Apollo extracts GP clinical data from both practice based or centrally hosted systems. The data extraction service is automated and does not require involvement from GP Practice staff following installation.

The following section gives an overview of the main software components that may be required to be installed on a nominated PC or server at the GP Practice:

**Apollo SQL Suite Software**

Apollo SQL Suite is a comprehensive data reporting software that produces a wide range of reports each report typically comprising a series of CSV files. SQL Suite typically uses a local dataset accessed via the clinical system’s API (Application Program Interface) to provide the required data.

**Apollo A3 (Apollo Automated Audit) Client**

A3 (Apollo Automated Audit) software is used to schedule automated data collection and/or automatic query executions (“jobs”) at the practice. This can be configured to run weekly, fortnightly and monthly or on a frequency defined by the data customer.

An A3 Client is installed at the GP Practice, this connects (at an agreed frequency) to the Apollo A3 Server to check for jobs or software / query updates.

SQL Suite is typically configured to execute extracts overnight or on Sundays to ensure execution occurs out of working hours to minimise the impact on the normal operations of the clinical systems.
**Apollo A2 Client**

Apollo A2 Client is the data encryption and delivery software which is used to securely transfer data output files from Apollo SQL Suite to the A2 Server data receiving software. All data is strongly encrypted by a combination of symmetric and asymmetric encryption algorithms (Triple DES and RSA 1024) before transmission, and utilises public & private key pairs unique to each project.

SQL Suite’s data transfer component enables encrypted data to be transferred from source to a designated end point. The data transfer status (including error messages) is returned to the Apollo based central A3 server so support staff can monitor the complete extract process. Log files are created by the application recording execution and file transfer. The solution allows for manually resending, should this be necessary, this too is recorded thus creating a full audit trail of all activity.

**Note:** A2 is a one-way service and transfer of files is initiated only by the transmitting organisation and never by the receiving organisation.

**Summary of Service**

- Fully identifiable, pseudonymised or anonymised datasets can be created. It is possible to provide a patient identifiable dataset within a GP Practice and send an anonymised or aggregated dataset to the nominated third party.
- Variable frequency of data extraction, such as daily, weekly, monthly or ad-hoc. Data extracts can be scheduled to run on any day including Saturday and Sunday.
- A GP can partake in more than one study/provide data for more than one model, extracts from separate projects, can be scheduled to run at different frequencies.
- Fully managed automated extraction service. Apollo software does not require the GP Practice staff to undertake any tasks. (GP staff may be required to arrange access for installation of software through their CCG/CSU/Local IT provider as administration rights will be required).
- Secure encrypted data transfer to end user (via NHS N3 network).
- Changes to dataset can be implemented automatically. As requirements change or new codes are added, queries can be amended and changes implemented automatically. No GP Practice interventions are required.

**Service Benefits**

- Single source for all data requirements regardless of GP Practice system
- Apollo has a proven track record of delivery of data for local, regional, and national studies/projects.
- Apollo project manage implementation from scoping to go-live using recognised methodologies such as PRINCE2, MSP and Agile.
- Apollo utilise innovative distributed edge architecture on an open source SQL database and .net framework
- Apollo provides a fully managed service from implementation to go-live, guiding and advising the customer on the best methods and processes to achieve their goals.
- Assist customers with data specification. Apollo understands the nuances of data between each of the clinical systems and can advise customers on the most appropriate dataset to meet their demands.
- Assist Customers with IG and Consent Models. Apollo is very familiar with IG rules and regulations and will guide customers in obtaining the appropriate consent.
- Remotely monitored support service with 9:00 – 17:00 service desk.
Information Governance

Information Governance forms a key aspect to Apollo’s service. The General Data Protection Regulations set out the rules and guidelines that Apollo must follow to ensure personally identifiable information (PID) is handled and processed in a secure and law-abiding manner. All processes, services, information systems, and relevant information assets are developed, implemented and controlled in a secure and structured manner, and comply with IG security accreditation, GDPR, information quality, cyber security, confidentiality and data protection requirements.

