hiso Health Information Standards Organisation
PAEREWA PĀRONGO HAUORA

Electronic Pharmaceutical Business Process Standard

HISO 10030.1

To be used in conjunction with
HISO 10030.2 Electronic Pharmaceutical
Messaging Standard

Copyright Information

This document has been approved as a Standard for the New Zealand health and disability sector by the Health Information Standards Organisation (HISO), a sub-committee of the Health Information Strategy Action Committee (HISAC), which is a ministerial committee appointed by the Minister of Health.

HISAC is the copyright owner of this document. HISO work on this document may be reproduced in any number of copies and in any format or medium provided:

- the content is not changed;
- the material is not sold;
- the material is not used to promote or endorse any product or service;
- the material is not used in an inappropriate or a misleading context having regard to the nature of the material;
- any disclaimers included on the published information are reproduced on the material;
- a copyright acknowledgment to the Health Information Strategy Action Committee is included.

Permission to reproduce HISAC work does not extend to include any work identified in this document as the copyright material of a party other than HISAC. Authorisation to reproduce such material must be obtained from the copyright holders concerned.

Published in October 2008 by HISAC
PO Box 5013, Wellington, New Zealand

ISBN 978-0-478-31777-0 (Online)
This document is available on the HISAC website:
http://www.hisac.govt.nz

Contents

Figures and Tables

Appendices

Committee Representation

Committee 10030.1 was responsible for the preparation of this draft document and consisted of the following representatives:

Nominating Organisation	Representative
Accident Compensation Corporation	Sunita Goyal
Auckland DHB	Rob Ticehurst
Counties Manukau DHB	Aaron Jackson
Genesis Consulting Group	Shayne Hunter
Healthlink Ltd	Edwin Ng
iSoftHealth Ltd	Jens Andreas
Medtech Ltd	Peter Sergent
Ministry of Health	Nicola Hill
NZ Guidelines Group	Nicola Lee
NZ Pharmacovigilance Centre	Janelle Ashton
Pegasus Health	Martin Wilson
PHARMAC	John Geering
Pharmaceutical Society of NZ	Dale Griffiths
Pharmacy Advisory Group	Lisa Teague
Pharmacy Guild NZ	Alex Lees
Radius Pharmacy	Megan Teusse
RNZCGP	David Monks
Safe & Quality Use of Medicines (SQM) Group	Marilyn Crawley
South Link Health	Chris Hilder
Toniq	Clive Davidson
Waikato Community Pharmacy Group	Steve Roberts
Whanganui Regional PHO	Fiona Corbin

Related Documents

The documents listed below were referred to in developing this Standard. They may be consulted if required in order to clarify this Standard.

HISO

HISO 10011.1: 2007 Referral, Status and Discharges Business Process

HISO 10011.2: 2007 Referral, Status and Discharges Messaging Standard

HISO 10011.3: 2007 Referral, Status and Discharges Implementation Guide

HISO 10008.2: 2007 Pathology and Radiology Messaging Standard

NZS Standard

SNZ HB 8169: 2002 – Health Network Code of Practice

AS/NZS Standards

AS/NZS 4700.3: 2002 – Implementation of Health Level Seven (HL7) version 2.3.1 – Electronic messages for exchange of information on drug prescription

AS/NZS 4700.1: 2005 – Implementation of Health Level Seven (HL7) version 2.4 – Patient administration

AS/NZS 4700.3: 2005 – Implementation of Health Level Seven (HL7) version 2.4 – Electronic messages for exchange of information on drug prescription

AS/NZS 4360: 2004 – Risk management

AS Standards

AS 4700.1: 1998 – Implementation of Health Level Seven (HL7) version 2.3 – Patient administration

AS 4700.2: 2004 – Implementation of Health Level Seven (HL7) version 2.3.1 – Pathology orders and results

AS 4700.6: 2004 – Implementation of Health Level Seven (HL7) version 2.3.1 – Referral and discharge summary

AS 4700.7: 2005 – Implementation of Health Level Seven (HL7) version 2.3.1 – Diagnostic imaging orders and results

AS 4700.3 (Int): 2007 – Implementation of Health Level Seven (HL7) version 2.5 – Electronic messages for exchange of information on drug prescription

AS 4700.5 (Int): 2007 – Implementation of Health Level Seven (HL7) version 2.5 – Immunisation messages

Other Standards

HL7 v2.3.1 – Health Level Seven Standard version 2.3.1, Health Level Seven Inc, Ann Arbor, 1999

Health Level Seven Inc, HL7 Standard version 2.4: 2000 – An Application Protocol For Electronic Data Exchange in Healthcare Environments

Health Level Seven Inc, HL7 Standard version 2.5: 2003 – An Application Protocol For Electronic Data Exchange in Healthcare Environments[1]

ISO 3166: ISO 3166-1: 1997 – Codes for the representation of names of countries and their subdivisions – Part 1: Country Codes

ISO 2955: Information processing – Representation of SI and other units in systems with limited character sets

Canada Health Infoway: Canadian Clinical Drug (CeRx) Messaging Standard

[1] This is the document referred to in the text as “HL7 v2.5”.

Other Publications

Pharmacy Council of New Zealand Code of Ethics 2004

Pharmaceutical Schedule

Pharmacy Procedures Manual, version 3

Guidelines for the Development and Operation of Standing Orders, November 2002 (Revised April 2006)

Enabling the Therapeutic Products and Medicines Bill to Allow for the Development of Collaborative Prescribing

Implementation Guide for Messaging with the National Immunisation Register

New Zealand Legislation

Health Information Privacy Code 1994

Medicines Act 1981, Section 29

Medicines Regulations 1984

Misuse of Drugs Act 1975

Medicines (Standing Order) Regulations 2002

Privacy Act 1993

(These are available on http://www.legislation.co.nz/ and http://www.legislation.govt.nz/)

1 INTRODUCTION

1.1 Background

The Health Information Strategy Action Committee (HISAC) is a ministerial committee responsible for the governance, oversight and leadership for the implementation of the Health Information Strategy for New Zealand (HIS-NZ), including the oversight and prioritisation of health information standards.

The New Zealand Health Information Standards Organisation (HISO), a subcommittee of HISAC, is charged with developing, endorsing and promoting health information standards.

1.2 The Health Information Strategy for New Zealand (HIS-NZ)

HIS-NZ identifies 12 'Action Zones' that provide a focus for health information in New Zealand over the next three to five years. HISAC has identified ePharmacy – Action Zone 4 as a priority in which it will deliver the required standards through HISO, and champion the development of sector-wide General Practice and community pharmacy system application solutions.

For each Action Zone, a detailed 'Preliminary Scope and Approach' (PS&A) document has been prepared. This is the core reference material for all ePharmacy-related activity and is available on the HISAC website: http://www.hisac.govt.nz

The PS&A provides information on the current situation and opportunities for improvement that ePharmacy seeks to address, and the benefits of ePharmacy.

The PS&A states that ePharmacy will be delivered through a cohesive and efficient set of standards, electronic systems, clinical decision support systems and business processes that will work with the results of the other Action Zones to enable improvements and efficiencies in pharmaceutical care.

To support ePharmacy Action Zone 4, HISO is coordinating the development of a range of standards; initially focusing on:

- Pharmaceutical Business Process and Messaging Standards:

  This set of standards will define a common set of business processes and the data elements that constitute a pharmaceutical transaction message.

- Common Medicines Terminology:

  This standard will uniquely identify all medicines at the pack and individual dose level by brand, generic name and therapeutic group. It will include information on dose form, active ingredient, and strength. It will enable the recording of prescribing and recommended dose information for each medicine as well as serious interactions and contraindications. It will underpin a universal electronic pharmaceutical or medicines 'list' for use across the New Zealand sector by prescribers, pharmacists and hospitals, which will improve efficiency, quality and safety.

1.3 About this Document

The documents related to Pharmaceutical Business Process and Messaging Standards as described in section 1.2 above are important contributors to the standards landscape for ePharmacy. Further, a number of the core concepts outlined in this document support the vision for shared electronic health information described in (HIS-NZ).

The two documents are:

Document Number	Document Title	Purpose
10030.1	Business Process Standard	You are reading this document. It provides context for the Messaging Standard, including a business model and key business processes.

Document Number	Document Title	Purpose
10030.2	Messaging Standard	This describes the structure and content of the message exchanges between sender and receiver, including mandatory, conditional and optional information requirements.

Table 1: Related Documents in Pharmaceutical Standard

This document outlines:

- A business model that:
  - summarises the overall context of the New Zealand Pharmaceutical Business Process and Messaging Standard;
  - describes the high-level business processes and information flows related to the sending and receiving of electronic information passed between parties within the 'prescribe, dispense and administer' lifecycle.
- A series of use-cases to describe the key processes that support the 'prescribe, dispense, and administer' lifecycle in various settings, including the requirements in terms of supporting information data-flows.

The development of this document has been an iterative process. It now reflects the considered view of the members of the Pharmaceutical Business Process and Messaging Standard Expert Advisory Committee responsible for developing this Standard.

The following assumptions apply to this document:

- This document provides a high-level overview of prescribing, dispensing and related activities as they are practised in New Zealand. It does not cover detailed nuances, or obscure or infrequent business practices.
- Business practices not sanctioned by law or regulation are specifically excluded.
- Messaging is one way of addressing the cross-organisational exchange of information related to ePharmacy, but is not the only way that information may be exchanged. Alternative approaches should refer to this Standard and align at the process and data level.
- Not all HL7 Message interactions/transactions are captured in this Standard (e.g. payments claiming, patient consent).
- It does not provide an implementation pathway. This will be addressed separately.

2 BUSINESS PROCESS AND DATA-FLOW MODEL

2.1 Purpose

The business process and data flow model described in this document is intended to provide guidance to the development of a New Zealand Pharmaceutical Business Process and Messaging Standard. As such, it defines business processes and information flows that are considered in the development of the Standard. It represents the major processes and business functions that a health care professional, such as a GP or a pharmacist, may perform in the provision of medicines and related services. The inclusion of a business process in this model does not necessarily imply that support for the process, including messaging, will form part of this Standard. It is necessary to include some processes in order to reinforce boundaries for the scope of this Standard.

The model reflects the clinical and business background for the Standard, in terms that should be understandable to all stakeholders, including health care professionals, business and policy representatives and technical implementers.

2.2 About the Model Diagram

The following points relate to the business process and data flow model diagram in Figure 1[2].

- All items with solid boxes and lines are 'in scope' of this Standard. The items with dotted boxes or lines are considered 'out of scope' of this Standard (refer section 2.6). Note that the scope of the model has been limited to cover ambulatory care and discharge from institutional care settings only. However, most business processes still apply at the institutional setting level and can be extended with little effort.
- The blue box is intended to cover the underpinning infrastructure, specifically those information systems that support prescribing, dispensing, administering of medicines and messaging, as well as local, regional and national data collection and reporting systems, e.g. shared patient information such as allergies, NHI, medication history, Pharmacy Data Mart (formerly 'Pharmhouse'), etc.

[2] This model is based on work done by Canada Health 'Infoway'.

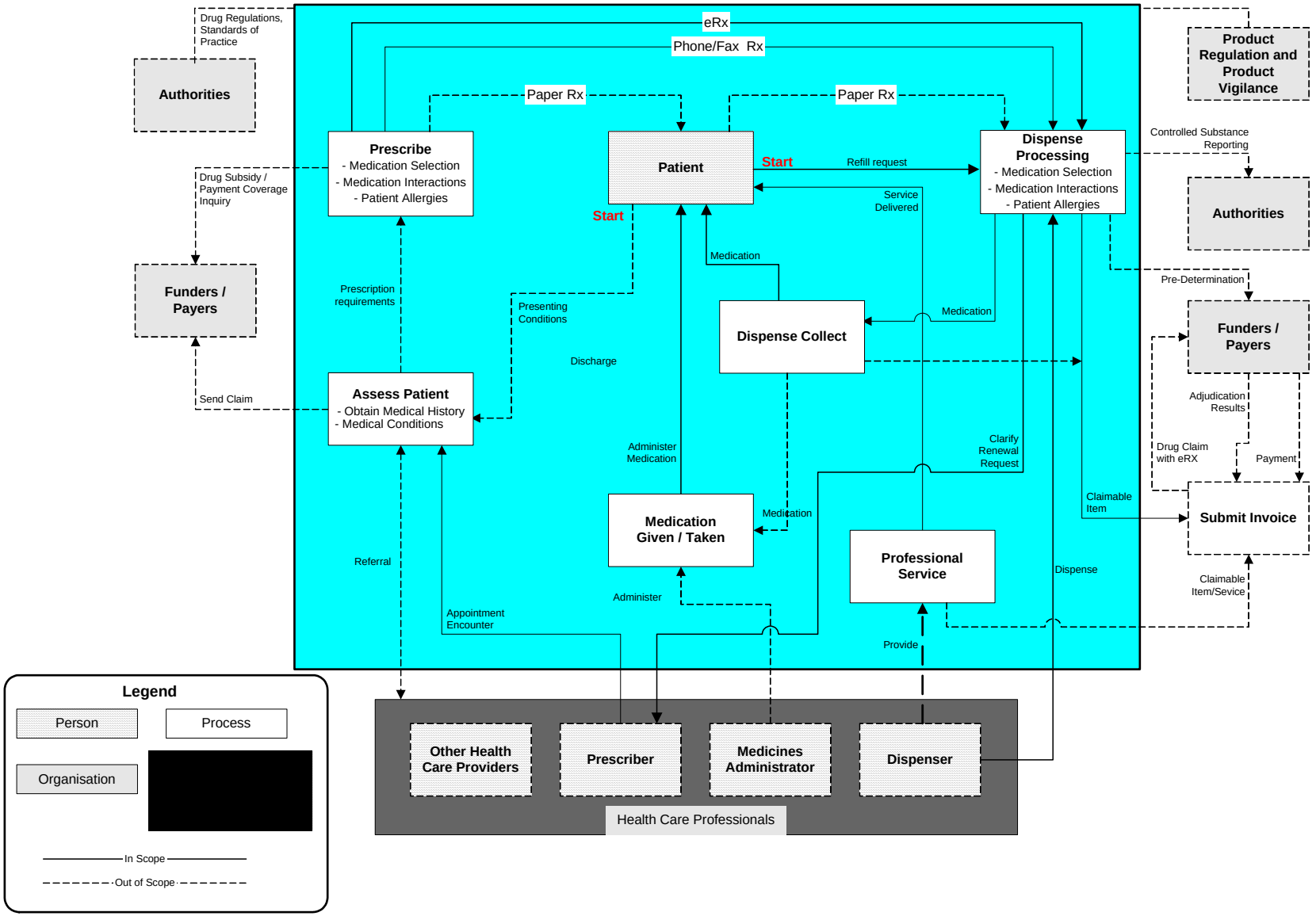

Figure 1: Business Process and Data-Flow Model

2.3 Introduction

There are two start points identified in the model: an initial prescription and a subsequent fill (e.g. a repeat). The process can terminate at any point in the model (e.g. patient does not collect a prescription).

