Medicines & Healthcare products Regulatory Agency

CPRD

CPRD Aurum Data Specification

Version 2.8

Date: 10 August 2022

NIHR | National Institute for Health and Care Research

Documentation Control Sheet
During the course of the project it may be necessary to issue amendments or clarifications to parts of this document. This form must be updated whenever changes are made and should be filed inside the front cover of the new or amended document.

Version	Summary of Change	Prepared By	Date	Reviewed By	Date
1.0	Initial draft	Helen Booth	06/12/2017		
1.1	Modified	Helen Booth	11/01/2018		
1.2	Modified	Helen Booth	29/01/2018		
2.0	Modified	Achim Wolf	10/04/2019		
2.1	Modified	Helen Booth	23/04/2019		
2.2	Modified	Helen Booth,	01/05/2019	Jenni Chapman, Dan Dedman	02/05/2019
2.3	Modified	Dan Dedman	07/08/2019	Achim Wolf	09/08/2019
2.4	Modified	Dan Dedman	24/02/2020	Tarita Murray-Thomas	26/02/2020
2.5	Modified	Hilary Shepherd	21/01/2021	Arlene Gallagher	27/01/2021
2.6	Modified	Hilary Shepherd	06/10/2021	Dan Dedman	06/10/2021
2.7	Modified	Kirsty Syder	05/01/2022	Eleanor Yelland	06/01/2022
2.8	Modified	Dan Dedman	10/08/2022	Mike Lonergan	10/08/2022

Summary of Changes

Version 1.1
- Updated fields

Version 1.2
- Updated fields

Version 2.0
- Updated for the release of the CPRD online tools

Version 2.1
- Updates to Drug Issue table from DTT feedback

Version 2.2
- Reviewed and updated all data types

Version 2.3
- Reviewed and updated based on client feedback

Version 2.4
- Reviewed and updated based on client feedback

Version 2.5
- Aligned CPRD GOLD and CPRD Aurum specifications
- Updated branding and formatting

Version 2.6
- Corrected table numbering

- Updated “Lookup: Staff table” to “Link Staff table” and removed lookup from staffid column in Staff table

Version 2.7

- Updated Practice region field to ONS Region

Version 2.8

- Added information about practice duplication

Dataset Format

The data are available to researchers as eight files in text format as listed below, with a graphical representation below.

1. The **Patient** file (Patient_*NNN*.txt) contains basic patient demographics and patient registration details for the patients.

2. The **Practice** file (Practice_*NNN*.txt) contains details of each practice, including the practice identifier, practice region, and the last collection date.

3. The **Staff** file (Staff_*NNN*.txt) contains practice staff details for each staff member, including job category.

4. The **Consultation** file (Consultation_*NNN*.txt) contains information relating to the type of consultation as entered by the GP (e.g. telephone, home visit, practice visit). Some consultations are linked to observations that occur during the consultation via the consultation identifier (consid).

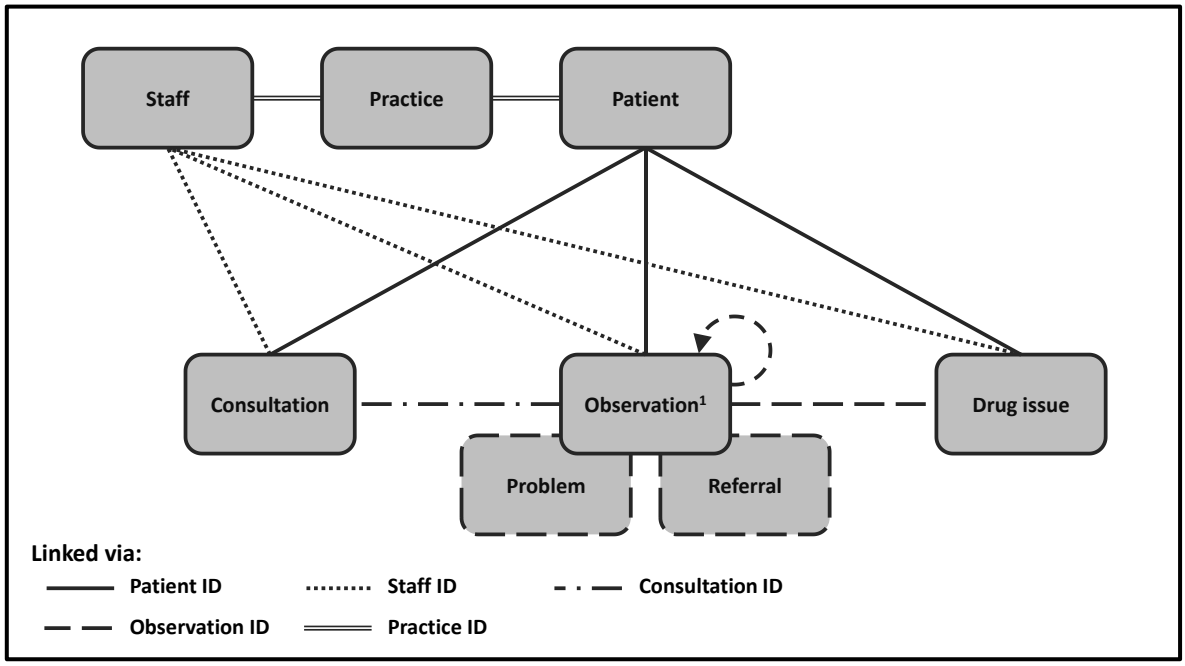
5. The **Observation** file (Observation_*NNN*.txt) contains the medical history data entered on the GP system including symptoms, clinical measurements, laboratory test results, and diagnoses, as well as demographic information recorded as a clinical code (e.g. patient ethnicity). Observations that occur during a consultation can be linked via the consultation identifier. CPRD Aurum data are structured in a long format (multiple rows per subject), and observations can be linked to a parent observation. For example, measurements of systolic and diastolic blood pressure will be grouped together via a parent observation for blood pressure measurement.

