has been identified with GPs and general practice staff in mind, it may be adapted in future for specialists and allied health practitioners in the community as the breadth of EDS distribution evolves.

It is recommended that the survey is adapted for administering pre-implementation and then administered annually, to all GPs or community based healthcare clinicians who have received an EDS. It is important to note that, to improve the survey response rate, it is best that a paper based survey is administered with reply paid envelopes, and incentives are offered.

Electronic Discharge Summary (EDS) Evaluation Survey – Healthcare professionals that receive a completed EDS

About this survey

This survey is to seek your feedback relating to your experience with electronic discharge summaries (EDS). It provides an important opportunity for us to identify the safety and quality impacts associated with the introduction of EDS.

Your participation is voluntary and you do not need to complete this survey if you do not wish to do so. ***Responses are confidential*** and you will not be identified in the survey or any reports based on the survey.

Why your participation is important

Your participation is needed to help us understand:

- the safety and quality impacts (both positive and negative) associated with the introduction of EDS
- your experience with EDS
- what the enablers were for the implementation and ongoing safe use of EDS
- any particular barriers experienced using or receiving EDSs.

What we do with the information

We will use the survey responses to evaluate the impacts the EDS has had on the safety and quality of patient care. Information gathered in this survey will be considered together with our findings from direct stakeholder consultations, and from clinical data analysis.

For more information

For any questions or concerns in relation to this survey, or if you would like to discuss any components of the EDS evaluation, please contact:

[name] .....

[Title/role] .....

[Phone] .....

or if you would like to make a **formal complaint**, please feel free to contact: XXXXX

These questions tell us

ABOUT YOU

1 Please select your profession:

select from a drop down list of options (such as medicine, nursing, occupational therapy, pharmacy, physiotherapy, psychology, social work, administration/clerk)

2 In the last month, on average, how many EDSs have you received from XXXX Health Service discharge summaries each week?

- ○ 0
- ○ 1
- ○ 2 +

These questions are about

USE AND MANAGEMENT OF THE EDS TO SUPPORT PATIENT SAFETY

3 How would you rate the quality of current EDSs received from XXXX Health Service (please indicate on the scale from 1–5 below)?

- ○ 1) Poor
- ○ 2)
- ○ 3) Good
- ○ 4)
- ○ 5) Excellent

4 How would you rate the quality of discharge summaries received from XXXX Health Service prior to the implementation of the EDS (please indicate on the scale from 1–5 below)?

- ○ 1) Poor
- ○ 2)
- ○ 3) Good
- ○ 4)
- ○ 5) Excellent

5 Comparing your current experience to prior to the implementation of the EDS, do you contact XXXX Health Service to clarify elements of discharge summaries? Please select one of the following.

- ○ More often
- ○ The same as before
- ○ Less often
- ○ Not applicable

6 What effect has the EDS system had on discharge summaries, with respect to:

a) the timeliness of discharge summary completion by health service staff and receipt by the GP?

- ○ 1) Less timely
- ○ 2)
- ○ 3) No change
- ○ 4)
- ○ 5) More timely

b) the accuracy of the discharge summary?

- ○ 1) Less accurate
- ○ 2)
- ○ 3) No change
- ○ 4)
- ○ 5) More accurate

c) the completeness of the discharge summary?

- ○ 1) Less complete
- ○ 2)
- ○ 3) No change
- ○ 4)
- ○ 5) More complete

d) the length of discharge summaries?

- ○ 1) Too short
- ○ 2)
- ○ 3) About right
- ○ 4)
- ○ 5) Too long

e) the readability of the discharge summaries?

- ○ 1) Harder to read and understand
- ○ 2)
- ○ 3) No change
- ○ 4)
- ○ 5) Easier to read and understand

7 Do you have any other comments that you wish to make?

.....

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.....

Thank you for your time and for your comments. Please ensure to press submit once you have completed the survey questions or place your completed survey in the reply paid envelope.

