## PLEASANT TRIAL – SUPPLEMENTARY INFORMATION

## Data Management Process – allocation of medical contacts and follow up data

### Overview of methods for allocation of data to scheduled/unscheduled contacts

A scheduled contact was defined as any contact that is part of the planned care for the patient, for example an asthma review; a medical review; repeat prescription or immunisation. An unscheduled contact was defined as any contact not part of their care plan that is either patient initiated or as a result of illness.

To ensure the allocation of scheduled and unscheduled contacts was robust a GP adjudication panel consisting of 3 independent GPs attended meetings to review the data blind to treatment. The GP adjudication panel reviewed the unique terms (17% of the unique terms were reviewed which accounted for 90% of the data. During these meetings the GP adjudication panel devised the assumptions (i.e. rules) used to allocate to scheduled, unscheduled or not applicable (irrelevant) contacts. These assumptions were documented (see Appendix 3) and approved by the GP adjudication panel.

All types of ‘consultation’ are recorded within the data that CPRD provides; each consultation was considered a medical contact. Not all consultations are considered relevant to the study. One ‘consultation’ in the consultation table was considered one contact. All consultation data supplied are taken into account for the study not just those that are asthma related. Only consultations that happened on or after 1st August were included.

Assumptions used to code records as scheduled, unscheduled or not applicable were based on a GP adjudication panel review of the clinical, immunisation, therapy, referral, test and consultation data.

The ‘medcode description’ from the clinical data was used first as it was felt that this table gave most description about the reason for the consultation. If contact type could not be determined by the ‘medcode description’ then clinical consultation was referenced.

Following GP adjudication panel review of the medcode descriptions and clinical consultation types, where over 90% of the data was reviewed (17% of the unique terms), clinical records were identified to be marked as scheduled (these include asthma annual review terms and other obvious types of planned appointments); unscheduled (e.g. examinations, emergency appointments); not applicable (e.g. DNA) or unknown.

The clinical data contains more than one record per consultation and the same consultation ID can have more than one clinical contact type. For these clinical records, we assumed that unscheduled takes precedence (i.e. they are likely to have come in for an unscheduled visit but had a scheduled ‘type’ of procedure at the same time).

Consultation data marked as unknown based on the clinical data as well as consultation data that did not link to clinical data are coded based on immunisation, therapy, referral, test and consultation data. If at least one match was found in the immunisation record they were coded as scheduled. If at least one match was found with therapy (medication) data they were coded unscheduled. If they matched with the test data as part of the routine asthma review then they were coded as scheduled; if they matched with test data of peak expiratory flow rate (PEFR)/ peak flow rate (PFR) they were coded as unknown; otherwise a match with test data was coded as unscheduled.

Finally contacts were coded on the consultation type in the consultation table; where consultation types of follow-up / routine visits, repeat issue and medicine management were coded as scheduled; consultation types which indicate an emergency visit were coded as unscheduled; administrative type consultation types were coded as not applicable and those which were unclear, e.g. Clinic, Surgery consultation and Other were coded as unscheduled because of the likelihood that most scheduled consultation types would be clearly recorded. Details of how this has been applied and other assumptions to propose the allocation of medical contacts as ‘scheduled’ and ‘unscheduled’ are described in this document.

