

# IDT Dataset Specification

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## Background

As an integral part of driving the paperless 2020 agenda and the Urgent and Emergency care transformation it is critical that we are able to develop an accurate clinical decision support system at the heart of NHS 111 and Integrated Urgent Care. The current NHS Pathways system is deemed to be clinically safe, but without being able to understand the outcomes for patients, it is impossible to discern how effectively the system directs patients.

The data that is currently collected within NHS Pathways and its integrated Directory of Services (DoS) provides a comprehensive account of the calls that are triaged via NHS 111 and 999. This data is held by NHS Digital and it includes information about the time and date of the call, the demographics of the caller, the pathways that were selected by the call handler, every question that was asked and every response that was provided by the patient, and the disposition reached by the call handler and/or clinician. The data also includes information on the commissioning area or the Clinical Commissioning Group (CCG) handling the call, the services offered to and rejected by the patient and the referrals made to local services. A full list of all fields, their data type and a description for each field is included in Appendix A.

This rich source of data provides a great deal of information about the patient's clinical needs at the time of the call. It allows commissioners to identify times of high service demand or gaps in service provision in their region. It allows for the identification of the most commonly selected services and the less selected services in the local area or nationally. It enables real-time monitoring of potential outbreaks of illness such as pandemic flu. The data also provides a basis for improving the Pathways system by highlighting questions that are causing the call-handler difficulties by being delayed, or by identifying Pathways that frequently result in clinicians overriding call-handler decisions.

However, in most cases this data does not include information about the actions of the patient or the outcome of their episode of care after the call to NHS 111. Following the call, the patient decides whether or not to comply with the referral advice provided by NHS 111; the proportion of patients who attend the recommended service is currently unknown. The patient's clinical outcome is also unknown, thus making it difficult to assess the accuracy of the triage advice provided by NHS 111. The patient's subsequent contact with healthcare services and the resulting diagnoses, treatments and investigations would provide an insight into the frequency of accurate NHS 111 triage versus instances of over-triage and under-triage.

Data is recorded in the Intelligent Data tool (IDT). The tool presents data in an easily accessible form to show clinical demand and gaps in service provision through a wide range of reports. The data captured includes symptoms reported, disposition, clinical skills required, the services referred to (and rejected) by patients. This information can be geographically split by CCG and commissioning area, time of day or truncated post code; and further split into age group and gender.

The reports are presented in a visual, interactive and informative framework. Data can be exported for further analysis or to be included in reports. It enables easy access over the web to analyse data for any given area through intuitive data presentation; including charts, graphs and table comparison with the ability to filter, split, compare and export information.

Given the steady daily volume of data collected by the IDT nationally across the telephony element of the Integrated Urgent and Emergency Care system, a picture of the wider patient journey and outcome could be built up if it were connected to other national or local datasets.

There would be a high level of linkage between HES and IDT if the NHS Number was included in the IDT submission and therefore; we are seeking a change to an extraction that is identifiable, by linking the patient's NHS number with NHS Pathways data and including this in the IDT submission, both retrospectively from Q4 2016 and then using live data from 2017 onwards, following a direction from NHS England.

The effectiveness of NHS 111 depends on its ability to: 1) Accurately determine the urgency of a call and recommend an appropriate course of action; 2) Persuade people to follow the recommended course of action; 3) Minimise inappropriate service usage and reduce demand on services by changing patient behaviour and, where appropriate, altering their intended course of action, measuring effectiveness against these criteria will be made possible as the NHS Pathways data is linked with outcome data from all of the healthcare services that would be expected to receive patients via NHS 111, Linking the patient's NHS number with NHS Pathways data would allow us to:

- Develop the future direction of the Domain B Clinical Triage Platform Programme (Intelligent Triage)
- Understand patient compliance with advice from NHS 111.
- Assess areas of potential over-triage and under-triage in the NHS Pathways algorithms (i.e. where the outcome from the patient's subsequent contact with a healthcare service indicates that the presenting symptoms or required treatments should have been dealt with at a different level of urgency than the advice provided by NHS 111). This will inform immediate delivery plans.
- Understand similarities and differences between the health outcomes of patients who comply with the advice and those who do not comply.

Having established the level of patient compliance and their clinical outcomes, the next step would be to use the NHS Pathways data to identify the variables (or combination of variables) that predict low compliance and/or high rates of over-triage or under-triage.

