

Integration Specification

Renal Association

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Contacts

Customer Info

| Info | Detail |
|---------|---|
| Website | https://renal.org/ , https://www.patientview.org/ |

Contacts

| Primary Technical Contact? | Name | Email |
|----------------------------|-------------------|-----------------------------------|
| Y | Tim Whitlock | Tim.Whitlock@renalregistry.nhs.uk |
| N | George Swinnerton | |

Support

| Purpose | Notes | Details |
|---------------------------|---|--|
| Updates | Receive technical notices and developer announcements | Developer blog |
| | Receive updates about PKB server status | PKB status |
| | Receive updates about PKB news and events | PKB company blog PKB website and mailing list |
| Questions | Email this distribution list if you have a question about how to use our API correctly | integrations@patientsknowbest.com |
| Problems / Config changes | Raise a support ticket to report an error with our system, or to request a change to your interface configuration | help@patientsknowbest.com |

Overview

This scope of the project is to migrate the existing Renal Patient View (RPV) platform to PKB for all existing patients and then all new patients.

Hospitals send data to the Renal Association (RA) registry database which is used as a source for the Renal Patient View platform and smartphone application. 74 trusts send data to the renal association database.

The Renal Association schemas are here:

- <https://github.com/renalreg/ukrdc-pv/blob/master/Schema/UKRDC-PV.xsd> -
- <https://github.com/renalreg/ukrdc/tree/master/Schema>

Phase 1

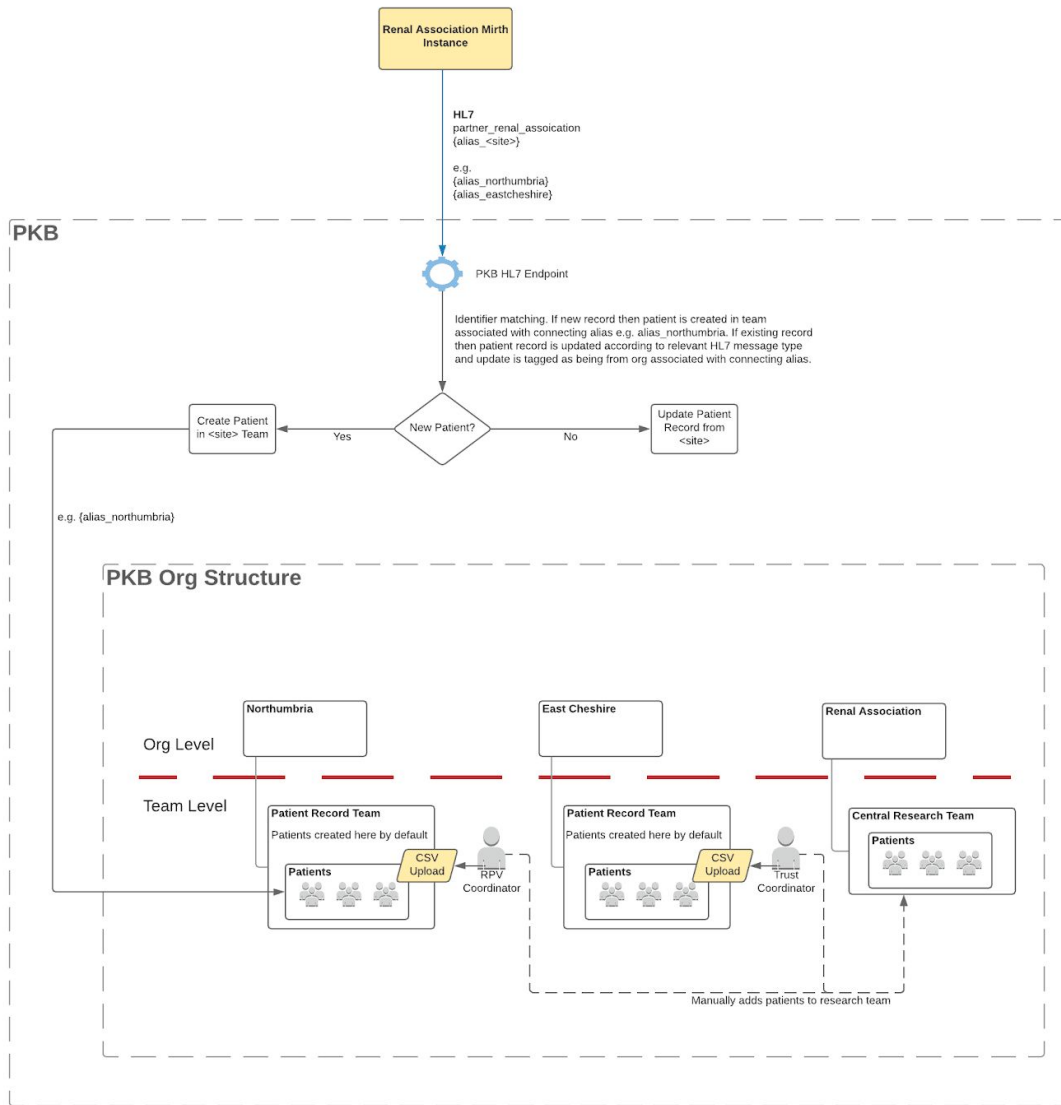
An organisation will be created on PKB representing each of the RA sites ~74. The Renal Association will generate a CSV for each organisation containing the patient records for that RA site. The allocated team coordinator will upload the patient records by [CSV upload](#) in each PKB organisation. The CSV should include all available demographics and email addresses. CSV upload process has the benefits of:

- a. The CSV upload reporting of creation outcomes is valuable: <https://manual.patientsknowbest.com/coordinator/records-mass>. This can be used to determine which patients are already on PKB but part of another organisation.
- b. The CSV upload can trigger an invite to an existing record when an email is included. This is not currently possible via HL7.

This initial record creation will then be followed by supplementary information to enrich the patient record via HL7 messages. HL7 partner credentials (<http://dev.patientsknowbest.com/home/hl7-api/connecting-hl7-to-pkb/partner-connections>) will be used. An MSH-4 alias will be included in each message to indicate the source RA site (this will align to the PKB organisation representing that site). The use of partner credentials will maintain the source of each data point. See [Risk/Issue 2](#) regarding data point IDs for partners.

Below is a visual representation of the above structure with Northumbria and East Cheshire as example RA sites.

RENAL ASSOCIATION DEPLOYMENT



Data in scope:

- Demographics (ADT^A31).
 - Verified NHS filtered.
 - ZRX medication segments included where available. See [Risk/Issue 1](#)
 - DG1 diagnosis segments included where available. See [Risk/Issue 1](#)
 - Potential need to base on coding standards to display full information / guidance. ERA-EDTA (<https://www.era-edta.org/en/registry/disclaimer/>)?
 - Email address included in PID segment where available.
- Lab Test Results (ORU^R01).
 - LOINC codes should be included in OBX-3.1/OBX-3.3 where available. PKB has an existing set of LOINC mappings where there is likely beneficial overlap.
- Documents (MDM^T02) - Letters
- Measurements (ORU^R01). E.g weight, height. This is synced to RADA - Registry of Rare Diseases.
 - <http://dev.patientsknowbest.com/home/hl7-api/messages/oru-r01/laboratory#TOC-Supported-single-measurements>
 - Pulse
 - Weight
 - Height
 - BP Systolic / Diastolic
- Surveys. PROM/PREM/PAM.
 - 3 forms of question / answers.
 - Two variations of PROM. Some optional free text fields result in variations.
 - Source originally OCR'd from paper. Held electronically in database. Rich data.
<http://dev.patientsknowbest.com/home/fhir-api/fhir-api-roadmap/questionnaire-response>.
 - Future completion of PAM/PROM/PREM surveys. Might be moved to PKB UI but project not confirmed.
 - Current:
 - Patient comes into the clinic. Fills in survey on an ipad. Response sent back to the unit.
 - Tactical workaround...clinician logs in to PKB.
 - Get the date, send spec.
- Transplant status.
 - List of NHS numbers sent to NHSBT.
 - NHSBT send transplant status.
 - PKB suggestion: sending an HTML CarePlan - MDM^T02 - <http://dev.patientsknowbest.com/home/hl7-api/messages/mdm-t02/care-plan>.

