

Medicine and Allergy/Intolerance Data Transfer Requirements Specification

Version 1.2 July 2022

Data Alliance Partnership Board

The Data Alliance Partnership Board (DAPB), which holds delegated authority from the Secretary of State for Health and Social Care, has approved a new information standard for publication under [section 250 of the Health and Social Care Act 2012](#).

Assurance that this information standard meets the requirements of the Act and is appropriate for the use specified in the specification document has been provided by the Data Standards Assurance Service (DSAS) and approved by the Data Alliance Partnership Board (DAPB).

This information standard comprises the following document:

- Requirements Specification (this document)

An Information Standards Notice (DAPB4013 Amd 5/2021) has been issued as a notification of use and implementation timescales. Please read this alongside the documents for the standard.

The controlled copies of these documents can be found on the [NHS Digital website](#). Any copies held outside of that area, in whatever format (e.g. paper, email attachment), are considered to have passed out of control and should be checked for currency and validity.

Date of publication: 30 September 2021

Update 8 September 2022

Since the publication of the Initial Standard (30 September 2021), the developers have received significant feedback from developers and system suppliers. Based on the feedback the developers have redrafted the Requirement Specification (this document) to provide more information about the requirements and to clarify that NHS Digital and NHS England are re-architecting the current Electronic Prescription Service (EPS). As a consequence, EPS has been removed from the current compliance date, with the expectation that, following appropriate consultation, this Standard will be uplifted as appropriate to include EPS.

The changes to the Requirements Specification add clarity, will aid implementation, and do not change the purpose or scope of the standard other than delaying compliance with EPS. The changes have been approved by the DAPB.

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Glossary of terms

Acronym or term	Definition
API	Application Programming Interface - a software intermediary that allows two applications to communicate with each other
APP	Computer application, especially as downloaded by a user to a mobile device
DCB	Data Coordination Board - provided the national governance of information standards and data collections (including extractions) from 2017 to 2021. It was replaced by the Data Alliance Partnership Board.
DHSC	Department of Health and Social Care - a ministerial department, supported by 28 agencies and public bodies
dm+d	Dictionary of medicines and devices
ePMA	Electronic Prescribing and Medicines Administration – computer systems used in hospitals to record prescribing and administration of medicines to patients
EPS	Electronic Prescription Service – transfers prescriptions electronically to dispensing locations
FHIR	Fast Healthcare Interoperability Resources - a method for transferring healthcare information electronically
GP	General Practitioner
HL7	Health Level Seven - the global authority on standards for interoperability of health technology with members in over 55 countries
Homecare	Homecare organisations provide dispensing and delivery for hospitals of high costs and specialist medicines which patients administer themselves at home, or may provide healthcare professionals who visit patients at home to administer medicines, and/or provide support and training
ICS	Integrated Care Systems – partnerships between organisations that meet health and care needs across an area or region, for example NHS, councils, voluntary, community and the social enterprise sector. Integrated Care Systems coordinate services and plan in a way that improves population health and reduces inequalities between different groups
INTEROPen	INTEROPen - a collaboration of industry, standards organisations, and health and care providers, who advise on the development of open standards for interoperability in the health and social care sector
IT	Information Technology
JSON	JavaScript Object Notation - an open standard file format and data interchange format that uses human-readable text to store and transmit data objects
LHCR	Local Health and Care Record – are regional collaborations across health, care and local authorities to develop shared health and care records for the people in their region. Their aim is to design shared records for improving and coordinating individual care

Acronym or term	Definition
NHS Digital	NHS Digital - England's central, authoritative source of health and social care information for frontline decision makers, which builds upon the Health and Social Care Act 2012
NHSX	NHSX - a joint unit bringing together teams from the Department of Health and Social Care, NHS England and NHS Improvement, with the aim of driving the digital transformation of care
PRSB	Professional Record Standards Body - develop care record standards that are widely accepted and endorsed across the UK, and work with professional groups to provide assurance and consistency across the system and recommend any further development needed to achieve the status of a PRSB endorsed national standard
RFC	Requirements For Change – a formal request for the implementation of a change
SIDeR	Somerset Integrated Digital e-Record – a programme to provide access to medicine information from the GP record
SNOMED CT	Systemized Nomenclature of Medicine Clinical Terms - a clinical vocabulary for use in an electronic health record, adopted as the standard clinical terminology for the NHS in England. A standard clinical terminology is essential for the interoperability of electronic health records
STU3	Standard for Trial Use release 3 – at the time of publication the current version of FHIR
UK Core	An adaptation of international FHIR resources so they are suitable for UK use
XML	Extensible Markup Language - a set of rules for encoding documents in machine-readable form

1 Introduction

NHSX¹ commissioned NHS Digital to produce an Information Standard which puts in place definitions that are to be used when a health professional sends or receives patient medication and allergy/intolerance information, by computer system, between care locations. The Information Standard is needed to ensure this information is machine-readable and computable so it can be integrated on receipt, and the send and receive can take place no matter the differences in computer systems being used, or where they are located.

The Information Standard refers to NHS Digital APIs and specifications that provide the definitions, including defining how the send and receive messages are constructed, and how the data within is structured so that it is machine-readable (or if there are legitimate reasons that prevent it being machine-readable, for example a medicine without a dm+d code, that human readable text is included so the information can still be transferred electronically).

There are multiple components that contribute to interoperable transfer, the diagram below gives an overview of those components.