### Data received from CPRD

Initial test data set received 10th May 2013

First baseline data set received 19th December 2013

2nd baseline data set received 3rd February 2014

3rd baseline data set received 13th July 2014

Baseline and follow-up data set received 19th January 2015

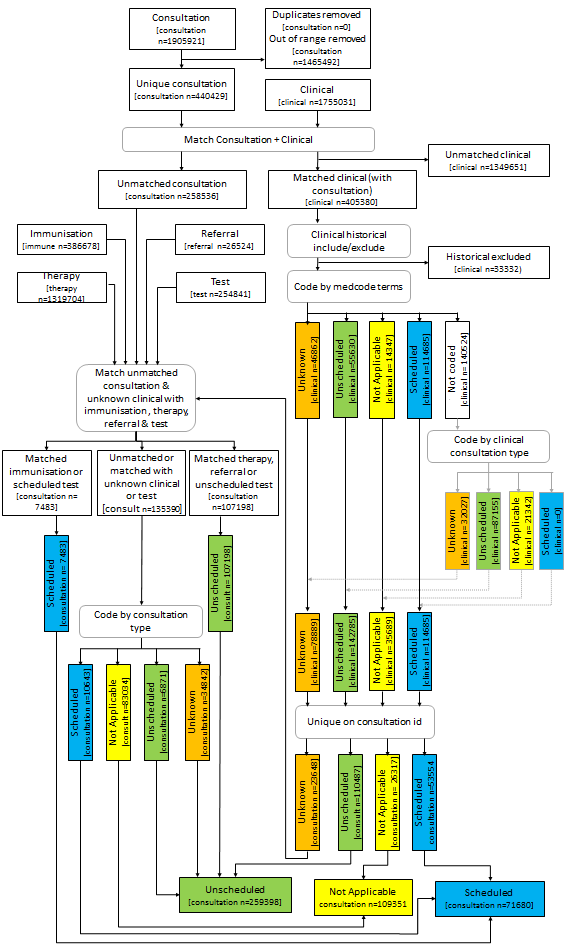
### CPRD data

Data from the Consultation, Clinical, Immunisation, Test, Referral and Therapy tables from CPRD Gold Data Dictionary were used.

### Overview

Figure 1 shows a very broad overview of how the data has been processed and the number of records. Full details of assumptions are in the following sections.

Figure : Decision tree showing an overview of how medical contacts have been allocated



### General assumptions

One ‘consultation’ (based on the combination of patient ID, practice ID and consultation ID) in the consultation table is considered one contact.

All consultations data supplied are taken into account for the study not just those that are asthma related.

Only consultations that happened on or after 01/08/2012 are included.

Assumptions used to code records as scheduled or unscheduled (contact type) are based on clinical, immunisation, therapy, referral, test and consultation data.

### Records with unmatched event dates

Each consultation record is supplied with an event date; this event date does not always match the event date recorded for that consultation within the other tables. This is most likely due to information entered into the database historically. Those contacts within the clinical table were included if they are relevant and unlikely to be duplicated (see “Inclusion of ‘unmatched / historical’ data” section for more details). All immunisation, therapy, referral and test records that did not match the event date supplied in the consultation data were excluded.

### Clinical data

Clinical data is linked to consultation data, all matched records are included.

### Inclusion of ‘unmatched / historical’ data

If the event date does not match but the clinical event date is within the dates of interest (i.e. from 1st August 2012) then those records which are both relevant and unlikely to be duplicated are included. The decision on which records to include was made by the GP adjudication panel after reviewing the most common unique terms (10% of the terms which covered 88% of the data). The most common 10 terms and the decision as to whether to include is shown in Table 1 for information; rules based on this review were used to decide whether or not to include the 12% of data not reviewed, e.g. “if it contains seen it is relevant and unlikely to be duplicated”.

Table : ****Inclusion of ‘unmatched / historical’ data****

|  |  |  |
| --- | --- | --- |
| Medcode desc | Records | Flag |
| Seen in paediatric clinic | 5214 | Relevant and unlikely to be duplicated |
| Seen in hospital casualty | 4863 | Relevant and unlikely to be duplicated |
| Letter received | 2901 | Irrelevant |
| Letter encounter | 2654 | Irrelevant |
| Administration | 2167 | Irrelevant |
| Seen in orthopaedic clinic | 1699 | Relevant and unlikely to be duplicated |
| Letter from consultant | 1587 | Likely to be duplicated |
| Letter from specialist | 1488 | Likely to be duplicated |
| Discharge summary | 1479 | Likely to be duplicated |
| Asthma | 1398 | Likely to be duplicated |

### Summary of coding using clinical data

The records included are used to determine scheduled or unscheduled based on ‘medcode description’ initially; the clinical data references Pegasus medical data using the field ‘medcode’ to get ‘medcode description’. If contact types cannot be determined by ‘medcode description’ then clinical consultation type ‘constype’ (consultation type) is referenced.

