Direct Care APIs Dataset Specification

Last updated 01/10/2021

Information and technology
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Contents

Introduction 3
Direct Care APIs Products 3
Technical Architecture of Direct Care APIs 4
The relationship between Direct Care APIs and the Digital Interoperability Platform 6
Curating the Direct Care APIs Specifications 7
Direct Care APIs and sensitive codes 8
Appendix A - Summary of data residing nationally 10
Appendix B - Data that traverses NHS Digital infrastructure 12

Version: 1.3
Last revised: 1/10/2021

Introduction

NHS Digital has been commissioned to develop and operate a Digital Interoperability Platform (DIP) to deliver a set of national Integrated Care products or services – see Figure 2.

This document provides detail of the dataset specifications in terms of data held nationally and data that flows through the infrastructure of NHS Digital for one of these national services - Direct Care APIs.

Direct Care APIs Products

Direct Care APIs aims to support better clinical care by enabling sharing of data held in general practice, to agreed standards, for the purposes of direct care. Drawing direction from key strategies including the Government Paperless 2020 (Personalised Health and Care Framework) and NHS England General Practice Five Year forward view, Direct Care APIs will create a set of national standards and 'open' APIs (Application Programming Interfaces) that allow the exchange of information between GP Practice and other care setting clinical systems.

The APIs and standards will deliver cross-organisational functional 'Products' with deployment dependent on clinical scenario and use case. Some Products support the flow of detailed, clinical information from the patient record (i.e. GDPR-defined special categories of personal data); others support the flow of administrative data (e.g. appointment information) as follows:

- Access Record: HTML view – presents a read-only view of the detailed patient record via a browser
- Appointment Management – presents the patient's future appointments and allows appointments to be booked, amended or cancelled for that patient
- Access Record: Structured (Medications and Allergies) – presents the detailed patient record in a machine-readable format so it can be imported into the local clinical system. Currently Direct Care APIs has delivered the capability to support the transfer of two sections (Medications and Allergies) of the patient record in a structured format. In the future, the Direct Care APIs Programme is looking to elaborate and develop further elements of the patient record for transfer in a structured format. This includes Access Record: Documents which provides the documents attached to the records.
- Messaging (Send Document and Update Record) - provides a simple and standardised way of updating a patient record. It currently sends either a consultation summary that may have taken place away from the patient's registered practice, or an online consultation (a survey taken by the patient). In the future, the Direct Care APIs Programme is looking to elaborate and develop further the ability send data in a structured coded format.

Appendix B describes in more detail the data fields associated with each capability.

These products will together form the core technology needed to support a national interoperability service, which will enable access to GP patient records and appointment

management across practices and other care settings, regardless of the GP clinical system used. Access to data via Direct Care APIs is, at this point, for direct care purposes only.

A further set of required products have been identified through stakeholder engagement to provide the ability to 'Writeback' into the patient's registered GP patient record. These are now described as 'Direct Care APIs Messaging Products' and include: Send a Document; Send a Task; and Send a Structured Document. The Send a Document capability has been specified in draft and is awaiting official acknowledgement and adoption as part of the 'GPIT Futures' framework. The other two have yet to be initiated.

Technical Architecture of Direct Care APIs

Below is a diagram (Figure 1) that depicts an overview of the technical architecture of Direct Care APIs. The diagram can be summarised in the following points:

- Direct Care APIs enables information about a patient to be accessed by a clinician in a GP Practice or other setting from the clinical system in their registered GP Practice (see the three products above).
- Direct Care APIs enables information about appointment availability within a GP Practice (depending on the structure of the primary care setting – this may not be the patient's registered practice) to be assessed by clinical admin staff from other GP Practices and care settings (for example, a 111-call centre or an urgent care centre). Direct Care APIs allows appointments to be booked, amended, or cancelled for a patient, and a list of future appointments can also be viewed.
- The patient information passes through NHS Digital infrastructure but is not stored.
- NHS Digital stores audit information on the message flows to enable service support. A subset of this audit information includes a patient's NHS number (see Appendix A for details).
- NHS Digital (SSP) validates that message only flow between (GP or other) organisations where data sharing agreements (DSAs) are in place.