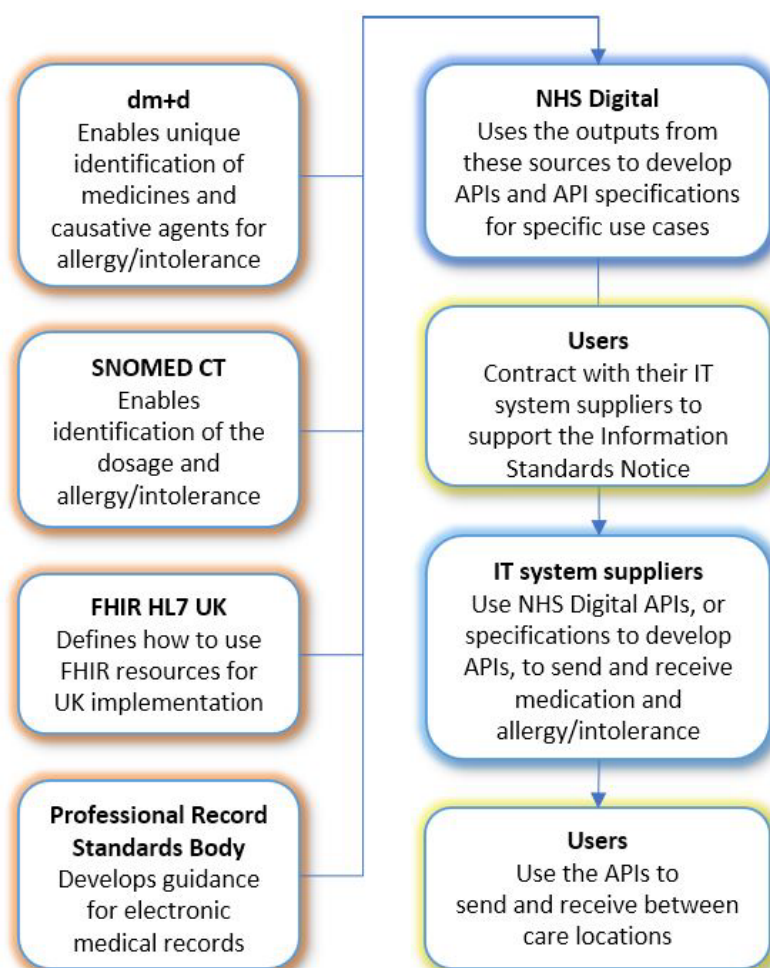


Figure 1: Components contributing to interoperable transfer

¹ NHSX merged into NHS England's Transformation Directorate in 2022.

1.1 Summary of key requirements

The key requirements are:

- Users, specifically those in charge of their organisation's IT (Information Technology) systems, must assess their IT systems to identify any electronic transfers of medication and allergy/intolerance to or from other systems, and if any are found determine whether they comply with this Standard, against which compliance is needed by 31 March 2023. Important exclusion: this compliance date does not apply to electronic transfer of prescriptions to an external dispenser, Section 7 has information about plans for electronic prescription transfer, including consultation about a proposed requirement to move to using electronic prescriptions in locations where paper is currently used.
- Where non-compliant message transfers are identified, users must make use of contracts they have signed with their IT system suppliers to develop new or update existing products to provide compliance. Alternatively, users might decide to change to a supplier which already offers a compliant system.
- NHS Digital, with the support of users, IT system suppliers, and professional bodies, has produced API (Application Programming Interface) specifications and APIs which enable each system supplier to develop products to send and receive conformant electronic messages:
 - FHIR (Fast Healthcare Interoperability Resources) message standards transfer the data between systems and locations.
 - NHS IT system suppliers must use NHS Digital APIs or API specifications to develop for each use case an API to send, receive, and integrate this data regardless of differences between the sending and receiving systems. When NHS Digital has not provided an API or specification system suppliers should use UK Core FHIR Resources to develop conformant transfers.
 - Integration (machine readability) of the data is achieved by:
 - using dm+d (dictionary of medicines and devices) codes for medicines
 - using SNOMED CT (Systemized Nomenclature of Medicine – Clinical Terms) codes for the elements of the dosage instruction, when there are appropriate concepts available in the FHIR UK standard
 - using dm+d and SNOMED CT codes for allergies/intolerances when there is a suitable coded entry in these terminologies.

NHS Digital does not assume all in-scope locations will implement the Standard by 31 March 2023. Some locations will establish electronic messages much sooner than this, for others it might be 5 years from now before an electronic flow is implemented, if for example they need to procure and install a suitable IT system. This Standard requires that if there is an existing electronic flow of medication and allergy/intolerance it must comply with the requirements by 31 March 2023, and any new electronic flows introduced from that date onwards must be compliant.

1.2 Background

NHSX commissioned NHS Digital to produce this Information Standard as they were concerned that without defining the end-to-end process the NHS will continue to see restrictions to messaging, for example a solution which only works between 2 IT system suppliers, or does not use FHIR, or does not use common data terminologies or clinical vocabularies.

When data is not structured it requires manual transcription and matching on receipt, which as well as adding burden, introduces risk of mistakes. So to provide time savings for personnel and reduce opportunity for error, the NHS must ensure interoperability when patient’s medication and allergy/intolerance information is transferred between care locations and IT systems.

Interoperability is achieved when the message is machine readable and can be integrated on receipt because it uses the FHIR messaging standard to transfer data and contains coded terms from dm+d and SNOMED CT to identify the medicine, dosage, and any allergy/intolerance.

Users that send or receive medication or allergy/intolerance using electronic messages must do so using compliant systems by 31 March 2023, using NHS Digital specifications which describe how NHS IT system suppliers can produce products that achieve this state for their users.

2 Scope

2.1 Functional scope

All care locations in England, running NHS services that need to know a patient’s current medicines and allergies/intolerance, or which prescribe, dispense, or administer medicines, and use computer systems that send or receive this information for a patient are in-scope.

This Information Standard intends to increase interoperability by enabling connections between all care locations. The following diagram indicates that data is expected to be able to flow in any direction to and from any location with a legitimate need, including shared care records as they emerge and evolve.