    a. The **Referral** file (Referral_*NNN*.txt) contains referral details recorded on the GP system. Data in the referral file are linked to the observation file and contain 'add-on' data for referral-type observations. These files contain information involving both inbound and outbound patient referrals to or from external care centres (normally to secondary care locations such as hospitals for inpatient or outpatient care). To obtain the full referral record (including reason for the referral and date), referrals should be linked to the Observation file using the observation identifier (obsid).

    b. The **Problem** file (Problem_NNN.txt) contains details of the patient's medical history that have been defined by the GP as a 'problem'. Data in the problem file are linked to the observation file and contain 'add-on' data for problem-type observations. Information on identifying associated problems, the significance of the problem and its expected duration can be found in this table. GPs may use 'problems' to manage chronic conditions as it would allow them to group clinical events (including drug prescriptions, measurements, symptom recording) by problem rather than chronologically. To obtain the full problem record (including the clinical code for the problem), problems should be linked to the Observation file using the observation identifier (obsid).

6. The **Drug issue** file (DrugIssue_*NNN*.txt) contains details of all prescriptions on the GP system. This file contains data relating to all prescriptions (for drugs and appliances) issued by the GP. Some prescriptions are linked to problem-type observations via the Observation file, using the observation identifier (obsid).

CPRD Aurum dataset structure



[1]Includes symptoms, diagnoses, immunisations, tests, and lifestyle factors. Note: The problem and referral tables contain add-on information for certain types of observations. Some consultations are linked to observations. Some drug issues are linked to problem-type observations.

Data dictionaries

CPRD Aurum dictionaries are provided as text files that can be imported into standard statistical software to enable code searching. The dictionaries are also available through the CPRD Code Browser. The CPRD Code Browser and a user guide can be requested by contacting enquiries@cprd.com. If you are already using the code browser to search the CPRD GOLD dictionaries you will still need to contact us to download the latest browser containing the CPRD Aurum dictionaries.

I. The **Medical** Dictionary contains information on all medical history observations that have been recorded in EMIS Web®. Observations are coded using a combination of SNOMED, Read and local EMIS® codes. Further information is provided in later sections of this document.

II. The **Product** Dictionary contains information on drug and appliance prescriptions recorded in EMIS Web®. This information is coded using the Dictionary of Medicines and Devices (DM+D). Further information is provided in later sections of this document.

**** IMPORTANT ****

CPRD strongly recommends that medcodes, prodcodes, SNOMED codes and any other long numeric identifiers are imported, stored, and processed as text rather than integers. In CPRD Aurum, unique identifiers such as these can be up to 19 digits in length. Standard software packages including R, Stata, SPSS, and Excel are unable to store integers of this magnitude without loss of precision. In other words, these software packages will retain incorrect approximations if these unique identifiers are stored as integers. The CPRD Aurum tools have been designed to overcome this limitation by importing, storing, and exporting text files.

Fields where this recommendation applies are indicated in the table specifications below as having a Field Type of 'TEXT', and a Format which includes numeric characters only.