All Apollo staff are appropriately trained in the information governance aspects required for their position within the company. Apollo completes the IG Toolkit accreditation yearly which ensures that policies are reviewed regularly to ensure their relevance and effectiveness. Apollo is currently accredited to the NHS Data Security and Protection Toolkit (2019/20).

Apollo’s policies ensure that all transfers of personally identifiable and sensitive information have been identified, mapped and risk assessed; technical and organisational measures adequately secure the transfer of data. Personally identifiable and sensitive information may be subject to use of pseudonymisation and anonymisation techniques where appropriate or where directed by the Customer.

Apollo follows a strict consent model to ensure appropriate transfer of data from the GP practice.

Individual back-up of local systems and data is not required as in the event of system failure data will be re-bulked from principal supplier systems.

Accreditation

- Apollo is proud to be a GPSOC Lot 2 Supplier and the only organisation to have NHS Digital IM1 accreditation for all four principal GP systems EMIS Web, TPP SystmOne, Vision and Microtest Evolution.
- Apollo is accredited to provide services under the latest version of the NHS Data Security and Protection Toolkit
- Apollo are registered with the ICO (Information Commissioning Office)
- Apollo data extraction software is accredited directly with principal system providers where required.
- Apollo has been awarded ISO27001 certification
- Apollo are compliant with all requirements under General Data Protection Regulations as administrated by an appointed DPO.

Apollo’s data extraction software has been developed over a period of 19 years; it is continually evolving to keep pace with changes to Principal GP clinical system providers’ software including changes from LAN based systems, centrally hosted systems and conformance with latest patient data Information Governance rules.

Apollo is the leading provider of primary care data extraction services in the UK and currently supports c40 healthcare projects. The Apollo Data Extraction Service typically provides data extracts to CSU’s, CCG’s, NHS England, NHS Digital, Public Health and other healthcare providers to enable the data to be used for:

- Risk Stratification Analysis (Anonymised or Patient Identifiable)
- Integrated Care Records
- Shared Health & Care Records
- Child Health Immunisations
- Real World Evidence
- Statistical Analysis
- Compliance/Concordance
- Disease Management
- Medicines Management
- Patient Care Management
- Financial Analysis
- Clinical Research
- Clinical Audits
- Disease Surveillance
- Patient Recruitment
Description of Service Implementation

Implementation of Apollo Data Extraction Services follows a typical process comprising of:

1. Sales Negotiation
2. Customer signing agreed contract and provides a purchase order.
3. Project Initiation using Prince2 methodologies to include DPIA (Data Protection Impact Assessment), stakeholder engagement and consent models.
4. Scoping – Apollo and the Customer will enter a collaboration phase where the detailed data specification requirements are discussed, agreed and signed off.
5. Development of Queries - The individual queries will be developed for each clinical system and tested on Apollo’s in-house systems.
6. Pilot - Pilot on several customers’ nominated GP Practices is required. Data Extracts require to be signed off by the Customer before implementation.
7. Implementation - Apollo will implement the data extract solution to all participating GP practices.
8. Go Live – followed by managed services delivering data at chosen frequency.

Service Management for Data Extract Service

- Apollo will schedule and run data extracts for each customer at the desired frequency.
- Apollo’s Operations Team will monitor and support the service without customer intervention.
- Customers must report missing or incomplete data anomalies to Apollo for investigation within 2 days of receipt of data.
- Apollo will apply service targets to the service, typical EXAMPLE below:

<table>
<thead>
<tr>
<th>Type of Extract</th>
<th>Frequency and Run Parameters</th>
<th>Description</th>
<th>Successful Data Extracts Target (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk</td>
<td>Quarterly</td>
<td>Run Bulk Extract Query once a quarter in place of monthly extract</td>
<td>100%</td>
</tr>
<tr>
<td>Incremental</td>
<td>Monthly</td>
<td>Run Incremental data extracts once a month</td>
<td>90%</td>
</tr>
</tbody>
</table>

- Apollo will provide a regular report (depending on extract frequency) that will indicate status and any issues for each GP Practice data extraction in a simple table (Excel) format.
- Apollo will undertake periodic regular conference calls with operations team as required and will receive periodic visits from the nominated Sales/Account Manager to review service.