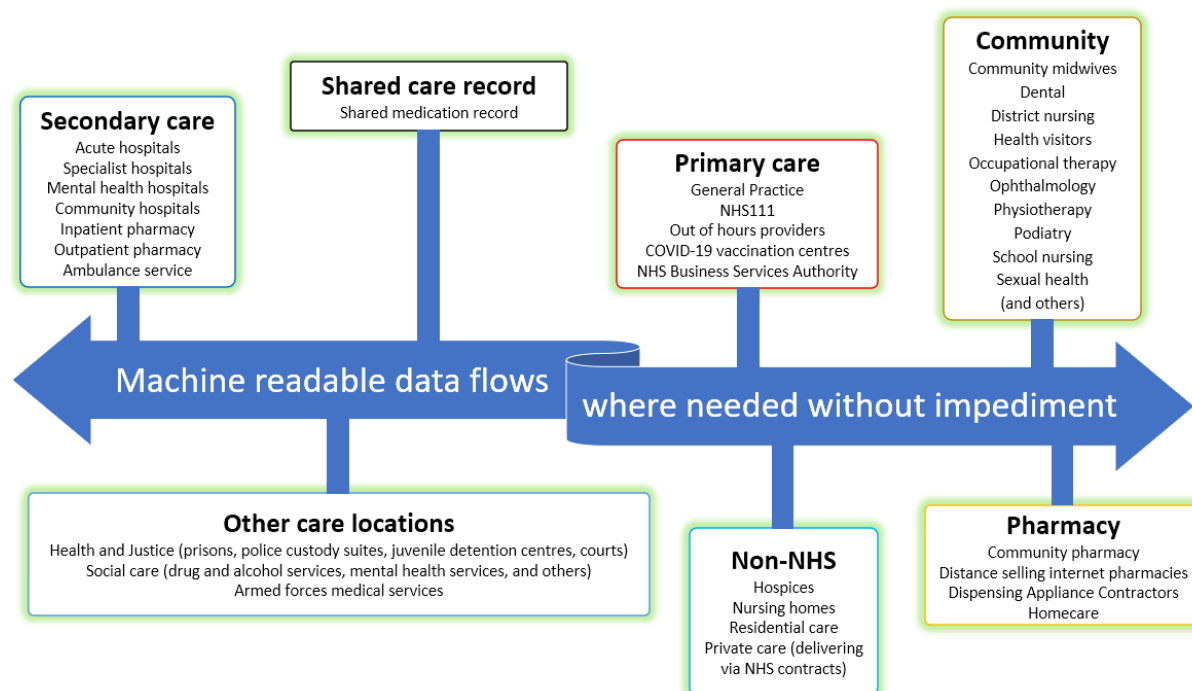


Figure 2: Indicative data flow diagram

Legacy or alternative data flows may co-exist as they transition to adopt the requirements of this Standard.

2.2 In-scope locations

The locations and services in table 1 are likely to participate in the transfer of medicine and allergy/intolerance information as part of providing care to individual patients. Where this transfer is directly between computer systems the requirements of this Standard apply, unless we have defined it as out-of-scope in Section 2.3.

NHS Services	Care locations
Secondary care	Hospitals (acute, specialist, mental health, community), ambulance service
Primary care	GP practices, out of hours treatment centres, walk-in clinics, NHS111, dentists, ophthalmology, vaccination centres
Pharmacy	Community pharmacy, distance selling (internet pharmacies), hospital inpatient pharmacy, hospital outpatient pharmacy, hospital outsourced pharmacy, Homecare, NHS Business Services Authority
Community Services	District nursing, community midwives, health visitors, school nursing, physiotherapy, podiatry, occupational therapy, sexual health
Shared Care Records	Local health and care records, integrated care systems, consolidated medication records, summary care record, patient APPs (applications)
Health and Justice*	Prisons, police custody suites, juvenile detention centres, courts, immigration removal centres
Other*	Social care, mental health services, drug and alcohol services, nursing and residential care, private care delivering via NHS contracts, hospices
*Note: Information Standards Notices apply only to NHS and social care funded organisations, so for example health and justice and private care are not required to apply this Standard, nevertheless, if users in those locations determine there is benefit from doing so, they might wish to engage with their system suppliers to utilise the appropriate NHS Digital specifications / UK Core FHIR.	

Table 1: In-scope locations

Additional notes:

The interface between systems and robotic dispensing systems should comply with the ISN, where patient specific information flows between the systems.

NHS standard terms and conditions for digital system contracts generally require that suppliers must maintain their systems in line with published NHS standards. It is recommended that organisations contact their system suppliers at the earliest opportunity to discuss ISN requirements and allow sufficient time for development and implementation.

2.3 Out-of-scope

The following transfers are **excluded** from this Standard’s conformance date, however users and system suppliers may decide there are benefits to users and patients if these data transfers are made compliant.

- Electronic prescriptions – see [Section 7](#) for full detail.
- Non-patient specific data (note: the FHIR resources are patient-specific).
- Data sent to automated dispensing cabinets and automated medicine administration devices including infusion pumps, syringe drivers and other such medical devices, if the data does not contain patient identifiable information.
- Where an electronic flow is not currently used to transfer medicine and allergy/intolerance this Standard does not mandate implementation of an electronic system, but it should be noted that users are required to comply with the standard if they subsequently introduce an electronic system (and start transferring information electronically) at any point after 31 March 2023. Users are encouraged to assess compliance with this Standard and the dm+d SCCI0052 Standard when procuring new digital medicines systems.

2.4 Example use cases

The diagrams which follow provide a few examples of how FHIR messages could be used to transfer information about medication between services. The UK Core FHIR Resources in these example messages are MedicationRequest, MedicationDispense, MedicationAdministration and MedicationStatement.

The use cases highlighted below are examples only. It is not a comprehensive list, and it is expected to grow especially as shared care records start to be embedded more generally. These examples are also not listed in order of priority. Our expectation is that users will assess medicines and allergy/intolerance flows and work with their system suppliers to identify priorities.