Duplication of data between practices in the CPRD Aurum database

Duplication of patient data can occur when one practice is absorbed by another practice which also contributes (or goes on to contribute) to the CPRD Aurum database. This issue potentially affects all builds of the CPRD Aurum database to date. As of August 2022 we are aware of 29 practices affected – which together comprise around 1% of the patients in the database.

When a practice is absorbed by another one it stops contributing data to the database, but its data remains in the database, in the same way as for all other practices that close or stop contributing data. Patients from the absorbed practice are assigned a new patient identifier in the absorbing practice, but carry across all their data to, and retain their original registration start date in, their new practice.

This is different from what happens when individual patients move between two practices which contribute to the database. In that case previous data is also carried across but, because it is before their new registration date, studies can avoid duplication by excluding data recorded before each individual's registration date. Such people are effectively split into two separate individuals within analyses.
We have identified 29 practices that appear likely to have merged into other contributing practices and suggest that you may want to exclude these from your studies, wherever possible. The practice identifiers are:

20024, 20036, 20091, 20202, 20254, 20389, 20430, 20469, 20487, 20552, 20554, 20734, 20790, 20803, 20868, 20996, 21001, 21078, 21118, 21172, 21173, 21277, 21334, 21390, 21444, 21451, 21553, 21558, 21585

These practices had more than 95% of their patients sharing combinations of registration start date, sex, and year of birth with patients in another practice within the same region. No other pairs of practices share more than 70% of values. Together these practices contain slightly less than 1% of the individuals in CPRD Aurum, so we expect the impact of this duplication on previous analyses to be small.

We intend to resolve this issue in future builds, but older builds will remain unchanged in order to allow for replication of previous analyses.

August 2022

Field descriptions

Full descriptions of the fields in each data file are provided in the tables below. Please note that the last five digits of the patient identifier (patid) and staff identifier (staffid) denote the identifier of the practice (pracid) that the patient or staff member belongs to. The mapping column lists lookup files with further information on decoding numerical values. A mapping of 'None' indicates the existence of raw data in the field. Fields that are not currently populated are highlighted.

1. Patient

Column name	*Field name*	*Description*	*Mapping*	*Type*	*Format*
Patient identifier	patid	Encrypted unique identifier given to a patient in CPRD Aurum. The patient identifier is unique to CPRD Aurum and may represent a different patient in the CPRD GOLD database. This is the primary key for this table. The last 5 characters will be same as the CPRD practice identifier	None	TEXT	6-19 numeric characters
CPRD practice identifier	pracid	Encrypted unique identifier given to a practice in CPRD Aurum	Link **Practice** table	INTEGER	5
Usual GP	usualgpstaffid	The GP that the patient is nominally registered with. To be used with the Staff table for reference	Link **Staff** table	TEXT	Up to 10 numeric characters
Gender	gender	Patient's gender	Lookup: Gender.txt	INTEGER	3
Year of birth	yob	Patient's year of birth. This is actual year of birth e.g. 1984.	None	INTEGER	4
Month of birth	mob	Patient's month of birth (for those aged under 16).	None	INTEGER	2
Date of death	emis_ddate	Date of death as recorded in the EMIS® software. Researchers are advised to treat the *emis_ddate* with caution and consider using the *cprd_ddate* variable below.	None	DATE	DD/MM/YYYY
Registration start date	regstartdate	The date that the patient registered with the CPRD contributing practice. Most recent date the patient is recorded as having registered at the practice. If a patient deregistered for a period of time and returned, the return date would be recorded.	None	DATE	DD/MM/YYYY
Patient type	patienttypeid	The category that the patient has been assigned to e.g. private, regular, temporary.	Lookup: PatientType.txt	INTEGER	5
Registration end date	regenddate	Date the patient's registration at the practice ended. This may represent a transfer-out date or death date.	None	DATE	DD/MM/YYYY
Acceptable flag	acceptable	Flag to indicate whether the patient has met certain quality standards: 1 =acceptable, 0 = unacceptable	None	INTEGER	1
CPRD death date	cprd_ddate	Estimated date of death of patient – derived using a CPRD algorithm	None	DATE	DD/MM/YYYY