Example variables include:

- Symptoms – where certain Pathways, routes within a Pathway, or specific questions within a Pathway are associated with low compliance or low triage accuracy.
- Content – where questions with particular phrasing, formats or response categories are associated with low compliance or low triage accuracy.
- Demographics – where variables such as age and gender are associated with low compliance or low triage accuracy.
- Situational – where the time of day, day of week, season, etc. have an impact on compliance and triage accuracy.
- Ambiguity/Complexity – where lower compliance and lower triage accuracy occur following calls that involve complex or ambiguous symptoms/conditions. Proxy indicators of complexity and ambiguity might include the call duration, the number of transfers between call handlers and clinicians, repeated questions, Pathway overrides, etc.

## Data Collection

Pathways itself is embedded within eight different host systems across the country via locally commissioned contracts between system suppliers and call providers.

The IDT webservice listens for data that is submitted by the 111 and 999 providers at the end of a patient triage call via a NHS Pathways assessment. The data is usually submitted within 15 minutes of the call ending.

The IDT webservice went live in Q1 2014, and since then, providers have steadily come on-stream to supply real-time information. Below is a table summarising when each supplier went live with their first provider to return IDT data:

Supplier	Go-Live Date
Advanced	22/04/2014
3TC	16/10/2014
Cleric	18/05/2015
IC24	13/08/2015
ValentiaTech	09/02/2016
MIS	24/05/2016
Intergraph/Hexagon	06/11/2016
TPP	TPP have committed to delivering IDT functionality, but the go-live date is still to be confirmed.

Currently, IDT collects all of the 999 data supplied by ambulance services using NHS Pathways, and 89% of all 111 calls nationally in real-time.

If a provider system upgrade goes live as scheduled on the 12<sup>th</sup> January 2017, then on that day, the percentage of all 111 calls will jump to approximately 97%.

	111	999
<b>Total calls in IDT for October 2017</b>	849,576	212,317
<b>Total calls in IDT for Oct 2015 to Oct 2016</b>	11,151,556	1,892,199

We are led to believe that there is little or no technical impediment to including the NHS number in the IDT submission and from a supplier perspective, the cost is unknown, but likely to be small (we are in the process of establishing this).

## NHS 111 Provider Organisations

NHS 111 services are provided by a number of different types of organisations.

Please see the list attached.

## Data Definition

During a triage assessment, the data that will be collected can be classified in three broad groups of relational data. At the top level is the Case data. One row of Case data will be created for one entire assessment. Examples would include the patient's gender or the symptom group attained.

Multiple rows of triage records contain the individual question and answer details, care advice and time stamps throughout the call. All linked back to the single Case record.

If a DoS webservice call was made, then there would be multiple service returns records that also link back to the Case record. See **Appendix A** for the precise definitions of all data items.

## Validation and Verification

There are several stages of data validation and verification. The data that comes into the IDT webservice has to initially pass a basic level of validation on core components of the data, such as some mandatory fields as well as basic logic checking. For example, a call end time value cannot be earlier than a call start time value. If the validation fails, the supplier is sent a rejection reason.

The second stage of validation comes from a large suite of tests that run automatically on new data every hour on the NHS Pathways database servers. Failed data is marked with a rejection reason.

Verification happens at different points, such as when the NHS Pathways Training Facilitators visit the site and compare call records against IDT call volume.

## Outcome Dataset Linkage

Given the steady daily volume of data collected by IDT nationally across the telephony element of the Integrated Urgent and Emergency Care system, a picture of the wider patient journey and outcome could be built up if it were connected to other national or local datasets.

Attempts were made to link IDT data to both the A&E Commissioning Dataset and the Admitted Patient Care Dataset (known collectively as Hospital Episode Statistics -HES). However, the matching was extremely poor, and that was due to the IDT data intentionally not collecting any Personal Confidential Data (PCD) at the outset of the project. If there was a common ID with which to match a patient calling 111 or 999 to the patient accessing a health service in person, then patient outcomes could be linked at a national level.

A feasibility study assessed whether including the NHS Number into the IDT feed would provide a good level of linkage with the HES dataset, and also sought to understand the IG implications and the development impact on suppliers to make this change.