2.4.1 ePMA to hospital pharmacy



Figure 3: ePMA to hospital pharmacy dataflow

2.4.2 Discharge

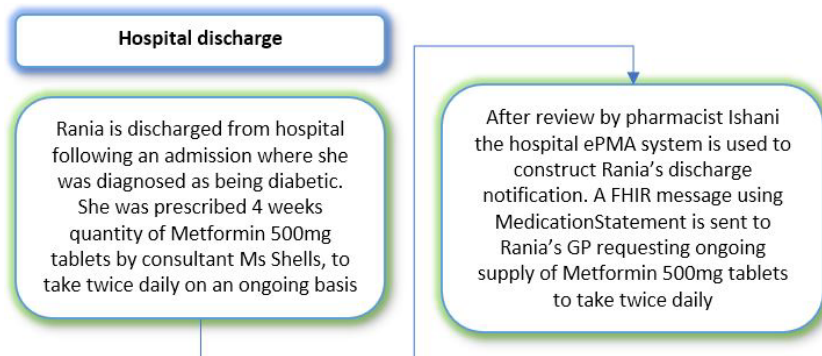


Figure 4: Hospital discharge dataflow

2.4.3 Admission

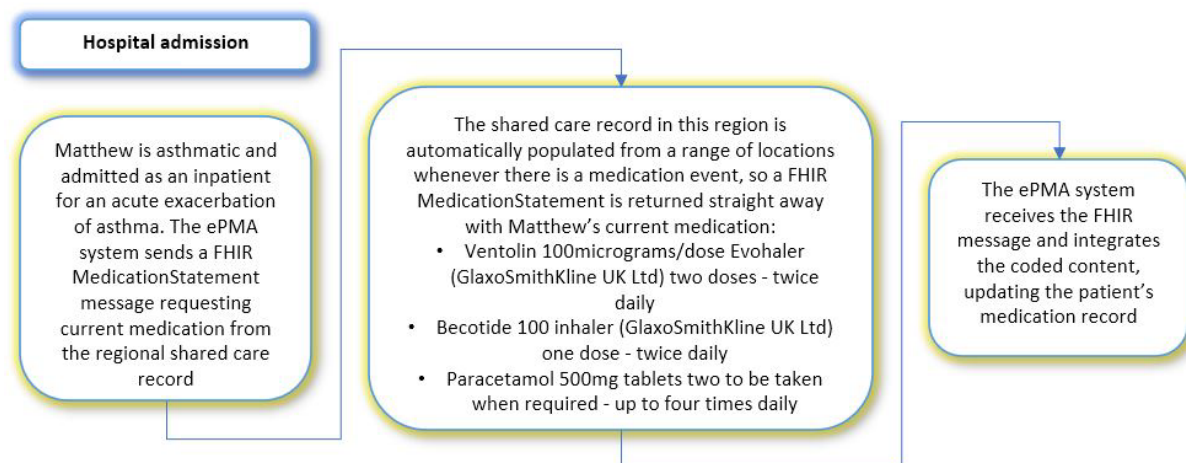


Figure 5: Hospital admission dataflow

2.4.4 Shared Care Record (Shared Medication Record)

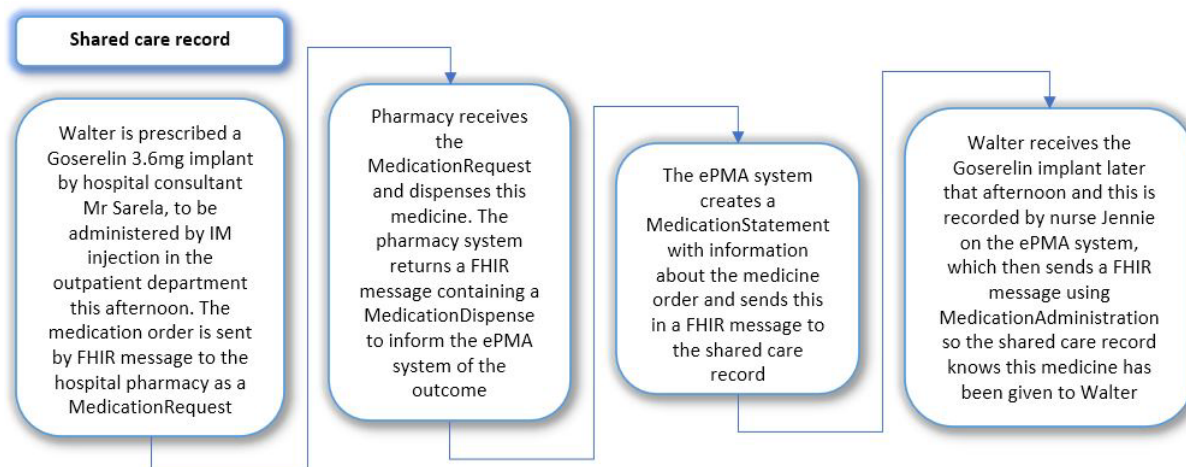


Figure 6: Shared medication record dataflow

See Section 7 for electronic prescription information.

3 Supporting information





Information Standards Notice DAPB4013 compliance summary	
	Patient's medication and allergy/intolerance data shared using the HL7 FHIR standard version STU3 or newer – recommended version is R4 UK Core.
	Where possible medication data includes structured dosing instructions using the HL7 FHIR dosage structure.
	Medication terminology using the NHS dm+d standard.
	Clinical (non-medication) terminology using the SNOMED CT standard.

Table 2: Compliance summary

3.1 Funding availability

There is no specific funding available to support compliance with this Standard. The 2022/23 technology funding allocations are being made directly to systems, for further information refer to: <https://www.england.nhs.uk/publication/2022-23-priorities-and-operational-planning-guidance/?msclkid=3fa36677ba5a11ecbc2ca3277edc3863>

3.2 NHS Digital FHIR specifications

When IT systems are used to send and receive patient's medication and allergy/intolerance information they should do so using either NHS Digital APIs or APIs created using NHS Digital specifications. When NHS Digital has not provided an API or specification UK Core FHIR Resources should be used to develop conformant transfers. The APIs and the specifications which describe how to use the most up to date version of United Kingdom specific FHIR Resources are available on the NHS Digital [API catalogue page](#). NHS Digital will continue to add APIs and specifications as use cases develop and evolve. At the time of publication APIs and specifications are available to support the following use cases:

APIs, specifications, and FHIR resources
<p>Dose syntax Use this API standard to provide a structured way to record dosage instructions between primary and secondary care settings.</p>
<p>ePMA (electronic Prescribing and Medicines Administration) API standards Use this specification to develop an API to share medication requests between ePMA systems and hospital pharmacy stock control systems.</p>
<p>FHIR UK Core API standards Use these API standards for FHIR R4 United Kingdom specific profiles.</p>
<p>FHIR Care Connect API standards Use these API standards for FHIR STU3 England specific profiles.</p>
<p>Terminology Server API Use this API to retrieve terminologies and classifications from the NHS Digital Terminology Server.</p>
<p>Transfer of Care / eDischarge Work is underway to publish a UK Core R4 technical specification and path-to-live route, but we do not know when this work will be completed.</p>
<p>NHS Digital has produced assurance processes and toolkits which accompany the various specifications and APIs. Section 5.2 provides more detail.</p>

Table 3: APIs, specification, and useful resources

3.3 Working with different versions of FHIR

It is possible to work with multiple versions of FHIR but how this is achieved may vary between implementations. For example, there are only small data and structural differences between UKCore R4 and STU3 CareConnect for the FHIR resources related to medication. Within the minimum viable product definition within UKCore, the data is identical to STU3 CareConnect.

For medication use cases, implementations should strive to support UKCore R4 but supporting STU3 CareConnect is acceptable if this aligns with the version of FHIR supported by other systems within the interoperability ecosystem.

A structural difference does exist within the FHIR Dosage structure. The Dosage.dose[x] and Dosage.rate[x] structures in STU3 have been replaced in R4 with a combined Dosage.doseAndRate structure.

The Faculty of Clinical Informatics has been commissioned by the NHS England/Improvement Transformation Directorate to help with a Standards and Interoperability Strategy Consultation. A key part of this strategy is how interoperability between different standards and versions of standards will be achieved.

3.4 dm+d

This Standard and the dm+d Standard are two separate Standards, but there is a link between them. This Standard covers the transfer of medicine and allergy/intolerance information across the NHS; dm+d is part of that dataset, as depending upon the context, it is the Standard for describing the item being prescribed, dispensed, administered.

'SCCI0052: Dictionary of medicines and devices' is a mandated NHS Standard which should already be applied by NHS IT system suppliers and requires that electronic systems that exchange or share information about medicines relating directly to a patient's care, must use dm+d identifiers and descriptions when transferring information.