Customer Responsibilities

Customers are responsible for:

- Ensuring appropriate project management is assigned and project governance is in place.
- Ensuring all CCG/CSU/GP IT Services/GP Practice and any other third parties/other staff are aware of the project and subsequent setup requirements.
- Obtain consent for the extraction of patient data and for storage of any data sent to them by Apollo from the GP Practice data controller and CCG/CSU if applicable.
- Nomination of a key project contact/project manager who will liaise with other parties and act as point of contact for Apollo.
• Define the data extract, working collaboratively with Apollo to agree detailed technical specification that queries will be developed against
• Nomination of a CSU/CCG IT representative who will be responsible for provision of access for Customer and Apollo to open up firewalls on N3, and other IT technical tasks as necessary to enable the installation and support of both the Customer and Apollo software solutions.
• Provision of a suitable secure endpoint location and a PC or server in which to receive data and for the installation of Apollo A2 data transfer service.
• The GP Practice Manager needs to ensure that the Nominated PC meets the following recommended requirements;
  • Operating System - Microsoft Windows 7 or higher.
  • Free disk space for installation of product and database – 50 GB
  • Processor - 1 gigahertz (GHz) or faster 32-bit (x86) or 64-bit (x64) processor
  • RAM - 2 GB (32-bit) / 4 GB (64-bit)
Appendix 1 – SQLSuite GP Practice Reports

SQLSuite can be provided with a set of pre-determined reports that can be run locally by GP Practice staff if desired. The additional GP practice reports will run alongside the automated data extract service. SQLSuite provides a user interface for GP Practice staff to select and run reports. SQLSuite provides a standard set of reports with data output in the same format, providing consistency across the data from the four main clinical systems.

GP Practice reports can be administered to all practices in a CCG or CSU or other local or regional or national alliance, where automated data extracts are not required to be sent to a third party. Local reporting will work alongside the automatic data extract service.

Apollo will provide bespoke reports for GP Practices. Reports can be created that will allow GP Practice staff to apply bespoke selection criteria. Changes to reports required by changes in legislation, changes to clinical systems, changes applied by external entities like the National Information Board (NIB) and changes to clinical coding can all be accommodated. Reports can be updated, amended and distributed automatically.

GP Practice Report Features

- Simple user interface to select and run reports
- Reports can be updated/amended automatically remotely by Apollo
- Outputs can be created in Excel, graphical, CSV and XML
- Can be used to identify patients to provide input to patient communications Mailing Module
- Can be used for trend analysis, monitoring medication, find patients at risk, check clinical coding, etc.

EXAMPLE GP Practice Reports

Below are EXAMPLES of typical reports that can be provided, and examples of individual reports of that type and examples of selection criteria that can be applied.

1. **Asthma Generic**
   - A register of patients with asthma excluding those who have been prescribed no asthma-related drugs in the previous 12 months.
   - % of patients aged 8 and over diagnosed as having asthma from 1 April 2015 with measures of variability or reversibility.
   - % of patients with asthma between the ages of 14 and 19 in whom there is a record of smoking status in the previous 12 months.
   - % of patients with asthma who have had an asthma review in previous 12 months.

2. **Atrial Fibrillation generic**
   - A register of patients with atrial fibrillation;
   - % of patients with atrial fibrillation diagnosed after 1 April 2015 with ECG or specialist confirmed diagnosis;
   - % of patients with atrial fibrillation who are currently treated with anti-coagulant drug or an anti-platelet therapy.
3. **Cancer generic**
   - A register of all cancer patients defined as a 'register of patients with a diagnosis of cancer excluding non-melanotic skin cancers from 1 April 2010
   - % of patients with cancer diagnosed within the last 18 months who have a patient review recorded as occurring within 6 months of practice receiving confirmation of the diagnosis.