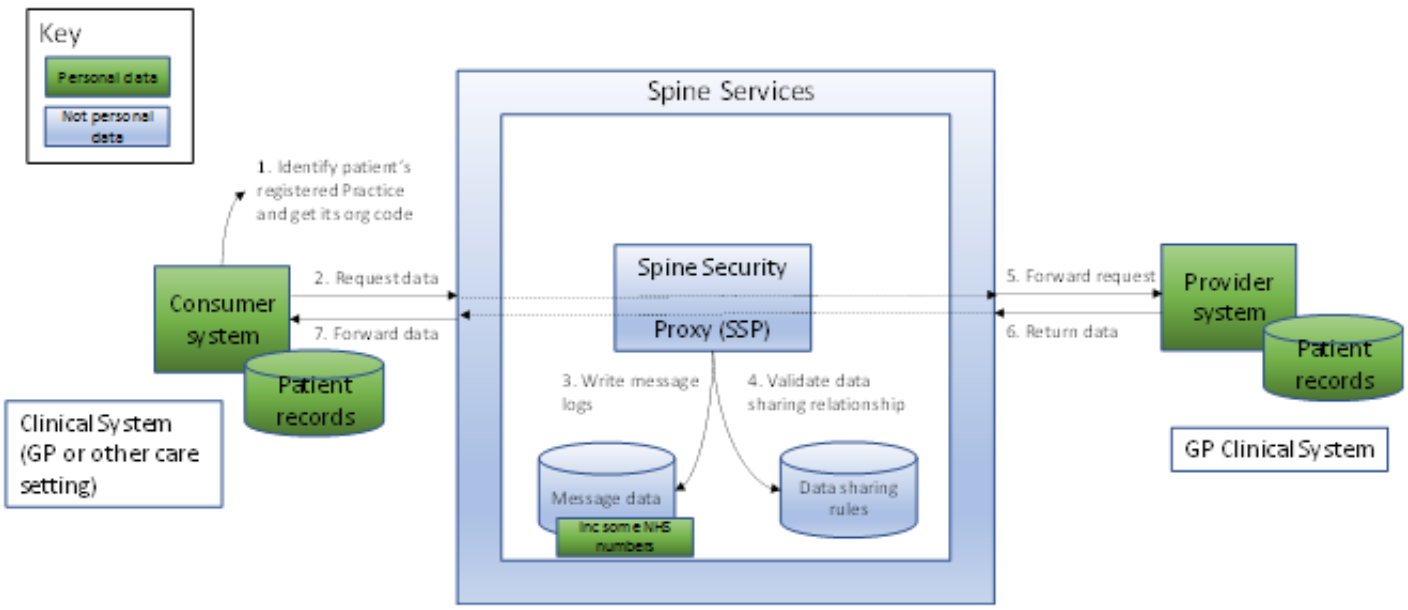

Figure 1 - Direct Care APIs Technical Architecture and data flows

The diagram (Figure 1) and description above relates the Direct Care APIs specific data flows. However, in addition to these flows, the Direct Care APIs service requires a consuming system to have conducted two additional requests for data on Spine before making a request for Direct Care APIs data:

1) The first is a request to the Patient Demographics Service (PDS) on Spine in order to confirm the identity of the patient. This involves the consuming system providing demographics (NHS number and/or patient name, address, date of birth & gender) to Spine, and receiving in response a complete PDS demographic record for the patient, as well as details of the patient's registered GP practice.

2) The second is a request to the Spine Directory Service (SDS) in order to determine the technical interface address of the target GP Practice. This involves the consuming system providing the practice's ODS code and in response receiving the technical interface address.