B. Medical file and EDS desktop audit tool

The desktop file audit has been developed to determine the level of consistency between the information in the medical record and the EDS, across a number of specified domains. The audit tool was developed to align to the NEHTA core components of a discharge summary and contains four core domains:

- ***Encounter record***, including discharge date, admission date, method of transmission and length of EDS, amongst others
- ***Event***, including GP details, separation mode, encounter/ admission summary and responsible health professional (Part A)
- ***Health profile***, including diagnoses, medical history, and medication, amongst others (Part B)
- ***Discharge planning***, including the discharge plan, recommendations and information provided to the subject of care, amongst others (Part C).

It is recommended that desktop audits using this tool are undertaken periodically on an ongoing basis, on a cross sample of at least 30 patient admissions across the range of clinical areas (e.g. including general medicine, general surgery and specialist medicine).

Audit Tool Information Sheet and Guide

Purpose – To undertake a review of patient discharge summary information recorded in the EDS/structure discharge document template, review the documented information contained in the EDS and compare it to information recorded in 1) the medical record and Electronic Medical Record/Information Technology system and 2) documentation in the medical progress notes and associated medical records such as the final medication chart and pathology results.

Audit Tool Guide:

Documented					Consistent			Evidence/Example
Was this information available? (Circle response)					Was the information consistent between the EDS and the Medical Record (Circle response)			Provide supporting evidence/examples in relation to consistency
Medical Record		**EDS**			**Yes**	**No**	**Partial**	
Yes Information Available	**No** Information not available	**Yes**	**No**	**Partial** Partial/ incomplete informa-tion avail-able	(information documented both in EDS and Medical Record)	(information not documented both in EDS and Medical Record)	(partial consistency between the information documented both in EDS and Medical Record)	

Audit Tool

Audit: Encounter Record ___ of ___

Patient/Unit Medical Record Number:			**Facility:**		**Date of Admission:**		**Date of Discharge:**		
					____/____/20___		____/____/20___		
Length of EDS: (when printed on A4 paper)			**Confirmation of Receipt of EDS:**				**Time of Receipt of EDS:**		
_____page(s)			Yes		No		_____day(s) post discharge		
EDS – Method of Transmission:			**EDS – Forms of Data Entry Used:**				**EDS – Text Options:**		
Secure email	Fax	Post	Patient hand delivery	Manual Data Entry	Automated Data Entry	Mixed Manual/ Automated Data Entry	Free Text	Standardised Healthcare/ Clinical Terminology	Mixed Free Text/ Standardised Terminology
Document Author/Contributors Listed:			**Document Control/Status Listed:**				**Document Recipients Listed:**		
Yes	No	Partial	Yes	No	Partial	Yes	No	Partial	
EDS Attachments: (please list relevant documents attached to EDS as part of ongoing care)									

PART A: EVENT

Information	Documented					Consistent			Evidence/Example
	Medical Record		EDS						
1 GP Details/Nominated Primary Healthcare Providers	Yes	No	Yes	No	Partial	Yes	No	Partial	
2 Responsible Health Professional at Time of Discharge/Contact Hospital Doctors	Yes	No	Yes	No	Partial	Yes	No	Partial	
3 Encounter/Admission Summary	Yes	No	Yes	No	Partial	Yes	No	Partial	
4 Separation Mode/Destination on Discharge	Yes	No	Yes	No	Partial	Yes	No	Partial	

PART B: HEALTH PROFILE

Information	Documented					Consistent			Evidence/Example
	Medical Record		EDS						
5 Problems/Principal Diagnosis	Yes	No	Yes	No	Partial	Yes	No	Partial	
6 Additional Problems/Diagnoses/ Co-morbidities/Complications	Yes	No	Yes	No	Partial	Yes	No	Partial	
7 Clinical Investigations/Principal Procedures/Additional Procedures	Yes	No	Yes	No	Partial	Yes	No	Partial	
8 Medical History	Yes	No	Yes	No	Partial	Yes	No	Partial	
9 Alerts/Critical Alerts	Yes	No	Yes	No	Partial	Yes	No	Partial	
10 Clinical Synopsis/Examination Findings	Yes	No	Yes	No	Partial	Yes	No	Partial	
11 Diagnostic Investigations	Yes	No	Yes	No	Partial	Yes	No	Partial	
12 Medications	Yes	No	Yes	No	Partial	Yes	No	Partial	
13 Adverse Reactions	Yes	No	Yes	No	Partial	Yes	No	Partial	

