



# **Diagnostic Imaging Dataset**

## **2013/14 Technical Report**

# Diagnostic Imaging Dataset

## 2012/13 Technical Report

Version number: 1.0

First published: 6<sup>th</sup> November 2014

Prepared by: NHS England Analytical Service (Operations)

Classification: Official

## Glossary of Terms

Acronym	Full name
DID	Diagnostic Imaging Dataset
HES	Hospital Episodes Statistics
HSCIC	Health and Social Care Information Centre
NHS Number	Everyone registered with the NHS in England and Wales has their own unique number
Patient Source Setting	The type of setting that the patient came from at the time of request for Diagnostic Imaging for use in the DID. This can be one of 7 options: Accident and Emergency Department, Admitted Patient Care – Day Case, Admitted Patient Care – Inpatient, GP Direct Access – outpatient, Other and Other Health Care Provider.
Referrer	The code of the person making the referral. This will normally be a Care Professional - a General Medical Practitioner or a Consultant.
RIS	Radiology Information System
TRUD	Technology Reference data Update Distribution

## Contents

Glossary of Terms .....	2
Contents.....	3
1 Introduction.....	4
2 Methodology.....	4
3 Data Source .....	6
3.2. Data Derivation.....	7
3.3. Exam code look-up table status .....	9
4. Data Quality.....	9
4.1. Validations.....	9
4.2. Data Quality Issues .....	11
4.3. Examination Code Variation .....	12
4.4. Organisation Coverage.....	13
4.5. Data field completeness .....	14
5. Revision Policy .....	15
6. Related Statistics.....	15
6.1. Other sources.....	15
6.2. Comparison with KH12.....	16
6.3. Comparison with DM01 .....	18
6.4. Devolved Administrations .....	19
7. Uses of the data .....	19
8. Contact Us.....	20
8.1. Feedback.....	20
8.2. iView.....	20
8.3. Websites.....	20
8.4. Additional Information.....	21
9. Annexes .....	21

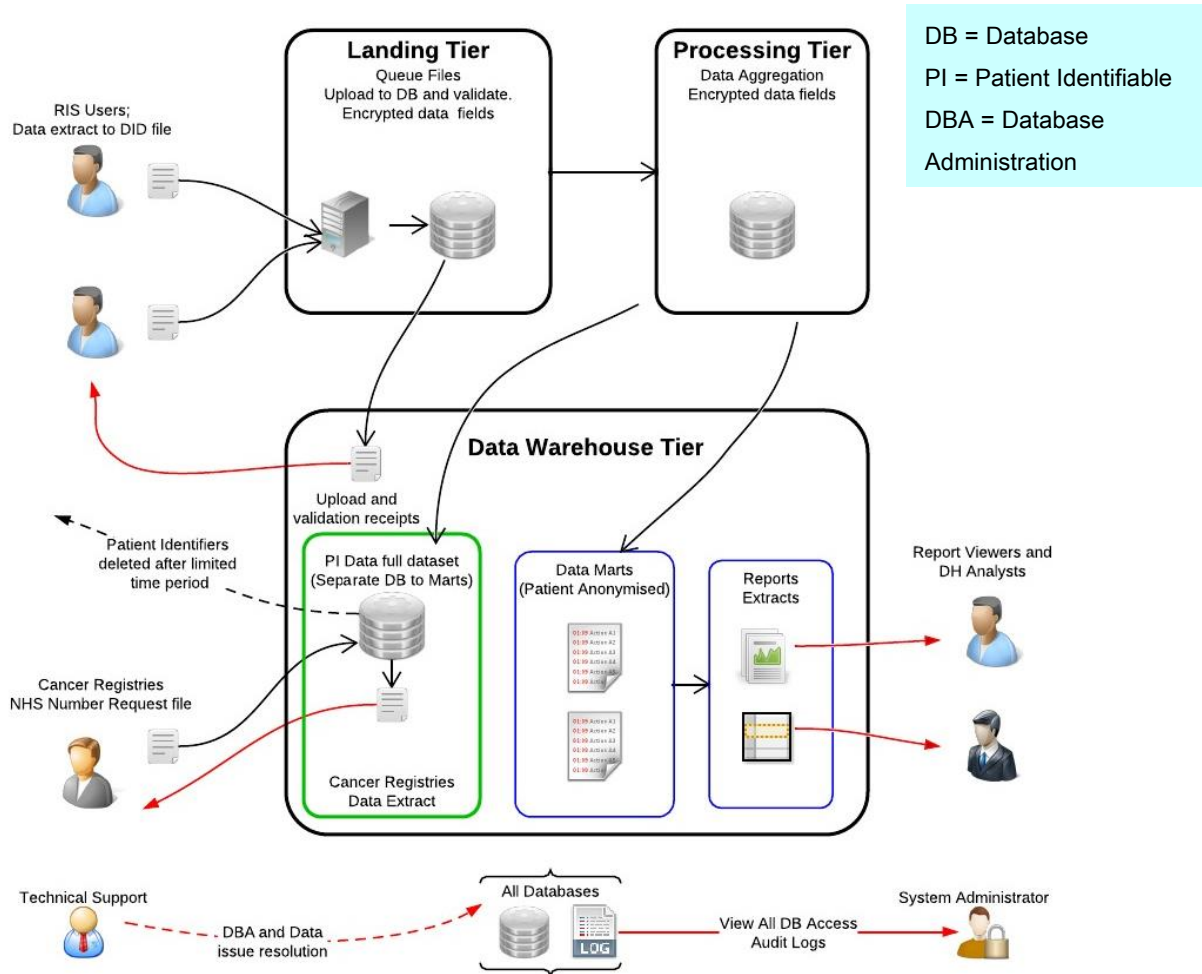
## 1 Introduction

- 1.1.1. On 6<sup>th</sup> November 2014, NHS England released an Annual Diagnostic Imaging Dataset publication that finalised 2013-14 data. Although provisional data have been published previously for each of these twelve months, the data have been updated. The annual publication serves as the final record.
- 1.1.2. The data are collected from hospital administrative data sources at patient level and consequently will allow for a rich variety of analyses.
- 1.1.3. The data are published as experimental data. The Office for National Statistics define experimental statistics as "...new official statistics undergoing evaluation. They are published in order to involve users and stakeholders in their development and as a means to build in quality at an early stage".
- 1.1.4. This Technical Report gives information on the methodology and data source of this data collection as well as covering data quality issues to give users an understanding of the usability of these data.