As this new Information Standard is applied it will increase the usage of dm+d codes and SNOMED CT terms in data transfers. NHS Digital recognises the majority of medicines have a dm+d code and our specifications require that dm+d codes are used to identify medicines in message transfers to enable machine-readability. For medicines without dm+d codes our specifications require that human-readable text is included so the information can still be transferred electronically.

- The dm+d information standard SCCI0052 has been in place since 2012 and requires that electronic systems which exchange or share information about medicines relating directly to a patient's care, must use dm+d identifiers and descriptions when transferring this information.
- The [dm+d Requirements Specification](#) contains in section 3.2.2 the following parameters which supports the Interoperable Medicine Standards programme's interoperability objectives:
 - [2] Health and care organisations MUST ensure that IT systems use SNOMED CT identifiers specified in dm+d to communicate information between them
 - [10] NHS organisations must ensure the dm+d release data is updated at least every 6 months by the next major update or new procurement, but more frequent updates may be driven by programme requirements or a specific use case. (Supplementary note: the Electronic Prescription Service updates are required at least every 8 weeks).

- [15] Systems MUST be able to output and receive SNOMED CT identifiers specified in dm+d and on receipt of an identifier the system MUST be able to 'translate' it to and display the associated human readable text description (whether a dm+d description or mapped to a concept within a local or commercial-off-the-shelf medicine dictionary).
- [16] SNOMED CT identifiers specified in dm+d MUST be used where information on medicines used in the care of an NHS patient is transferred electronically from one system to another system.

NHS Digital is aware some systems do not have their dm+d database frequently updated. We encourage users to update a minimum of every 8 weeks, hospital trusts should note this will be a requirement for usage of the Electronic Prescription Service (EPS) Next Generation, which we intend to deploy for outpatient prescribing. See [Section 7](#) for electronic prescription information.

The following guidance is also a useful resource for dm+d users and implementers: [dm+d implementation guide for secondary care](#).

3.5 SNOMED CT

There is a relationship with the 2011 SNOMED CT Information Standard SCCI0034, which IT system suppliers should already be applying. SNOMED CT is a clinical vocabulary for use in an electronic health record and has been adopted as the standard clinical terminology for the NHS in England. This new Information Standard will increase the usage of SNOMED CT terms in new data transfers, and the NHS Digital specifications refer to using SNOMED CT terms to support interoperability by making transferred data machine-readable. This is particularly relevant for dosage instructions transferred with medicines, which when coded remove the need for manual transcription. It is also relevant for the transfer of allergy/intolerance data, which when coded enables consumption by prescribing decision support systems checking for drug reactions.

- The [SNOMED CT Requirements Specification](#) contains in section 7.1 and 7.2 the following parameters which supports the Interoperable Medicine Standards programme's interoperability objectives:
 - [7.1] Software systems must use SNOMED CT to provide the vocabulary for data elements that need to be:
 - extracted from the electronic patient record
 - shared outside the organisation.
 - [7.1] SNOMED CT to be the terminology utilised for clinical terms within all electronic communications. National message specifications must use and thus will require data to be captured using the SNOMED CT terminology when transmitted between systems.
 - [7.2] The standard must be used to support the management of the health and care of the patient in the following, but not restricted to, ways within electronic systems:
 - In messages that are used to transfer patient related data from one system to another.
 - Allergy lists and allergy management.

3.6 Allergy/intolerance

FHIR R4 UK Core (the UK specific version) has used the Professional Record Standards Body (PRSB) model for allergies to define the structure of the recorded data and of the FHIR message which transfers allergy/intolerance. [Guidance](#) is provided that allows recording of a clinical assessment of an allergy or intolerance - substances include but are not limited to a therapeutic substance administered correctly at an appropriate dosage for the individual; food; material derived from plants or animals; or venom from insect stings.

NHS Digital worked with the PRSB to develop the specification for an electronic discharge summary. PRSB provided the approach and detail in the form of an [information model for allergies and adverse reactions](#), based on the discharge summary heading 'Allergies and adverse reaction' published in the Academy of Medical Royal Colleges (AoMRC) Clinical Documentation and Generic Record Standards (2013).

Machine readability of allergy/intolerance is achieved by using a suitable coded entry from the dm+d or SNOMED CT terminologies, however not all causative agents have a code, so it is important there is a mechanism to transfer non-coded entries in the message in a human-readable format, and for the IT system to display these to users on receipt in the same way it would a coded entry.

3.7 Policies and frameworks

- [The future of healthcare: our vision for digital, data and technology in health and care](#) - defines the need for interoperability to address specific medicine interoperability problems when patients move between care locations. (This policy is underpinned by [NHS digital, data and technology standards framework](#) which sets out the core standards on technology and data by which it is proposed all IT systems and digital services in the NHS must abide).
- Develop [interoperability](#) to support the move to systems enabling access to patient information through open interfaces (FHIR Care Connect APIs).
- [Open standards for software interoperability, data and document formats in government IT specifications](#).
- [NICE guideline NG0525](#) includes the recommendations that: medicines-related communication systems should be in place when patients move from one care setting to another, and medicines reconciliation processes should be in place for all persons discharged from a hospital or another care setting back into primary care, and the act of reconciling the medicines should happen within a week of the patient being discharged.
- [Data saves lives: reshaping health and social care with data](#) (draft at the time of publication of this Standard). This (newly released) Government policy paper aims to improve citizen health by enabling access to health data, with the specific elements that support this Standard being:
 - Chapter 2: Giving health and care professionals the data they need to provide the best possible care - achieved by delivering shared records.
 - Chapter 3: Supporting local and national decision makers with data – achieved by integrating local care systems with a culture of interoperable by default.
 - Chapter 6: Helping colleagues develop the right technical infrastructure – achieved by promoting and developing data and technical standards.
 - Chapter 7: Helping developers and innovators to improve health and care – achieved by driving interoperability for innovation.

3.8 Use of patient data and provision of data for secondary uses

Users should note this Information Standard defines how the patient information should be transferred, it does not provide any permissions for data to be collected, transferred, or provided for secondary uses such as research and analysis. Users (senders and receivers) must involve their data controllers and data protection officers to ensure any new computer processes are assessed, approved, and publicised using their own information governance procedures.

3.9 Stakeholder engagement

To determine appropriate options for use when transferring medicine and allergy information NHS Digital has worked closely with:

- [INTEROPen](#) - a collaboration of industry, standards organisations, and health and care providers, who advise on the development of open standards for interoperability in the health and social care sector.
- The [PRSB](#) (Professional Record Standards Body) – who develop care record standards that are widely accepted and endorsed across the UK, and work with professional groups to provide assurance and consistency across the system and recommend any further development needed to achieve the status of a PRSB endorsed record standard.
- [UK FHIR Delivery Senior Leadership Team](#) – which supports the development, promotion, and implementation of HL7 (Health Level Seven) standards in ways which meet the needs of healthcare organisations, health professionals and healthcare software suppliers in the United Kingdom.
- The Interoperable Medicine Standards working group – which has 200+ members drawn from NHS Digital (multiple programmes), NHSX, healthcare IT system suppliers, hospital trusts, and community pharmacy.