2.4 Key Persons

The key health care providers in the business model are:

- A 'prescriber', who may be a General Practitioner (GP), dentist, mid-wife, nurse practitioner, hospital clinician, or other health care professional (as defined in relevant legislation).
- A 'dispenser', who is usually a pharmacist, but could be a GP, dentist, or other health care provider (as defined in relevant legislation). In general terms, it would be the pharmacist or the prescriber as permitted in legislation.
- A 'medicines administerer' who, for the purposes of this model, has administered a medicine to a patient. This could include a health care professional, the patient themselves (self-administered), or a parent or other caregiver in a household situation.
- Other health care professionals, e.g. a dietician or certified diabetes educator, who sees a patient based on a referral from another health care professional, e.g. a GP.

2.5 Key Processes

The key processes in the business model are:

- **Assess patient:**

  To obtain a patient medication profile. For the purposes of this Standard, this could include dispensing/medication history, to help establish what medicines a patient is currently taking. The prescriber may refer to other sources of information to determine family history, allergies, physical and diagnostic tests. The result of this assessment may be a prescription; the prescriber generally checks the proposed medicine against the current list of contraindications or allergies.

- **Prescribe:**

  To confirm appropriate medicines to treat the patient. The prescription is either given to the patient, faxed or phoned into a specific pharmacy, or sent electronically to a specific pharmacy or electronically to a message exchange that holds prescription orders until such time as a patient presents at a pharmacy.

- **Dispense processing:**

  Triggered by the patient presenting the prescription order (paper), or by the receipt of a fax/phone message or electronic prescription order. The dispenser will perform appropriate medicine interaction checking as well as updating a medication profile (if applicable) and prepare the medicine(s).

- **Dispense collect:**

  Describes the process of picking up by – or delivery of the prescription order to – the patient, always at a later point than the dispense processing.

- **Professional service:**

  May or may not accompany the collecting of the medicine, e.g. pharmacist advice to the patient.

- **Medication given/taken:**

  - Administration:

    May or may not be recorded. It may be necessary to record the fact that medicine was given or taken/administered (e.g. recording medicines such as an immunisation or an observed methadone ingestion in the patient's medication record).

  - Instructions:

May or may not be recorded. It may be necessary to record the fact that instructions were given for the patient to change the amount of a medicine that they are taking, or to stop taking the medicine.

In addition to the above processes, there is an ongoing ability to cancel, suspend, release, stop, partially fill, decline to fill, transfer, annotate, abort fill, or record other active medicines. These processes are not indicated in the business model diagram, but are included in scope of this Standard and are covered in more detail in the use-cases.

These processes are described in more detail in section 3.

2.6 Scope of this Standard

2.6.1 'In scope'

The Standard covers the high-level business processes and information flows relating to the sending and receiving of electronic information passed between parties within the 'prescribe, dispense and administer' lifecycle. It focuses on:

- generating and sending electronic prescriptions, including normal attributes of paper prescriptions;
- medication dispensing and administering (where applicable);
- the provision of a shared patient medication list.

This occurs between the following parties:

ePharmacy Lifecycle			
Prescribe setting	**Dispense setting**	**Administer setting**	**Review setting**
Primary care provider	Community pharmacy or primary care provider	Patient/Care provider	N/A
Primary care provider	Hospital	Patient/Care provider	N/A
Hospital	Community pharmacy	Patient/Care provider	N/A
Hospital	Hospital	Hospital	N/A

Table 2: ePharmacy Lifecycle Processes

Exceptions have been explored in order to allow for some future proofing of the Messaging Standard, for example the business process and associated information flows related to prescribing, dispensing and administering of pharmaceuticals in rest homes.

Other specific inclusions are:

(a) Data, including minimum data sets.

(b) Definition of the supporting Messaging Standard (messaging structure, content and transmission).

(c) Ensuring compliance with relevant legislation is not compromised.

(d) Assistance and guidance documentation to support implementation.

2.6.2 'Out of scope'

The Standard does not cover the ePharmacy business processes and information flows related to:

- the generation of invoices (claims) for assessing the patient initially and for the dispensing of the medicine;

- ordering and resulting of lab tests to determine appropriate drug therapies;
- recording and reporting of controlled drugs under the Misuse of Drugs Act 1975 and Regulations.

Other specific exclusions are:

(a) Specifying or developing a pharmaceutical code set; or terminology or reference information systems, such as a dictionary of medicines, electronic schedule, etc.

(b) Specifying or developing any message exchange or shared patient medication history capability, including generalised repository reporting.

(c) Developing an implementation programme to support the roll out of this Standard.

(d) The assessment of technologies and the merits of specific vendor products or emerging terminology standards.

(e) Other required processes such as patient consent, privacy, practitioner and health consumer registries and authentication frameworks necessary to realise the business model.

2.7 Message Exchange and Shared Information

The exchange of health information electronically between disparate health care information systems can provide safer, more timely, efficient, effective, equitable and patient centred care. The implementation of exchange of information initiatives may differ in many ways, however, and success requires that there is adherence to common principles and standards pertaining to the technical and policy aspects of information sharing. Further, there is a need for enabling technical infrastructure to facilitate this exchange.

Such infrastructure components include Health Message Exchanges (HMX) and Shared Information Repositories (SIR). These components are still emerging concepts[3] and the terminology used in this document may change as these concepts are further developed. They have not been specifically and separately identified in the business model diagram (refer Figure 1 above). They are included in the blue box in Figure 1 over which the core business processes are presented. They are also identified in the use-cases in sections 3.5 to 3.7 of this document and in the Messaging Standard (refer to the messaging interaction models therein).

The Standard can be applied in practice without these infrastructure components. For example, it is possible to exchange an electronic prescription and dispense message directly between a prescriber and a dispenser. The benefits of this might include business process efficiencies and improvements in dispensing and patient safety, through reducing transposed or illegible data-related errors.

Messaging is one way of addressing the cross-organisational exchange of information related to ePharmacy. Where messaging-based ePharmacy is implemented, a HMX is an important intermediary service.

SIRs can play a key role in medicine reconciliation, medication management and patient safety, particularly where multiple organisations are involved in the care of a person.

Assumptions relating to HMXs and SIRs are described below.

[3] In New Zealand, there exists the capability to exchange messages between parties and with some modification this capability could support the business processes described in this Standard.

2.7.1 Health Message Exchanges

Health Message Exchanges (HMX) manage the flow of messages to and from parties participating in a business process where information is exchanged. In the case of prescribing medicines, the parties would include a prescriber, dispenser, administerer and SIRs. Essentially, a HMX acts as a 'post office' and holds messages temporarily until they have been delivered to one or more of the parties and the process is completed.

A HMX:

- Validates a message – as defined by agreed business rules which are implemented in a HMX[4].
- Returns valid/invalid acknowledgement messages to the message sender.
- Holds a valid message until the message is sent to a message receiver. This message could be pushed to or pulled by a message receiver.
- Manages distribution of messages, as defined by business rules which are implemented in a HMX.
- Monitors message status and provides alerts, as defined by agreed business rules which are implemented in a HMX.
- Has access to information about a message that, for example, enables it to:
    - ensure that the message conforms to the requisite specification;
    - ensure that it is not a duplicate message;
    - send a message to a specific receiver and notify other parties if required;
    - track the status of a message and notify parties of the status of a message, as and if required;
    - is not a source of patient information that can be searched.

A HMX is a logical concept that can be implemented as one or any number of physical systems. A HMX would be implemented and managed according to an agreed set of standards related to: interoperability (e.g. requisite interface and connection specifications); operations (e.g. service quality, systems management); privacy and security (refer section 2.8 below); and governance.

2.7.2 Shared Information Repositories

Shared Information Repositories (SIR) hold up-to-date information related to a patient's medication history that is accessed by authorised parties with a 'need-to-know' information inquiry related to a patient. The information in a SIR is not intended to be a complete and dynamically updated Electronic Health Record (EHR). Rather, it is a trusted source of patient information that is deemed shareable and contains a subset of the information that resides in the various source/feeder systems from which its data was supplied. This is important, because third parties (i.e. those with no information or limited information in their local system about the patient in their care) will rely on the information in a SIR for decision support, care delivery, etc.

In the case of patient medication, a SIR would contain historical information related to medicines a patient has had prescribed, dispensed and, in some circumstances, administered.

Accessing patient information in a SIR can be direct, for example via a web browser, or in an integrated manner, for example via their business/clinical system such as a Practice Management System (PMS).

To ensure privacy and security of information there will be different controls and rules associated with searching and viewing shared information sources and local sources. Privacy and security is discussed further in section 2.8.

[4] Systems that generate messages should ensure that the message is validated and meets the mandatory data requirements before being sent. These requirements will be defined in a separate ePharmacy implementation guide. Refer to section 1.2 of the document HISO 10030.2 – Electronic Pharmaceutical Messaging Standard.

A SIR is a logical concept that can be implemented as one or any number of physical databases. A SIR could contain data related to a variety of contacts a patient has had with the health system, or the data could be purpose specific, e.g. laboratory test results or pharmaceutical dispensing. A SIR must be implemented and managed according to an agreed set of standards related to: interoperability (e.g. requisite interface and connection specifications); operations (e.g. service quality, systems management); privacy and security (refer section 2.8 below); and governance. It is not necessary to have a 1:1 ratio between a SIR and HMX.

2.8 Privacy and Security

Privacy and security of health information in the health and disability sector is important for the following reasons:

(a) Health information is generally deemed sensitive and needs to be protected. Most health information is collected in a situation of confidence and trust, often in the context of a health professional/patient relationship. Maintaining this confidence and trust is critical.

(b) Health information may be required by the health agency and by other providers treating the individual, long after it has ceased to be needed for the original episode of care and treatment. Ensuring that health information is available only on a need-to-know basis is therefore important.

(c) The ability to exchange high quality health information in a safe and secure manner between partners in health care processes is vital for a health system focused on achieving improved health outcomes.

The implementation of privacy and security protection measures is an important factor for ePharmacy solutions. Privacy and security protection measures for:

- The flow of data between prescribers and dispensers shall be based on the Health Information Privacy Code 1994, SNZ HB 8169: 2002 – Health Network Code of Practice (or any policy or standard that builds on, or replaces this).
- A SIR will be addressed as part of the implementation of the SIR and will include consultation with health professionals, patients and consumers. Consideration will need to be given to what is stored in a SIR, consent models including opt-in or opt-out, and the roles, rights and responsibilities related to accessing or updating information in a SIR.

2.8.1 Specific requirements for this Standard

The requirements related to privacy and security identified in this Standard are:

- Prescriptions sent electronically via a HMX are downloaded by a dispenser using a valid prescription order reference number. When the reference is generated by a prescriber, this number will be provided to the patient (initially on a printed prescription order). In some cases, a prescriber may provide this number verbally to a dispenser. A HMX cannot be randomly searched for prescription orders by patient name or National Health Index (NHI).
- A patient's medication profile (historical information related to medicines prescribed, dispensed and administered) is held in a SIR or across a number of SIRs. Prescribers, dispensers and administerers can access a patient's medication profile. They can search for this information by using either the patient's NHI and/or name and date of birth, or by using a prescription order reference number.
- Access will be strictly controlled and on a 'need-to-know' basis only. Access will only be granted to authenticated and authorised users and systems. Standardised business rules will be implemented in SIRs to ensure that access is appropriately controlled.
- All access to a HMX or SIR will be logged. Logged information will include the date, time, what was accessed, what actions were taken and by whom.

3 PROCESSES

3.1 Purpose

This section describes the major business processes (refer section 3.4) that were introduced in the business model and which are referenced in the use-cases that are described in more detail in sections 3.5 to 3.8.

The use-cases describe the 'prescribe, dispense, and administer' lifecycle for a range of common scenarios, across different settings. They help determine the supporting information and information systems requirements. They may provide guidance in the development of a New Zealand Pharmaceutical Business Process and Messaging Standard, and for those implementing the Standard.

3.2 General Notes

The Standard supports the exchange of information related to prescription medicines, controlled drugs, pharmacist-only medicines, pharmacy-only medicines, general sales medicines and complementary products. It does not require that the supply of pharmacy-only medicines and complementary products be recorded, however, doing so would provide completeness of a patient's medication record.