## 2 Methodology

- 2.1.1. The information collected by the DID is sourced from the local Radiology Information System (RIS) of each provider. The aim of this collection is to collate these data nationally, through the monthly submission of a standard extract of RIS data to a central data system. The data are extracted through the automated running of a query and then submitted manually via the Health and Social Care Information Centre (HSCIC) website.
- 2.1.2. The DID is a monthly collection of detailed information about diagnostic imaging tests carried out on NHS patients. The dataset captures information about referral source and patient type, details of the test (type of test and body site), demographic information such as the patient's registered GP practice, postcode, ethnicity, gender and date of birth, plus dates for each diagnostic imaging event giving periods e.g. from test request through to reporting. The dataset is collected at record level (a record being one test for one patient) and includes patient identifiers to enable linkage to other datasets, most notably cancer registration data.
- 2.1.3. The data required is already held locally, within each provider's RIS. The DID has been structured around the processes and timings of diagnostic imaging tests recorded in RISs, ensuring that the data items specified are already captured in these local systems. An illustration of the system for data flow and data access is shown in figure 1.

Figure 1.



2.1.4. The system allows secure upload of data, which once transmitted is contained in the central database controlled by the HSCIC. The HSCIC provide for secure transmission of data and access to aggregated and anonymised datasets. Two points in the system involve patient-identifiable (PI) data – the landing tier and a secure area accessed only by authorised Cancer Registry staff to enable data linkage. Non PI data are held in a database used for reporting (and eventually querying, using a tool called iView) by all other end-users of the data.

2.1.5. The system accepts CSV files but is designed to receive XML files and to apply XML schema validation. On receipt of data in CSV format the system converts it to XML; this enables a common workflow and approach to validating data submissions. Prior to conversion, the data structure of the CSV file is checked to ensure a logical conversation to XML is possible.

2.1.6. Data quality is checked at different stages in the system:

Upon file upload:

- The file credentials are verified
- The structure of the file is checked against the schema definition
- Codes are validated against HSCIC reference data

- Data integrity is checked (e.g. a patient's date of birth cannot be in the future)
- Cross field validation checks are carried out. (e.g. the patient's Date of Test cannot be before the date of the patient's test request.)

Post file upload, monthly cross record checks are carried out. These include:

- Checking for duplicate records from the same provider submitted in different months
- Checking for records that have been archived in error
- Monitoring coverage and timeliness of submissions from providers
- Monitoring the completeness of key non-mandatory data items (e.g. Referrer Code, Date of Referral and Date of Report Issue)
- Checking the integrity of data items such as variation in the other patient identifying information associated with an NHS number.

### 3 Data Source

- 3.1.1. The information contained in the DID is sourced directly from the RIS of each organisation that returns data.
- 3.1.2. A RIS is a computer system used in radiology departments to record, store and manage records of patient's radiological events. The system generally includes demographic information, examination details and scheduling events. The RIS interfaces with an organisation's Patient Administration System (PAS) and Picture Archiving and Communications System (PACS) where required. Different organisations use different brands of RIS, but all have the same remit.
- 3.1.3. It is intended that each record within a RIS is unique and contains a number of data items, recorded using standard coding systems. This should allow the data to be queried, aggregated or categorised and reports to be produced. Examination details should be recorded using SNOMED CT and/or NICIP codes.
- **SNOMED CT** (Systematised Nomenclature of Medicine - Clinical Terms), is a systematically organised, computer processable collection of medical terms providing codes, terms, synonyms and definitions covering diseases, findings, procedures, microorganisms, substances, etc. It allows a consistent way to index, store, retrieve, and aggregate clinical data across specialties and sites of care. The codes consist of a string of digits.
  - **NICIP** (National Interim Clinical Imaging Procedure) codes are a comprehensive, national standard set of codes and descriptions for imaging procedures. They are maintained by the UK Terminology Centre of the HSCIC. The list is designed to cover all imaging specialties in the scope of the National PACS programme and currently includes all conventional imaging modalities found in diagnostic imaging departments, such as CT and MR as well as nuclear medicine and bone densitometry.

The codes consist of 5 or 6 characters (for example XANKR is X-ray of the right ankle).

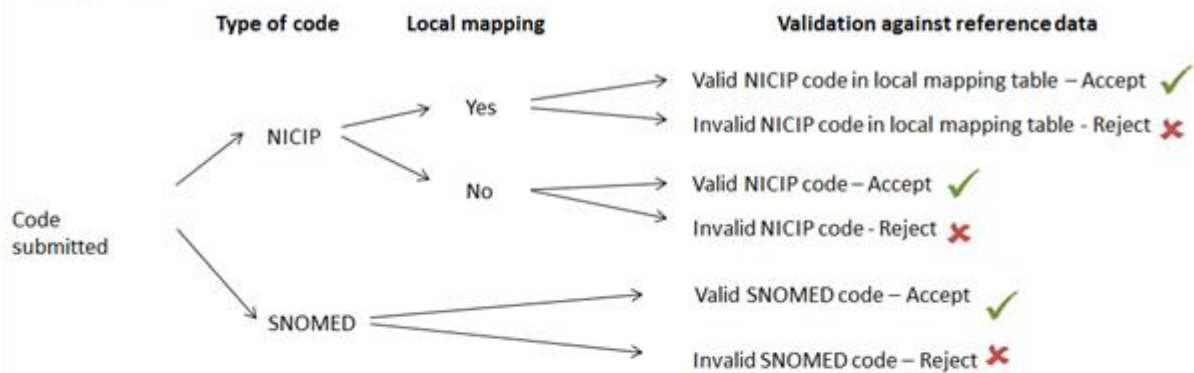
- 3.1.4. In some cases, local codes, which are recognised only by that organisation, are used to record examination details. An interim conversion service is provided by the HSCIC, which maps local codes into the relevant NICIP code. This means that records that contain local codes can be submitted to the DID, and will be mapped to the relevant NICIP code. In order to use this service, an organisation must, in advance of submission, provide a table that shows which NICIP code their local code most closely maps to.