PART C: PLAN

Information	Documented					Consistent			Evidence/Example
	Medical Record		EDS						
14 Plan	Yes	No	Yes	No	Partial	Yes	No	Partial	
15 Information Provided to Subject of Care and/or Relevant Parties									
16 Arranged Services and Planned Activities									
17 Recommendations									

C. Quality review tool

Given the diversity of admission types to different health care settings, from maternity, surgery, mental health, general medicine through to rehabilitation, no one single set of EDS questions will have relevance across all specialties. Subsequently, the following series of questions are provided more so as prompts or questions to consider the EDS and its contents critically.

Over time, these questions may be refined and a series of questions specific to each specialty area/diagnostic group identified. Until this time, it is recommended that the quality review process be conducted on a sample of EDS by a clinical director or peer from the related specialty area.

EDS fields		EDS Quality review questions to ask
NEHTA Term	**Alternative Term(s)**	
1 Adverse Reactions		• Are the known adverse reactions for the patient (including allergies and intolerances), and relevant reaction details included? • If not, is this clearly identified with 'nil known' or words to that effect?
2 Alerts	Critical Alerts	• Are the alerts pertaining to the patient that may need special consideration or action by the recipients (such as GP) clearly identified? • If not is this clearly identified with 'nil known' or words to that effect.
3 Arranged Services and Planned Activities		• Have the clinical services that have been arranged for the patient been clearly identified (such as: service type, contact details, date and time, what to take)?
4 Attachments		• Should a care plan, health assessment or similar document be attached to the EDS? If so, is this attached (consider particularly for patients who had longer stays and complex interdisciplinary care)?
5 Clinical Interventions	Principal Procedures/Additional Procedures	• Are the key clinical interventions included in the EDS? Consider not only invasive but non-invasive procedures and cognitive interventions.
6 Clinical Synopsis	Examination Findings	• Does the clinical synopsis contain summary information/ comments about the clinical management of the patient, prognosis of diagnoses/problems identified during the healthcare encounter? • Does it also include health-related information pertinent to the patient, and/or a clinical interpretation of relevant investigations and observations performed on the patient (including pathology and diagnostic imaging if applicable)?