Some important considerations that apply to all the use-cases described in this document include:

- It is the responsibility of the prescribers, dispensers and administerers to ensure lawful practice in their respective professions, e.g. a dispenser accepts a prescription order, after confirming patient status, order status and dispensing restrictions. A list of the current regulations can be found at http://www.legislation.govt.nz
- It is currently a legal requirement that prescriptions exist in hard copy form and are signed personally by the prescriber, using his/her usual signature. This requirement does not preclude the application of this Standard in practice, i.e. to send prescriptions and dispensing information electronically. What must accompany the patient is a signed hard copy prescription, which is provided to the dispenser. This will continue to be the case until enabling legislation is in place.

  An urgently required prescription can be phoned or faxed to the pharmacy and the process of provision of the original signed copy of the prescription must be consistent with Medicines Regulation 40 A (2). It is not a legal requirement for the original prescription to accompany the patient to the pharmacy.
- Until all parties possess the information systems and communications technologies to support ePharmacy, there will be a mix of manual and electronic information flows related to prescribing and dispensing. This Standard is not dependent on all parties possessing the necessary systems and communications technologies. It supports the various combinations of interactions that may occur including:
  - A prescription order (refer section 3.3 for definitions) is provided on paper and taken to a pharmacy but no electronic prescription is ever sent. The pharmacy is unable to send dispensing information electronically. This is essentially the arrangement that exists today.
  - A prescription order is provided on paper and taken to a pharmacy but no electronic prescription is ever sent. The pharmacy is able to send dispensing information electronically. In this case, a patient's medication profile will be updated to reflect what has been dispensed. A patient will not be able to take the paper prescription order elsewhere for dispensing, as the dispenser has the original prescription order. In the case of a partial dispense, the patient will be given a revised paper prescription order showing what remains to be dispensed. In the case of fraudulent behaviour, the HMX will show the prescription order as being no longer available, or in the case of a partial dispense, the dispenser will see what has or hasn't been dispensed already.
  - A prescription order is provided on paper and taken to a pharmacy and an electronic prescription is sent. The pharmacy is unable to send dispensing information electronically. In this case, a patient's medication profile will be updated to reflect what has been prescribed, but not what has been dispensed. A patient will not be able to take the paper prescription order elsewhere for dispensing, as the dispenser has the original prescription order. In the case of a

partial dispense, the patient will be given a revised paper prescription order showing what was dispensed and what remains to be dispensed. In the case of a patient taking the revised prescription order to a dispenser, the dispenser will be presented with a prescription order that shows all items that are available for dispensing. The dispenser will be requested to ensure the completeness of a patient's medication record by ensuring they update the electronic dispense information with what was shown as dispensed on the paper prescription order they were presented with, as well as what they have dispensed. The HMX will show the prescription order as being no longer available, or in the case of a partial dispense, the dispenser will see what has or hasn't been dispensed already.

- A prescription order is provided on paper and taken to a pharmacy and an electronic prescription is sent. The pharmacy is able to send dispensing information electronically. This is essentially the arrangement we want to achieve.

3.3 Core Terms and Concepts

Appendix A contains a full list of the terms used in the document. The explanation of core terms and concepts below will help make it easier to understand the process definitions that follow.

- **Medicine:**

  Medicine means any substance for administering to one or more human beings for a therapeutic purpose; or any substance for use as an ingredient in a medicine. The term 'medicine' is used throughout this document in preference to 'drug', except where the term 'drug' applies to a specific reference, for example controlled drugs.

- **Medication:**

  Throughout this document, medication refers to a treatment or therapy using medicines.

- **Prescription:**

  Prescriptions are legal documents written within a regulated framework to order a medicine for a patient. For the purposes of this Standard, a prescription specifies a single prescription item (medicine or medical device), a set of instructions and a quantity and/or period of supply relating to that item. By definition, there can only be one item per prescription. However, prescriptions can be grouped into a single prescription order. Note that a prescription is only required for a prescription medicine, since other medicines can be supplied without a prescription. Prescriptions are also often issued for medicines that are not prescription medicines. This may be done in order for the medicine to be funded under the Pharmaceutical Schedule arrangements. A prescription must meet the requirements set out in the Medicines Regulations. A prescription remains legally valid (and therefore able to be dispensed) for a defined period.

- **Prescription order:**

  A prescription is recorded in a prescription order. A prescription order can contain one or more prescription items. By definition, a prescription order must meet the requirements set out in the Medicines Regulations.

- **Prescription order number:**

  Every prescription order will have a globally unique number assigned. This number will adhere to a standard format. Generally it will be created by a prescriber, but it can also be generated by a dispenser. A prescription order number generated by a prescriber will be used throughout the 'prescribe, dispense and administer' lifecycle. Internally, within prescriber or dispenser systems, this number can be mapped to other numbering systems, such as those required for HealthPAC claiming purposes. More details can be found in the Messaging Standard.

  A prescription order can be modified (i.e. have prescription items removed from, and added to it) over time prior to and at the time of dispensing, but not once it has been filled (i.e. the patient has collected the medicines) – and it will keep the same prescription order number.

- **Prescription item number:**

  Each prescription item in a prescription order will be assigned a prescription item number. The prescription item number will be related to the prescription order number. In the case of repeats, each repeat number will relate to the prescription item number (e.g. ABD12345/1, ABD12345/2, ABD12345/3). More details can be found in the Messaging Standard.

A single prescription item within a prescription order can only be cancelled (never modified), and may be replaced by a new prescription item with a new prescription item number.

- **Medication profile:**

  A medication profile relates specifically to a single patient and can include information related to medicines previously prescribed, dispensed and administered (where applicable); alerts such as allergies, medicine reactions, etc and any other relevant information agreed to be shared. What is contained in a medication profile will vary depending on specific parameters that are set at the time the request for a medication profile is made. It may contain a list of current medicines only, or include additional historical information that may be clinically important. This could include prescription medicines, controlled drugs, pharmacist-only medicines, pharmacy-only medicines, general sales medicines and complementary products.

- **Current medication:**

  The term 'current medication' does not have a precise definition. It is outside of the scope of this Standard to define it. The definition of 'current medication' and the parameters that would meet clinical information needs in different contexts will most likely form part of the scope of work to specify the SIR, referred to in section 2.7.2 of this document.

- **In the context of a prescriber, actions that can be taken are:**

  - *Generate* a new prescription order for one-off or repeat prescription(s).
  - *Cancel* an existing prescription order or prescription item within an order, including those started by another prescriber. This can only happen before a prescription order has been retrieved by a dispenser, or, if it has been retrieved, after it has been returned to a HMX. Cancellation should include the reason as to why the cancellation has occurred.
  - *Modify* an existing prescription order. This can only happen before a prescription order has been retrieved by a dispenser, or, if it has been retrieved, after it has been returned to a HMX. This could occur either when a prescriber decides to change the prescribed medicines after the patient has left, or when a presciber adds an additional item to the prescription order.
  - *Authorise* a dispensing that has been made by a dispenser, with prior authorisation from the prescriber (see below). This would typically be for a prescription order that has been modified by a dispenser or counter signing a standing order.
  - *Stop* an existing medication regime, including regimes for prescriptions by another prescriber. This represents a change to the medication regime for a patient, e.g. a patient or caregiver is given instructions to stop taking a medicine(s) they have been prescribed. This can happen only after the patient has collected the medicine(s).
  - *Change* an existing patient instruction, including those for prescriptions by another prescriber. This represents a change to the medication regime for a patient, e.g. a patient or caregiver is given alternate/revised instructions to those originally given in the prescription order. This can happen only after the patient has collected the medicine(s).
  - *Supply* medicine(s) to the patient from stock on hand, or administer a medicine to the patient during a consultation. Recording of a supply to a patient made by a prescriber is required to provide completeness of a patient's medication record.

  NOTE: *Health professionals other than pharmacists, e.g. registered nurses approved by the New Zealand Nursing Council may supply the emergency contraceptive pill.*

- **In the context of a dispenser, actions that can be taken are:**

  - *Accept* a prescription item within a prescription order for dispensing.
  - *Dispense* all prescription items within a prescription order; some but not all prescription items within a prescription order (a 'partial dispense' – see section 3.8.8); or part but not all of a prescription item (an 'owe' – see section 3.8.9).
  - *Cancel* an existing prescription order or prescription item within an order. This can only happen before a prescription order has been filled (dispensed and collected by a patient). Cancellation should occur in consultation with the prescriber and should include the reason as to why it was cancelled. A prescription order should be cancelled if the patient dies after it was generated.

- *Modify* an existing prescription order. This can only happen before a prescription order has been filled (dispensed and collected by a patient).

  This may be a simple substitution of one brand for another (e.g. because the substituted medicine is subsidised, whereas the prescribed medicine is not). Substitution of one medicine brand for another brand of the same medicine must be authorised by the prescriber in writing (for medicines in general or for particular medicines) or may be given verbally in relation to a particular prescription). In either case, the Regulations do not require the pharmacist to seek any further authorisation from the prescriber (e.g. a replacement prescription). The dispensing information simply indicates which product was used to fill the prescription.

  Or, this may be a change of one medicine for another (e.g. due to allergy conditions identified by the dispenser). Where one medicine is being replaced with another, a new prescription is required from the prescriber. The change of one medicine for another in effect stops one prescription and starts another. The original prescription item must be cancelled (by dispenser or prescriber) and a new one generated by the prescriber. The dispenser may dispense the medicine prior to the new prescription item being created, in which case the prescriber will be required to confirm that the dispense was authorised. This should be treated in the same way as a prescription that has been communicated orally. The Regulations specify the period within which a prescription must be provided.

  Compliance with the relevant medicines legislation and associated Regulations, with regards to dispenser countersigning and/or prescriber authorisation is required. Where this is required to exist in hard copy form, such a requirement will continue until enabling legislation is in place. However, this does not preclude the application of this Standard in practice, i.e. the sending of electronic prescription and dispensing information.

- *Return* to HMX a prescription order if the dispenser is unauthorised or unable to fill the entire order (if part of the order can be filled this is a partial dispense).

- *Emergency supply* of prescription medicine(s). Under the Medicines Regulations, a dispenser is 'selling' but not prescribing an emergency supply of prescription medicine(s) previously prescribed for the patient. The dispenser must comply with the Medicines Act and associated Regulations when dispensing an emergency supply of medicine(s). Recording a supply to a patient made by a pharmacist provides for completeness of a patient's medication record.

- *Supply* a medicine (other than a prescription medicine) directly to the patient. In this case, the pharmacist is effectively a prescriber (but not in the same sense as the prescriber defined in the legislation, who can write a prescription for medicines to be dispensed). Recording a supply to a patient made by a pharmacist provides for completeness of a patient's medication record.

- Where a patient presents a paper copy of a prescription order and there is no corresponding electronic prescription order available from a HMX, the prescriber reference number on the paper copy is to be recorded by the dispenser as the prescription order number, unless the paper copy does not have a reference number. Section 3.3 outlines how prescription order numbers are generated to ensure that duplicate order numbers cannot be created.

3.4 Major Business Processes

3.4.1 Assess patient

This business process includes both history taking and physical examination of the patient in order to arrive at a diagnosis and a decision to treat the patient.

A health care professional obtains information about a patient and formulates a final diagnosis or an hypothesis of likely diagnoses (and in some cases request further investigations to confirm or clarify the diagnosis before proceeding to render treatment, e.g. lab test results or consultations).

There may be sources of shareable information about the patient's medical history including a medication profile, with previous medicines they have taken and any medicines that may have been prescribed by other prescribers. It may also include allergies, known adverse events, etc. Of interest and value to prescribers will be the medicine(s) prescribed for a patient, but never filled or collected. The prescribers use this information to support, in part, the decision made on whether to prescribe medicine(s). The sources of

shareable information about the patient should be updated through the prescribe, dispense collect and medication administered processes described below.

3.4.2 Prescribe

Once the decision to prescribe has been made, a prescription order is created.

A health care professional may provide a patient with a prescription order for a medication based on a provisional diagnosis, and/or to manage the immediate discomfort of the symptoms (diagnosis may need to await further testing or a therapeutic trial). They may also adjust existing medication therapies by suspending or stopping these therapies.

To be valid, a prescription order must contain a minimum set of data/information (refer to section 3.9 of this document and the accompanying Messaging Standard).

3.4.3 Dispense processing

Patients have the right to receive their dispensed medicine(s) from the pharmacy (dispenser) of their choice, though there may be some regulatory restrictions on this, for instance for controlled drugs. In the existing business model, patients are given a piece of paper (printed or written) with the prescription details and this is honoured at most pharmacies, or prescriptions are faxed or verbally transmitted to a pharmacy at the request of the patient.

With the advent of electronic prescriptions, the patient will be provided with a paper copy of the prescription order containing the order details (or an approved 'token'), to enable the dispenser to retrieve and process the prescription order. The patient goes to the pharmacy of their choice to request the fulfilment of the prescription order that, upon presentation of the necessary documentation by the patient, is retrieved by the pharmacy at the time of presentation.

As with the existing paper based system, a prescriber may decide – or the patient may request – that a prescription is to be prepared in advance of the patient's arrival. In some situations, the patient and the health care professional will have agreed that a particular pharmacy will dispense the medication. It will be necessary for the prescriber or the patient to contact the pharmacy separately (e.g. by phone or fax) and give the pharmacy the prescription order number, thereby enabling the pharmacy to retrieve the prescription order in advance.