## **3.2. Data Derivation**

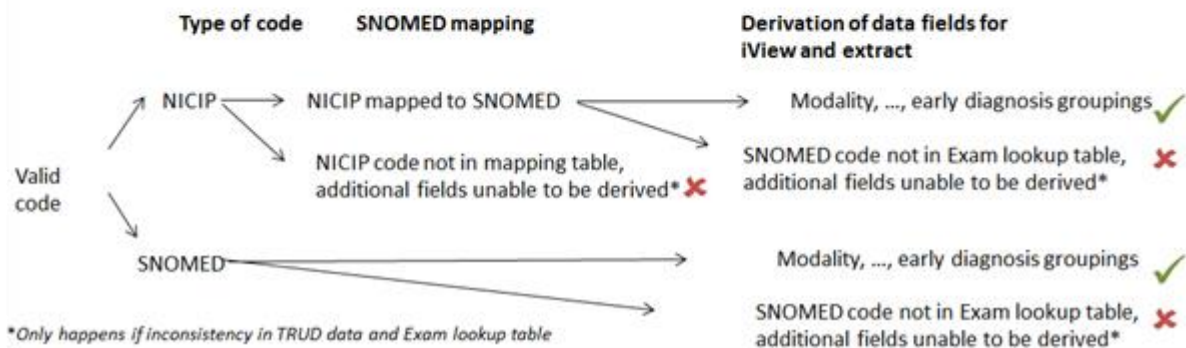
- 3.2.1. The provider organisation for imaging activity is derived from the provider site data field reported with the data. This may differ from the submitting organisation.
- 3.2.2. Examination codes which are submitted are validated against over 3,000 valid NICIP and over 2,000 valid SNOMED codes.
- 3.2.3. For reporting purposes, data are aggregated for key groups based on SNOMED codes. The groups are described fully in the lookup table provided at Annex 1. This table provides lookup information from SNOMED clinical terms ('SCT\_ID' for code and 'SCT\_FSN' for description) to impute modality (type of test), laterality (side of the body), region (part of the body), etc. of the imaging test and whether it has use for early diagnosis of cancer. It also provides NICIP codes ('short codes') and descriptions matched to SNOMED.
- 3.2.4. The process of validation of examination codes and derivation of aggregations of these codes is described in figure 2.
- 3.2.5. A modality is a broad procedure based on NICIP or SNOMED codes provided in the DID data submission. The main modalities for the DID are: Plain Radiography (X-ray), Diagnostic Ultrasonography (Ultrasound), Computerized Axial Tomography (CT Scan), Magnetic Resonance Imaging (MRI), Fluoroscopy, Medical Photography, Nuclear Medicine, Positron Emission Tomography (PET Scan) and Single Photon Emission Computerized Tomography (SPECT Scan). These aggregations are fully described in the lookup table provided at Annex 1. Each modality describes a group of codes with a common set of characteristics, for example, Fluoroscopy – a collection of codes mentioning fluoroscopy or using fluoroscopic guidance, Barium enema or swallow.

Figure 2.

Submission validation:



Information derived from exam codes:



3.2.6. Some imaging codes submitted to the DID are grouped under the modality 'Endoscopy', however, this only provides partial coverage of the broader definition of endoscopy, therefore does not feature in the main report. Some imaging codes are grouped under the modality Cone Beam Computed Tomography, but these are also excluded from the main report due to limited coverage. Additionally, some examination codes submitted to the DID are not mapped to any modality – the occasions when this occurs are shown in Figure 2. Codes not grouped into a modality are excluded from the analysis as they may be insufficiently precise, not generally stored in RISs or covered more fully in other data.

3.2.7. Annex 3 gives the amount of imaging activity submitted to the DID which is identified as endoscopy and that without a modality, by provider.

3.2.8. Imaging Tests that could contribute to Early Diagnosis of Cancer are derived as follows (subject to review):

**Brain (MRI)**

- This may diagnose brain cancer, this includes – MRI of brain (often with contrast);



#### **Kidney or bladder (Ultrasound)**

- This may diagnose kidney or bladder cancer, this includes – ultrasound of kidney, ultrasound scan of bladder or ultrasound and Doppler scan of kidney;

#### **Chest and/or abdomen (CT)**

- CTs which may diagnose lung cancer, this includes - chest + abdominal CT, CT of chest (high resolution or other), CT thorax + abdomen with contrast, CT thorax with contrast or CT chest + abdomen;

#### **Chest (X-ray)**

- This may diagnose lung cancer, this includes – plain chest X-ray only;

#### **Abdomen and/or pelvis (Ultrasound)**

- This may diagnose ovarian cancer, this includes – ultrasonography of pelvis, ultrasonography of abdomen (upper, lower or other) or abdomen + pelvis.

3.2.9. Although these tests are regularly used to diagnose cancer, many of the tests also have wider clinical uses. Within the DID data it is not possible to distinguish between tests that are carried out to diagnose cancer and those carried out for other reasons.

### **3.3. Exam code look-up table status**

3.3.1. The exam lookup table is scheduled to be updated twice a year to coincide with the national release of updates of the coding frames used in DID. The updates are released in April and October and the Exam code look-up table is updated as close to this release as possible. During 2013/14, the versions used to map SNOMED codes to modalities and other categories were version 7 (April 2013), version 8 (June 2013) and version 9 (October 2013). The current version is version 11 which was uploaded in October 2014.