2. Practice

Column name	*Field name*	*Description*	*Mapping*	*Type*	*Format*
Practice identifier	pracid	Encrypted unique identifier given to a practice in CPRD Aurum. This is the primary key for this table.	None	INTEGER	5
Last Collection Date	lcd	Date of the most recent CPRD data collection for the practice.	None	DATE	DD/MM/YYYY
Up-to-standard date	uts	The date at which the practice data is deemed to be of research quality, based on CPRD algorithm. **[Not currently populated]**	None	DATE	DD/MM/YYYY
Region	region	Value to indicate where in the UK the practice is based. The region denotes the ONS Region for English practices.	Lookup: Region.txt	INTEGER	5

3. Staff

Column name	*Field name*	*Description*	*Mapping*	*Type*	*Format*
Staff identifier	staffid	Encrypted unique identifier given to the practice staff member in CPRD Aurum. This is the primary key for this table.	None	TEXT	Up to 10 numeric characters
Practice identifier	pracid	Encrypted unique identifier given to a practice in CPRD Aurum	Link **Practice** table	INTEGER	5
Job category	jobcatid	Job category of the staff member who created the event	Lookup JobCat.txt	INTEGER	5

4. Consultation

Column name	*Field name*	*Description*	*Mapping*	*Type*	*Format*
Patient identifier	patid	Encrypted unique identifier given to a patient in CPRD Aurum. The patient identifier is unique to CPRD Aurum and may represent a different patient in the CPRD GOLD database.	Link **Patient** table	TEXT	6-19 numeric characters
Consultation identifier	consid	Unique identifier given to the consultation. This is the primary key for this table.	None	TEXT	Up to 19 numeric characters
Practice identifier	pracid	Encrypted unique identifier given to a practice in CPRD Aurum	Link **Practice** table	INTEGER	5
Event date	consdate	Date associated with the event	None	DATE	DD/MM/YYYY
Entered date	enterdate	Date the event was entered into the practice system	None	DATE	DD/MM/YYYY
Staff identifier	staffid	Encrypted unique identifier given to the practice staff member who took the consultation in CPRD Aurum	Link **Staff** table	TEXT	Up to 10 numeric characters
EMIS® consultation source identifier	conssourceid	Identifier that allows retrieval of anonymised information on the source or location of the consultation as recorded in the EMIS® software. Only the most frequently occurring strings have been anonymised and are included in the lookup. All others have been withheld by CPRD, pending anonymisation where feasible.	Lookup: ConsSource.txt	TEXT	Up to 10 numeric characters
CPRD consultation source identifier	cprdconstype	Type of consultation: this will be generated by CPRD based on information recorded in the consmedcodeid and conssourceid variables. **[Not currently populated]**	Lookup: cprdconstype.txt [not included in initial release]	INTEGER	3
Consultation source code identifier	consmedcodeid	Source of the consultation from EMIS® software. This is a medical code that can be used with the medical dictionary. It may contain information similar to the consultation source identifiers but is available for use now. Some of the codes may not be interpretable e.g. Awaiting clinical code migration to EMIS Web®.	Medical dictionary. Maps to medcodeid	TEXT	6-18 numeric characters

5. Observation

Column name	*Field name*	*Description*	*Mapping*	*Type*	*Format*
Patient identifier	patid	Encrypted unique identifier given to a patient in CPRD Aurum. The patient identifier is unique to CPRD Aurum and may represent a different patient in the CPRD GOLD database.	Link **Patient** table	TEXT	6-19 numeric characters
Consultation identifier	consid	Linked consultation identifier. In EMIS Web® it is not necessary to enter observations within a consultation, so this identifier may be missing.	Link **Consultation** table	TEXT	Up to 19 numeric characters
Practice identifier	pracid	Encrypted unique identifier given to a practice in CPRD Aurum	Link **Practice** table	INTEGER	5
Observation identifier	obsid	Unique identifier given to the observation. This is the primary key for this table.	None	TEXT	Up to 19 numeric characters
Event date	obsdate	Date associated with the event	None	DATE	DD/MM/YYYY
Entered date	enterdate	Date the event was entered into EMIS Web®	None	DATE	DD/MM/YYYY
Staff identifier	staffid	Encrypted unique identifier given to the practice staff member who took the consultation in CPRD Aurum	Link **Staff** table	TEXT	Up to 10 numeric characters
Parent observation identifier	parentobsid	Observation identifier (obsid) that is the parent to the observation. This enables grouping of multiple observations, such as systolic and diastolic blood pressure, or blood test results.	Link **Observation** table	TEXT	Up to 19 numeric characters
Medical code	medcodeid	CPRD unique code for the medical term selected by the GP	Lookup: Medical dictionary	TEXT	6-18 numeric characters
Value	value	Measurement or test value	None	NUMERIC	19.3
Numeric unit identifier	numunitid	Unit of measurement	Lookup: NumUnit.txt	INTEGER	10
Observation type identifier	obstypeid	Type of observation (allergy, family history, observation)	Lookup: ObsType.txt	INTEGER	5
Numeric range low	numrangelow	Value representing the low boundary of the normal range for this measurement	None	NUMERIC	19.3
Numeric range high	numrangehigh	Value representing the high boundary of the normal range for this measurement	None	NUMERIC	19.3
Problem observation identifier	probobsid	Observation identifier (obsid) of any problem that an observation is associated with. An example of this might be an overarching condition that the current observation is associated with such as ‘wheezing’ with the problem observation identifier that links to an	Link **Observation** table	TEXT	Up to 19 numeric characters