Frontline staff are encouraged to input complete and accurate information into their digital systems so that information that flows between organisations is usable.

3.10 Use cases

During 2020/21 NHS and NHS Digital identified the use cases in table 3 as being suitable for development and worked with a range of NHS organisations and system suppliers to refine our specifications and develop conformant medicine data transfers. This information might be helpful for users considering how and where to implement the requirements of this Standard, as elsewhere in this guidance these examples are also not listed in order of priority, and our expectation is users will assess medicines and allergy/intolerance flows and work with their system suppliers to identify priorities for their organisation.

Use case	Description and status
ePMA to pharmacy	Electronic ordering of medicines by hospital wards from inpatient pharmacies. <ul style="list-style-type: none"> • In December 2020 University Hospitals of Derby and Burton Foundation Hospital Trust went live with an electronic ordering process between the wards and inpatient pharmacy, using the FHIR Care connect (STU3) Resources MedicationRequest and MedicationDispense. The APIs were developed using the NHS Digital specification for ePMA to inpatient pharmacy electronic ordering.
Discharge	Providing current, changed, future, and stopped medications, as well as new allergies/intolerances from hospitals to GPs and community pharmacists when a patient is discharged from hospital.

Use case	Description and status
	<ul style="list-style-type: none"> In 2021 NHS Digital began supporting work on the Somerset Digital Medicines project which is developing a shared medication record using FHIR Resources. Supporting hospital discharge is a high priority use case. In 2021 NHS Digital began supporting work on the Wessex One Medication Record platform which is developing a shared medication record using the FHIR MedicationStatement Resource, with development at Dorset County Hospital focused on replacing an existing Health Level 7 version 2 patient discharge process (ePMA to GP) with a FHIR UK Core (R4) message containing coded data.
Admission	<p>Providing current medication and allergies/intolerances from GPs when a patient is admitted to hospital.</p> <ul style="list-style-type: none"> In 2021 NHS Digital began supporting work on the Somerset Digital Medicines project which is developing a shared medication record using FHIR Resources. Supporting hospital admission is a high priority use case. In 2021 NHS Digital began supporting work on the Wessex One Medication Record platform which is developing a shared care record using the FHIR MedicationStatement Resource, it is expected a future development will be to support hospital admissions.
Shared Care Record	<p>Providing past, current, and planned (future) medications, as well as allergies/intolerances to a shared medication record, shared care record, or LHCR (Local Health and Care Record), and other such systems that are being developed by ICS (Integrated Care Systems).</p> <ul style="list-style-type: none"> In 2021 NHS Digital began supporting work on the Somerset Digital Medicines project which is developing a shared medication record using FHIR Resources, building on the SDeR (Somerset Integrated Digital e-Record) programme that provided access to medicine descriptions in the GP record. Phase 1 of the project provided a pilot in Autumn 2021 of a federated shared record, which doesn't store data, but on request queries all connected systems to see which hold medication data about a patient, then collects and provides this information to the requesting system in a structured format using the FHIR MedicationStatement Resource to transfer the medicine, dose, relevant statuses, and dates. Phase 2 will move to a persisted shared record, which stores this data on receipt, and rather than sending out on-demand requests for the data, will be fed whenever a medication event occurs in a wide range of locations (including acute and community trusts, minor injuries units, GPs, community pharmacy). The persisted record will organise the received events and distil them down to a consolidated list of active medications and sequence of historic interventions for each patient. Supporting hospital admission and discharge are high priority use cases, but the scope is to cover a wide range of use cases. In 2021 NHS Digital began supporting work on the Wessex One Medication Record platform which is developing a shared care record using the FHIR MedicationStatement Resource, providing current medication and allergies/intolerances when a patient is transferred between specialities within a hospital, or when transferred to a different hospital. Hampshire Hospitals NHS Foundation Trust, (Basingstoke and North Hampshire Hospitals) and University Hospital Southampton NHS Foundation Trust, are developing FHIR UK Core

Use case	Description and status
	<p>(R4) to transfer messages from ePMA into a shared care record, and subsequently out to a different ePMA in another hospital.</p> <ul style="list-style-type: none"> In 2021 NHS Digital began supporting work with the Lancashire and South Cumbria Health and Care Partnership to develop a consolidated medicine record for the whole region which will bring together medicine records from primary care, secondary care, mental health, care homes, and hospices.
EPS Next Generation	<p>Providing the electronic prescription service to hospital outpatients for prescriptions dispensed in community pharmacy.</p> <ul style="list-style-type: none"> In September 2021 NHS Digital started a pilot at Midlands Partnership Trust to issue electronic prescriptions in outpatients for dispensing in community pharmacies. This used FHIR UK Core (R4) Resources MedicationRequest and MedicationDispense and APIs developed from NHS Digital specifications.

Table 4: Initial use cases

4 Benefits and outcomes

The Interoperable Medicine Standards Programme aims to deliver a range of benefits and outcomes as a result of users being able to use products built using the specifications which underpin this Standard.

Benefit description	Benefit type	ePMA to pharmacy	Discharge	Admission	Shared Medication Record	EPS Next Generation
Removes the need for transcription into the receiving computer system which releases health professionals to spend time on other tasks	Financial	Yes	Yes	Yes	Yes	Yes
Reduces the opportunity for error because transcription is not needed when there is a machine-readable electronic transfer	Qualitative	Yes	Yes	Yes	Yes	Yes
Increased interoperability as a result of using the FHIR standard for dosage which provides machine readable medication data transfer between primary and secondary care locations	Qualitative	Yes	Yes	Yes	Yes	Yes
Increased transfers of medication and allergy/intolerance data as a result of suppliers using common standards for data transmission, which benefits patients	Qualitative	Yes	Yes	Yes	Yes	Yes

Benefit description	Benefit type	ePMA to pharmacy	Discharge	Admission	Shared Medication Record	EPS Next Generation
Reduced effort when ascertaining patient's current medication and allergies/intolerance as a result of electronic transfer, which enables health professionals to spend more time on other matters	Qualitative		Yes	Yes	Yes	Yes
Reduces the time taken to dispense the medication order in pharmacy because it enters the dispensing queue sooner as a result of it being received electronically	Qualitative	Yes				Yes
Reduced hospital doctor and GP time converting medicine dosage as a result of transferring medication and dose electronically in machine readable format	Financial		Yes	Yes		Yes

Table 5: Potential benefits and outcomes

4.1 Implementation outcomes for hospital prescribers

- Receive patient's current medication directly into the hospital ePMA system in a machine-readable format, removing the need to manually type in the information when patients are admitted to hospital or move between different specialties in a hospital.
- When patient's current medication details are received from the GP on admission to hospital the dosage is coded enabling conversion from GP to hospital syntax (product to dose).
- When preparing the patient medication component for inclusion in discharge notifications before the patient is discharged and returned to GP care, the dosage is coded enabling conversion from hospital to GP syntax (dose to product).
- Removes the need to write patient's medication orders onto order sheets which are then transported to the inpatient pharmacy for dispensing.