4. **CKD generic**
   - A register of patients with aged 18 years and over with CKD (US National Kidney Foundation: Stage 3 to 5 CKD);
   - % of CKD patients whose notes have BP recorded in the previous 15 months;
   - % of CKD patients with last BP <=140/85 in previous 15 months.
   - % of CKD patients with hypertension who are treated with an ACE Inhibitor or A2 antagonist.

5. **COPD generic**
   - A register of patients with COPD;
   - % of patients where diagnosis has been confirmed by spirometry including reversibility testing;
   - % of COPD patients with a record of FeV1 in previous 15 months;
   - % of COPD patients receiving inhaled treatment in whom there is a record that inhaler technique has been checked in the preceding 15 months;
   - % of COPD patients who have had a current flu vaccination.

6. **CVD PP Generic**
   - A register of patients with a record of CVD PP.

7. **Dementia generic**
   - A register of patients diagnosed with dementia;
   - % of patients diagnosed with dementia whose care has been reviewed in the previous 15 months.

8. **Depression generic**
   - % of patients on the diabetes register and/or the CHD register for whom case finding for depression has been undertaken on one occasion during the previous 15 months using two standard screening questions;
   - In those patients with a new diagnosis of depression, recorded between the preceding 1 April to 31 March, the % of patients who have had an assessment of severity at the outset of treatment using an assessment tool validated for use in primary care.

9. **Diabetes generic**
   - A register of patients with diabetes which specifies type 1 or type 2 diabetes;
   - % of diabetics with BMI recorded in past 15 months;
   - % of diabetics who have HbA1C recorded in past 15 months;
   - % of diabetics who have HbA1C <= 7.5 in past 15 months;
   - % of diabetics who have HbA1C <= 10 in past 15 months;
   - % of diabetics who have retinal screening recorded in past 15 months;
   - % of diabetics who have peripheral pulses recorded in past 15 months;
   - % of diabetics who have neuropathy recorded in past 15 months;
   - % of diabetics who have BP recorded in previous 15 months;
   - % of diabetics with last BP <=145/85 in previous 15 months;
   - % of diabetics with micro-albuminuria testing in past 15 months (excl. patients with proteinuria);
   - % of diabetics who have a record of estimated glomerular filtration rate or serum creatinine testing in past 15 months;
   - % of diabetics who have proteinuria or microalbuminuria who treated with ACE I (or A2 antagonists);
   - % of diabetics with cholesterol recorded in last 15 months;
   - % of diabetics with last cholesterol reading <= 5mmol in last 15 months;
   - % of diabetics who have had a current flu vacc.
10. **Epilepsy generic**
   - A register of patients over 18 receiving drug treatment for epilepsy.
   - % of patients who have a record of seizure frequency in the previous 15 months.
   - % of patients who have a record of medication review involving the patient and/or carer in the previous 15 months.
   - % of patients who have been seizure free for the last 12 months recorded in the previous 15 months

11. **Heart Failure generic**
   - A register of patients with heart failure;
   - % of newly diagnosed heart failure patients who have been confirmed by an echocardiogram;
   - % of patients with heart failure due to LVD who are currently treated with ACE Inhibitors or A2 antagonists.

12. **Hypertension generic**
   - A register of patients with established hypertension;
   - % of hypertension patients who have BP recorded in previous 9 months;
   - % of hypertension patients with last BP <=150/90 in previous 9 months.

13. **Hypothyroidism generic**
   - A register of patients with hypothyroidism;
   - % of hypothyroidism patients with thyroid function tests recorded in previous 15 months.

14. **Learning Disabilities generic**
   - A register of patients with learning disabilities.