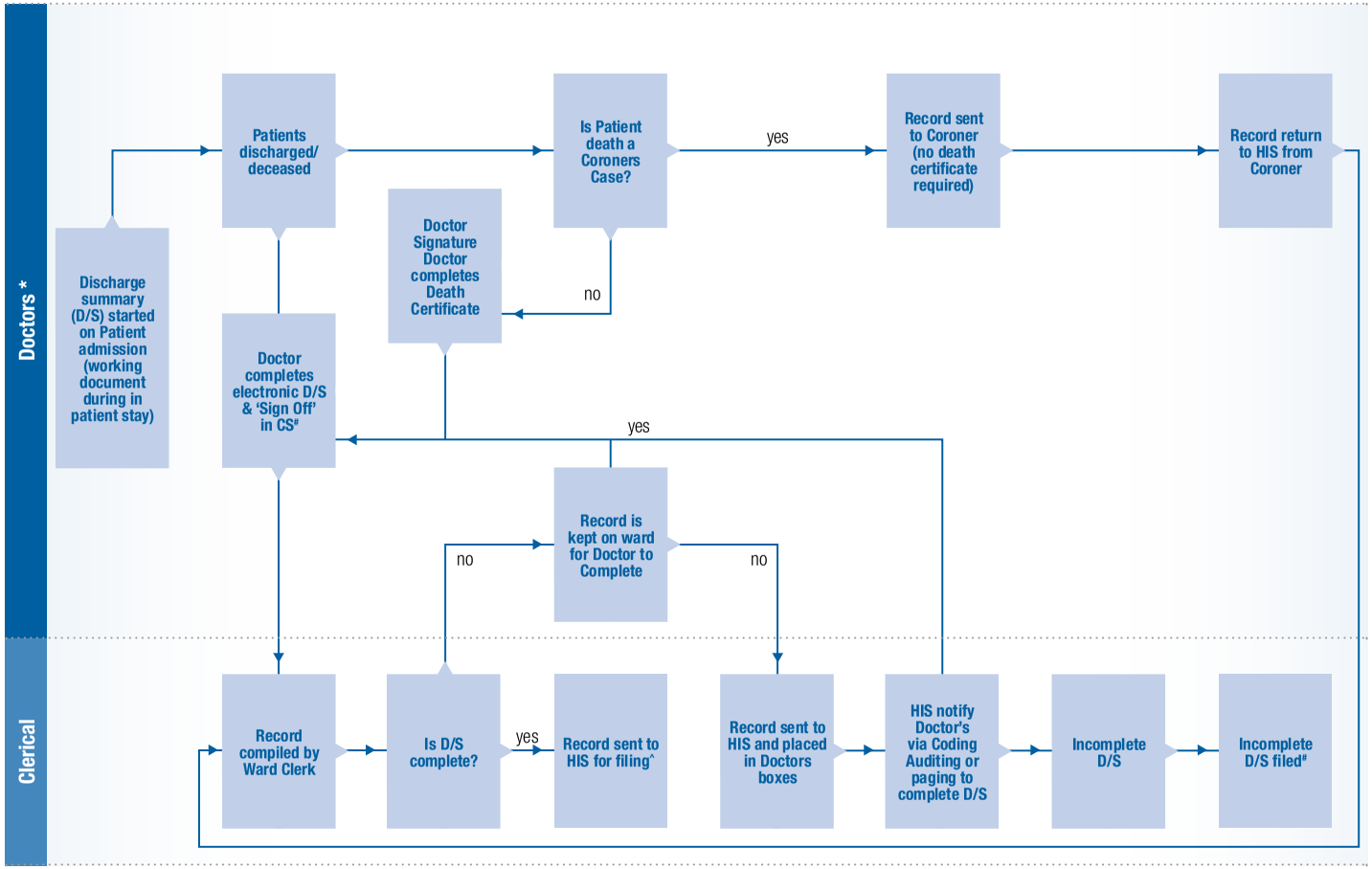
EDS fields		EDS Quality review questions to ask
NEHTA Term	**Alternative Term(s)**	
7 Separation Mode	Destination on Discharge	• Is the separation status of the patient (e.g. discharge/ transfer/death) and place to which patient is released (e.g. home, residential aged care facility, etc) clearly articulated?
8 Diagnostic Investigations		• Are the relevant diagnostic and clinical investigations performed (to the patient's ongoing care) included in the EDS?
9 Plan		• Are the services requested for the patient and the advice given to the recipient community healthcare providers (such as a GP) and/or the patient included clearly in the EDS?
10 Document Author	Contributors	• Is the main author (health care provider chiefly responsible for patient care during admission episode) of the EDS clearly stated?
11 Document Control	Status	• Is it clear whether the EDS has been finalised or does it remain in draft? Are any changes or additions clearly identified?
12 Document Recipients		• Is a community healthcare provider (person or organisation) identified to receive the EDS either via electronic or manual means? If not, are other distribution processes identified clearly (such as patient to provide to GP for example)?
13 Encounter	Admission Summary	• Are the key elements of the health care encounter succinctly identified in an admission summary, for the purposes of communicating pertinent information to community clinicians?
14 Information Provided to Subject of Care and/or Relevant Parties		• Is it clear in the EDS as to what information and education has been provided to, and discussed with, the patient, their family, carer and/or other relevant parties? Consider awareness or lack of awareness of diagnosed conditions, and related health management. An indication of whether or not the patient or carer has understood/or is able to understand may also be noted.
15 Medical History		• Are any relevant diagnoses and/or health/medical problems pertaining to the patient, as well as any relevant clinical interventions that have been performed on or for the patient, included in the EDS? Consider relevance for the community clinician providing ongoing care (such as the GP).