- RRT status. E.g. dialysis. Calculated result by the renal team, derived from data sent through.
 - PKB suggestion: sending an HTML CarePlan - MDM^T02.

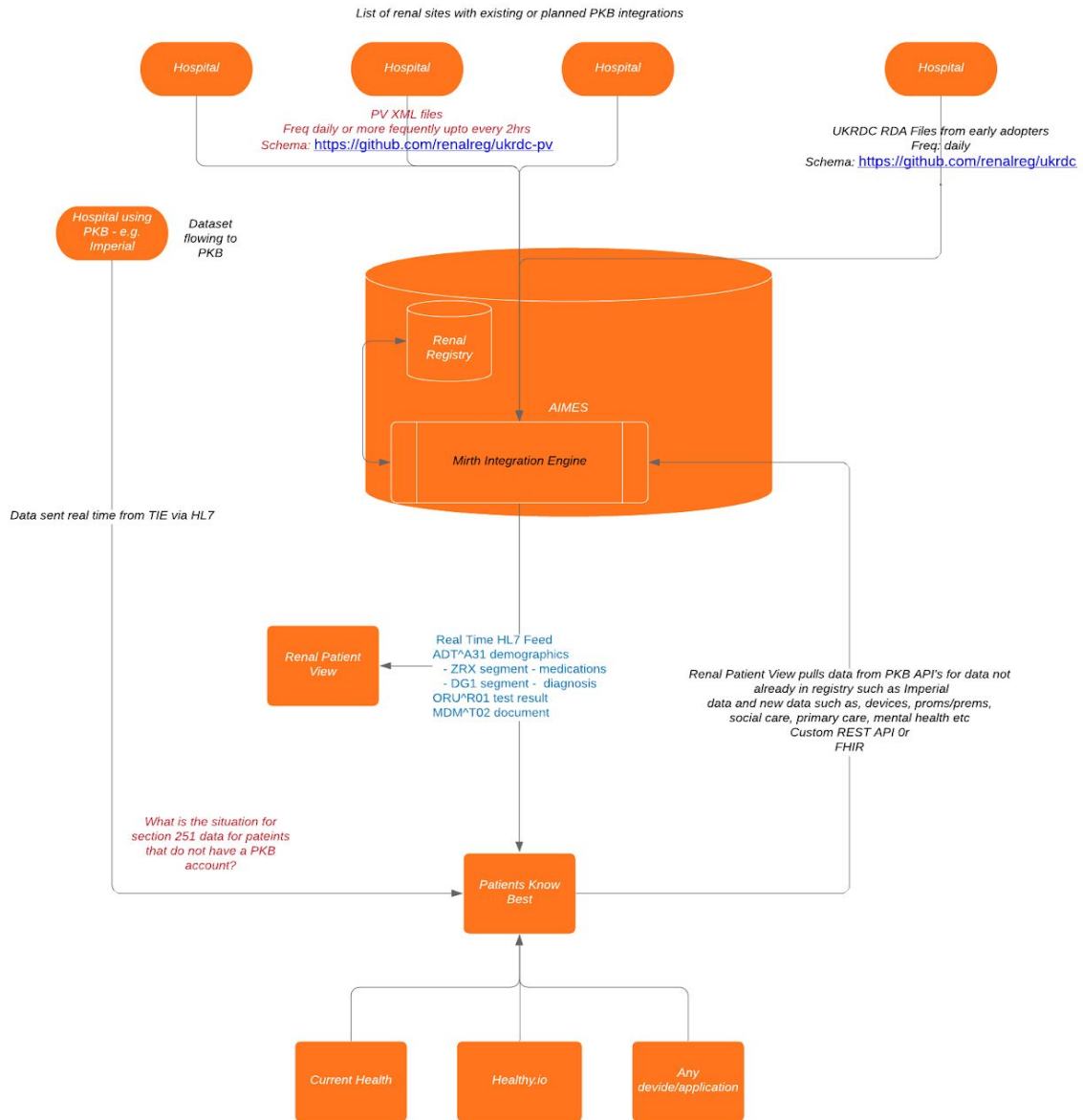
PKB should be sent all the data that is currently on RPV. This will mean that the upload of data to the patient records may be broken into two pieces of work:

1. A one off upload of existing historical data to PKB to ensure that PKB records are equivalent to the current RPV records. This should be done prior to the patient invite or in parallel to the invite so that the records are present when the patient registers on PKB. This could be done on a per site basis.
2. An ongoing feed of new / updated data to the PKB records.