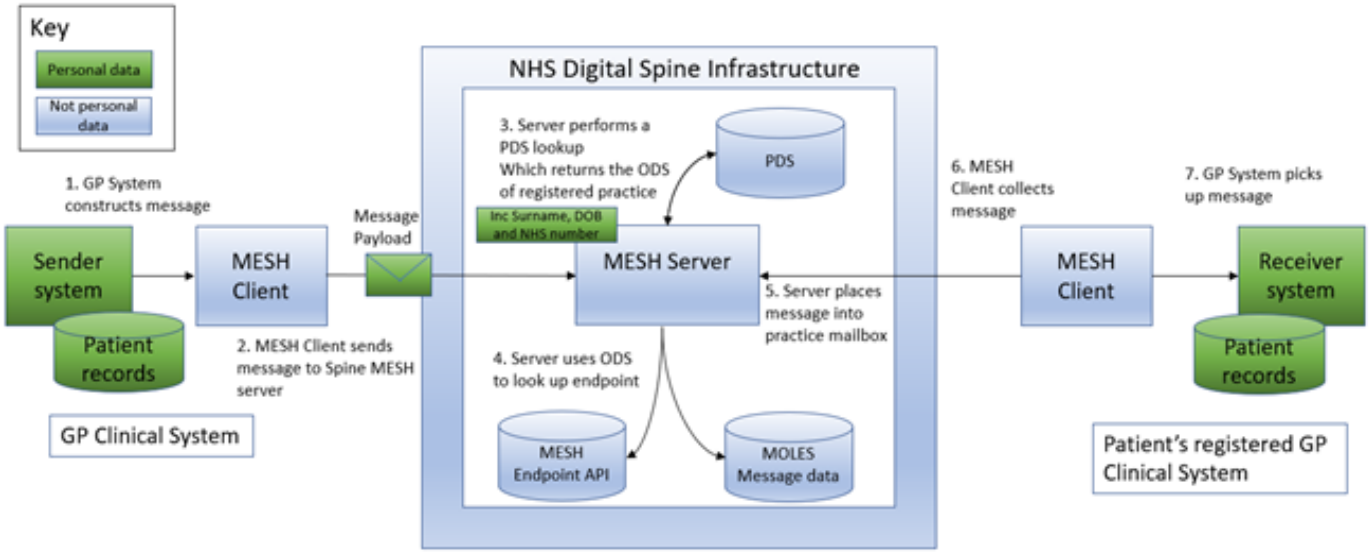

Figure 2 - Direct Care APIs Technical Architecture and data flows for Messaging (Update Record)

The diagram (Figure 2) shows the flow of messages when MESH is used to transfer messages back to a patient's registered GP practice or to an alternative care provider using Update Record. The flow can be described as follows:

1) After a consultation with a patient takes place, the sender system writes a summary of the consultation to send to the patient's registered practice or an alternative care provider. This results in a message being constructed containing a PDF of the consultation, it may contain additional binary documents (for example, images).

2) Using the MESH client or API, the sender sends the message to the MESH server for collection on behalf of receiver.

3) The MESH client or API is used to collect the message from the MESH server and makes it available to other system components in the receiving system for onward processing.

4) The message is processed in the receiving system, usually this will result in a task being created in the practice workflow.

5) Once received the receiving system will send back an infrastructure acknowledgement to say the message has been received, followed by a business acknowledgement once the message has been processed and accepted by the receiving system

In the future the payload being sent back to the GP clinical system will contain only FHIR structured data. This will enable the GP clinical systems to ingest structured coded data.

The relationship between Direct Care APIs and the Digital Interoperability Platform

Direct Care APIs forms part of a wider group of interoperability services, which together are called the Digital Interoperability Platform (DIP). The DIP patient information services will bring together care information related to the patient in near real-time at the point of care. Together the services will support wider sharing of records along care pathways and across organisational boundaries.

All the messages that are used in DIP services are being developed transparently and collaboratively with clinical SMEs and other key stakeholders, such as InterOPEN, a group of SMEs for interoperability. The objective is to make patient information securely accessible to healthcare professionals at the point of need.