Column name	*Field name*	*Description*	*Mapping*	*Type*	*Format*
		observation of ‘asthma’, that in turn contains information in the problem table.			

5a. Referral

Column name	*Field name*	*Description*	*Mapping*	*Type*	*Format*
Patient identifier	patid	Encrypted unique identifier given to a patient in CPRD Aurum. The patient identifier is unique to CPRD Aurum and may represent a different patient in the CPRD GOLD database.	Link **Patient** table	TEXT	6-19 numeric characters
Observation identifier	obsid	Unique identifier given to the observation. This is the primary key for this table.	Link **Observation** table	TEXT	Up to 19 numeric characters
Practice identifier	pracid	Encrypted unique identifier given to a practice in CPRD Aurum	Link **Practice** table	INTEGER	5
Referral source organisation identifier	refsourceorgid	Source organisation of the referral. Organisations are identified by an ID number and each organisation has a type (e.g. hospital inpatient department, community clinic). Both the organisation table and the OrgType lookup are required. The lookups are undergoing anonymisation work. **[Not currently populated]**	Lookups: Organisation.txt [not included in initial release] *and* OrgType.txt	INTEGER	10
Referral target organisation identifier	reftargetorgid	Source organisation of the referral. Organisations are identified by an ID number and each organisation has a type (e.g. hospital inpatient department, community clinic). Both the organisation table and the OrgType lookup are required. The lookups are undergoing anonymisation work. **[Not currently populated]**	Lookups: Organisation.txt [not included in initial release] *and* OrgType.txt	INTEGER	10
Referral urgency identifier	refurgencyid	Urgency of the referral e.g. routine, urgent, dated	Lookup: RefUrgency.txt	INTEGER	1
Referral service type identifier	refservicetypeid	Type of service the referral relates to e.g. assessment, management, investigation	Lookup: RefServiceType.txt	INTEGER	2
Referral mode identifier	refmodeid	Mode by which the referral was made e.g. telephone, written	Lookup: RefMode.txt	INTEGER	1

5b. Problem

Column name	*Field name*	*Description*	*Mapping*	*Type*	*Format*
Patient identifier	patid	Encrypted unique identifier given to a patient in CPRD Aurum. The patient identifier is unique to CPRD Aurum and may represent a different patient in the CPRD GOLD database.	Link **Patient** table	TEXT	6-19 numeric characters
Observation identifier	obsid	Unique identifier given to the observation. This is the primary key for this table.	Link **Observation** table	TEXT	Up to 19 numeric characters
Practice identifier	pracid	Encrypted unique identifier given to a practice in CPRD Aurum	Link **Practice** table	INTEGER	5
Parent problem observation identifier	parentprobobsid	Observation identifier for the parent observation of the problem. This can be used to group problems via the Observation table.	Link **Observation** table	TEXT	Up to 19 numeric characters
Problem end date	probenddate	Date the problem ended	None	DATE	DD/MM/YYYY
Expected duration	expduration	Expected duration of the problem in days	None	INTEGER	5
Last review date	lastrevdate	Date the problem was last reviewed	None	DATE	DD/MM/YYYY
Last review staff identifier	lastrevstaffid	Staff member who last reviewed the problem	Link **Staff** table	TEXT	Up to 10 numeric characters
Parent problem relationship identifier	parentprobrelid	Description of the relationship of the problem to another problem e.g. the problem may have evolved or been merged with another problem as the problem, or the GP's understanding of the problem, changes	Lookup ParentProbRel.txt	INTEGER	5
Problem status identifier	probstatusid	Status of the problem (active, past)	Lookup: ProbStatus.txt	INTEGER	5
Significance	signid	Significance of the problem (minor, significant)	Lookup: Sign.txt	INTEGER	5