## **4. Data Quality**

The Diagnostic Imaging Dataset is the first time that data from RISs have been collated and published at a national level so they must be used and interpreted with care.

### **4.1. Validations**

4.1.1. There are a large number of validations built into the DID upload system, verifying that the data provided by organisations makes sense. There are two types of validations built into the system. Hard validations (meaning that data provided will fail to upload if the validation rule is not satisfied) and soft validations (which draw the submitters attention to potentially illogical data, but do not cause the upload to fail). The hard validations are shown in the table below.

**Table A: Diagnostic Imaging Dataset Hard Validations**

Data Item	M/R/M*	Hard Validations
NHS number	M*	Must be 10 numeric digits in length and an unbroken sequence. In line with NHS Number specification it must satisfy the modulus 11 algorithm and is not allowed be 1234567890, 0123456789 or N00000000N, where N is a non-zero number.
NHS number status	R	Must be one of the nationally defined codes <sup>^</sup>
Date of birth	M*	Must be given in the format CCYY-MM-DD. It must be: Before or equal to "Date of test", and before Today, and before or equal to "Date test report issued"
Ethnicity	M*	Must be one of the nationally defined codes <sup>^</sup> . This includes the option "National code Z - Not Stated should be used where the person has been given the opportunity to state their ethnic category but chose not to."
Patient gender	M*	Must be one of the defined national codes <sup>^</sup> , including the options Not Known and Not Specified.
Patient home postcode	M*	Must only have 1 space between 2 parts of postcode. This does not check that the postcode provided is a valid postcode.
Patient registered GP practice	M*	Must be one of the defined national codes <sup>^</sup> , including codes for "Not Registered", "Not Applicable" and "Not Known"
Patient Type (Patient Source Setting)	M	Must be one of the defined national codes <sup>^</sup> , which includes an option for other, but no option for unknown.
Referrer	R	Must be from defined national values <sup>^</sup> , which includes an option for not known.
Referring organisation	R	Must be from defined national values <sup>^</sup> , which includes an option for not known and for not applicable.
Date of test request	R	Must be given in the format CCYY-MM-DD. Must be before or equal to "Date test request received"
Date test request received	R	Must be given in the format CCYY-MM-DD. Must be equal to or after "Date of test request"
Date of test	M	Must be given in the format CCYY-MM-DD. It must be: after "Date test request received", and after "Date of test request", and before "Date test report issued"
Imaging code (NICIP)	M	Must be from defined national codes <sup>^</sup>
Imaging code (SNOMED-CT)	M	Must be from defined national codes <sup>^</sup>
Date test report issued	R	Must be in the format CCYY-MM-DD. Must be after or equal to "Date of Test"
Provider site code	M	Must be from defined national codes <sup>^</sup>
RIS accession number	M	Must be a unique alphanumeric code of up to 20 characters, which is validated after submission to the DID

<sup>^</sup>Links to nationally defined codes and value can be found in Annex 1

- 4.1.2. Each data item is either Mandatory (M) or Required =(R). Excluding a data field which is a mandatory field would cause the data upload to fail. At least one of the fields marked M\* is required, e.g. if NHS Number is not available, this field can be left blank as long as at least one of the other fields marked M\* have been provided. Excluding all fields marked M\* would cause the data upload to fail. The mandatory fields should be available in all configurations of RISs for all examinations. The required fields are important to the DID collection for secondary uses of the data, however they may not be available in all configurations of RIS and/or may not be available for each record. For instance not all RISs capture NHS Number Status. This may be available in the PAS but not all RISs are connected to the PAS. Another example is availability of Date of Report Issue. This may not be captured in the RIS for all records, for instance where the reporting is carried out by a specialist outside of the radiology department.
- 4.1.3. Further information about these 18 fields can be found in Annex 2 “Diagnostic Imaging Dataset Data items” and in the DID submitters guidance, available here <https://did.hscic.gov.uk/Main/Guidance>.
- 4.1.4. These hard and soft validations help to ensure that the data are fit for purpose. However, not all validations were fully applied from the start of the collection and some earlier data may not meet current validation rules. Information on data field completeness, on page 14, shows where required data were missing or invalid.
- 4.1.5. The validations built into the DID system are not designed to ensure that the data submitted by an organisation reflects the total activity carried out by the organisation. There is a dependency on the data provider to upload all records within their RIS relating to NHS funded patients. There is anecdotal evidence that some data providers are removing a small number of records that are failing hard validations, rather than amending the records to meet the validations. The data collection team at the HSCIC are continuing to support data providers to upload all the required data and are encouraging submitters to use default codes for GP practices and trust sites if they do not have valid data.

## **4.2. Data Quality Issues**

- 4.2.1. Throughout the year 2013/14 numerous data quality issues were noticed and these have been investigated and mostly corrected.

### **Duplicate Records & Archived Errors**

- 4.2.2. In order to be able to revise a record submitted to the DID, (for example in the case where a report has not been issued when a record is first submitted to the DID but the following month a report has been issued, and hence report issue date can be included), each record needs a unique identifier. Within each RIS every record should have an accession number which is unique to each test and this should be reported to the DID. However, for some organisations this field is not consistently available, which has led to two or

more records being submitted with the same accession number or the same record being submitted twice with different accession numbers.

- 4.2.3. Total activity counts may include duplicates for some providers; this was due to them submitting the data more than once. Data for providers who were duplicating data was removed from the provisional data, and providers have now had the chance to revise this data for the 2013/14 annual report.
- 4.2.4. Another data quality issue comes with some provider reusing previous accession numbers. These accession numbers should be unique to each individual imaging test, but these providers are reusing previous accession numbers. The majority of these cases have been put down to surveillance imaging tests, where a patient has been asked to have an imaging test at regular intervals. This has resulted in a degradation in 2013/14 data because with each time the same accession number is provided the 'Date of Test' field is altered to the latest test date.