When pharmacy staff begin processing the order, they will determine whether the required information has been included with the prescription (e.g. minimum data requirements and legal requirements) after which, using internal processes as defined by their organisation, they will process the prescription order. In general, order validation is checked by the pharmacy system.

Pharmacy staff may wish to obtain additional or clarifying information from the patient, or there may be sources of shareable information to access about the patient's medical history, including a medication profile with information related to medicines a patient has had prescribed, dispensed and, in some circumstances, administered, including the ability to clearly identify what is 'current'. The medication profile may also include allergies, known adverse events, etc. The pharmacist will be able to review the appropriateness of the prescription order (either directly or by utilising in-house decision support software). The pharmacist will be able to manage the alerts or, alternately, contact the prescriber for clarification, or in some instances a replacement prescription. A pharmacist will need to obtain authorisation from the prescriber if the prescription order needs to be modified.

3.4.4 Dispense collect (pickup)

The patient often picks up the prescription. A medicine may be prepared while the patient waits, or in advance of the patient presenting to pick up the medicine. For phone, fax or electronic orders, the dispenser may prepare the medicine on either the advice of the patient or the prescriber.

However, there are many situations in which patients are not able to pick up their medicine themselves. In these cases, patients may request a delivery from the pharmacy, or may send a proxy to pick up their prescription. Pharmacists use their best judgment in releasing the medicine in cases where the person picking up the medicine is not the patient, in accordance with the legislation governing their practice. For

deliveries, pickup may be recorded when the medicine leaves the pharmacy (e.g. in a delivery vehicle), or may be recorded when the driver returns and confirms that the patient has received their medicine.

The pickup signals that the medicine can or will soon be consumed, and completes the compliance picture in the ambulatory setting (refer to section 2.5 for comments on medicine given/taken).

Dispense processing and dispense collect constitute a complete dispense and the prescription is then filled. Once the medicines are dispensed, the dispenser records the status of the prescription order (fully or partly dispensed). Until the pickup is realised, the dispense is unfilled.

3.4.5 Medicine administered

Patients in the ambulatory setting self-administer their own medicine or are assisted in this administration by a caregiver, based on the instructions of the prescriber. In some institutional settings, the institution will record each administration, or lack thereof. However, there are instances when recording an administration for an ambulatory patient is seen as good practice. Examples would be an influenza shot received at a special clinic, immunisations at a health care professional's office, tetanus toxoid received in an emergency room visit as a result of an accident, or recording an observed ingestion of methadone.

3.4.6 Professional service

This process is out of scope for this project.

Health care providers, on occasion, may provide a professional service to a patient to assist them in their medication therapy. For example, a pharmacist may counsel a patient to limit exposure to sunlight when taking certain medicines. A pharmacist may undertake a full medication review with a patient to assist in their medication management, with improved compliance being the goal. There may be detailed training of a patient in how to use a blood glucose monitor to aid in diabetes control, or a peak flow meter to assist the patient in monitoring and managing their asthma treatment.

A pharmacist may assess the patient based on history, but would rarely conduct a physical examination. Pharmacists may recommend use of an over-the-counter medicine, or may suggest that the patient see a health care professional for a prescription medicine.

3.4.7 Submit claim for payment

This process is out of scope for this project.

Typically, collecting medicine triggers claiming for payment from a funder/payer, e.g. HealthPAC or ACC. In some cases, dispensing the medicine triggers claiming.

The provider submits an invoice for services performed and/or goods provided to a patient. Attachments to the invoice may also be submitted, either as required by a payer or at the provider's discretion. The frequency, timing and method of submission are determined by the payer.

3.4.8 Product regulation and product vigilance

The processing of prescription data to the Intensive Medicines Monitoring Programme (IMMP) is out of scope for this project.

Product regulation and product vigilance relates to medicines safety in New Zealand and is the overall responsibility of the regulatory and licensing body Medsafe. Post-marketing product vigilance is conducted by the New Zealand Pharmacovigilance Centre under contract to Medsafe and includes the IMMP, which collects nationwide prescription data for selected medicines.

3.5 Use-Case 1 – Community Prescribed, Dispensed and Administered (General)

The following process diagram covers the 'prescribe, dispense, administer' lifecycle where a patient is prescribed medicines in a community-based medical practice or outpatient clinic and also where medicines are dispensed in a community-based pharmacy.

In this use-case:

- A prescriber is an authorised prescriber as defined in the Medicines Act 1981.
- A dispenser is person authorised under the Medicines Regulations to dispense prescription medicines.
- A prescriber can cancel an existing prescription order, or stop or change an existing medication regime, whether they were the original prescriber or not.
- A message-based exchange of information is envisaged, hence the reference to a HMX. Should an alternative be considered, the business process and data requirements should remain fundamentally unchanged.

This use-case deals with what may be considered 'normal' aspects of this 'prescribe, dispense, administer' lifecycle scenario. Section 3.8 covers some very common and important areas of practice that are exceptions to the lifecycle described in this use-case.

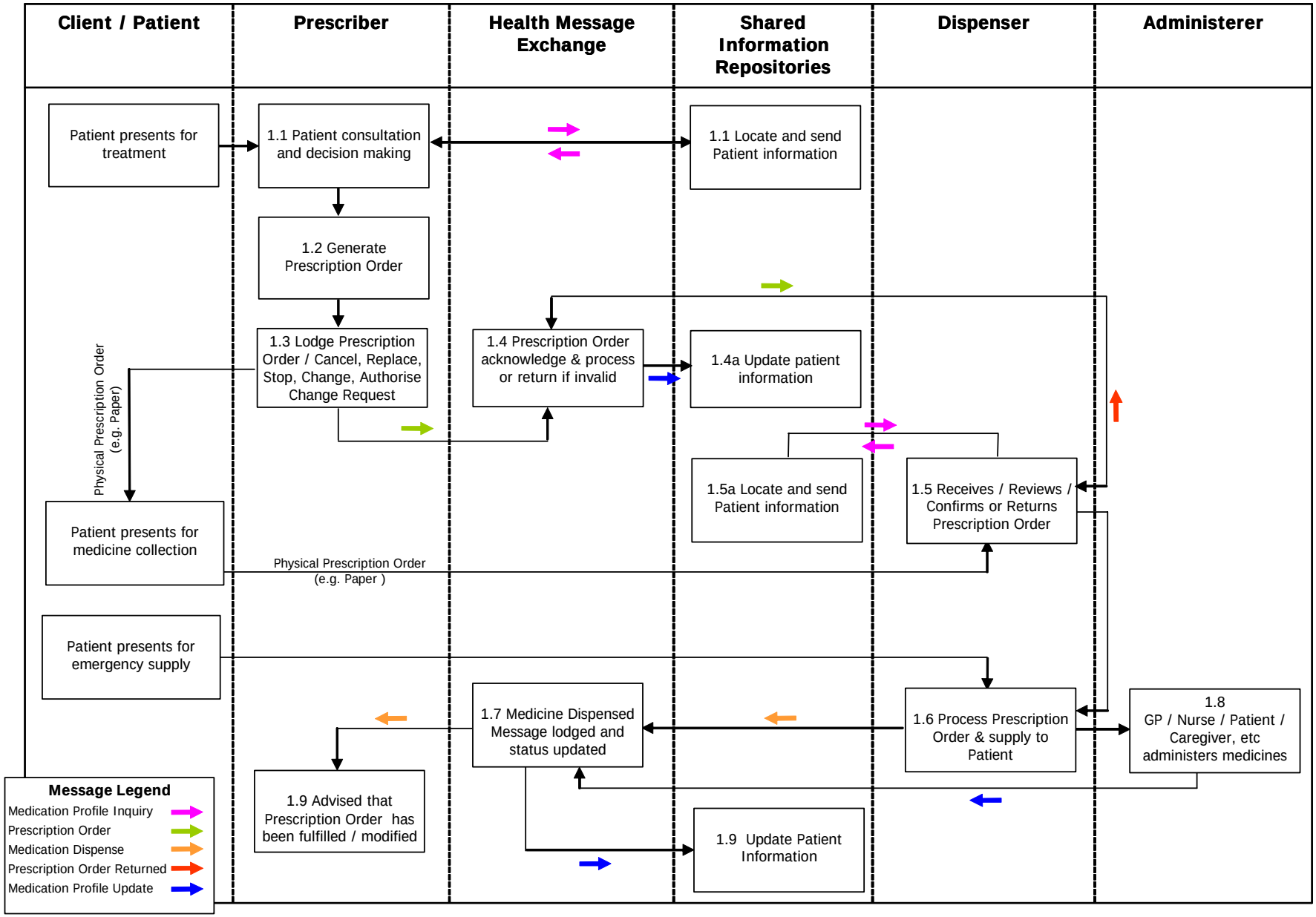

Figure 2: Use-Case 1 – Community Prescribed, Dispensed, Administered Lifecycle

3.5.1 Process Description

A high-level description of each process step in the use-case in Figure 2 is outlined in the table below:

1.1 Patient consultation and decision making:

- consultation with patient;
- decision to prescribe;
- queries shareable information sources, including a patient's medication profile, alerts, etc;
- decision on medicines to be prescribed is supported by patient information above.

1.2 Generate prescription order/cancel, replace, stop, change, authorise change request:

- Prescriber generates a prescription order.
- Prescriber can also:
  - Cancel or replace an existing prescription order residing on the HMX (i.e. before the patient has collected the medicine), whether they were the original prescriber or not. Canceling a prescription order destroys the order and no prescription items are dispensed. Replacing a prescription order cancels the order and replaces it with a different order (where there has been a change to one or more of the prescription items in the cancelled order).
  - Stop or change an existing medication regime (i.e. after the patient has collected the medicine previously dispensed), whether they were the original prescriber or not. This will update the status of patient medicines in an SIR (e.g. stopped flag is set and any valid prescriptions held in a HMX such as '2 repeats owing' are deactivated).
  - Confirm authorisation of a prescription order that was modified by a dispenser with the appropriate prior authorisation of the prescriber (possibly by phone, fax, email or other acceptable means) – refer to step 1.5.

1.3 Lodge prescription order/cancel, replace, stop, change, authorise change request:

- Prescriber lodges the prescription order with a HMX.
- Prescriber can also:
  - lodge a request to cancel/replace an existing prescription order, or stop/change an existing medication regime.
  - lodge a confirmation of authorisation for a prescription order that was modified by a dispenser with prior approval from the prescriber.

1.4 Prescription order/request acknowledged and processed or returned:

- A HMX receives and validates a prescription order message:
  - checks for a valid message type;
  - returns an acknowledgement response for a valid message or an invalid response for an invalid message;
  - holds a valid prescription order message for dispenser retrieval;
  - processes cancel/replace/stop/change requests as well as dispenser returns driven from step 1.5 below;

- sends patient medication profile update request to an SIR.

1.4a Update patient information:

- Patient medication profile update request is processed by an SIR.

1.5 Receive, review and confirm, or return order:

- Dispenser requests and receives the prescription order from a HMX.
- Dispenser requests and receives patient's medication profile.
- Dispenser reviews the prescription order; and
  - Confirms the order can be fully or partially filled (as prescribed/not as prescribed).
  - Returns the order in the event that it cannot be filled (refer to section 3.2 General Notes).
  - Contacts the prescriber as required to discuss prescription details, for example where clarification is required or there is a concern with what has been prescribed; or where there is a need to dispense different medicines to those prescribed. The prescription order would be replaced (refer to section 3.2 General Notes).

1.5a Locate and send patient information:

- Decision on medicines to be dispensed may be supported by information, including a patient's medication profile, alerts, etc.

1.6 Process prescription order and supply to patient:

- Dispenser processes the prescription order (as ordered or replaced) and supplies the patient with their medicines.
- Dispenser supplies the patient with medicines that do not require a prescription (this may or may not be related to the point above i.e. this may be the supply of a pharmacist's or pharmacy-only medicine to someone who walks in off the street).

1.7 Medicine dispense message lodged and status updated:

- HMX is sent a medicines dispensed message for medicines dispensed and collected. Where this relates to a prescription order, the status of the prescription order is updated in the HMX.

1.8 Administer medicines:

- HMX is sent a medicines administered message for medicines administer, where the facility to generate the message exists. In some settings, recording an administration for a patient and sending a message will not always be possible, but where it is possible, there are instances when is seen to be good practice.

1.9 Update SIR/advise prescriber (if required):

- HMX notifies the prescriber that a prescription order has been dispensed and collected, if this requirement to be notified was set in the prescription order by the prescriber, and updates a SIR.
- HMX notifies the prescriber that a prescription order has been dispensed, if the dispenser was

given prior authorisation by the prescriber to change the prescription and where the change requires that the prescriber confirms that prior authorisation was given.

- A SIR is updated to reflect the supply of medicines that do not require a prescription. This Standard does not require that the supply of non-prescription medicines and complementary products be recorded, however, doing so would provide completeness of a patient's medication record.

Table 3: Use-Case 1 – Process Steps

3.6 Use-Case 2 – Hospital Prescribed, Community Dispensed and Administered

The following process diagram covers the 'prescribe, dispense, administer' lifecycle, where a patient is prescribed medicines in a hospital setting (e.g. emergency department, inpatient, outpatient clinic) and medicines are dispensed in a community-based pharmacy.