Phase 2

- Pulling data out of PKB. Priority being:
 - Lab results - questions: mapped by coding standard, retrieved by unit / site?
 - Measurements - questions: mapped by coding standard?
 - Then other data points....
- 'Phase 2' as illustrated by the arrow from PKB to the Renal Registry database for data not already in the registry database. I.e. "Renal Patient View pulls data from PKB API's for data not already in registry such as Imperial data and new data such as, devices, proms/prems, social care, primary care, mental health etc Custom REST API or FHIR"

Tactical data flow PKB & Renal patient view migration shared with
 Renal Association



Notes

| # | Description |
|---|--|
| 1 | Source IP Addresses (based on current implementation ideas) Production 10.38.181.68 |

| | |
|--|---|
| | Staging 10.38.181.84 Dev 10.38.181.123 Desktops/Dev 62.255.13.162 |
|--|---|

Risk and Issues

| # | Description |
|---|--|
| 1 | <p>There is a risk if the customer site also sends their own demographics A28/A31 feed at some point (or already do) with separate diagnosis, medication information then the feeds will end up overwriting each other's data. PKB generally discourage partners from sending DG1/AL1/ZRX.</p> <p>Would be interested to know if the RA feed diagnosis and medications are likely to also be replicated on the customer PAS?</p> <p>See http://dev.patientsknowbest.com/home/hl7-api/connecting-hl7-to-pkb/partner-connections#TOC-Considerations</p> <p>Update 11/09 - diagnosis and medications from renal association are usually - renal specific plus occasionally some tightly related. They do not have the full set of diagnosis / medications recorded on the PAS hence contention between a PAS and Partner feed is realistic.</p> |
| 2 | <p>Data point IDs. RA should reference partner considerations here: http://dev.patientsknowbest.com/home/hl7-api/connecting-hl7-to-pkb/partner-connections#TOC-Considerations.</p> |
| 3 | <p>Patients with multiple national identifiers. E.g. NHS and CHI. A patient record can have multiple national identifiers. These can be supplied via the HL7 feed. An appropriate AA/TC should be sent for each value. If a patient has an NHS and CHI for instance an A28/A31 should always include both....this prevents two records being created..one with NHS...one with CHI for the same person. http://dev.patientsknowbest.com/home/hl7-api/identifiers#TOC-National-identifiers</p> |
| 4 | <p>'Person to contact' field in Renal Association database. This may logically map to next of kin or a carer record? E.g. can a professional / team coordinator see that a patient record has a carer record associated?</p> |
| 5 | <p>Rather than deltas. PV traditionally resends the last x months when they identify a change has occurred. I.e. now...going back 4 weeks. Optionally can extend that back further.</p> |

Integration Design

Architecture

| Option | Details | Select | In-house? |
|-----------------------|---|--------|-----------|
| Customer | <p>A Customer interacts with PKB APIs directly, using credentials issued to the organisation.</p> <p>A Customer is normally an organisation providing healthcare directly to patients, and will have user accounts to the web interface.</p> <p>A Customer is responsible for managing messaging issues. For example, the Organisation Administrator is responsible for manually reviewing queued HL7 messages.</p> | | N/A |
| Partner | <p>A Partner integration interacts with PKB APIs on behalf of a Customer. The Partner must first be granted an identifier by PKB. This is a prerequisite to interacting with the APIs.</p> <p>Subsequently, the Partner can interact with PKB APIs if and only if a Customer (organisation or team) chooses to grant access. The Partner will have a level of access bounded by the Customer's level of access.</p> <p>For example, if a team grants access to a Partner, the Partner will not be able to view Patient data which was not available to the granting team.</p> | X | |
| App (incl. SSO) | <p>An App integration interacts with PKB APIs on behalf of a registered PKB user. The App must first be granted an identifier by PKB. This is a prerequisite to interacting with the APIs.</p> <p>Subsequently, the App can interact with PKB APIs if and only if a user chooses to grant access.</p> <p>This is the appropriate architecture for SSO implementations.</p> | | |