EDS fields		EDS Quality review questions to ask
NEHTA Term	**Alternative Term(s)**	
16 Medications		• Does the EDS describe relevant medication information for the patient to be communicated to the general practitioner? • Does the EDS include detail on current medications on discharge? Is it accurate? • Does the EDS include detail on ceased medications? • Are the reasons/indications for each of these medicines (including reason ceased) identified?
17 Nominated Primary Healthcare Providers	General Practitioner Details	• Is a nominated health care provider recorded? If not, is the reason for omission recorded?
18 Problems	Principal Diagnosis	• Is a diagnostic label or problem statement assigned (describing the principle diagnoses or health/medical problems relating to the patient during the encounter/ admission)? If not, is the reason for omission clearly explained in the EDS?
	Additional Problems/Diagnoses/ Co-morbidities/Complications/	• Is a diagnostic label or problem statement assigned (describing the additional diagnoses or health/medical problems relating to the patient during the encounter/ admission)?
19 Recommendations		• Does the EDS clearly set out recommendations to a recipient healthcare provider and/or the patient which are relevant to the continuity of care and ongoing management of the patient?
20 Responsible Health Professional at Time of Discharge	Contact Hospital Doctors	• Is the healthcare provider who has the overall responsibility (for the care given to the patient at the time of discharge) identified in the EDS (such as the Clinical Director/Consultant/VMO)?

D. Workflow mapping example template

A process or value stream map of the discharge summary completion stages prior to the EDS implementation and a hypothetical or 'potential post implementation EDS process map' will provide valuable insight into any potential changes to workflow and practices. While there are numerous ways to map and record workflows, a useful approach in this case is to use 'swim lanes' or rows across the page to map not only the end to end process but also the staff involved in each step. This approach also allows for easier identification of potential changes for clinicians and administration staff. An example developed by one of the evaluation sites is provided below.

Discharge Summary Completion



* Obstetrics & Mental Health D/S are completed by Midwives and Case Managers but are 'signed off' by patients Doctor.
# Some EH Sites stamp record incomplete.
^ D/S is scanned in Client Patient File (CPF) at WH and YRH.

E. Benefits register

Date identified	Description of anticipated benefit	Potential beneficiaries	Estimated benefit value		Benefit measure or indicator	Responsibility (for measurement)	Baseline value
			Worst case scenario	Best case scenario			
1.6.09	Improved timeliness of Discharge Summary receipt	GP, Patient	50% of EDS received within 48 hours of patient discharge from hospital	99% of EDS received within 48 hours of patient discharge from hospital	Proportion of EDS sent to the GP within 48 hours of patient discharge	Quality Improvement Manager (globally) and Clinical Directors (at a unit/service level)	43%

F. Risk and issues logs

Risk log

Date identified	Description of risk and its potential consequences	Likelihood of occurring (low, medium or high)	Potential impact (minimal, major or catastrophic)	Responsibility	Mitigation strategy
e.g.13.3.09	Potential failure of the IT systems during or after EDS implementation. Leading to the need for manual and temporary solutions to be used for discharge communications.	low	Major	IT Manager, After Hours and Site Manager.	Refer to Failure matrix protocol 258b1, which highlights a staggered response.

Issues log

Date logged (closed)	Issue/action	Raised by	Requires decision/ action of	Date due	Responsibility	Action taken
Open issues or risks						
e.g. 1.8.09	Clinical lead (Dr Sage) will be on leave for 2 months prior to the go live date (Jan–Feb 2010).	Change manager	Project Management Group.	30.11.09	Chair	Acting Clinical lead to be included in all future correspondence and meetings during the absence of Dr Sage.
Closed issues or risks						
e.g. 2.3.10	UAT delayed due to test software delays.	IT project lead	Project Management Group.	2.3.10	IT project lead	UAT timetable to be revised and all clinicians and users notified of final UAT dates.