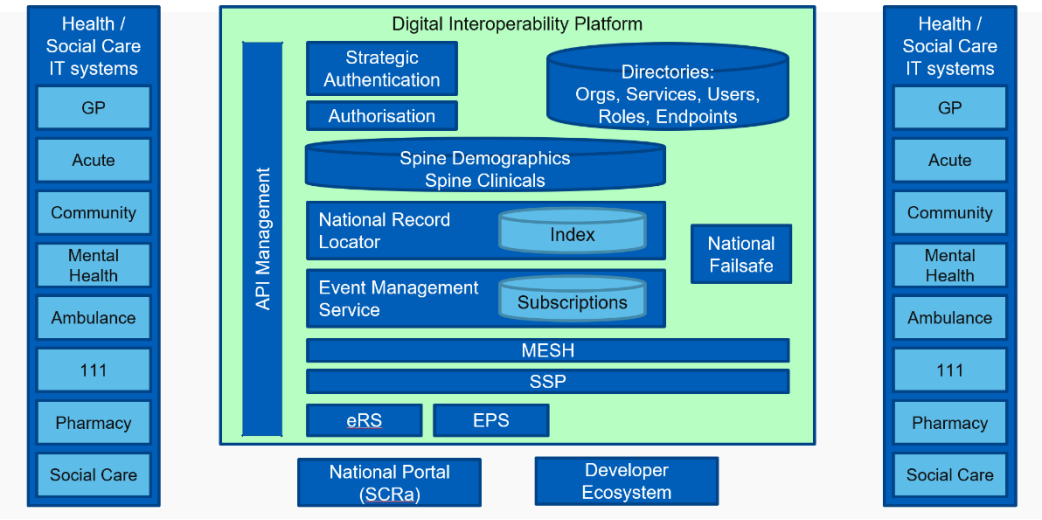

Figure 3 - Technical Components of the Digital Interoperability Platform

The first set of services to be enabled through DIP are:

- Direct Care APIs
- National Record Locator Service (NRLS)
- National Event Management Service (NEMS)
- Reasonable Adjustment Flag
- Summary Care Record application (SCRa) development

These services are based on open standards for messaging and APIs. As previously stated above, as part of the DIP, Direct Care APIs opens up access to the Principal Clinical Systems using technology which allows the data to pass through national infrastructure rather than being stored nationally.

The green box in Figure 2 shows the constituent technical components of the Digital Interoperability Platform. Direct Care APIs is not itself a technical component of the DIP, however, it makes use of a number of DIP components to deliver the service, as well as the Direct Care APIs developed by the Principal Clinical Suppliers. The Direct Care APIs service uses the following components of the DIP:

- The Spine Security Proxy (SSP) which is used to authenticate consuming and providing systems, enforce data sharing rules, audit Direct Care APIs messages flowing through, and act as a message router for consuming systems to communicate with providing (GP) systems.
- The Directories are used – specifically organisations and endpoints – in order to allow a consuming system to determine the technical interface address of the providing system.
- Spine Demographics are used in order for a consuming system to verify a patient's NHS number against key demographic fields. It is also used to determine a patient's registered GP practice.

Curating the Direct Care APIs Specifications

The programme has worked with the GP Principal System suppliers, other NHS programmes, clinicians and SME groups to define (i) the standard dataset structures (FHIR Profiles) used as part of the Direct Care APIs products to carry the required information, and (ii) the business rules determining population of the profiles.. This work has involved several steps:

The programme conducted analysis on the use cases gathered for the Direct Care APIs products. A logical model was created from this analysis that contained detailed records of the data items that the business required.

The team then analysed what information currently exists within the Principal Clinical Systems and how this is exported to support other NHS Digital projects. The projects considered have been: GP2GP, Summary Care Record (SCR) and Electronic Prescription Service (EPS). The programme also considered future needs of ongoing NHS Digital projects, such as GP Data Implementation, Care Connect and the National Data Architecture team to ensure we are as in line with these ongoing efforts as possible.

This analysis was used to create draft profiles that were then discussed in detail with all four of the Principal Clinical System Suppliers to ensure their feasibility. Once this was done the profiles were taken through a curation process by a multi-disciplinary team that involved representatives from many organisations. These included: primary and secondary care clinicians, pharmacists, terminologists, data standards, clinical informaticians that had been involved in creating the base FHIR profiles, clinical safety representatives and representatives from primary and secondary care clinical systems suppliers and PRSB.

All this analysis was then fed into the profiles that have been published by data standards as part of the Direct Care APIs specification on the NHS Health Developer Network and are part of the Care Connect profiles, which are also published on the Network.

All the Direct Care APIs products listed in this document remain under development. The NHS has a public facing website used to publish this work and the current data set specifications – NHS Health Developer Network (see Figure 3). The latest versions of the Direct Care APIs Capability dataset specifications are included here.