4.2 Implementation outcomes for hospital pharmacy professionals

- Receive medication orders electronically from wards so manual entry of the order into the pharmacy stock control dispensing system from order sheets is not required.

4.3 Implementation outcomes for pharmacy professionals outside hospital locations

- Receive electronic prescriptions from locations which previously supplied patients with hand-written or printed prescriptions, so manual entry of the order into the pharmacy stock control dispensing system is not required.
- Receive computable coded dose syntax so manual entry for medicine labels is reduced.

4.4 Implementation outcomes for general practitioners (GPs)

- Receive patient's current medication on discharge in a machine-readable format, so manual entry of the information into the GP IT system is not required.

4.5 Implementation outcomes for patients

- Expend less time providing and repeating information to health professionals about their medication, allergies/intolerances and any changes that have occurred as they move between care locations.

5 Requirements and conformance criteria

This section defines the actions in-scope users need to take after 1 October 2021. This Standard applies to users, so it is their responsibility to use local contracts to instruct how their IT system suppliers comply with the Standard. **MUST** requirements are mandatory, **SHOULD** requirements mean there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course. [RFC-2119](#) (Requirements for Change) provides additional information about these categorisations.

For each requirement there is a corresponding conformance criterion which defines the measures used to assess success.

5.1 User (provider) requirements and conformance criteria

Reference	Requirement	Conformance criteria
R1	Providers MUST ensure this Requirements Specification is reviewed to establish which computer data transfers are covered by the scope, and whether any changes are required. We recommend this review takes place soon after 1 October 2021 to allow maximum time to plan for any actions required for compliance by 31 March 2023.	Review the Information Standards Notice documents to identify any systems or processes that will be affected.
R2	Providers MUST , where the need for change is identified, ensure their systems are changed to be conformant with the standard by 31 March 2023.	Ensure your system supplier has plans, where the software does not meet the Standard, to upgrade it before 31 March 2023.
R3	Providers MUST instruct their IT system supplier to develop APIs to transfer medication and allergy/intolerance data according to the NHS Digital specifications and ensure their APIs can communicate successfully when different versions of FHIR are used by the sender and receiver. The specifications are available on our API catalogue page .	System suppliers should confirm to providers they have used NHS specifications and used Transforms or their own conversion tools to convert messages that use different FHIR versions.
R4	Providers MUST instruct their IT system supplier to ensure the APIs include the use of dm+d codes for medications, SNOMED CT codes for	System suppliers can evidence to providers by providing reports from

Reference	Requirement	Conformance criteria
	the elements of the dosage instruction when there are appropriate concepts available as identified in the UK FHIR version, and dm+d or SNOMED CT codes for allergy/intolerance. The specifications are available on NHS Digital's API catalogue page .	the NHS Digital self-assurance test harness which will validate their use of FHIR in the API meets the minimum viable criteria from the NHS Digital specification.
R5	Providers SHOULD instruct their IT system suppliers to use NHS Digital's assurance and testing processes that accompany the use case specifications and APIs. These can be found after accessing the resources for each use case on NHS Digital's API catalogue page .	System suppliers can evidence to providers by providing reports from the NHS Digital assurance and test processes.
R6	Providers SHOULD work with their IT system suppliers to complete a local risk and clinical safety assessment before any new API is used to transfer live patient data. Some risks for consideration can be requested by email from the self-assurance guidance and these should be used alongside existing governance already in place within your organisation.	A self-assessment should be completed between the IT system supplier and the provider to ensure all risks have suitable mitigations in place and are agreed between both parties.
R7	Providers MUST ensure appropriate guidance is made available to their users if changes implemented to achieve compliance affect how a user interacts with the system.	Ensure user guidance is available to support any changes to the software and local process.
R8	Providers MUST ensure when procuring new systems or modifying agreements with existing IT system suppliers that their supplier complies with existing clinical safety standards: DCB0129 Clinical Risk Management: its Application in the Manufacture of Health IT Systems . DCB0160 Clinical Risk Management: its Application in the Deployment and Use of Health IT Systems .	Check your system supplier complies with clinical safety standards DCB0160 and DCB0129.

Table 6: User requirements and conformance criteria

5.2 Assurance and testing

NHS Digital's APIs and specifications for developing APIs are generally accompanied by resources for testing and assuring functionality. These can be found after accessing the resources for each use case from NHS Digital's [API catalogue page](#).

For example, to support the ePMA to inpatient pharmacy stock control specification, NHS Digital provides access to a test harness that system suppliers should use to test their FHIR resources (MedicationRequest and MedicationDispense) comply with the specification's minimum viable product parameters when sending or receiving messages. This test harness also enables testing of the FHIR Resource MedicationStatement to support development of the shared medication record use case, and will be developed to include the FHIR Resource MedicationAdministration.

NHS Digital's Interoperable Medicine Standards team strongly encourages users to check their IT system supplier has tested their FHIR messages and API implementations using the available test and assurance processes, which greatly reduces the risk of the software not being able to communicate correctly with other systems.

In addition to tools such as the test harness, NHS Digital also aims to provide use case specific risk assessments which users should work with their IT system suppliers to complete, to check the products are fit for purpose and conform with clinical safety standards before any patient data is transferred. Mitigating actions will be with the user and/or supplier, for example, if the supplier solution is locally hosted then the non-functional risk items related to scalability, system performance, security vulnerabilities, disaster recovery and business continuity would be more applicable for the user to address or to be jointly addressed by the system supplier and user. Whereas if the software is centrally hosted the non-functional risks for the user would be minimal.

6 Timescales

September 2021 – Publication

This Information Standards Notice was originally approved for publication in September 2021. From September onwards NHS Digital will use its communication channels to inform stakeholders about the Standard and publicise the implementation and conformance dates.