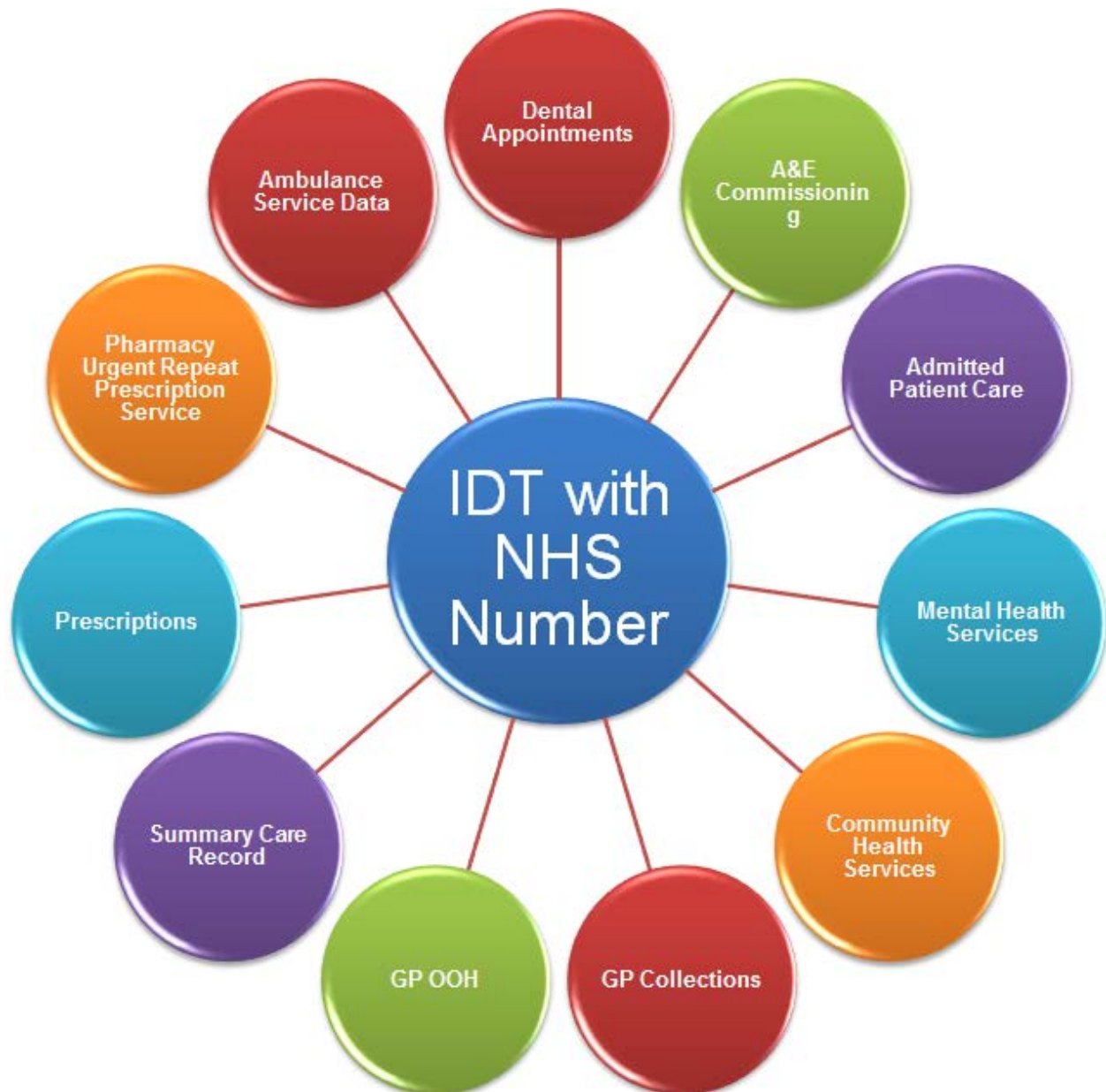
The conclusion is that there would be a high level of linkage between HES and IDT if the NHS Number was included in the IDT submission. A limitation of this matching is that it would only highlight if the same patient happened to have called 111/999 then attended a service in person within a short timescale, regardless of the two contacts with the patient being related or not.

The impact on the supplier was assessed by contacting all the major suppliers, and the feedback showed that the change is extremely minor. Some suppliers have confirmed that the change could be put live within a very short timescale without costs incurred.