6. Drug issue

Column name	*Field name*	*Description*	*Mapping*	*Type*	*Format*
Patient identifier	patid	Encrypted unique identifier given to a patient in CPRD Aurum. The patient identifier is unique to CPRD Aurum and may represent a different patient in the CPRD GOLD database.	Link **Patient** table	TEXT	6-19 numeric characters
Issue record identifier	issueid	Unique identifier given to the issue record. This is the primary key for this table.	None	TEXT	Up to 19 numeric characters
Practice identifier	pracid	Encrypted unique identifier given to a practice in CPRD Aurum	Link **Practice** table	INTEGER	5
Problem observation identifier	probobsid	Unique identifier for the observation that links to a problem under which this prescription was issued. This refers to an 'obsid' in the Observation table which, in turn, can be linked to a record in the Problem table using 'obsid'.	Link **Observation** and **Problem** tables	TEXT	Up to 19 numeric characters
Drug record identifier	drugrecid	Unique identifier to a drug template record, which is not currently for release. At present this may be used to group repeat prescriptions from the same template.	None	TEXT	Up to 19 numeric characters
Event date	issuedate	Date associated with the event	None	DATE	DD/MM/YYYY
Entered date	enterdate	Date the event was entered into EMIS Web®	None	DATE	DD/MM/YYYY
Staff identifier	staffid	Encrypted unique identifier given to the practice staff member issued the treatment in CPRD Aurum	Link **Staff** table	TEXT	Up to 10 numeric characters
Drug code identifier	prodcodeid	Unique CPRD code for the treatment selected by the GP	Lookup: Product dictionary	TEXT	6-18 numeric characters
Dosage identifier	dosageid	Identifier that allows dosage information on the event to be retrieved. Not included in first release	Lookup: common_ dosages.txt	TEXT	64 characters
Quantity	quantity	Total quantity entered by the GP for the prescribed treatment		DECIMAL	9.3[1]
Quantity unit identifier	quantunitid	Unit of the treatment (capsule, tablet)	Lookup: QuantUnit.txt	INTEGER	2
Course duration in days	duration	Duration of the treatment in days	None	INTEGER	10
Estimated NHS cost	estnhscost	Estimated cost of the treatment to the NHS	None	DECIMAL	10.4[1]

[1] The number before the decimal point gives the precision i.e. the total number of digits. The number after the decimal point denotes the scale i.e. the maximum number of decimal places

I. Medical dictionary

Column name	*Description*	*Mapping*	*Type*	*Format*
medcodeid	CPRD code to describe the observation. Links to the observation table. This is the primary key for this table.	None	TEXT	6-18 numeric characters
term	Description of the observation associated with the codeid	None	TEXT	255 characters
originalreadcode	The original Read code text as provided in the EMIS® dictionary (contains codes which are not valid Read codes)	None	TEXT	100 characters
cleansedreadcode	CPRD-cleaned and validated version of the originalreadcode	None	TEXT	7 characters
snomedctconceptid	The SNOMED CT concept identifier associated with the observation	None	TEXT	Up to 19 numeric characters
snomedctdescriptionid	The SNOMED CT description identifier associated with the observation	None	TEXT	Up to 19 numeric characters
release	Reference data version. **[Not currently populated]**	None	TEXT	100 characters
emiscodecategoryid	Category identifier in EMIS® that describes the observation	Lookup: EMISCodeCat.txt	INTEGER	2

II. Product dictionary

Column name	*Description*	*Mapping*	*Type*	*Format*
prodcodeid	CPRD code to describe the treatment. Links to the Drug Issue table. This is the primary key for this table.	None	TEXT	6-18 numeric characters
dmdid	The DM+D code associated with the treatment	None	TEXT	Up to 19 numeric characters
termfromemis	Description of the treatment provided by EMIS® associated with the prodcodeid	None	TEXT	255 characters
productname	Name of the product	None	TEXT	Up to 999 characters
formulation	Formulation of the product	None	TEXT	Up to 999 characters
routeofadministration	Route of administration for the product	None	TEXT	Up to 999 characters
drugsubstancename	Active ingredient(s) included in the product. For combination therapies, each component is listed, separated by /	None	TEXT	Up to 999 characters
substancestrength	Strength of each active ingredient listed in the drugsubstancename column, including units. Separated by / if more than 1	None	TEXT	Up to 999 characters
bnfchapter	BNF chapter to which the product belongs	None	TEXT	Up to 999 characters
release	Reference data version. **[Not currently populated]**	None	TEXT	100 characters