In this use-case:

- A prescriber is an authorised prescriber as defined in the Medicines Act 1981.
- A dispenser is person authorised under the Medicines Regulations to dispense prescription medicines.
- The patient has been either referred to a hospital for treatment or presented at an emergency department.
- Medicines were only prescribed in hospital, on discharge. No medicines were dispensed or administered in hospital (refer to 3.7 Use-Case 3 – Hospital Prescribed, Hospital Dispensed and Administered).
- When the patient is discharged (or on leave) with a prescription order for dispensing in the community, the process in Use-Case 1 is followed, starting from receipt of a prescription order at an HMX.
- A message-based exchange of information is envisaged, hence the reference to a HMX. Should an alternative be considered, the business process and data requirements should remain fundamentally unchanged.

This use-case deals with what may be considered 'normal' aspects of this 'prescribe, dispense, administer' lifecycle scenario. Section 3.8 covers some very common and important areas of practice that are exceptions to the normal lifecycle described in this use-case.

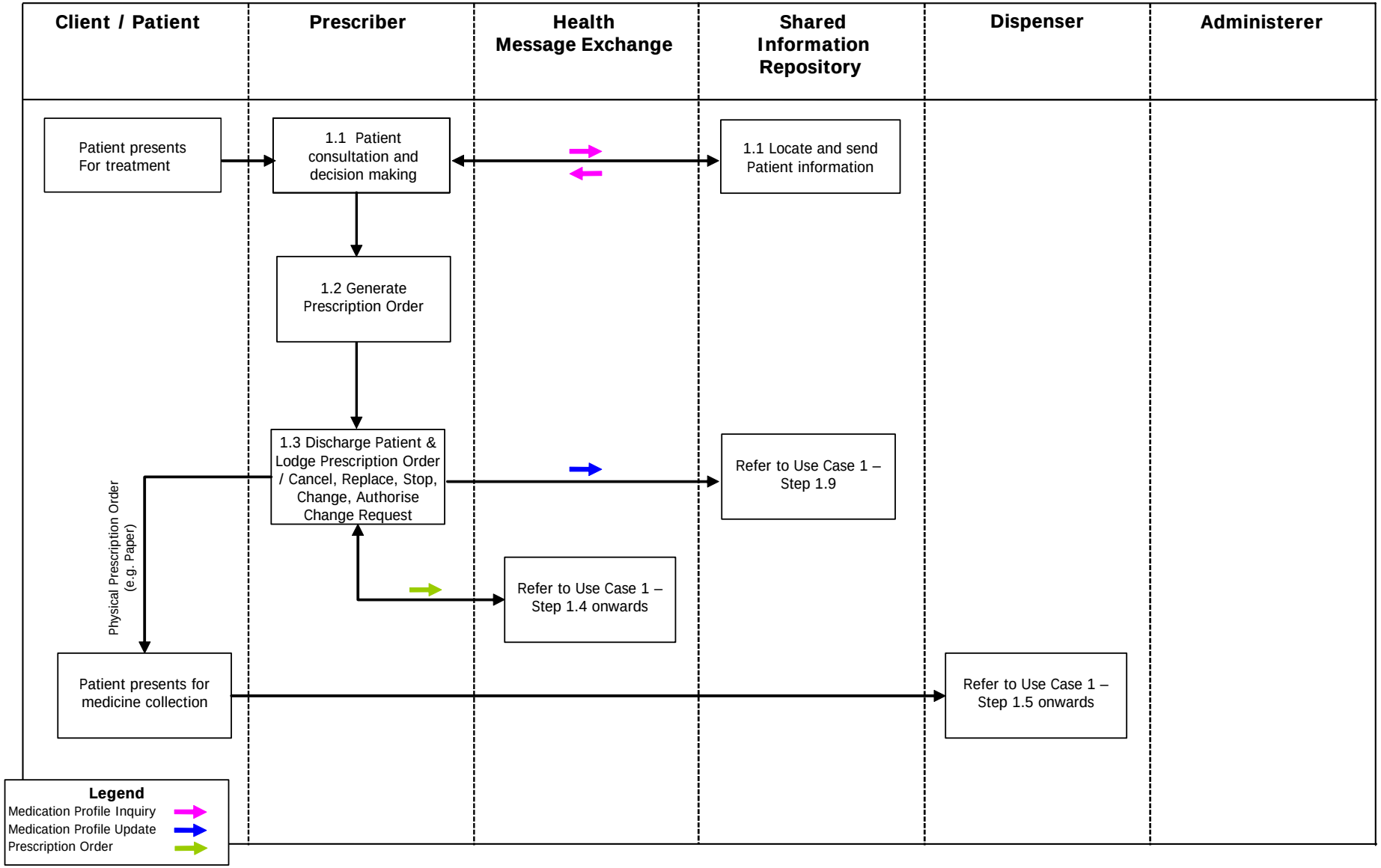

Figure 3: Use-Case 2 – Hospital Prescribed, Community Dispensed and Administered Lifecycle

3.6.1 Process Description

A high-level description of each process step in the use-case in Figure 3 is outlined in the table below:

1.1 Patient consultation and decision making:

- consultation with patient;
- decision to prescribe;
- queries shareable information sources including a patient's medication profile, alerts, etc;
- decision on medicines to be prescribed is supported by patient information above.

1.2 Generate prescription order/cancel, replace, stop, change, authorise change request:

- Prescriber generates a prescription order.
- Prescriber can also:
  - Cancel or replace an existing prescription order resident on a HMX (i.e. before the patient has collected the medicine), whether they were the original prescriber or not. Canceling a prescription order destroys the order and no prescription items are dispensed. Replacing a prescription order cancels the order and replaces it with a different order (where there has been a change to one or more of the prescription items in the cancelled order).
  - Stop or change an existing medication regime (i.e. after the patient has collected the medicine previously dispensed), whether they were the original prescriber or not. This will update the status of patient medicines in a SIR (e.g. stopped flag is set and any valid prescriptions held in a HMX such as '2 repeats owing' are deactivated).
  - Confirm authorisation of a prescription order that was modified by a dispenser, with the appropriate prior authorisation of the prescriber (possibly by phone, fax, email or other acceptable means) – refer to step 1.5.

1.3 Discharge patient and lodge prescription order/cancel, replace, stop, change, authorise change request:

- Discharge summary is completed. If the patient was referred, the discharge summary is sent to the referrer. If the patient was not referred, the discharge summary is generally sent to the patient's GP.
- A prescription order (including the conditions the patient is being treated for) is lodged with a HMX for dispensing and administering in the community.
- Prescriber can also:
  - lodge a request to cancel/replace an existing (community generated) prescription order, or stop/change an existing (community generated) medication regime;
  - lodge a confirmation of authorisation for a prescription order, that was modified by a dispenser with prior approval from the prescriber.

1.4 Prescription order/request acknowledged and processed or returned:

- Refer to Use-Case 1.

1.4a Update patient information:

• Refer to Use-Case 1.
1.5 Receive, review and confirm or return order: • Refer to Use-Case 1.
1.5a Locate and send patient information: • Refer to Use-Case 1.
1.6 Process prescription order and supply to patient: • Refer to Use-Case 1.
1.7 Medicine dispense message lodged and status updated: • Refer to Use-Case 1.
1.9 Update shared information repository/advise prescriber (if required): • Refer to Use-Case 1.

Table 4: Use-Case 2 – Process Steps

3.7 Use-Case 3 – Hospital Prescribed, Dispensed and Administered

The following process diagram covers the 'prescribe, dispense, administer' lifecycle, where a patient is prescribed, dispensed and administered medicines in a hospital setting (e.g. emergency department, inpatients, outpatient clinic).

In this use-case:

- A prescriber is an authorised prescriber as defined in the Medicines Act 1981.
- A dispenser is person authorised under the Medicines Regulations to dispense prescription medicines.
- A patient may be referred to the hospital (e.g. inpatients, outpatient clinic) or presents at a hospital emergency department.
- During the hospital encounter, the internal hospital processes apply. These processes are out of scope of this standard and therefore are not expressly described.
- When the patient is discharged (or on leave), no prescription order for dispensing in the community is generated (refer to 3.6 Use-Case 2 – Hospital Prescribed, Community Dispensed and Administered). The details of medicines prescribed and administered during the stay in hospital will be recorded in the discharge summary and will also be lodged in a SIR.
- A message-based exchange of information is envisaged, hence the reference to a HMX. Should an alternative be considered the business process and data requirements are fundamentally unchanged.

This use-case deals with what may be considered 'normal' aspects of this 'prescribe, dispense, administer' lifecycle scenario. Section 3.8 covers some very common and important areas of practice that are exceptions to the normal lifecycle described in this use-case.

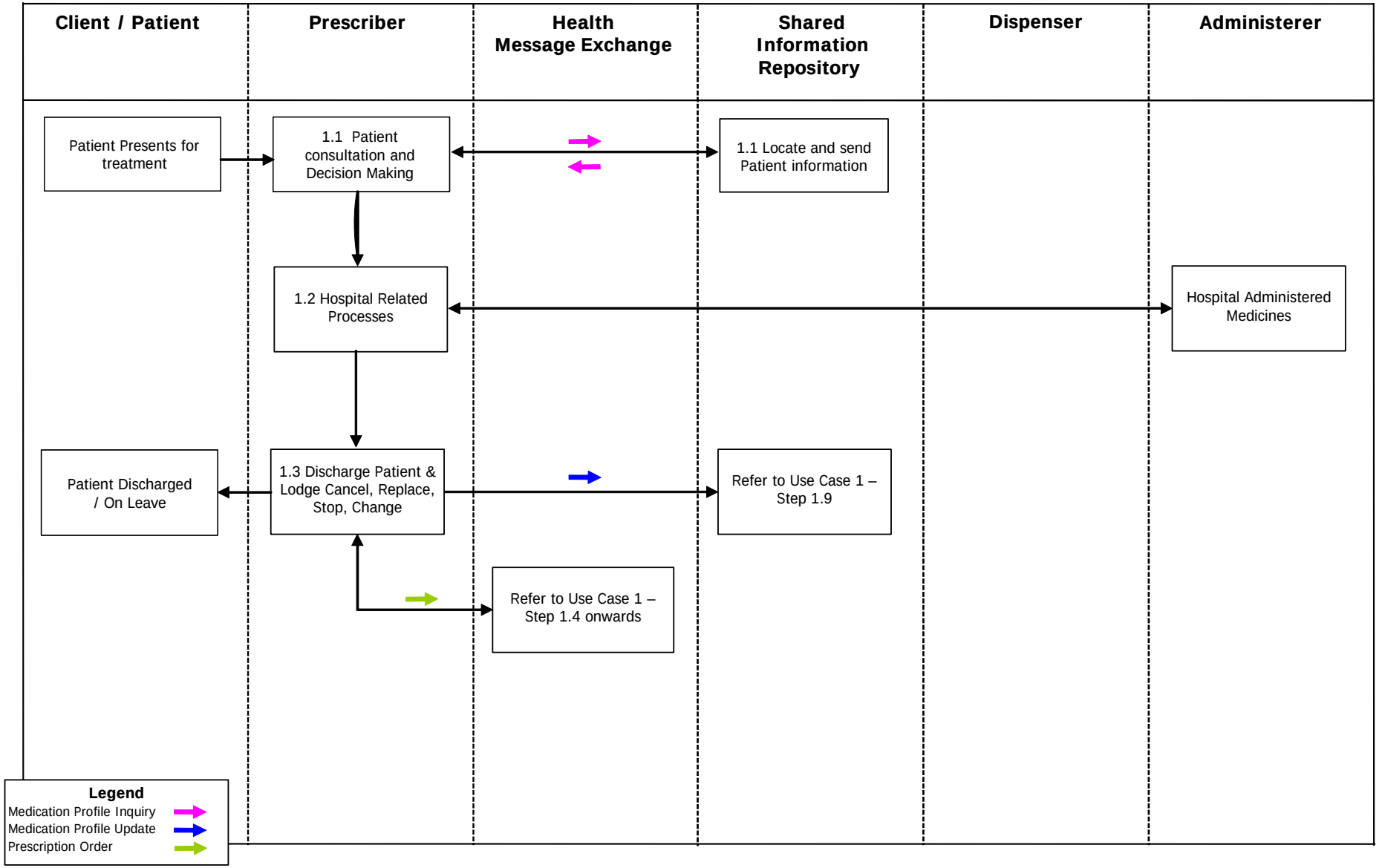

Figure 4: Use-Case 3 – Hospital Prescribed, Dispensed and Administered Lifecycle

3.7.1 Process Description

A high-level description of each process step in the use-case in Figure 4 is outlined in the table below:

1.1 Patient consultation and decision making:

- Consultation with patient;
- Decision to prescribe;
- Queries shareable information sources, including a patient's medication profile, alerts, etc;
- Decision on medicines to be prescribed is supported by patient information above.

1.2 Hospital medication related process:

- At this step:
  - the day-to-day business of hospital patient/medicine flow applies, including the generation of internal prescription orders by hospital prescribers.
- At this step a hospital prescriber may:
  - cancel or replace any existing internal prescription orders as required;
  - stop or change an existing medication regime started internally as required;
  - temporarily stop or change an existing (community-generated) medication regime (i.e. medicine previously dispensed, that the patient has collected).

1.3 Discharge patient without prescription order:

- A 'discharge summary' is completed. If the patient was referred, the discharge summary is sent to the referrer. If the patient was not referred, the discharge summary is generally sent to the patient's GP.
- Details of medicines prescribed and dispensed only, administered during the in-hospital stay, and stopped before or at discharge are sent to the SIR to update the patient's medication profile. Information on medicines which are temporary should also be provided.
- At this step a prescriber can also:
  - Lodge a request to permanently cancel/replace an existing (community-generated) prescription order resident on a HMX (i.e. medicine previously prescribed but that has not been dispensed and collected by the patient). Canceling a prescription order destroys the order and no prescription items are dispensed. Replacing a prescription order cancels the order and replaces it with a different order, where there has been a change to one or more of the prescription items in the cancelled order.
  - Lodge a request to permanently stop or change an existing (community-generated) medication regime. This will update the status of patient medicines in a SIR (e.g. stopped flag is set and any valid prescriptions held in a HMX such as '2 repeats owing' are deactivated).