Following GP adjudication panel review of the medcode descriptions; where over 90% of the data was reviewed (17% of the unique terms) clinical records to be marked as scheduled; unscheduled; not applicable or unknown were identified based on terms (*see tables Table 2-5* for examples: full details are available on request if required). Based on this review rules to apply to the data were also determined (*see Table 6*). Finally, decisions on how to code the remaining records based on the clinical consultation type were made (*see Table 7*).

Table ****: Clinical Records: Scheduled****

|  |
| --- |
| Medcode\_desc |
| Administration of medication under patient group direction |
| Administration of medication under patient specific directn |
| Antimalarial drug prophylaxis |
| asthma annual review |
| Asthma causes daytime symptoms 1 to 2 times per month |
| Asthma causes daytime symptoms 1 to 2 times per week |
| Asthma causes daytime symptoms most days |
| Asthma causes night symptoms 1 to 2 times per month |
| Asthma causes symptoms most nights |
| Asthma causing night waking |
| Asthma control questionnaire |

Table ****: Clinical Records: Unscheduled****

|  |
| --- |
| Medcode\_Desc |
| Abdomen examined - NAD |
| Abdominal examination - NAD |
| Breast examination |
| CVS examination |
| CVS examined - NAD |
| Ear examination - normal |
| emergency appointment |
| Exam. of cardiovascular system |
| Exam. of digestive system |
| Examination of abdomen |

Table ****: Clinical Records: Not Applicable****

|  |
| --- |
| Medcode\_Desc |
| [V]Healthy person accompanying sick person |
| Advice to GP to change patient medication |
| Did not attend - no reason |
| Discharge from hospital |
| Discharged from accident and emergency |
| Discharged from inpatient care |
| Drug not collected - no reason |
| Employment milestones |
| Failed encounter |
| Failed encounter - message left on answer machine |

Table ****: Clinical Records: Unknown****

|  |
| --- |
| Medcode\_Desc |
| [V]Issue of repeat prescription |
| Advice |
| Asthma |
| Asthma medication review |
| Asthma monitoring due |
| Asthma NOS |
| Bronchial asthma |
| Change in asthma management plan |
| Clinical management plan agreed |
| Family history |

Table : Medcode description rules coding

|  |  |
| --- | --- |
| Letter rule | If contains 'letter' then scheduled unless it contains 'referral', in that case it's not applicable |
| Pain/inflamed/sore rule | If contains 'pain', 'inflamed' or 'sore' then it's unscheduled |
| Asthma trigger rule | If contains 'Asthma trigger' then scheduled unless it contains 'infection' then it's unscheduled |
| Immunisation/vaccination rule | If does not contain 'letter' and contains 'immunisation', 'immunisats', 'imm', 'vacc' or 'vaccination' then 'Scheduled' unless it contains 'flu', 'Influenza', 'advice', 'not consent', 'declined' or 'requires' in that case it's 'unknown' |
| Exam/examination rule | If contains 'exam' or 'examination' then unscheduled, unless it contains 'chest', 'respiratory', 'lung', 'breath', 'foot' or 'eye' then it's scheduled |
| Asthma management plan rule | If contains 'Asthma management plan' then scheduled unless it also contains 'change' or 'step up', in that case it's unknown |
| Referral rule | If contains 'Referral' then not applicable unless it contains 'a and e', 'accident and emergency' or 'admission', in that case it's unscheduled |
| Blank rule | If blank then it's unscheduled |
| DNA rule | If it contains 'Did not attend' or 'DNA' it's not applicable |
| Failed encounter rule | If it contains failed encounter it's not applicable |
| lloyd george rule | If it contains lloyd george it's not applicable |
| Seen rule | If it contains ‘seen’ it's scheduled, unless it contains accident, emergency, out of hours, GP, A&E, A & E, rota, primary care centre, patient call, triage, co -op, coop, co op, walk in, ooh, triage, injury, on call, home visit, urgent, surgery, doctor in which case it's unscheduled |
| Out of hours rule | If it contains out of hours then it's unscheduled |
| Emergency rule | If it contains emergency then it's unscheduled |
| Discharge report | If it contains discharge report then it's unscheduled |

Table : Clinical consultation type coding

|  |  |
| --- | --- |
| Clinical consultation type | Code as |
| Administration | Not applicable |
| Symptom | Unscheduled |
| Diagnosis | Unscheduled |
| Intervention | Unscheduled |
| Management | Unscheduled |
| Presenting complaint | Unscheduled |
| Examination | Unknown |

### Conflicting clinical contact types

Clinical data contains more than one record per consultation. In some cases the same consultation ID can have more than one clinical contact type. For these clinical records, we assume that unscheduled takes precedence (i.e. they are likely to have come in for an unscheduled visit but had a scheduled ‘type’ of procedure at the same time) over all other contact types, scheduled take precedence over not applicable and unknown and unknown takes precedence over not applicable.