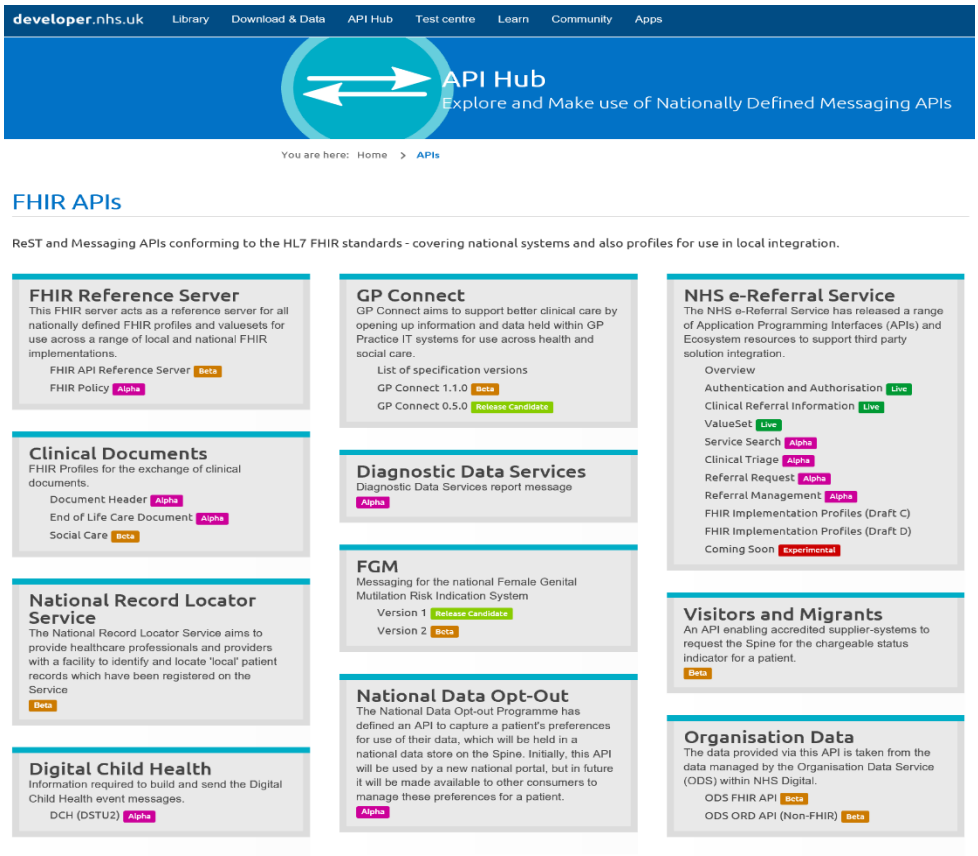

Figure 4 - NHS Health Developer Network

The following sections of this document differentiate between data items that are held by NHS Digital and data that flows through NHS Digital infrastructure and does not reside nationally. Data specifications listed in Appendix B are a “snap shot” taken at the time the Direction was developed.

Direct Care APIs and sensitive codes

The Access Record HTML and Structured Direct Care APIs specifications require the API providers to exclude data for the codes that have been deemed sensitive by the Royal College of GPs (RCGP). The list of codes is known as the RCGP Sensitive Exclusion Code Set. This requirement seeks to ensure that sensitive data will not be shared via Direct Care APIs. There is also a requirement in the specifications for the providers to be able to update the codes for the data they exclude to allow for any future changes to the Exclusion Code Set.

Provider systems are also required to enforce GP Practice designated data exclusions; that is to say, any items that have been designated as confidential by the GP at the request of the patient shall not be sent to Spine.

The Appointment Management specification does not require the provider or consumer systems to provide the patient record; the information shared about a patient is limited to what is needed to book an appointment and this dataset is not considered to be sensitive or confidential. See table 7 (a, b & c) in Appendix B for details of the data that traverses the Spine for API messages associated with the Appointment Management capability. Therefore, this capability does not have any requirements around the handling of the Exclusion Code Set.

Appendix A - Summary of data residing nationally

The following table summarises the data that is held nationally which is used by the Direct Care APIs service.

Capability	Data held nationally by NHS Digital
Direct Care APIs	• **Audit data** (see Table 2 below) • **Registered GP** of a patient is the record locator for this capability - already in Personal Demographics Service. • **Accredited System Directory** – Existing Spine Core Capability. Re-use of the existing Spine directory of accredited IT systems (and the IT providers for each), and the integration products each has been assured to use/perform.

Table 1 - A summary of the data held nationally in NHS Digital infrastructure used by the Direct Care APIs Service

All other patient data that flows as part of the Direct Care APIs products is not held by NHS Digital – summaries of the specifications for Access Record: HTML view, Appointment Management and Access Record: Structured - Meds and Allergies products can be found in Appendix B.

The following table describes the Audit data that is captured by the Spine Security Proxy (SSP) and is stored in Spine SPLUNK logs to support service management and any investigations into service malfunctions.