15. **Mental Health generic**
   - A register of patients with schizophrenia, bipolar affective disorder and other psychoses;
   - % of patients with schizophrenia, bipolar affective disorder and other psychoses with a review recorded in the preceding 15 months;
   - % of patients on lithium therapy with a record of serum creatinine and TSH in the preceding 15 months;
   - % of patients on lithium therapy with a record of lithium levels in the therapeutic range within previous 6 months;
   - % of patients on the register who have a comprehensive care plan documented in the records agreed between individuals, their family and/or carers as appropriate;
   - % of patients with schizophrenia, bipolar affective disorder and other psychoses who do not attend the practice for their annual review who are identified and followed up by the practice team within 14 days of non-attendance.

16. **Obesity generic**
   - A register of patients aged 16 and over with a BMI greater than or equal to 30 in the previous 15 months;

17. **Organisational Generic Records**
   - Records11: The blood pressure of patients aged 45 and over is recorded in the preceding 5 years for at least 65% of patients.
   - Records15: The practice has up-to-date clinical summaries in at least 60% of patient records.
   - Records17: The blood pressure of patients aged 45 and over is recorded in the preceding 5 years for at least 80% of patients.
   - Records18: The practice has up-to-date clinical summaries in at least 80% of patient records.
   - Records20: The practice has up-to-date clinical summaries in at least 70% of patient records.
   - Records21: Ethnic origin is recorded for 100% of new registrations from 1st April 2015.
   - Records22: The % of patients aged over 15 years whose notes record smoking status in the preceding 27 months, except those who have never smoked where smoking status need be recorded only once.
18. Cervical Screening
  - CS1: The % of patients aged from 25 to 64 (in Scotland from 21 to 60 whose notes record that a cervical smear has been performed in the last 5 years).
  - Medicines Management
  - Medicines11: A medication review is recorded in the notes in the preceding 15 months for all patients being prescribed four or more repeat medicines.
  - Medicines12: A medication review is recorded in the notes in the preceding 15 months for all patients being prescribed repeat medicines.

19. Osteoporosis generic
  - A register of patients with a record of Osteoporosis

20. PAD Generic
  - A register of patients with a record of PAD

21. Palliative Care generic
  - Outputs a register of all patients in need of palliative care/support.

22. Secondary Prevention in CHD generic
  - Outputs:
    - A register of patients with CHD;
    - % of newly diagnosed angina who are referred for exercise testing and/or specialist assessment;
    - % of CHD patients who have BP recorded in previous 15 months;
    - % of CHD patients with last BP <=150/90 in previous 15 months;
    - % of CHD patients with cholesterol recorded in last 15 months;
    - % of CHD patients with last cholesterol reading <= 5mmol in last 15 months;
    - % of CHD patients who have taken antiplatelet or anticoagulant in the last 15 months;
    - % of CHD patients who are currently on beta blockers;
    - % of newly diagnosed MI patients who are currently on ACE Inhibitors;
    - % of CHD patients who have had a current flu vacc.

23. Sexual health generic
  - A register of patients with a record of Sexual Health.

24. Smoking generic Outputs:
  - % of patients with any or any combination of the following conditions: coronary heart disease, stroke or TIA, hypertension, diabetes, COPD or asthma whose notes record smoking status in the previous 15 months. Except those who have never smoked where smoking status need only be recorded once since diagnosis;
  - % of patients with any or any combination of the following conditions: coronary heart disease, stroke or TIA, hypertension, diabetes, COPD or asthma who smoke whose notes contain a record that smoking cessation advice or referral to a specialist service, where available, has been offered within the previous 15 months.

25. Stroke or TIA generic
  - A register of patients with stroke or TIA;
    - % of new patients with a stroke who have been referred for further investigation;
    - % of stroke or TIA patients who have BP recorded in previous 15 months;
    - % of stroke or TIA patients with last BP <=150/90 in previous 15 months;
    - % of stroke or TIA patients with cholesterol recorded in last 15 months;
    - % of stroke or TIA patients with last cholesterol reading <= 5mmol in last 15 months;
    - % of patients with a non-haemorrhagic stroke or TIA who are treated with antiplatelet or anticoagulant medication;
    - % of stroke patients who have had a current flu vacc.