G. Potential quality and safety measures

Outcome measures relating to EDS can be identified at three levels, described in the evaluation activities section of the Toolkit. As the outcome levels become more important (through to the ultimate aim of improving health outcomes), the direct impact of the EDS lessens; importantly, there are no direct EDS quality and safety measures at this high level. As such, proxy measures are used at the lower levels (A and B) to demonstrate the likely influence of the EDS at the higher outcome level (C).

To minimise the burden on health services, it is recommended that the health services select at least five of the 10 potential measures presented below. These measures should be selected in the context of existing quality and safety indicators used at the local health service level.

The below list of indicators is not exhaustive and may be supplemented or supported by existing data collection activities undertaken by the health service, which could be used to provide prompts or flags for further investigation. For example, an unexpected change in the rate of unplanned readmissions may prompt the health service to investigate whether this is due to an increase in the proportion of GPs not receiving a discharge summary. The levels of outcome measure and specific potential measures and indicators are identified below.

Desired EDS levels of outcomes	Outcomes relating to EDS	Related potential measure/s
Improved patient care processes focussing on the effectiveness of patient care systems	Timeliness of EDS receipt	(1, 2, 5)
	Relevance of information received in the EDS	(3)
	Accuracy of the information received in the EDS	(3, 4)
	Provided to the community clinicians who need the information (delivered and received)	(1, 6, 7)
Improved health care provision focussing on improvements to community clinician decision making	Increased timeliness of community clinician decision making	(2)
	Decreased risk of adverse patient events (such as medication errors, unplanned hospital re-admissions)	(4)
	Decreased risk of duplicating diagnostic and clinical test	(3)
	Improved patient health literacy	(7)
Improved health outcomes focussing on individual patient health outcomes and benefits	Decreased morbidity and mortality	No direct EDS measure
	Lower post acute care adverse events (such as a decrease in adverse medication reactions)	

Potential quality and safety measures (refer to Section B1)	
Measure 1	Number of outstanding EDSs for patients who are meant to have one
Measure 2	Proportion of EDSs sent within 48 hours of patient discharge (timeliness)
Measure 3	Proportion of EDSs which have undergone a peer review (Quality)
Measure 4	Consistency between the EDS and medication documentation (Medication reconciliation)
Measure 5	The proportion of EDSs that are successfully received by the patient's nominated GP
Measure 6	The number of community health professionals within the health service catchment who have the ability to receive an EDS
Measure 7	Proportion of patients who had an EDS completed who were provided with a copy of their EDS
Measure 8	The number of complaints relating to discharge summary/EDS
Measure 9	Satisfaction of GPs with the EDS in terms of its content, readability, length, useability, timeliness and overall satisfaction
Measure 10	Average time to complete an EDS

Potential EDS Quality and Safety measures and indicators

Measure 1

Number of outstanding EDSs for patients who are meant to have one

The patients who are meant to receive an EDS is to be determined by local health service policies – e.g. the health service may decide that an EDS is not to be used in wards/units with high patient turnover.

Potential indicators

- The number of outstanding EDSs at the time of coding or 14 days post patient discharge (whichever is earlier), compared to the total eligible separations/patients discharged.

Measure 2

Proportion of EDS sent within 48 hours of patient discharge (timeliness)

While the 48 hours is to be used universally for this measure, it should not be considered a clinical benchmark, particularly for high risk patients with complex conditions or co-morbidities who need to be seen by their GP within 48 hours.

Potential indicators

- Proportion of EDSs sent within 48 hours of patient discharge
- Results of the GP survey relating to their satisfaction with the timeliness of the EDS that they receive.

Measure 3

Proportion of EDSs which have undergone a peer review (Quality)

The evidence to assess this measure would be collected retrospectively via an audit of a sample of EDS and patient files.