1.4 Request acknowledged and processed or returned:

• Refer to Use-Case 1.
1.9 Update SIR (Shared Information Repository) (if required): • Refer to Use-Case 1.

Table 5: Use-Case 3 – Process Steps

3.8 Other Important Use-Case Considerations

The use-cases in section 3.5 to 3.7 deal with what may be considered 'normal' aspects of the respective 'prescribe, dispense, administer' scenarios.

This section discusses if and how this Standard can be applied to a number of very common and very important areas of practice that cause complexities and that are exceptions to the normal lifecycle described in the use-cases.

3.8.1 GP prescribe and dispense

In this situation, the GP completes the prescribe and dispense processes. This occurs if the GP dispenses medicines to the patient from their own PSO (Practitioner's Supply Order) supplies, e.g. when a GP supplies 3x trimethoprim antibiotic tablets to a patient to treat an acute urinary tract infection from a PSO supply previously obtained from a dispensary.

In this instance, the GP also completes the administer process. This occurs when a GP medicates the patient directly during a consultation, e.g. intra-articular steroid injections or nebulised bronchodilators, which are administered at the GP's surgery and supplied from stock held locally.

This Standard can be applied to this scenario as follows:

- a GP will create a record of the prescribing, dispensing, and/or administering of such medicines on their own PMS (Practice Management System);
- corresponding medicine dispense or medicine administer messages will be lodged to ensure completeness of the patient's medication profile in a SIR;
- in some cases, both dispense and administer messages will be needed, for instance if the health care professional administers some medicine and gives the patient the remainder to take away with them.

3.8.2 Pharmacist dispense without prescription

In this situation a pharmacist is:

- Dispensing a prescription medicine to a patient following a verbally communicated prescription or as an emergency supply.

  A pharmacist cannot prescribe a prescription medicine; however, they can dispense prescription-only medicines, acting on instructions conveyed by an authorised prescriber (e.g. a GP), or as an emergency supply.

Or

- Supplying a medicine or product to a patient where a prescription is not required, but where recording the supply to a patient provides for completeness of a patient's medication profile in the SIR. This could also include where a patient has been 'sold' an emergency supply of medicine in accordance with Medicines Regulations r44 (m).

This Standard can be applied to this scenario as follows:

- Where a pharmacist is wanting to supply a prescription medicine to a patient who does not have a prescription and where this <u>is not</u> an emergency supply:
  - The pharmacist will contact a prescriber directly and discuss the situation.
  - The prescriber will create a prescription order and send it electronically, print it and fax it, or will verbally convey the prescription order to the pharmacist.
  - In the case of a prescription order that is sent electronically, Use-Case 1 applies from step 1.2 onwards.
  - In the case of a prescription order that is faxed or verbally conveyed, Use-Case 1 applies from step 1.6 onwards. The pharmacist would note that prior authorisation had been

given by the prescriber and the prescriber would be requested to confirm that prior authorisation was given, as per step 1.8 of the use-case. In effect, the prescriber creates a new prescription order to authorise the dispensing. The status of the prescription order will remain unauthorised until it has been authorised by the prescriber. The prescription items in the prescription order would be flagged as dispensed.

- Where a pharmacist is wanting to supply a prescription medicine to a patient who does not have a prescription, and where this is an emergency supply:
  - Use-Case 1 applies from step 1.6 onwards;
  - medicines supplied would be flagged as dispensed and as an emergency supply.
- Where a pharmacist is wanting to supply a medicine or product to a patient, where a prescriber does not need to provide a prescription:
  - Use-Case 1 applies from step 1.6 onwards;
  - medicines supplied would be flagged as dispensed.

3.8.3 Supply of controlled drugs

A controlled drug is any substance, preparation, mixture or article specified or described in the First, Second or Third Schedule to the Misuse of Drugs Act 1975. Some controlled drugs are used as medicines. .

This Standard can be applied to this situation as follows:

- prescribers and dispensers will generate, lodge and process electronic prescriptions as per the steps in Use-Cases 1, 2 and 3;
- a patient must be supplied with the requisite hard copy documentation for certain controlled drug prescribing and dispensing and present this when picking up the prescribed medicines;
- prescribers, dispensers and administerers must keep records in accordance with the Misuse of Drugs Act, the Medicines Act and associated Regulations.

3.8.4 Community residential care

For the purposes of this Standard, a community residential care facility could be an aged care facility, a hospice, or a residential facility for mentally or physical disabled people. Patients may require long or short term care.

Medical records for each patient in a residential care facility will be kept in accordance with the facility's internal processes. The records will contain details of patients' medication history, including all alert and allergy information.

The processes for prescribing, dispensing and administering will vary from facility to facility, however, in the context of a community residential care setting the process lifecycle may be summarised as:

- A doctor writes the medication regime on a patient chart, or writes any changes to the medicine regime on a patient chart (as occurs in hospitals).
- The doctor could be an on site or visiting GP – some residential facilities may have a GP on site. Some patients may prefer to be treated by their own GP, rather than the residential care facility GP. Some patients may also be privately funded. GP visits to a residential care facility tend to take place on a regular basis, unless there is need for an emergency visit.
- The doctor may provide a formal prescription to support what has been charted.
- The patient chart or prescription may be faxed to a pharmacy, placed in a 'collection box' for collecting by a pharmacy, or taken directly to a pharmacy by residential care staff. There may be an ongoing arrangement between a residential care facility and a dispenser to facilitate this process.

- Prior to dispensing medicines, the pharmacy generates prescriptions for the charted items or faxed prescriptions, noting how prescribing instructions were received.
- Telephone prescriptions are generated each month off the charts provided.
- Pharmacists continue to use the same chart until there is a change.
- The pharmacy dispenses medicines that are picked up by – or sent to – the residential care facility for administration. The residential care facility staff will administer the medicine.
- Pharmacy-generated prescriptions are sent to the prescriber for signing.

This Standard can be applied to this situation as follows:

- Use-Case 1 would be applied where the community residential care facility has the technology available to support this regime, or the prescriber has the appropriate portable technology to support it or;
- the approach outlined in section 3.8.2 above (for supply of prescription medicines) would apply.

3.8.5 Standing orders

A standing order is a written instruction issued by a medical practitioner or dentist in accordance with the Medicines (Standing Order) Regulations, which authorises specified health professionals such as registered nurses and paramedics, with specified competencies, to supply and administer specified medicines in specified circumstances.

More information can be found in the document *Guidelines for the Development and Operation of Standing Orders, November 2002*, which can be downloaded from the publications section of the Ministry of Health website. In summary:

- The Regulations set minimum requirements for the content, development and use of standing orders;
- The Regulations are very specific in requiring each standing order to specify in writing to which health practitioner group it applies, what competencies those people must have, the class of person to be treated with what medicines and in what particular circumstances these medicines may be supplied or administered, their indications, dose range, contraindications, method of administration and what records must be made. The issuing doctor or dentist must review and counter-sign each patient record of every medicine supplied or administered under a standing order.
- A standing order does not permit the specified health professionals to prescribe medicines, but does authorise nurses and other health care workers to supply and administer specified medicines and certain controlled drugs, when a doctor is unavailable to prescribe for a named patient.
- The medicines that are supplied under these instructions would be on hand but not prescribed for an individual; they would remain as stock ready for use until administered to a specified patient under the relevant standing order.
- Standing orders are not a substitute for a prescription or an authority to prescribe.
- Prescription medicines, restricted medicines, pharmacy-only medicines, and certain controlled drugs may be supplied or administered pursuant to a standing order.

This Standard can be applied to this situation as follows:

- Use-Case 1 applies from step 1.6 onwards where the facility to generate the messages exists (sending messages to the HMX and SIR, related to supply and administration under standing orders is not always possible);
- this ensures that a medicine dispense message is generated and lodged, to provide completeness of a patient's medication record;

- the dispense message would flag the medicines having been dispensed or administered under a standing order.

3.8.6 Collaborative prescribing

Collaborative prescribing is where a non-prescribing health practitioner, after authorisation from their registration authority, may prescribe under the supervision of an authorised prescriber. Collaborative prescribing is different from standing orders in that standing orders do not allow 'prescribing', but allow 'supplying' and/or administration of prescription medicines. Collaborative prescribing is referred to in the consultation document *Enabling the Therapeutic Products and Medicines Bill to Allow for the Development of Collaborative Prescribing*. This document can be downloaded from the publications section of the Ministry of Health website.

> ***NOTE:*** *Collaborative prescribing is not currently legal in New Zealand and is not supported by this Standard. This situation will be revisited if and when enabling legislation is in place.*

3.8.7 Administration of a vaccine

This is intended to be a reference to a nurse recording the administration of a vaccine as part of an immunisation programme, where there is no prescription for each child vaccinated.

This Standard can be applied to this situation as follows:

- Use-Case 1 applies from step 1.8 onwards. The vaccine administered is recorded in the SIR by way of lodging a medication profile update message, where the facility to generate the message exists (sending messages to the HMX and SIR related to the administration of a vaccine is not always possible).
- This provides for completeness of a patient's medication record.

3.8.8 Partial dispense and repeats

A partial dispense is where not all prescription items in a prescription order can be dispensed at the time the patient requires them. The balance can be dispensed at a later date by the pharmacist who was able to dispense some of the prescription items in the prescription order, or the balance of the prescription order can be dispensed at another pharmacy if the patient chooses to go elsewhere (of his/her own volition, or at the suggestion of the pharmacy).

The balance of the prescription order must be dispensed within the designated time period of the prescription.

A repeat prescription can also be treated as a partially dispensed prescription item, when the number of prescription items dispensed is less that the total number of repeats prescribed. The remainder of repeats available can be dispensed by the same or a different pharmacy.

Partially filled/repeat prescription items are accommodated in this Standard. The majority of patients will generally return to the same pharmacy for dispensing of partially dispensed prescription orders, and this is not expected to change as a result of this Standard.

3.8.9 'Owes'

'Owes' are where a prescription item quantity cannot be dispensed as prescribed (i.e. the quantity of a prescription item that is dispensed is less than the quantity prescribed) and where the balance is to be dispensed at a later date.

Essentially the pharmacy 'owes' the patient the balance of the particular prescription item that was not fully dispensed. The 'owe' must be dispensed within the designated time period of the prescription.

The prescription item remains 'locked' until it is fully dispensed or it expires.

NOTE: *The management of 'owes' is outside the scope of this Standard.*

3.8.10 Close control

Close control is a mechanism that permits subsidised medicines to be dispensed more frequently than the default period permits. Close control rules can be found in the NZ Pharmaceutical Schedule, for which PHARMAC has responsibility. Close control is endorsed/annotated and initialled on prescriptions by either the prescriber or, in certain circumstances, the pharmacist.

The Pharmaceutical Messaging Standard supports close control through the use of a close control flag and the inclusion of instructions/comments. The flag can be set and instructions/comments provided by the prescriber at step 1.2 of Use-Cases 1, 2 and 3 and by the dispenser at step 1.6 of Use-Cases 1 and 2.

It is currently a legal requirement that prescriptions exist in hard copy form and are signed by a prescriber. This requirement does not preclude the application of this Standard in practice, i.e. to send an electronic prescription. What must accompany the patient is a signed hard copy prescription, which is to be provided to the dispenser. This hard copy prescription should include initialled close control endorsement annotations, as required by PHARMAC. This will continue to be the case until enabling legislation is in place.

3.9 Information Flows

3.9.1 Information drivers

The primary drivers for the information throughout the 'prescribe, dispense, administer' lifecycle that have been identified include:

- legal – legally required for a prescription or dispense record;
- subsidy – required to support prescribing/dispensing with a subsidy;
- contractual – imposed by standard or specific prescribing/dispensing-related contracts;
- business process – required for reasons specific to the core business process within the 'prescribe, dispense, administer' lifecycle, or for complementary or related processes, e.g. claiming;
- clinical – required for clinical reasons including safety;
- other – required for reasons other than those above.

The information requirements are based around the following categories:

- **Patient demographics:**
  - information about the person to whom medicines have been prescribed and supplied.
- **Patient alerts:**
  - Patient allergies/medicine reactions or other medicines-related information identified and recorded by a prescriber, dispenser, and/or administerer specifically during the 'prescribe, dispense, administer' lifecycle. This information should flow with the patient to ensure safe or appropriate clinical intervention.
  - It complements information held in a national alerts system such as the Medical Warnings System (MWS), which has been captured outside through other business processes.
- **Patient-specific medicines information:**
  - details of what medicines are being prescribed, why are they prescribed, what are the dispensing and/or administration instructions.
  - this can include prescription, pharmacy-only, pharmacists-only, controlled drugs, general sales and complementary products.
- **Prescriber details:**
  - who prescribed the medicines.
- **Dispenser details:**
  - who dispensed the medicines;
  - where medicines were dispensed;
  - any changes to what was prescribed and the appropriate authorisation given for any change.
- **Administrative and other information required for prescribing, dispensing or administering:**
  - details of any specific restricted criteria as required in the Medicines Act 1981;
  - details of any subsidy or funding that applies;

- general notes, such as advising an urgent dispense or dispense prior to a patient presenting, alerts relating to suspicious behaviour, etc.

Not all items listed within each category above are mandatory. Refer to the Messaging Standard for the full list of optional and mandatory elements.

