# Change

Changed 6th December 2017 to reflect current codebase (1.1.2)

Main changes:

1. Write Audit when new number allocated
2. Write Audit when patient linked to existing UKRDC record for the first time
3. When a new national id link is made, a check is made for duplicate links from the same organization to that national id (e.g. 2 records from RXF01 with the same NHS Number)

# EMPI Data Structures

The EMPI schema is a separate schema from the repository.

## Person

A representation of the key demographics of the incoming record, uniquely identified by local ids - type/org/number (“MRN” / “RXX01” / “12345”).

This record will contain standardized fields to support algorithmic tracing and can hold historic data although currently only the previous surname is supported for performance reasons.

## MasterRecord

A national master record. There will be a Master Record for every NHS Number, CHI Number, H&SC, UKRR and UKRDC Number. This is uniquely identified by type and id (e.g. “NHS” / “1234567890”)

## LinkRecord

A simple x-reference table between the Person and MasterRecord. This identifies verified links between a person and a master record.

Uniquely identified by personid and masterid.

To find all records for a UKRDC record you would need a query such as:

select \* from jtrace.person p, jtrace.linkrecord lr, jtrace.masterrecord mr

where lr.masterid = mr.id

and lr.personid = p.id

and mr.nationalid = 'RR3000001'

and mr.nationalidtype = ' UKRDC '

## Relationship between Masters

The relationship in this model between two master records potentially referring to the same physical person is always indirect. There is no direct relationship between an NHS Number and a CHI Number except through a Person record claiming to link the two numbers – essentially because that link is the view of the source system not a definitive link recognized by NHS England and the NHS Scottish.

At first glance this might seem an impediment but the creation of UKRDC Master record and links to the associated source system Person records removes that complexity for real life access. Once created the UKRDC Master becomes the “top of the tree” accessing related person records as required.

## Links to the Repository

Records in the Repository are in a different schema but keyed by the same local ids as used in the person table in the EMPI. This provides for an easy link between the two.

# Client

The Client (the repository) will create a Person record containing

* Local Ids
* Primary Id (if present - “UKRDC” + UKRDC Number)
* National Ids (a list of other national ids present on the RDA)
* Demographics

It will call EMPI CreateOrUpdate passing in the Person

# API: Create Or Update

If effective date is not provided then default to today.

**Validate**

Find the person for the inbound record (originator, local id type, local id)

If found

**Update**

Else

**Create**

## Create

Create standardized versions of the name

Insert Person record

\*\* Maintain the links to other national ids

For each National Id on the inbound record (NHS/CHI/H&SI)

**Create National Id Links**

\*\* Maintain the primary index (UKRDC number)

**Create UKRDC Link**

## Update

Create standardized versions of the name, including previous surname if required

Update Person record

\*\* Remove any national identifies which are no longer on the person record

For each LINK on the database for this person

Get the Corresponding MASTER

If not UKRDC

If this national Id & type is also on the inbound record

**Update National Id Links**

Mark this national id as *processed*

If this national Id is not on the inbound record

Delete from the database

If no other links to this MASTER

Delete the MASTER

\*\* Add any new national links

For each National Id on the inbound record (Not marked as *processed*)

**Create National Id Links**

\*\* Maintain the primary index (UKRDC number)

**Update UKRDC Link**

## Create UKRDC Link

If a primary id is on the inbound record

Find the MASTER record for that primary id

If found

If **VerifyMatch**

Create LINK

If the effective date on the inbound is > effective date on the MASTER

Update the demographics on the MASTER

If not

Create WORK

Create LINK

update MASTER as INVESTIGATE

If the effective date on the inbound is > effective date on the MASTER

Update the demographics on the MASTER

Else

Create a MASTER record

Create a LINK to it

Else

\*\* Try to find a matching UKRDC record which can be corroborated by other national ids

For each national id on this record (NHS/CHI/H&SI)

Get the MASTER Record by national id

Get all the Links to this MASTER

For each linked record (excluding the inbound person)

Search for a MASTER UKRDC number LINKed to this person

If found

Does the inbound record **VerifyMatch** against this UKRDC Master?

If so

Create LINK

Audit Link

Else

Create WORK

If not linked

Allocate UKRDC Number

Audit Allocation

Create MASTER

Create LINK

## Create National Id Links

Find the MASTER record for the national id details provided

If found

Create LINK

If not **VerifyMatch**

Create WORK

mark MASTER as INVESTIGATE

If the effective date on the inbound is > effective date on the MASTER

Update the demographics on the MASTER

Check Duplicates for the MasterId/Originator

If found

Create WORK

mark MASTER as INVESTIGATE

Else

Create a MASTER record

Create a LINK to it

## Update UKRDC Links

If a UKRDC number is linked to the inbound record

Find the MASTER record for that primary id

If there is no primary on the inbound OR it is the same as that stored

If the effective date on the inbound is > effective date on the MASTER

Update the MASTER demographics

**Verify Links**

Else

// Stale update

If the record does not **VerifyMatch**

Create WORK

Mark MASTER as INVESTIGATE

Else

// Primary has changed

Delete the original LINK

If no LINKs remain for the MASTER

Delete the MASTER

**Create UKRDC Link**

Else

**Create UKRDC Link**

## Update National Id Links

If demographics have changed

If the effective date on the inbound is > effective date on the MASTER

Update the demographics on the MASTER

**Verify Links**

Else

If no longer **VerifyMatch**

Create WORK

Mark MASTER as INVESTIGATE

## Verify Links

// Called when the demographics on the master are updated

For each Person linked to this master (except the person causing this change)

If no longer **VerifyMatch**

Create WORK

Mark MASTER as INVESTIGATE

## Validate

* If present, the Primary Id must be UKRDC
* Surname must be at least 2 characters
* Given name must be at least 1 character
* Gender must be at least 1 character
* Date of birth must be present
* Local id must be present and at least 5 characters
* Local id type must be present
* Originator must be present

## VerifyMatch

If DOB Matches exactly

Return TRUE

If 2 parts of the DOB Match

If the first 3 characters of Surname and 1 character of Given name matches

Return TRUE

RETURN FALSE

# API: Search

// Used to find a UKRDC number from another national id and demographics

Programme Search Request must be provided and must contain a National Id

Find the MASTER for the National Id provided

If not found - return null

For each person LINK to the MASTER

Search for a LINKed UKRDC MASTER

If found

**VerifyMatch** the demographics provided against the UKRDC MASTER found

If verified – return the MASTER

# API: Link

// API call will be used for a Manual Link

Find a LINK for the master id and person id provided

If exists

Reject

Create LINK