### **Age and Date of Birth**

- 4.2.5. When a provider doesn't send a valid date of birth the system currently classifies the field as an empty string. At the start of 2013/14 there was an issue affecting some data whereby these empty strings use a default date of 01/01/1901 as the data of birth which means that the record is attributed to the top age band in the grouping. This affected approximately 2% of records for the months concerned and consequently biased the analysis of the top age band (omitted from age analysis). The problem was resolved during the year.

## **4.3. Examination Code Variation**

- 4.3.1. The data within each organisation's RIS is primarily held for the management of workflow within hospitals, rather than for national statistics purposes. Consequently, the coding methods used to record imaging within organisations vary. One of the key data items collected in the DID is information relating to the examination, i.e. the exam code.
- 4.3.2. The rollout of PACS/RIS to imaging departments was part of the National Programme for IT in the NHS (NPfIT). The adoption of common standards, including exam codes, was an essential requirement to enable full interoperability between systems. To ensure this, since 2010 providers have been required to use National Interim Clinical Imaging Procedure Codes (NICIP codes (ISB 0148)). These codes provide a uniform way of describing the examination performed.
- 4.3.3. However, prior to the rollout of PACS/RIS and a uniform code set, there was not such consistency in describing examinations. Some local codes remain in use now for a variety of reasons. This means that an examination that would be described by a single NICIP code, and therefore exist as a single record of imaging, may be described by a local code in a variety of different ways. This could generate multiple records.

4.3.4. Furthermore, it is planned to replace NICIP codes with Systematized Nomenclature of Medicine Clinical Terms code (SNOMED- CT) in 2015. This could also lead to inconsistency in the number of discrete imaging records generated to capture an examination.

#### 4.4. Organisation Coverage

4.4.1. Any organisation in England with a RIS that carries out imaging activity on NHS funded patients is required to submit to the DID. There are 182 submitter organisations that have been identified as required to submit data throughout 2013/14 (relating to 187 provider organisations).

4.4.2. In the following table the cumulative monthly number of successful submissions for each quarter is split by Area Team.

**Table B: Number of organisations successfully submitting to the Diagnostic Imaging Dataset, by quarter of activity and by area team**

Area Team	Q1		Q2		Q3		Q4	
	Passed	Failed/No Attempt	Passed	Failed/No Attempt	Passed	Failed/No Attempt	Passed	Failed/No Attempt
Q44	18	0	18	0	18	0	18	0
Q45	9	0	9	0	9	0	9	0
Q46	30	0	30	0	30	0	30	0
Q47	9	0	9	0	9	0	9	0
Q48	27	0	27	0	27	0	27	0
Q49	21	0	21	0	21	0	21	0
Q50	15	0	15	0	15	0	15	0
Q51	15	0	15	0	15	0	14	1
Q52	15	0	15	0	15	0	15	0
Q53	15	0	15	0	15	0	15	0
Q54	27	0	27	0	27	0	27	0
Q55	12	0	12	0	12	0	12	0
Q56	30	0	30	0	30	0	30	0
Q57	15	0	15	0	15	0	15	0
Q58	21	0	21	0	20	1	21	0
Q59	5	1	6	0	6	0	6	0
Q60	15	0	15	0	15	0	15	0
Q64	15	0	15	0	15	0	15	0
Q65	12	3	15	0	15	0	15	0
Q66	15	0	15	0	15	0	15	0
Q67	12	0	12	0	12	0	12	0
Q68	24	3	27	0	27	0	27	0
Q69	12	0	12	0	12	0	12	0
Q70	26	1	27	0	27	0	27	0
Q71	87	0	86	1	86	1	87	0
<b>England*</b>	534	12	542	4	543	3	545	1

\*England total does not equal Area Team total, as England total include Independent Sector Healthcare Providers.

## 4.5. Data field completeness

4.5.1. Only five data fields are mandatory (please refer back to table A for details), whilst all other fields can be left blank if the data is not available.

4.5.2. The following Table C gives the percentage of records that contain each of the listed data items. Note that for certain data items, as outlined in table A above, the values “not known”, “not applicable” etc. is an acceptable value.

**Table C: Percentage of records with a given field<sup>1</sup>**

Field	Underlying Data Item	M/R/M*	2012/13	2013/14
NHS Number		M*	96.0%	97.0%
NHS Number Status Description		R	44.2%	47.3%
Number not present and trace not required		-	0.1%	0.1%
Number present and verified		-	35.2%	36.8%
Number present but not traced		-	7.7%	9.1%
Trace attempted - no match or multiple match found		-	0.1%	0.1%
Trace in progress		-	0.2%	0.3%
Trace needs to be resolved - (NHS Number or patient detail conflict)		-	0.1%	0.0%
Trace postponed (baby under six weeks old)		-	0.0%	0.0%
Trace required		-	0.8%	0.9%
Date of Birth		M*	97.9%	98.5%
Ethnic Category Code		M*	87.7%	93.4%
Ethnicity known/stated		-	73.7%	78.5%
Gender Code		M*	97.4%	98.6%
Gender known/stated		-	96.4%	97.8%
MSOA	Postcode of Patient Usual Address	M*	94.5%	94.1%
GP Code		M*	92.8%	92.2%
Patient Source Setting		M	99.9%	100.0%
Diagnostic Test Date Request		R	80.9%	81.3%
Diagnostic Test Req Rec Date		R	86.4%	85.2%
Diagnostic Test Date		M	100.0%	100.0%
Imaging Code SNOMED and/or NICIP		M	99.9%	100.0%
valid NICIP description		-	96.9%	100.0%
Service Report Issue Date		R	88.8%	88.2%
Provider Site Code		M	99.0%	100.0%

<sup>1</sup> This table does not include Referrer Code and Referrer organisation code.