3.9.2 Messages and Data Elements:

HISO 10030.2 Pharmaceutical Messaging Standard defines the range of messages required to support the processes and associated requirements outlined in section 3 and it must be used in conjunction with this document.

The Messaging Standard also identifies the mandatory and optional data and information requirements.

Appendix A – Glossary

Terms defined in this glossary apply to both this document and the Messaging Standard document. Not all terms are used in both documents.

Term	Definition	Reference
ACC	Accident Compensation Corporation.	
ACC identifier	Alpha numeric code which is allocated to a claimant to verify claims against ACC.	
Administer	To take, give or apply medicine, be it orally, by injections or by some other means, to a patient or by a patient.	Medicines Act 1981
Administration history	The timing and other details of a single patient's past medicine administrations.	
Administrative message	This is a type of status message and relates to the sharing of non-clinical/administrative status information.	
ADR	Adverse Drug Reaction.	
APC	Annual Practising Certificate.	
ARC	Aged Residential Care facility.	
Authentication	This allows one or more parties to have confidence in the identity of the other in an electronic transaction and is a way for individuals and organisations to access electronic health and disability information electronically while assisting to maintain security and privacy.	
Authorised prescriber	Authorised prescriber means a medical practitioner, registered midwife, or designated prescriber.	Medicines Act 1981
Bar-code	A bar-code is a way of representing data in a machine-readable form.	
CARM	Centre for Adverse Reactions Monitoring.	Group within NZ Pharmacovigilance Centre
Clinical Decision Support System	Clinical Decision Support Systems are "active knowledge systems which use two or more items of patient data to generate case-specific advice".	
Clinical message	This is a type of administrative message and relates to the sharing of clinical status information.	
Clinical status report-	A collection of information about events during care, reported by a health care provider.	
Close control	Refer to section 3.8.10.	
Collaborative care	Sharing the care of a patient in a shared collaborative manner.	
Collect	Patient or representative has physically taken possession of prescribed	

Term	Definition	Reference
	medicine.	
Community pharmacy	Any place under the direct supervision of a pharmacist where the practice of pharmacy occurs, or where prescription orders are compounded and dispensed, other than at a hospital pharmacy.	
Community Services Card (CSC)	Community Services Cards are issued by Work and Income to individuals on reduced income.	
Conformance statement	A declaration that sets forth the name of the query supported by the server, the logical structures of the information that can be queried, and the logical structure of what can be returned.	
Contraindication	A clinical reason not to give a medicine.	
Controlled drug	Certain drugs listed in the Misuse of Drugs Act 1975. These drugs may not be prescribed, supplied or administered other than in accordance with the Misuse of Drugs Act 1975.	Misuse of Drugs Act 1975
CPN	The common person number issued from the Health Practitioner Index.	Health Practitioner Index.
Data element	A single piece of data, e.g. first name, last name, etc.	
Data group	Collection of data elements which are related.	
Data set	Collection of data groups used for specific purposes.	
Designated prescriber	A person, other than a medical practitioner, dentist or a registered midwife, who: a) Belongs to a class of registered health professionals authorised by Regulations made under the Medicines Act 1981 to prescribe any specified class or description of prescription medicines, subject to the satisfaction of requirements specified in or imposed under those Regulations; and b) Satisfies any applicable requirement relating to competency, qualifications, or training specified in or imposed under Regulations made under the Medicines Act 1981.	Medicines Act 1981
DHB	District Health Board	
Did not collect	A failure to physically collect.	
Digital signature	A digital signature is data appended to (or a cryptographic transformation of) a data unit, to prove the source and integrity of the data unit and to protect against forgery.	Health Network Code of Practice

Term	Definition	Reference
Discharge	The relinquishing of patient care in whole or in part by a health care provider or organisation.	
Discharge summary	A collection of information, reported by a provider or organisation about events at the point of discharge.	
Dispensing	In relation to a medicine includes, without limitation: a) The preparation of that medicine for sale to the public (whether in response to the issue of a prescription or a request by an individual to be supplied with the medicine); and b) The packaging, labelling, recording and delivery of that medicine.	Medicines Act 1981
Dose	A specified quantity of a medicine prescribed to be taken at one time or at stated intervals.	
eClaiming	An electronically enabled process for validating and administering claims for direct credit payment of subsidised services upon receipt of accurately completed documentation, within contractual timeframes that supports contract administration, payments, information reporting, auditing and counter-fraud, and patient eligibility services and other functions overseen by HealthPAC.	
ECP Extemporaneous	Compounding of a medicine that is not commercially available. In the context of pharmacy, this is where the pharmacist is required to mix or 'compound' the medicine in the pharmacy for the specific needs of the patient.	
EHR	Electronic Health Record.	
Emergency supply	A prescription medicine may be sold or dispensed otherwise than under a prescription given by a practitioner, registered midwife, or designated prescriber if it is sold to or dispensed for— A person who has previously been supplied with the medicine on the prescription of an authorised prescriber (except a dentist) for a particular condition, and is so sold or dispensed - a) By a pharmacist who is satisfied that the person requires an emergency supply of the medicine for that condition; and b) In an amount not exceeding the	Medicines Regulations 1984

Term	Definition	Reference
	quantity reasonably required by that person for a period of 72 hours, or a minimum pack of a special container from which it is not practicable to dispense a lesser amount.	
ePharmacy	A holistic system of transactions governing the pharmaceutical supply chain, including patient and clinical services, payment and electronic records administration, management and reporting and other functions.	
ePrescription	The electronic transmission of prescription information on pharmaceutical products from legally and professionally qualified/registered health practitioners to licensed pharmacies (or dispensing system).	
eSignature	In relation to information in electronic form, this is a method used to identify a person and to indicate that person's approval of that information.	Electronic Transactions Act (2002)
Exemption Card	Refer to 'Pharmaceutical Subsidy Card'.	
Facility	A single physical location from which health goods and/or services are provided.	HPI Data Set
Filler	The filler is the technical term referring to the system that is responsible for filling the order.	HL7 v2.5
Filler order number	An acceptance or receipt number from the pharmacy system to acknowledge that an order has been received and accepted.	
Form	The description of the presentation of a medicine, e.g. tablet, injection, suspension, etc.	
Generic drug name	The chemical or approved name of a medicine, as opposed to the proprietary or brand name given to a particular product.	
GP	General Practitioner.	
Health care provider	A person, facility or organisation that provides patient health care services, including services to promote health, to protect health, to prevent disease or ill-health, treatment services, nursing services, rehabilitative services or diagnostic services.	
Health Message Exchange (HMX)	Refer to section 2.7.1 for detailed definition.	
Health Network Code of Practice	Released in 2002, amended October 2006, the Health Network Code of Practice details the security practices needed to comply with the Health	SNZ HB 8169:2002

Term	Definition	Reference
	Information Privacy Code for health providers and health and disability information users.	
Historical medication profile	Medicines a patient has been prescribed in the past but is not currently taking.	
HL7	Health Level 7 – an application protocol for electronic data exchange in healthcare environments.	
HMX	Health Message Exchange.	
Hospital specialist	Health provider, recognised by MCNZ as a specialist, who works in a secondary or tertiary care facility.	
Health Practitioner Index (HPI)	The HPI provides identifiers that uniquely describe the registered practitioner, health care worker[5], delivery location and facility or organisation who authorises a health transaction.	HPI Data Set HPI Code Set
HUHC	High Use Health Card.	
ICD-10	I10 (ICD–10 CM). A coding system based on the International Classification of Diseases.	
IMMP	Intensive Medicines Monitoring Programme.	Programme administered by NZ Pharmacovigilance Centre
IPD	Individual Patient Dispensing.	
IVMP	Intensive Vaccines Monitoring Programme.	Programme administered by NZ Pharmacovigilance Centre
JPEG (.jpeg)	Joint Photographic Experts Group. A file used for photographic images	
Life cycle, lifecycle	A periodically repeated sequence of events within a course of treatment.	
LOINC	Logical Observation Identifiers Names and Codes. A coding system.	
Long term medication	Ongoing medication the patient has been prescribed.	
MCNZ	The Medical Council of New Zealand.	
Medication	A treatment or therapy using medicines.	
Medication chart	A list of prescribed medicines that a patient is currently taking, or intended to be taking. Generally applies to a hospital, an aged care facility, a hospice, or a residential	

[5] Health care workers who are not registered with an authority, but who deliver health care (such as social workers) are proposed to be included on the HPI in the medium to longer term.

Term	Definition	Reference
	facility for mentally or physical disabled, where a caregiver is responsible for managing patient medication.	
Medication history	History of a patient's medication treatment or therapy using medicines.	
Medication profile	Refer to section 3.3.	
Medical device	Any device, instrument, apparatus, or contrivance, including component parts and accessories thereof, that is manufactured, imported, sold, or supplied for use wholly or principally on or by one or more human beings for a therapeutic purpose; and includes bandages and other surgical dressings, except medicated dressings, where the medication has a curative function that is not limited to sterilising the dressing.	Medicines Act 1981
Medicine	Medicine means any substance for administering to one or more human beings for a therapeutic purpose; or any substance for use as an ingredient in a medicine.	Medicines Act 1981
Medicine order	Refer to 'Prescription order'.	
Medicines dictionary	Collection of information pertaining to a specific medicine.	
Medicines encyclopaedia	Extensive, clinically-determined information about a specific medicine.	
Medicines terminology	A set of terms that provide human readable (terminology) and computer processable (codes) capable of identifying all drugs by active ingredients, generic and proprietary drug names, drug classification or grouping structures, and at the pack (distribution) and individual dose (prescribing) level.	
Mitte	Instruction to the dispenser to provide/supply patient with 'x' amount, e.g. "Mitte 1/12" is to supply one month's supply.	Latin term meaning send
Modify	Refer to section 3.3.	
MoH	Ministry of Health.	
MPSO	Refer PSO, Practitioner Supply Order.	Pharmaceutical Schedule
MSD	Ministry of Social Development.	
MWS	Medical Warning System.	
National Health Index (NHI)	An alpha-numeric New Zealand national patient identifier, comprising three letters and four numbers.	
NCCLS AUTO4	National Committee for Clinical Pharmacy Standards; the Subcommittee	

Term	Definition	Reference
	on System Status (AUTO4).	
NZHIS	New Zealand Health Information Service.	
NZMT	New Zealand Medicines Terminology.	
NZNC	New Zealand Nursing Council.	
NZPhvC	New Zealand Pharmacovigilance Centre – national centre for monitoring adverse events associated with medicines, vaccines or any product for medicinal use.	Incorporates CARM, IMMP and IVMP
Order	The request for service from which the messages are derived independent of transport mechanism. In this context, refer to 'Prescribe'.	
Order number	This uniquely identifies the order.	
Owe	Where the quantity supplied is less than the quantity prescribed for any given period and where the balance is to be dispensed at a further date. The 'owe' must be dispensed within the designated time period of the prescription.	
Partial dispense	Where a dispenser is unauthorised or unable to fill part of the prescription order.	
PHARMAC	New Zealand Pharmaceutical Management Agency.	
Pharmacist	A health practitioner who is, or is deemed to be, registered with the Pharmacy Council, established by the Health Practitioners Competence Assurance Act 2003 as a practitioner of the profession of pharmacy.	Medicines Act 1981
Pharmacode	The Pharmacy Guild of NZ coding system used to rationalise the ordering procedure for pharmacies throughout New Zealand. Pharmacode is a registered trademark.	
Pharmaceutical Subsidy Card	The prescription exemption card given once a family reaches 20 new prescriptions (items) in any given prescription year (1st Feb to 31st Jan).	Health Entitlement Card Regulations
Pharmacy	A place where pharmacy practice is carried out.	Medicines Act 1981
Pharmacy Council of NZ	The Pharmacy Council is responsible for registration of pharmacists, the setting of standards for pharmacists' education, scopes of practice and conduct.	Health Practitioners Competence Assurance Act 2003 (HPCAA)
Pharmacy-only medicine	A medicine declared by regulations that may be sold by retail only by a person under the supervision of a pharmacist in a pharmacy, or a hospital, or by a person in a shop with a licence to sell that	Medicine Act 1981

Term	Definition	Reference
	medicine.	
Pharmacy practice	Includes, without limitation, the following: a) The compounding and dispensing of prescription medicines, restricted medicines, or pharmacy-only medicines; b) The supply of a medicine by a pharmacist to suit the needs of a particular person; c) The sale of prescription medicines, restricted medicines, or pharmacy-only medicines.	Medicines Act 1981
Pharmhouse	Now known as Pharms DM.	
Pharmaceutical Claims Data Mart (Pharms DM)	Pharms DM contains claim and payment information from pharmacists for subsidised dispensing that has been processed by the HealthPAC General Transaction Processing System (jointly owned by the Ministry of Health and PHARMAC).	
PHO	Primary Health Organisation.	
PHO enrolment	Enrolment with a PHO or provider means that the person enrolling intends to use that PHO or provider as their preferred provider.	
Placer	The system that has placed the order.	
Placer group number	Used to identify a particular episode and to link all tests that comprise that episode. All tests from a particular episode should have the same placer group number. Referred to as the prescription order number in this document.	
Placer order number	Order reference number generated by placer.	
PMS	Practice Management System.	
POD	Patient's own drugs (brought from home).	
PSO Practitioner's Supply Order	Practitioner's Supply Order – a written order made by a practitioner on a form supplied by the Ministry of Health, or approved by HealthPAC for the supply of community pharmaceuticals to the practitioner, which the practitioner requires to ensure medical supplies are available for emergency use, teaching and demonstration purposes, and for provision to certain patient groups where individual prescription is not practicable.	New Zealand Pharmaceutical Schedule, April 2008
Prescribe	In medical practice, the act of authorising an order to supply or administer a substance used or capable of being used to prevent, treat, or palliate a disease, or	