This uplifted version with clarifications and updates on progress was published June 2022.

The original implementation and conformance dates are not changed by this uplift.

October 2021 – Implementation

1 October 2021 is the start date for this Information Standard. From this date users and IT system suppliers have up to 18 months to assess the Standard, determine whether any changes are required, and plan how to apply changes before 31 March 2023. Users should check if any modification is needed to their contracts with IT system suppliers, and IT system suppliers may need to undertake activities to make their products compliant. NHS Digital recommends users and IT system suppliers check the NHS Digital [API catalogue](#) regularly during 2021/2022 as we will add APIs and update specifications as new use cases develop.

March 2023 – Full conformance

31 March 2023 is the full conformance date, at which point all users transferring medication and allergy/intolerance data by computer must comply with this Information Standard. Similarly, all new implementations of medication and allergy/intolerance data transfer by computer after 31 March 2023 must comply with this Standard.

7 Electronic Prescription Service (EPS)

In early 2022 NHS Digital and NHS England decided to re-architect the current EPS (Electronic Prescription Service), as a result we have decided to exclude EPS from this Standard's 31 March 2023 conformance requirement.

Re-architecting EPS will be a two-stage plan:

Stage 1: Introduce a modern FHIR messaging 'façade' around the current EPS to support system suppliers that wish to integrate with EPS. This will primarily (but not exclusively) support the appetite of relevant system suppliers and the NHS to introduce EPS for hospital outpatients. The EPS 'FHIR façade' is forecast to be ready for system suppliers to commence development from Autumn 2022.

Stage 2: Introduce the re-architected EPS Next Generation that will ultimately replace both current EPS and the 'FHIR façade'. This work is currently in the discovery phase and timelines are under development.

Following appropriate consultation we expect this Standard will be uplifted as appropriate to include EPS.

7.1 Example data flows for EPS

The diagrams which follow indicate how FHIR messages could be used to transfer information about prescriptions between hospitals and dispensing locations using.

7.1.1 EPS General Practice

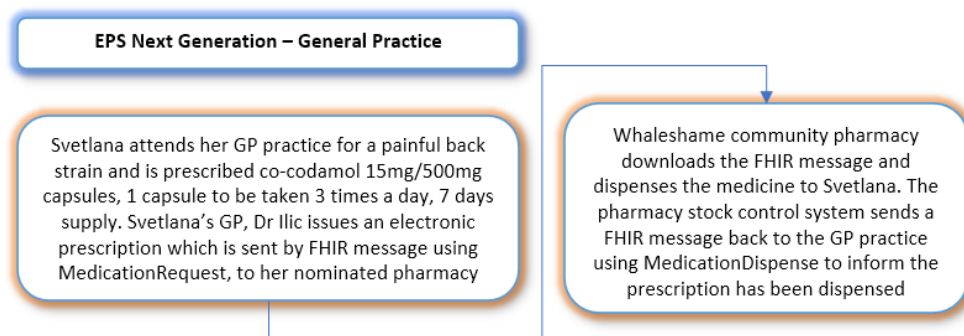


Figure 7: EPS Next Generation - General Practice

7.1.2 EPS Hospital outpatients

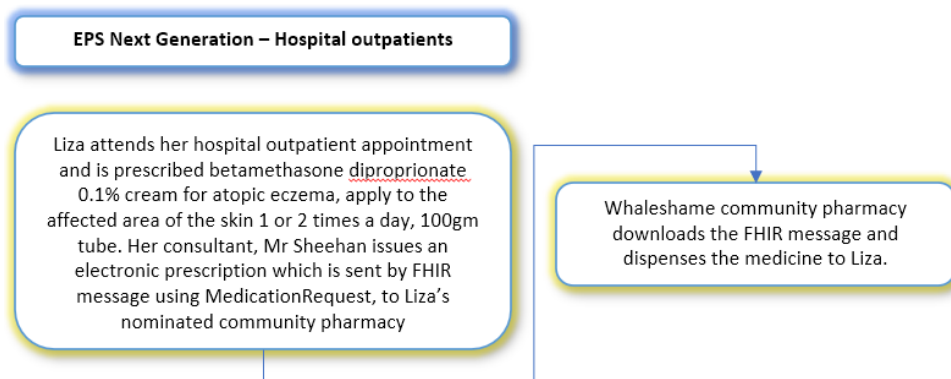


Figure 8: EPS Hospital outpatients

7.1.3 EPS Homecare

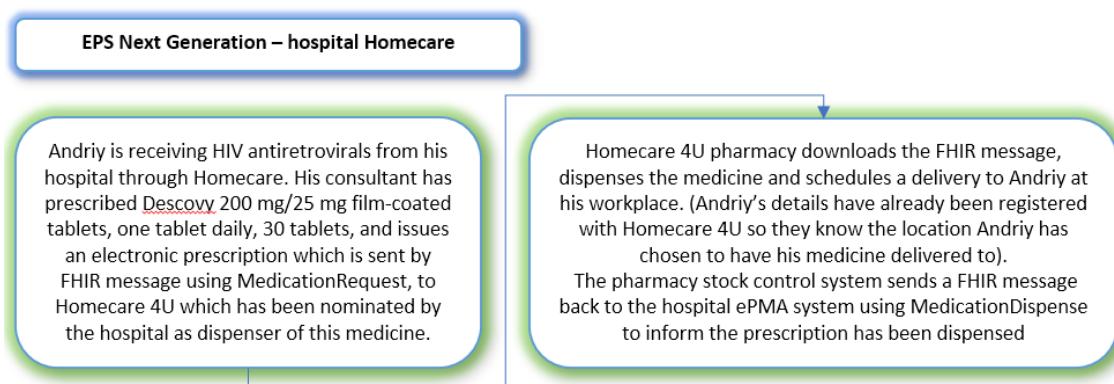


Figure 9: EPS Homecare

More information about the Homecare service can be found on the National Clinical Homecare Association’s ‘[Clinical Homecare explained](#)’ pages.

8 Helpdesk

NHS Digital currently offers various forms of support to stakeholders involved in the adoption of medicine interoperability. A working/user group meets online most Mondays at 15:05 to support definition/adoption of the standards, dm+d, dosing, and other associated interoperability topics. Those interested in joining these sessions can contact medicinesstandards@nhs.net and request to be added to the meeting invitation list.

We have identified several areas where primary and secondary care differ when transferring patient's medicine data, and as the digital interactions between different care locations increases we expect more will be identified. We will continue to work with users and system suppliers to assess these as they emerge.

Any questions or enquiries regarding this document should be emailed to medicinesstandards@nhs.net