## 5. Revision Policy

5.1.1. This revision protocol relates to the DID which is collected by the HSCIC and disseminated by NHS England via a statistical notice 'Diagnostic Imaging Dataset Statistics' and by the HSCIC via the online tool 'iView'.

### **All data collected may be revised.**

5.1.2. This policy is consistent with the National Statistics Code of Practice and the UK Statistics Authority's guidance on revisions.

### **Revisions to provisional estimates**

5.1.3. DID statistics are published on a monthly basis as provisional and therefore subject to change. The provisional data are extracted from the database just over 3 months after the period. Submitters may continue to submit and refresh data on the DID dataset. Final data are extracted from the database just over 6 month after the period. Whilst the statistics are designated as experimental, revisions for some providers were significant as they improved the quality and completeness of the information submitted.

### **Revisions to finalised estimates**

5.1.4. Once data have been finalised, revisions will only be made in exceptional circumstances if not doing so would materially distort the historical time series. Currently, the iView dataset may incorporate revisions made after the data were finalised for publication, but these should be minimal and do not affect the final published data.

### **Decisions about revisions**

5.1.5. NHS England and the HSCIC data collections team reserve the right to refuse any revisions that do not make material differences to published data. The normal pre-release procedure will apply to revisions.

### **Process for making revisions**

5.1.6. Revisions can be made by resubmitting data to the DID system according to the timetable and guidance provided by HSCIC. Revisions outside of this period can be requested by emailing the HSCIC contacts given at the DID website <https://did.hscic.gov.uk/>

## 6. Related Statistics

### 6.1. Other sources

6.1.1. NHS England produce other statistics relating to diagnostic test activity and waiting times through three collections:

- The *Monthly Diagnostics Waiting Times and Activity* return (DM01) collects data on waiting times and activity for 15 key diagnostic tests and procedures.
- The *Quarterly Diagnostics Waiting Times* census collects data on patients waiting over 6 weeks for a diagnostic test.

- The *Annual Imaging and Radiodiagnostics data* collection (KH12) collects data on the number of imaging and radiological examinations or tests carried out during the year.

6.1.2. Further information and data can be accessed via the following link.

<http://www.england.nhs.uk/statistics/statistical-work-areas/diagnostics-waiting-times-and-activity/>

6.1.3. The KH12 annual diagnostics collection contains data covering similar tests to that of the DID. It incorporates yearly counts of tests by modality comprising X-rays, Ultrasounds, CT Scans, MRI Scans, Fluoroscopies and Radio-isotopes. The activity section of the DM01 monthly diagnostics waiting time collection also incorporates counts of tests by modality, including Non-obstetric ultrasound, CT scans and MRI scans. The sections below provides a comparison of these data with the DID and explanation of some of the differences.

6.1.4. Currently the HSCIC are analysing DID data linked to Hospital Episodes

Statistics (HES). For more information see: <http://www.hscic.gov.uk/hesdid>

## 6.2. Comparison with KH12

6.2.1. The *Annual Imaging and Radiodiagnostics* collection (KH12) counts the total number of imaging tests for the year for X-ray, Ultrasound, CT scan, MRI scan, Fluoroscopy and Radio-isotopes. One of the original aims of the DID was to replicate and ultimately replace the KH12 report. Due to the experimental nature of the DID, it was expected that reaching the quality to replicate KH12 would take some time.

6.2.2. Although the KH12 provides counts of diagnostic activity in similar modality groupings to those published in the DID, there are a number of reasons why the activity counts may differ:

- **Definitional differences:** For the KH12, organisations calculate an aggregate figure for each modality. Since different organisations may use different coding systems (see Section 4.3), they may also use different coding aggregations (and these may change over time, introducing year on year differences).
- **Use of local coding systems:** Some trusts may have used local codes that haven't been mapped to either a NICIP or SNOMED-CT code (see Section 4.3), resulting in missing or differently counted tests.
- **Methods of counting:** Trusts might record the number of imaging sites in KH12 and the number of procedures in the DID. It is possible to address this by using 'multiplication factors' (see below).
- **Underrepresentation of specific tests:** For example, there is evidence to suggest that some organisations have not been submitting obstetric ultrasound tests to the DID.
- **Difference in scope:** The DID only collects information about NHS funded patients and is limited to those recorded on the RIS, whereas KH12 may include other patients treated in NHS organisations.