The table below looks at the volume of call data within IDT where a patient was recommended to go to an ED. This gives an indication of the volume of outcome linkage that is possible with HES alone.

	111	999
<b>ED Dispositions for October 2017</b>	74,829 (8.8%)	2,603 (1.2%)
<b>ED Dispositions for Oct 2015 to Oct 2016</b>	949,065 (8.5%)	22,889 (1.2%)

## Datasets that could be linked to IDT via NHS Number



### NHS Digital Datasets

- A&E Commissioning Dataset
  - A&E, Speciality, Dental Departments, WIC, MIU
- Admitted Patient Care Dataset (Hospital Admissions)

- Mental Health Services Dataset (MHSDS)
- Community Health Services Dataset
- GP Collections via General Practice Extraction Service (GPES)
- Emergency Care Dataset (successor to A&E Commissioner Dataset)
- Summary Care Record

### Business Services Authority Datasets

- Dental Appointments
- Prescriptions

### NHS England Dataset

- Pharmacy Urgent Repeat Prescription Service

### Local Datasets

- Ambulance Service Datasets
- GP OOH Datasets

## Appendix A – Field Definitions

### Case Record

Field	Type	Example	Size	Notes
NHS number				
siteId	Integer <i>Required</i>	2		Unique ID provided by the NHS Pathways team to identify the site i.e. East of England Ambulance.
supplierCallRef	String <i>Required</i>	30ac7afe-1e34-4848-a06a-ff605a299f62	36	System suppliers unique reference or CallId
Postcode	String <i>Required</i>	GL1 5QD		Full postcode of patient location
ageGroupId	Integer <i>Required</i>	1, 2,3 or 4		1 (Adult), 2 (Child), 3 (Toddler), 4 (Neonate & Infant)
ageInYears	Integer	13		Patient age in years
genderId	Integer <i>Required</i>	1, 2 or 3		1 (Male), 2 (Female), 3 (Unknown)
partyId	Integer <i>Required</i>	1 or 3		1 (1 <sup>st</sup> party), 3 (3 <sup>rd</sup> Party)
chUserCode	Text	NFT	Max 50 characters	Call Handler user code
chSkillsetId	Integer	3		Call Handler skillset 1 (OOH Call Handler), 3 (999 Call Handler),

				5 (111 Call Handler), 7 (RP Call Handler)
chCallStartTime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	Call Handler call start time
chTriageStartTime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	Call Handler triage start time
chDispoTime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	Call Handler dispo time
chTriageEndTime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	Call Handler triage end time
chCallEndtime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	Call Handler call end time
chTriageDispoCode	Text	Dx38	Max 10 characters	Call Handler triage dispo code
chFinalDispoCode	Text	Dx38	Max 10 characters	Call Handler final dispo code
chOverrideFlag	Boolean	true or false	5	Call Handler Disposition override flag
clUserCode	Text	PSF	Max 50 characters	Clinician user code
clSkillsetId	Integer	4		Clinician skillset 2 (OOH Clinician), 4 (999 Clinician), 6 (111 Clinician), 8 (RP Clinician)
clCallStartTime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	Clinician call start time
clTriageStartTime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	Clinician triage start time
clDispoTime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	Clinician dispo time
clTriageEndTime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	Clinician triage end time
clCallEndtime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	Clinician call end time
clTriageDispoCode	Text	Dx05	Max 10 characters	Clinician triage dispo code
clFinalDispoCode	Text	Dx06	Max 10 characters	Clinician final dispo code
clOverrideFlag	Boolean	true or false	5	Clinician Disposition override flag
symptomGroup	Integer	1112		The group of symptoms to which the pathway belongs.
symptomDiscriminator	Integer	4003		The discriminator that is produced by the completion of the Pathways triage.
releaseVersion	Text <i>Required</i>	6.2.2	Max 10 characters	Pathways version in use for this case/triage
clinicalAreaId	Integer	1 to 22		ClinicalAreaID from the pathway selected 1 (eye) 2 (head) 3 (breast) 4 (urinary) 5 (arm) 6 (back)