Connectivity Information

Overview

Colour any box that applies

| | Customer | Partner | | App |
|-----------------------|---|--|--------------------------|------------------------|
| HL7 Messaging | HTTP basic; Username / Password (org_) | HTTP basic; Username / Password (partner_) | | N/A |
| REST (FHIR/Custom) | N/A | OAuth2; System Client (Tethered Token) | OAuth2; System Client | OAuth2; User Client |

Credentials

Environment: Sandbox

HL7

<https://sandbox.patientsknowbest.com:7443/services/hl7>

Partner

| | |
|---|------------------------------------|
| Username: partner_renal | |
| Password: testing | |
| Issued on: 2020-09-17 | |
| Name | Renal Association |
| Whitelisted IP(s) | N/A for sandbox |
| Interface default time zone | Europe/London |
| Partner grant (defaults) | |
| Default team code | Dependent on granting org |
| Soft-matching | none |
| NHS number status checking | no |
| Auto create | no |
| Partner grants | |
| renal_site1 | Renal Association Site 1 [RAS1] |
| renal_site2 | Renal Association Site 2 [RASite2] |

Test Site Logins

<https://sandbox.patientsknowbest.com>

| Org | Team | User Type | Username | Password |
|---|------|--|------------------------------------|-------------|
| Renal Patient View [<patientview_org>] | | | | |
| | | Organisation Administrator | admin_patientview@pkbtest.com | P4t!3ntv13w |
| Patient Records Team [<patientview_prt>] | | | | |
| | | Team Coordinator | admin_patientview_prt@pkbtest.com | P4t!3ntv13w |
| | | Team Professional | prof_patientview_prt@pkbtest.com | P4t!3ntv13w |
| Nephrology [<patientview_neph>] | | | | |
| | | Team Coordinator | admin_patientview_neph@pkbtest.com | P4t!3ntv13w |
| | | Team Professional | prof_patientview_neph@pkbtest.com | P4t!3ntv13w |
| Renal Association Site 1 [<RAS1>] | | | | |
| Patient Records Team [<patientview_prt>] | | | | |
| | | Patient | charlotte.nelson.1@pkbtest.com | P4t!3ntv13w |
| | | Team Professional | joelinton9@pkbtest.com | Renal2020! |
| Renal Association Site 2 [<RASite2>] | | | | |
| Patient Records Team [<renal_site2>] | | | | |
| | | Patient | sara.perez.1@pkbtest.com | P4t!3ntv13w |
| | | Team Professional | acarroll7@pkbtest.com | Renal2020! |

API Usage

HL7 Messaging

Specs: <http://dev.patientsknowbest.com/home/hl7-api>

Complete one box per trigger event

Example

| | |
|---------------------|--|
| Message | A28 |
| Trigger | New patient created into source system |
| Purpose | To create the new patient in PKB |
| Details | - |
| Corrective workflow | <ul style="list-style-type: none">• A31 to update the demographics |

| | |
|-----------------------|------|
| Risks / issues | None |
| Client-side filtering | |
| Example | |
| | |
| Go-live dates | |

REST - FHIR

Specs: <http://dev.patientsknowbest.com/home/fhir-api>

Complete one box per interaction

Example

| | |
|-------------------------|---|
| Endpoint | GET /fhir/metadata |
| User type | - |
| Trigger | Hello world! |
| Purpose | To retrieve the capabilities of our FHIR server |
| Details e.g. apiRefs | - |
| Corrective workflow | N/A |
| Risks / issues | None |
| Client-side filtering | |
| Example | |
| Go-live dates | |

REST - Custom

Specs: <http://dev.patientsknowbest.com/home/rest-api>

Complete one box per endpoint

None.

Checklist

A selection of checklists; delete as applicable.