Term	Definition	Reference
	the symptoms or effects of a disease for the purposes of clinical treatment of a patient under the authorising person's care. The provision, by a prescriber, of a authorisation to a person under their care allowing them to receive, possess and use prescription medicines for the purposes of treating a diagnosed condition. In health sector practice, the act of authorising an order to supply, possess or administer a prescription, pharmacist-only, pharmacy or general sale medicine used or capable of being used to prevent, treat, or palliate a disease, or the symptoms or effects of a disease for the purposes of clinical treatment of a patient under the authorising person's care.	
Prescription	Refer to section 3.3.	
Prescription item number	Refer to section 3.3.	
Prescription life-cycle	A prescription is valid for a defined period from initial creation until final dispense. After final dispense, the prescription is flagged as "historical". The length of time for which the supply/administration on a prescription is authorised.	
Prescription number	A unique identifier assigned to every prescription.	
Prescription order	Refer to section 3.3.	
Prescription order number	Refer to Placer order number.	
Public funded	Funding derived from local or central government.	
READ codes	A therapeutic and diagnostic coding system designed for use in primary care.	
Referral	The intent to transfer care of a patient, in part or in whole, by one health care provider to another health care provider.	
Referring specialist	A 'referred-to' health care provider who is referring a patient for advice or treatment, but not back into the care of the referring health care provider.	
Registered midwife	A health practitioner who is, or is deemed to be, registered with the Midwifery Council established by section 114(3) of the Health Practitioners Competence Assurance Act 2003 as a practitioner of the profession of midwifery.	Medicines Act 1981

Term	Definition	Reference
Repeat prescription	A prescription (both an order to supply for a pharmacist and instructions to a patient on how to administer), which contains an authorisation to dispense the medicine on more than one occasion. After the authorised number (or a set duration) has been reached, a new prescription must be obtained.	
Report	A report is a set of one or more results and any associated interpretation, usually generated in response to a request for a laboratory test or radiology examination. A report may include results previously reported and in some instances results from another request.	
Route	a) Licensed routes – the routes by which a drug is licensed for administration to a patient. b) Route of administration – the actual route of administration for a given medicine, i.e. this describes which route the administered medicine should take to get into the body or into contact with the body and constitutes part of the "where" (the other part being site). It is the "way in" or the course the medicine must take to get to its destination.	
Rc	Latin term meaning 'seek instruction'.	
Rx	Prescribers write Rx in the heading of prescriptions as an instruction to the dispenser to 'take' a medicine and prepare it for the patient.	
Script	Shortened term for 'prescription'.	
Section 29	An unregistered medicine. It has an exemption from Ministerial Consent requirements for medicine required by medical practitioner.	Medicines Act 1981
Sector	Health and disability sector.	
SIR (Shared Information Repository)	Refer to section 2.7.2 for detailed definition.	
SNOMED	Systemised Nomenclature of Medicine. A coding system.	
Special authority	An application process administered by PHARMAC, in which a prescriber requests government subsidy for a particular person. Once approved, the prescriber and the patient are provided a special authority number, which must appear on the prescription.	
Specialist	An individual administering specialist treatment or advice. A specialist cannot be a facility.	

Term	Definition	Reference
Standing order	Refer to section 3.8.5 for detailed definition.	The Medicines (Standing Order) Regulations 2002/373
Start	The first step in the 'prescribe, dispense, administer lifecycle'.	
Start date	The intended date/time when a medicine should start being administered to a patient. Not necessarily the same as the prescribing date.	
Status	The current situation.	
Stop	Where the prescription order or a prescription item is stopped by either a prescriber or dispenser and a change is made to the medication regime.	
Stop date	The date/time when an intervention was/should be ceased.	
System message	A message for computer system consumption that is automatically initiated by a trigger event, e.g. electronic notification receipt of a prescription order by a HMX, which transmitted it to the originator of the prescription order, i.e. without intervention by any user.	

Appendix B – Example Scenarios

The following scenarios are intended to demonstrate the use of this Standard and the associated benefits.

Scenario 1: Pulmonary disease

An exchange of medication-related information between a GP, a hospital and community pharmacist.

(based on fictional persons)

'At home'
The patient is a 53-year-old smoker, COPD patient. To treat his complaints, he has been using a Combivent® (salbutamol/ipratropium) inhaler; three to four puffs a day under normal circumstances. Due to a gradual deterioration of the dyspnoea complaints, Nuelin® (theophylline) was added to his medication, with a twice daily dosage of 350 mg in the form of sustained release. The SIR is updated to reflect changes to the patient's medication.

'At the GP'
The patient visited his doctor as he was very short of breath, his temperature had been 39.5ºC for two days and he was coughing up purulent sputum. He had considerably increased his inhalations of Combivent® over the previous two days, but this had not offered enough relief.

The doctor prescribed a course of antibiotics, which was dispensed from an out-of-hours pharmacy that same evening. The SIR is updated to reflect changes to the patient's medication.

The patient's symptoms did not improve, so the out-of-hours GP was contacted. The GP was able to access the patient's medication profile on the SIR and noted the COPD medicine, and that antibiotics had recently been supplied. The GP came to the conclusion that the patient should be admitted into hospital.

'Admittance into hospital'
In the hospital, the consulting doctor accessed the patient's medication profile on the SIR and historical hospital encounters on the hospital system, and noted any earlier admissions into hospital or treatment at the outpatients clinic and associated laboratory results. The medication list clearly identified current and historical medication.

After viewing this, the consulting doctor decided to continue with a number of the medicines, altering the way in which some of them were administered and to facilitate inhalation, changed the Combivent® salbutamol/ipratropium to a nebuliser.

The patient was also given a high dosage/pulse therapy course of prednisolone. A culture was started of the patient's sputum. Since antimicrobial therapy was indicated and the antibiotics had not yet had an effect, ciprofloxacin was started in a twice daily dosage of 750 mg, in anticipation of the results of the culture.

'Medication monitoring'
While prescribing ciprofloxacin in the hospital system, a warning appears on screen advising the consulting doctor that ciprofloxacin can slow down the metabolism of theophylline, leading to high concentrations of theophylline in the blood. Since the development of side-effects is usually linked to serum levels, the doctor decided to order a determination of serum levels for the second day. The results of the culture were expected to be ready about the same time as the theophylline level determination, and these results could be used to decide whether the ciprofloxacin should be continued, and whether the theophylline dosage needed to be adjusted.

Due to another emergency, the doctor was called away before recording the patient's consultation notes in the hospital system.

'The hospital pharmacy'
The hospital pharmacist noted the alert about the interaction between ciprofloxacin and theophylline during the medication monitoring. As the doctor had not recorded the patient's consultation notes in the hospital system, it was not clear if the doctor had seen the interaction alert. The pharmacist went through the

medication requirements, and, noticing the request for the theophylline determination, concluded that the interaction had been noted by the consulting doctor.

'The outcome'
Two days later the course of ciprofloxacin started to take effect: the fever had gone down and the complaints of tightness of breath were gradually becoming fewer. But the patient did complain that he was feeling nauseous, dizzy and restless. Two days after the ciprofloxacin was given, the theophylline level was found to be 23.7 mg/l.

The sputum culture showed that this was caused by *Pseudomonas aeruginosa*. The lung specialist in attendance decided to continue the ciprofloxacin treatment started by the assistant physician during the weekend, but reduced the theophylline dosage during the course of treatment to 250 mg twice a day, skipping the next dosage. He recorded this clearly in the patient's notes on the hospital system for those on evening duty.

On Friday the patient was much better and was allowed to return home. As well as 250 mg Nuelin® SR tablets and a Combivent® dose aerosol, the patient was given a schedule for reducing the take-home prednisone. The ciprofloxacin treatment had to be continued for another five days, until the Wednesday. On the following Monday, the patient had to give a blood sample to the local blood clinic to check whether the theophylline dosage needed to be increased. The prescriptions for the medication prescribed on discharge were sent to the patient's own pharmacist electronically. After the medication was collected, the hospital lung specialist and the patient's GP were informed of this electronically.

'Conclusion'
The health care practitioners in the community and hospital settings who were involved with this patient had an up-to-date electronic overview of the medication prescribed/dispensed in these settings and the adaptations made by other health care practitioners. The hospital could send prescriptions electronically to the hospital pharmacy as well as to the community-based pharmacies. The health care practitioner systems and externally-based shared information repositories ensured that the hospital and community-based healthcare practitioners had a coherent picture of the medication information required for safe and appropriate treatment.

Advantages of applying this Standard

For the patient:

- because of the efficient provision of information, the medication prescribed/dispensed in the community setting could be continued immediately and, after some adaptation, during his stay in hospital;
- the GP and the pharmacist were kept immediately informed, so that the medication prescribed/dispensed in the community setting could be continued on the same day after discharge from hospital;
- the discharge medication was ready to be picked up from the pharmacy.

For the GP:

- the prescribed medication, as well as the medication supplied, can be seen by the doctor at the central out-of-hours medical post to which patients can turn for continuation of care outside working hours;
- any relevant consultations can be recorded electronically, so that they can be read by other health care practitioners, e.g. a GP can see clearly what another GP has prescribed and another pharmacist has supplied;
- immediately after the patient's discharge from hospital, the GP can see what medication was given during hospitalisation and on discharge;
- ePrescribing is fast, especially when Standard protocols are employed;
- medication monitoring takes place online and without delay.

For the community pharmacist:

- Prescriptions are complete and legible.

- Prescriptions written at the outpatients clinic or on discharge from hospital can be processed electronically and, where requested, can be prepared and ready by the time the patient comes to collect them.
- While locums are on duty, ALL medication supplied by pharmacists can be seen as a component of medication monitoring. This includes medication supplied by the hospital pharmacist.

For the doctor in the hospital:

- access to up-to-date relevant patient information, current and historical, ensures decisions are safe and appropriate;
- ePrescribing is fast, especially when Standard protocols are employed;
- medication monitoring takes place online and without delay;
- any relevant consultations can be recorded electronically, so that they can be read by other health care practitioners, e.g. staff at the hospital can see clearly what other hospital staff or a GP has prescribed, as well as what a pharmacist has supplied.

For the hospital pharmacist:

- Prescriptions arrive at the pharmacy quickly, the instructions are complete and legible.
- Prescriptions for medication which require preparation in the pharmacy (perhaps in a sterile environment) can be scheduled and prepared by the pharmaceutical preparation department in good time.
- By being able to read the remarks recorded by the specialist, the pharmacist is fully cognisant of the decision making process. Using this as a basis, the pharmacist can consider whether extra advice is necessary or not.

Scenario 2: Prescribe and dispense information

The data elements related to prescriber and dispenser information, as related to the patient's medication.

Prescriber information:

(a) Prescribed medicine (generic and/or brand) – prescriber may or may not specify brand.

(b) Dose (quantity, unit of measure and frequency – this may be complex, e.g. two (2) tablets in the morning and one (1) tablet at night).

(c) Dose form (syrup, tablet, etc – e.g. patient may not be able to swallow a tablet, hence syrup may be specified).

(d) Administration route (e.g. 'oral').

(e) Prescriber instructions (any other possible prescriber instructions – e.g. 'stop immediately if rash occurs').

(f) Total prescription item quantity – this requires a quantity and a unit of measure (e.g. 20 tablets).

(g) Optionally, a specified maximum supply at each dispensing (e.g. not more than 10 tablets because patient is a suicide risk).

(h) Special authority number and expiry could be included here.

Dispenser information:

(a) Total quantity dispensed – this requires a quantity and a unit of measure (e.g. 10 tablets).

(b) Dispenser instructions (e.g. 'avoid alcohol').

(c) Dispensed medicine (brand and pack). This will be a specific brand and pack size – brand information will not necessarily be part of the prescription; pack information will never be part of the prescription. Also, a single prescription may require >1 packs – e.g. if Warfarin 6 mg daily is prescribed, this may be dispensed as 2 x 3mg tablets, or 1 x 5mg and 1 x 1mg tablets).

Hence the data elements to support this would be:

Description	Value
Prescribed generic code	Generic code
Prescribed generic name	Paracetamol (this could be inferred from code hence is arguably redundant as a data element)
Prescribed brand code	Brand code (optional – not supplied if prescribing generically)
Prescribed brand name	Panadol 500mg tablet (this could be inferred from code, hence is arguably redundant as a data element)
Dose quantity	1000
Dose unit of measure	mg
Dose frequency6	4 hourly as required for pain
Dose form	Tablet
Administration route	Oral
Prescriber instructions	e.g. 'stop immediately if [xyz] occurs...'

[6] Dose quantity and unit of measure should allow multiple records to cope with the '2 tablets in the morning and 1 tablet at night' scenario.

Description	Value
<<Special Authority Number>>	
<<Special Authority Expiry>>	
Dispensed brand code	Brand code
Dispensed brand name	Panadol 500mg tablet (this could be inferred from code hence is arguably redundant as a data element)
Dispensed pack code	Pack code
Dispensed pack name	Panadol 500mg tablet x 20 (this could be inferred from code hence is arguably redundant as a data element)
Dispenser instructions	e.g. 'avoid alcohol'
Total quantity prescribed	60
Total quantity prescribed unit of measure	Tablet
Total quantity dispensed	10
Total quantity dispensed unit of measure	Tablet
Maximum quantity to be supplied as a single supply on each dispensing	10