Potential indicators

- Results of quality audit of EDS.

Measure 4

Consistency between the EDS and medication documentation

The EDS should contain accurate information relating to the medications that a patient is currently using as well as those that were ceased or changed during the episode.

There is unlikely to be one single source of evidence for this information within the heath service (e.g. medication reconciliation form may not be written for every patient who is discharged, the National Inpatient Medication Chart (NIMC) does not contain a reason code for changed or ceased medications). It is therefore likely that the EDS will need to be reviewed for consistency against a number of potential sources of information, including the medication reconciliation form, the NIMC and the patient notes.

Potential indicators

- Degree of consistency between the EDS and available medication documentation, such as the medication reconciliation form, the National Inpatient Medication Chart and patient file.

Measure 5

The proportion of EDSs that are successfully received by the patient's nominated GP

This measure is reliant on the ability of the GP software and messaging systems being able to send a positive or negative acknowledgement to the health service and that this information is collected by the health service.

Potential indicators

- Proportion of EDSs sent for which an acknowledgement of receipt has been received by the GP/medical practice.

Measure 6

The proportion of GPs within the health service catchment that have the ability to receive an EDS

This measure provides important contextual information relating to the implementation of an EDS system.

Potential indicators

- Proportion of GPs within health service catchment capable of receiving an EDS.

Measure 7

Proportion of patients who had an EDS completed who were provided with a copy of their EDS

This measure could be assessed based on raw numbers (which requires a field within the EDS system 'EDS provided to patient' or similar), or could be assessed during a regular audit of a selection of EDS.

Patients could be provided with the EDS on the day of discharge or a copy could be sent to them at a later date (either via post, electronic mail or ultimately the PCEHR).

Potential indicators

- Proportion of patients who had an EDS completed who were provided with a copy of their EDS.

Measure 8

The number of complaints relating to discharge summary/EDS

This measure would require a discreet field in the health services' incident management system (e.g. Riskman) that enables the reason for a complaint to be relating to the EDS/discharge summary.

Potential indicators

- The number of complaints per month to the health service relating to discharge summary/EDS.

Measure 9

Satisfaction of GPs with the EDS in terms of its accuracy, completeness, readability, length, timeliness and overall quality

Evidence for this measure would likely be collected via a survey of GPs/community healthcare professionals that have received an EDS. An example survey is provided at Appendix A.

Potential indicators

- Satisfaction elicited through use of a survey on a five point Likert scale rating accuracy, completeness, readability, length, timeliness and overall quality from poor to excellent.

Measure 10

Average time taken to complete an EDS

If the EDS system allows for it, the information underpinning this measure could be collected based on the log-in information for clinicians into the EDS system. Alternatively, clinicians could be asked to estimate the average time taken to complete an EDS.

This information should be measured and analysed by ward or speciality area.

Potential indicators

- Time taken by clinician to complete an EDS.

H. Glossary

Term	Definition
Clinical handover	The transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis.
Clinician	A health professional directly providing health care services such as a medical officer, nurse, or allied health professional.
Discharge summary	A document prepared by the attending physician of a hospitalised patient that summarises the admitting diagnosis, diagnostic procedures performed, therapy received while hospitalised, clinical course during hospitalisation, prognosis, and plan of action upon the patient's discharge with stated time to follow-up.
Health Care Worker	A health care provider or health professional who delivers proper health care in a systematic way to any individual in need of health care services.
Health Services	Facility involved in the provision of health care such as hospitals and community health facilities.
Patient administration system	Application responsible for recording and reporting administrative details of a patient's encounter in a hospital.
Project stakeholders	Project stakeholders are those entities within or outside an organisation which sponsor a project, or have an interest or a gain upon a successful completion of a project; or may have a positive or negative influence in the project completion.
Workflow mapping	A method of completely describing the materials and information flows necessary to accomplish one or more specific objectives of work, in their correct sequence, in a single job, a process, an organisational unit, or an entire organisation.

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