HL7: Demographics

Customer has acknowledged, and where relevant tested, that...

| Issue | Comments |
|---|----------|
| ...an A28 and A31 are processed identically. | |
| ...patients are always created into a team. A creation triggered at the org level will create the patient into the default team for that org. Updates to a patient sent from a different team will update the demographics but do not add the patient to that team. | |
| ...the HL7 Null Value ("") must be used during demographic updates to remove an existing field. Blank fields during an update will remain unmodified. | |
| ...PKB does not yet support merges. | |
| ...soft-matching behaves differently for demographic updates. NHS status number is used. See the docs for details. | |
| ...MSH-7 is inspected and compared to the last modification timestamp of the patient's demographics. Stale demographic updates will be silently ignored. | |
| ... the HL7 API has a subset of email manipulation functionality. For example, a first email address cannot be added to an existing medical record. | |
| ...the auto create feature determines whether patient records will be created via non-demographic messages. Disabled by default, this means non-demographic messages will not create new medical records. | |
| ...there are 3 flavours of "NHS number": England & Wales / Scotland / NI. PKB requires the correct AA/TC values to be set and will reject incorrect values based on these. | |

HL7: Laboratory results

Customer has acknowledged, and where relevant tested, that...

| Issue | Comments |
|-------|----------|
|-------|----------|

| | |
|---|--|
| <p>...the content patterns provided match the content patterns supported by PKB.</p> <p>http://dev.patientsknowbest.com/home/hl7-api/messages/oru-r01/laboratory#TOC-Content-patterns</p> | |
|---|--|

HL7: Appointments

Customer has acknowledged, and where relevant tested, that...

| Issue | Comments |
|---|----------|
| ...any virtual appointments (where the patient is not expected to turn up in person) have an appropriate location value set. | |
| ...any appointments which are about the patient, but to which they are not invited, have been handled appropriately. | |
|the HL7 Null Value ("") must be used during S13/S14 updates to remove an existing field. Blank fields during an update will remain unmodified. | |

HL7: Measurements

Customer has acknowledged, and where relevant tested, that...

| Issue | Comments |
|---|----------|
| ...all the measurements they wish to send have had the correct SNOMED code confirmed by PKB and are documented in this Integration Specification. | |

HL7: Partner connections

Customer has acknowledged, and where relevant tested, that...

| Issue | Comments |
|---|----------|
| ...data flows only when authorisation is granted. Consider where the first authorisation will come from after going live. | |
| ...HL7 messages are queued for owning Organisation Administrator. There is no Organisation Administrator for the Partner. | |

| | |
|--|--|
| ...the data point ID namespace is shared with the granting Organisation. | |
|--|--|

HL7: General

Customer has acknowledged, and where relevant tested, that...

| Issue | Comments |
|--|----------|
| ...PKB has support for code sets. The correct code sets have been supplied and checked by the Organisation Administrator. | |
| ...if this is a gainshare project where HL7 credentials are shared with Synertec then the soft matching check will apply to both feeds. Synertec can only support postalCode typically. Postcode does change frequently. | |

REST

Customer has acknowledged, and where relevant tested, that...

| Issue | Comments |
|--|----------|
| ...parameters for OAuth 2.0 POST calls should be in the body of the message, not sent as URL parameters. | |
| ...anti-CSRF state tracking should be used during OAuth 2.0 authorization code grant. | |

REST: Single Sign-on

Customer has acknowledged, and where relevant tested, that...

| Issue | Comments |
|--|----------|
| ...cross-browser testing has been performed as appropriate. | |
| ...users have the ability to trigger a re-pairing. This enables them to fix a significant number of problems without requiring additional support. | |

General

| Issue | Comments |
|------------------|---|
| Testing overview | <Summarise testing performed by customer> |

| | |
|--------------------------|---|
| Connection monitoring | <Summarise customer's ability to monitor the health of the interface> |
| Retries & error handling | <Summarise customer's approach to message retries and error handling> |
| Misc support issues | <Summarise any additional miscellaneous support issues> |

History

| Date | Attendees | Notes |
|------------|-----------|-------|
| YYYY-MM-DD | | |