				<p>7 (hip &amp; leg)              8 (skin and hair)              9 (not area specific)              10 (flank)              11 (rectum/anus)              12 (shoulder)              13 (groin)              14 (genital)              15 (abdomen)              16 (chest)              17 (face)              18 (neck)              19 (ear)              20 (nose)              21 (mouth)              22 (throat)</p>
dosTransactionId	Uniqueidentifier	8abb9e61-941f-4666-b1af-809bf95fc5b9	36	If a call to DOS was made, the unique reference returned from the DOS call. Version 1.3 of the DOS web service is required to obtain the dosTransactionId
dosStartTime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	DOS start time
dosEndTime	DatetimeOffset	2015-12-23T04:43:30+00:00	24	DOS end time
dosRequestFailId	Integer	104		<p>If call to DOS fails, the reason why it failed:</p> <p>300 - Unable to login to DoS web services              301 - The web service is currently unavailable              302 - Authentication failed              303 - Authentication failed missing role              100 - System Search failure              101 - Postcode Validation: Postcode not found              102 - Service Search: No services found              103 - Request Response: Service not found              104 - Parameter Validation: No valid discriminators passed/SGSD combo not valid              105 - Parameter Validation: Invalid search distance/Invalid disposition              106 - Parameter Validation: Invalid gender/ageFormat supplied - supported values</p>
callerType	Text	Some caller type text here	Max 50 characters	Text field to capture caller type(if used). Mainly applicable to 999 sites.
callReason	Text <i>Required if CallerType is populated</i>	Some reason text here	Max 50 characters	Text field to capture caller reason (if used). Mainly applicable to 999 sites.

*Note: Postcode is not stored by Pathways but mapped on entry to CCG code so that dashboards can be viewed by CCG area.*

## Triage Record

The table below indicates the data collected as the user triages a caller. There will be *multiple* records for each patient triage episode.

Field	Type	Example	Size	Notes
userCode	Text <i>Required</i>	NFT	Max 10 characters	All triage records need a UserCode as more than one user may triage a call if collected from a queue. Clinician or Call Handler user code.
timeIn	DatetimeOffset <i>Required</i>	2015-12-23T04:43:30+00:00	24	Creation date time of TriageRecord.
timeOut	DatetimeOffset <i>Required</i>	2015-12-23T04:43:30+00:00	24	Date time record is exited – e.g. by activating next procedure.
pwld	Text	PW123	Max 20 characters	PathwayID.
orderNo	Integer	100		OrderNo of the triage record.
quID	Text	Tx220074	Max 20 characters	Question (Tx130011), Care Advice (Cx150010), dispo code (Dx140000), or body map area (hip & leg).
answerNo	Integer	3		The actual answer number selected by the user
userComment	Text	specify comment here	Max 300 characters	Any extra information added by the user for this answer.
actionId	Integer <i>Required</i>	1 to 6		The procedure used by the user to leave the record. Mostly this will be next but there are other ways to exit a record. List of possible values:  1 (Back) 2 (Next) 3 (Change) 4 (Early Exit) 5 (Restart) 6 (End)

### Services Returned record

The Services returned data is used to describe the services returned from the DoS, giving a picture of the order in which they were presented, and which services were rejected and which service was ultimately selected. For example, if 10 services were returned and displayed, each will start off with a statusId of 1 (service displayed). Those which were rejected will have a statusId of 2 along with a rejection reason. The service which was finally selected (if appropriate) will have a statusId of 3.

Field	Type	Example	Size	Notes
serviceId	Integer <i>Required</i>	135599956 8		DoS organisation service ID.
serviceOrder	Integer <i>Required</i>	2		The order in which the service was displayed to the user by your system (i.e. 1 = first result).
serviceStatusId	Integer <i>Required</i>	1 to 3		Integer used to describe Status of what happened with the service (default of 1)  1 (Service Displayed) 2 (Service Rejected) 3 (Service Selected)
rejectReasonId	Integer	22		If the service was rejected, please include the reason why the service was rejected.  21 (Caller Unable To Access Service Due To Transport / Distance) 22 (Recommended service not available for capacity reasons) 23 (Recommended service not clinically appropriate) 24 (Recommended service declined the referral) 25 (Unable To Contact Recommended Service) 26 (Patient Declined Service) 27 (Patient Contacting Own GP) 28 (Other Service Accepted) 29 (Requires Ambulance Assistance) 30 (Reject all)