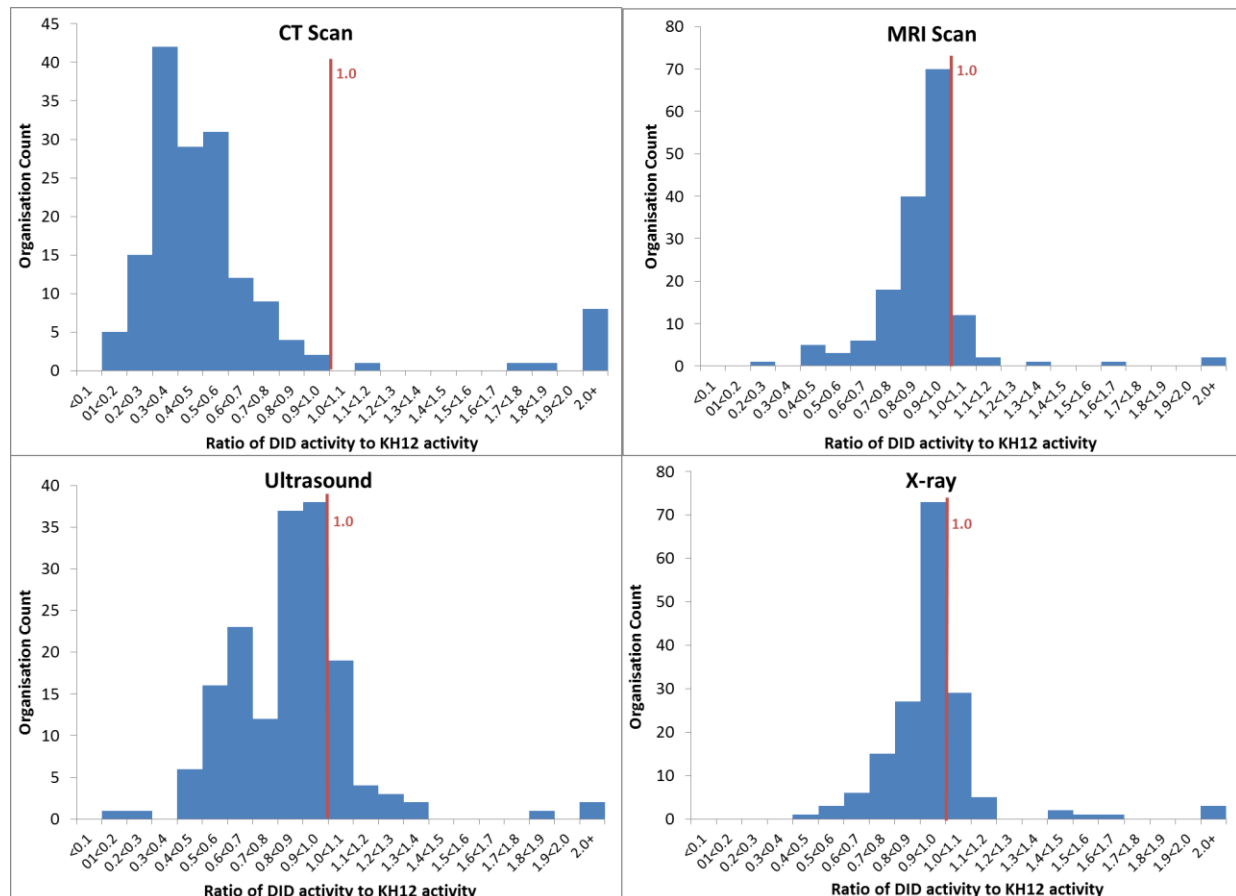
- **Differences in coverage:** There are differences in the number of modalities and organisations for both tests. Comparisons have been used when appropriate.
- **Difference in timeliness:** The DID is finalised just over six months after the end of each month, whereas the KH12 is collected just over 3 months after the end of the full year.

In addition, since the DID is still experimental, some differences may be due to incomplete reporting by some organisations.

6.2.3. In general there were fewer tests reported in the DID than in KH12. The KH12 reported 42.9 million imaging tests in 2013/14 (up 4.6% from 41.0 million in 2012/13), compared to 37.9 million in the annual DID (up 5.1% from 36.1 million in 2012/13). For each modality that appears in both publications, the number of tests reported in KH12 exceeded the number reported in the DID. In addition, 85% of organisations submitting to both publications reported more tests in KH12 than in the DID, the rest reporting a higher figure in the DID. This compares to 88% in 2012/13.

6.2.4. Comparisons of the organisations submitting data to both the DID and KH12 are summarised in Graph 1. The differences are more marked for CT scans than for other modalities and this may reflect the variable impact of the factors above, in particular around definitional differences and methods of counting.

**Graph 1: Number of organisations by Ratio of imaging tests reported in the DID to imaging tests reported in KH12, by modality.**



6.2.5. NHS England and the HSCIC are currently producing a more comprehensive comparison of KH12 and DID using an exam multiplier basis, due for publication in early 2015. This comparison will attempt to address issues around definitional and coding differences and it is hoped this will give a more accurate comparison of the two datasets.

### **6.3. Comparison with DM01**

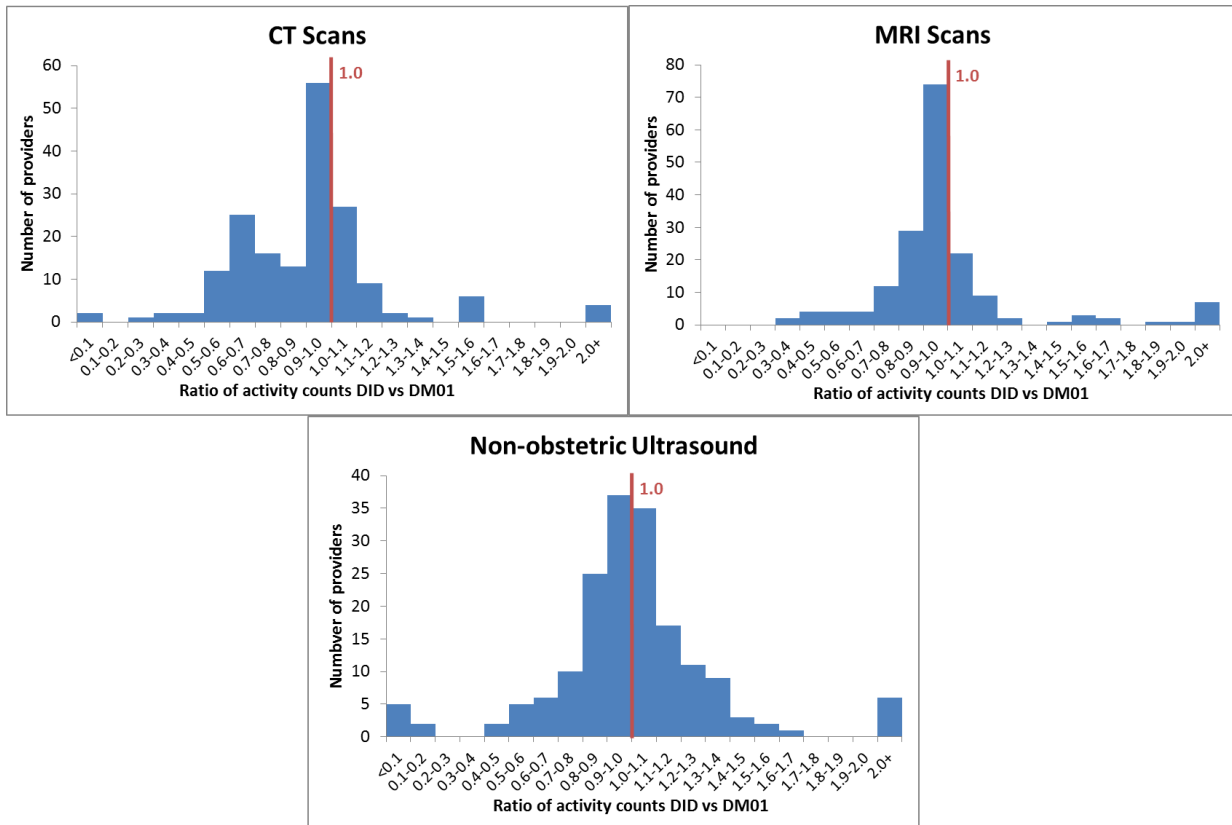
6.3.1. The Monthly Diagnostic Waiting Times and Activity collection (DM01) is a report on the number of patients waiting for diagnostic tests at the end of each month within NHS Trusts and providers in England. Whilst the main aim of the collection is to monitor waiting times, it also collects monthly diagnostic activity data for 15 diagnostic procedures, three of which (CT Scans, MRI Scans and Non-obstetric ultrasound) can be compared with the DID.