Field Name	Description
Date and Time	The date and time of the request eg: 05/06/2018 17:09:52.605
Log_Level	The level of the log that is being made, there are a number of different types in Splunk. Such as DEBUG, INFO, WARN and AUDIT
Process	The process handler that picked up the request when it came into Spine.
logReference	This is the Log Reference for that log that's being created and determines what information is logged.
service	The service that the request is for.

method	The http method of the request eg. POST
ipAddr	The IP address the request has come from.
redactedURL	The URL the message is to be sent to with the NHS Number redacted.
URL	This is only logged when the Log Level is AUDIT and is the above URL but with the NHS Number visible.
internalID	This is an ID that Spine assigns a message when it receives it so it can track it's progress through the system.
certificateID	The ID of the certificate that's been used to make the request.
certificateDN	The domain name on the certificate being used
ContentType	The type of content that's included in the message eg.
sslProtocol	The SSL protocol that is being used eg. TLS 1.2
sslCiphers	The ciphers that are being used for the communication with Spine
Ssp-TraceID	ID identifying the sender's message/interaction (to be generated per request
Ssp-From	Sender of the message/request as an ASID (Accredited System ID)
Ssp – To	Recipient of the message/request as an ASID
Ssp-Interaction ID	The message type or interactionID of the message

Table 2 - Audit data fields: System level auditing

Appendix B - Data that traverses NHS Digital infrastructure

The Direct Care APIs Service facilitates the transfer of information between the Principal Clinical Supplier Systems and other Clinical Systems for the purposes of Direct Care. Direct Care APIs has curated Data Specifications for the three products it enables. This has allowed the system suppliers to develop a standardised Direct Care APIs Product. The tables below set out summaries of the data that will traverse the SSP to and from different clinical systems. The more detailed FIHR Specifications can be found at the NHS Health Developer Network.

Direct Care APIs Capability Specifications

Access Record: HTML view Specification

Section	Description
Patient details	Patient demographic information, including: family name, given name, gender, date of birth and GP Practice code; and the following as optional: address and postcode, contact (e.g. telephone no.), responsible GP code and name, and GP practice name and address
Summary	Summarised text for some / all of the following current Allergies and Adverse Reactions, last 3 encounters, active problems and current medications, emergency codes
Allergies and Adverse Reactions	Table of Allergies and Adverse Reactions
Administrative items	Table of coded record items which the provider has classified as non-clinical, such as activities of record administration and communications
Clinical terms	Text for coded record items which the provider has classified as clinical, such as Problems, Diagnosis and Procedures
Encounters	A journal like view of interaction(s) between the patient and a healthcare professional
Immunisations	A list of all recorded immunisations events
Medications	Tables of Medications prescribed, dispensed and administered

Observations	Table of clinical items from the GP record that represent measurement data (i.e. blood pressure, temperature, heart rate etc.)
Problems	Table of items marked as problems from the GP record
Referrals	Table containing details of referrals to and from the GP Practice
Emergency Codes	This section differs from others as it does not have a corresponding view of its own and will only be present in the Summary view. It may be enabled / disabled where there is a need to promote specific clinical information in response to a national health emergency. Content of the section is derived from a specific codeset which is defined, published and maintained according to the nature of the health emergency information. The returned information will also be present in at least one of the other sections.

Table 3 - Summary of the Access Record: HTML view Specification

The Access Record HTML response will also include minimally populated structured foundations records for the patient and GP. See Foundations details below.

Access Record: Structured – Meds and Allergies Specification

Area	Description
Allergies and Adverse Reactions	Contains each substance or class of substance recorded on the GP practice record of an allergy or intolerance, a propensity, or a potential risk to an individual, to have an adverse reaction on future exposure to the specified substance or class of substance
Medications	Contains each medication/medical device being taken, taken in the past or to be taken in the future that is recorded on the GP practice record.
Rest of Structured	To Follow
Consultations	Contains each consultation recorded on the GP practice record. The consultation will be made up of records from any of the areas defined, the details of the consultation (date, location, people involved, etc), the consultation structure (any headings associated with the consultation record) and any additional narrative notes
Problems	Contains a problem header to describe any item of the GP practice record which has been designated as a problem along with the main clinical item from which the problem has been created and all other items which the problem is linked to from any of the areas of the structured record
Immunisations	Contains details of vaccinations given to a patient as recorded in the immunisation module or otherwise classified as an immunisation record in the GP practice record. This may also include additional records relating to consent, dissent, vaccination not given when intended and communication regarding vaccination where the GP practice record classifies this as immunisation data (as opposed to unclassified data entry)
Investigations	For this version of the specification the scope of investigations is to make available any investigations results contained in GP systems that have been received from the lab by an EDIFACT message. This includes the details of the specimen, test results (textual or coded), test result grouping / headers, lab comments, GP practice filing comments and summary information / interpretation.
Referrals	Contains details of outbound referral events (from the GP practice to another organisation) on the GP practice record.
Diary Entries	Contains details of proposals for future clinical actions as recorded on the GP practice record within a diary entry, recall or equivalent feature
Uncategorised data	Contains details of coded data on the GP practice record which does not fall under the definition of one of the other clinical areas defined above for the structured record.