### Clinical to consultation

The code assigned in accordance with clinical contact type as described above is linked to the consultation data.

Consultation data marked as ‘unknown’ based on the clinical data as well as consultation data that did not link to clinical data are coded based on immunisation, therapy, referral, test and consultation data as described in the following sections.

### Immunisation data

Uncoded consultation data are matched against immunisation data; if at least one match is found in the immunisation record then these are marked as ‘Scheduled’.

### Therapy

Those that do not match with immunisation data are linked to medication data. If at least one match is found they are marked as ‘unscheduled’.

### Referral

Those that do not match with immunisation or therapy data are linked to referral data. If at least one match is found they are marked as ‘unscheduled’.

### Test

Those that are still uncoded are linked to test. If linked to test it is coded as either ‘scheduled’, ‘unknown’ or ‘unscheduled’ based on a review of the data. In general, if the test is part of the routine asthma review then it is coded as ‘scheduled’; if it’s PEFR/PFR then it is coded as ‘unknown’. Otherwise it is coded as ‘unscheduled’ (full details are available on request).

Where a consultation links to more than one record the same rules of precedence apply as outlined in the “Conflicting clinical contact types” section.

### Consultation data

For consultation data which is still ‘unknown’, ‘unlinked’ and therefore uncoded, consultation type is used to determine scheduled, unscheduled or N/A. See Table 8 for a summary (full details are available on request). In this way all contacts will now be coded as either ‘scheduled’, ‘unscheduled’ or ‘not applicable’.

Table : Consultation type coding

|  |  |
| --- | --- |
| Consultation type | Coded as |
| Follow-up/routine visit  Repeat issue  Community Clinic  Medicine Management | Scheduled |
| If the consultation is about out of hours visits, telephone call, acute visit, inpatient/hospital admission, accident and emergency attendance, triage, home/hotel visit, walk-in centre, co-op surgery or injury | Unscheduled |
| Clinic  Surgery consultation  Other | Unscheduled (it is assumed that most scheduled consultation types will be clearly recorded). |
| If the consultation type is ‘Data not entered’ or if they are about correspondence, reports, administration, nursing/residential home visits, test results or non-consultation data. | Not applicable |

### Emergency contacts

In addition to coding to scheduled, unscheduled and not applicable some consultation types from the consultation table were coded as emergency (*see Table 9*).

Table ****: Emergency contact codes****

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Code | Consultation Type | Relevant medical contact? | unscheduled / scheduled | Emergency |
| 2 | Night visit, Deputising service | Yes | unscheduled | Yes |
| 4 | Night visit, Local rota | Yes | unscheduled | Yes |
| 6 | Night visit , practice | Yes | unscheduled | Yes |
| 7 | Out of hours, Practice | Yes | unscheduled | Yes |
| 8 | Out of hours, Non Practice | Yes | unscheduled | Yes |
| 11 | Acute visit | Yes | unscheduled | Yes |
| 18 | Emergency Consultation | Yes | unscheduled | Yes |
| 20 | Casualty Attendance | Yes | unscheduled | Yes |
| 23 | Hospital Admission | Yes | unscheduled | Yes |
| 24 | Children's Home Visit | Yes | unscheduled | Yes |
| 27 | Home Visit | Yes | unscheduled | Yes |
| 28 | Hotel Visit | Yes | unscheduled | Yes |
| 32 | Twilight Visit | Yes | unscheduled | Yes |
| 34 | Walk-in Centre | Yes | unscheduled | Yes |
| 37 | Co-op Home Visit | Yes | unscheduled | Yes |
| 50 | Night Visit | Yes | unscheduled | Yes |