6.3.2. Many of the factors affecting the comparison between KH12 and the DID also apply to the comparison between DM01 and the DID. However the difference is less marked in the comparison with DM01 than in the KH12 comparison. This may reflect DM01's focus on patients, even though the DM01 guidance counts activity for each distinct clinical test/procedure, and DM01 is also defined as NHS-funded only.

6.3.3. In general, for modalities present in both collections, there were fewer tests reported in DID than DM01. For CT scans, 3.78 million tests were reported on the DID in 2013/14 compared to 4.29 million tests in the DM01, a difference of 12%. For MRI, 2.61 million tests were reported in the DID compared to 2.67 million in the DM01, a difference of 2%. For Non-obstetric ultrasound, 6.23 million tests were reported in DID compared to 6.31 million in DM01, a difference of 1%.

6.3.4. Comparisons of the organisations submitting imaging activity data to both collections are shown in Graph 2.

**Graph 2: The ratio of imaging tests reported by an organisation to the DID to imaging tests reported by an organisation to DM01, separated by modality.**



## 6.4. Devolved Administrations

6.4.1. The DID includes data about imaging activity carried out in England on NHS funded patients. It does not contain information about imaging activity carried out on NHS funded patients in the devolved administrations. Similar data is not collected and published by the Devolved Administrations.

## 7. Uses of the data

7.1.1. Data is collected to meet the following needs:

- To provide national data on GPs' direct access to tests, as well as tests requested via other referral sources.
- To provide more detailed national data than is currently available on test type (modality), body site of test and patient demographics
- To enable analysis of demographic and geographic access to diagnostic imaging tests
- To enable analysis of turnaround times for tests, in particular, test to report times which is not reported elsewhere.
- To enable better analysis of cancer pathways by linking Cancer Registry data to diagnostic imaging test data for cancer patients
- To allow the Health Protection Agency (HPA) to calculate more accurate estimates of the distribution of individual radiation dose estimates from medical exposures

- To inform work on development of accurate tariffs for all diagnostic imaging tests
- To replace the existing annual KH12 dataset
- To link to other health data sets to examine patient pathways from symptoms to treatment.

7.1.2. However, there are limitations to how the data can be used. For example, users should exercise caution when considering time series since:

- At a national level, there are variations in coverage from month to month
- At a provider level there are some instances of high levels of variation from month to month which are unlikely to reflect genuine changes in activity

7.1.3. Additionally, due to scope and definitional requirements the data is not directly comparable with 'Diagnostic Test Waiting Time Statistics'.

7.1.4. Due to data quality issues discussed in this report the statistics published should **not** be used for performance monitoring at this time. However, it is intended that in the future these statistics will be appropriate for this use.

## 8. Contact Us

### 8.1. Feedback

We welcome feedback on this publication. Please contact us at [did@dh.gsi.gov.uk](mailto:did@dh.gsi.gov.uk)

### 8.2. iView

The HSCIC allow health sector colleagues to access DID information through their web-based reporting tool, iView. Registered users may access anonymised data at aggregate level in a consistent and flexible format:

- **Access Information** – choose from a variety of data areas.
- **Build Reports** – select data to suit their needs.
- **Generate Charts** – customise report tables and graphs.
- **Export Data** – copy to Excel and manipulate data.
- **Save Reports** – store favourite views for future use.

If you would like to register to use iView for DID, please email [enquiries@hscic.gov.uk](mailto:enquiries@hscic.gov.uk) (subject: DID iView Access). For more information, please visit the iView website <http://www.hscic.gov.uk/iview>

### 8.3. Websites

The DID Information website is <http://www.hscic.gov.uk/did>

Those who submit data to DID do so via a secure submission portal <https://did.hscic.gov.uk/>

DID data and annexes can be found here:

<http://www.england.nhs.uk/statistics/diagnostic-imaging-dataset/>

#### **8.4. Additional Information**

For press enquiries contact the NHS England Media team on 0113 825 0958 or 0113 825 0959. Email enquiries should be directed to [nhsengland.media@nhs.net](mailto:nhsengland.media@nhs.net)

The Government Statistical Service (GSS) statistician responsible for producing this report is:

Sheila Dixon  
Analytical Service (Operations)  
NHS England  
Room 5E24, Quarry House, Quarry Hill, Leeds LS2 7UE  
Email: [did@dh.gsi.gov.uk](mailto:did@dh.gsi.gov.uk)

#### **9. Annexes**

Annex 1 – DID Lookup Table Version 11  
Annex 2 – DID Data items table  
Annex 3 – DID Activity of excluded Modalities