Table 4 - Summary of the Access Record: Structured - Meds and Allergies Specification

Structured responses will also include foundations records for the patient and any practitioners referenced by the returned resources, including the practitioner role and associated organisation where available.

Access Document

Area	Description
Find Patient	Retrieves a patient record to obtain the GP System patient ID and verify identity match with local record. See appointment management for details of the message content. Access Document Find Patient will only receive a positive response for a main practice patient registration
Document List	Contains details of the metadata associated with electronic file attachments to the GP practice record and reference to the 'document' which can be retrieved
Document Retrieve	Contains the actual content of an individual electronic file encoded using base64

Table 5 - Summary of Access Document Specification

The document list response will also include foundations records for the patient and any practitioners referenced by the returned resources, including the practitioner role and associated organisation where available.

Messaging

Area	Description
Send Document	Enables a sending system to send a document (PDF, Word doc etc...) back to the patient's registered GP practice, or an alternative direct care provider (for example, a Community Pharmacy)
Update Record	Enables a sending system to send a FHIR structured message back to the patient's registered GP practice.

Table 6 - Summary of Send Document – Messaging capability

Appointment Management & Foundations Specification

Part A) Patient Message Structure – returning Patient Information to support the appointment

Field Name	Description
Patient Reg Type & preferred Branch Surgery	e.g. GMS-registration, temporary, emergency
Patient Language(s) - Communication Preferences	Communication Language Preferences, incl Interpreter flag Sign Language represented here
Patient EPS Nominated Pharmacy	As recorded on PDS
Patient NHS Number	Mandatory according to business rules
Patient Active Indicator	
Patient Name(s) - 'Official'	The name retrieved from PDS - only one Name with the value of 'Official'

Patient Name – Other	
Patient Telecom Details	
Patient Gender	
Patient Birth Date	
Patient Deceased Date/Time	
Patient Address	Zero, one or more
Patient Contact Party Details	A contact for the patient for the purposes of the appointment booking- eg Carer guardian, partner, friend – Name, Address, Telecom/Email, relationship with patient
Patient Usual GP Practice	Patient's Nominated Primary Care Provider - practitioner
Patient Managing Organization - providing the patient record	May be registered GP, or other organisation acting on behalf of the patient, providing the appointment

B) Patient Appointment Message Structure

Field Name	Description
Future Booked Appointment	Any future appointments booked for a patient from and including the day the request for the information is made
Future Booked Appointment Description & Comment	Summary – limited non-coded description of 100 chars to convey high-level reason for the appointment and non-coded Comment of 500 chars to contain limited further pertinent supporting information

C) Practitioner Message Structure – returning information about the Practitioner(s) assigned to the Patient appointment

Field Name	Description
Name	
Gender	
Practitioner Language(s) - Communication Preferences	Communication Language Preferences, Sign Language represented here

Table 7 (a,b and c) - Summary of the Appointment Management Specification

Audit trail data

This data is required as part of a Direct Care APIs message it may be used within Provider or Consumer systems to validate messages, but it is not captured or used by NHS Digital.

Field Name	Description
User ID	ID of the user
Name	Name of the user
Role profile	Role and organisation of the user (URP ID when Smartcard authenticated)
Identity of authority	The person authorising the entry of or access to data
Date on which the interaction occurred	Date of interaction
Time at which the interaction occurred	Time of interaction
Details of the nature of the event	Description of the event being audited
Identity of the associated data	Identity of data e.g. patient ID, message ID associated with the audited event
Sequence number	Number intended to protect against malicious attempts to subvert the audit trail by, for example, altering the system date
End-user device (or system) involved in the recorded activity	Identification of the device used during the audited event

Table 8 - Audit data fields: Cross Organisation Audit & Provenance