

2022

FAMILY PRACTITIONER SERVICES GENERAL DENTAL STATISTICS NORTHERN IRELAND – ADMINISTRATIVE DATA QUALITY ASSESSMENT REPORT

This initial report highlights and seeks users views on the key outcomes of an in depth data quality assessment of administrative systems from which BSO/FPS Official Statistics (OS) are sourced and produced. Assessment outcomes are detailed in terms of key strengths and weaknesses, and potential sources of error and bias relating to these statistical series.



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Dear User of Family Practitioner Services Statistics in Northern Ireland,

Your views are being sought on our quality assessment report of administrative sources from which family practitioner services statistics in Northern Ireland are produced. This first assessment of administrative sources is based on quality standards published by the UK Statistics Authority. The statistical producer team are continuing to ask for your views on our updated assessment, in terms of process, outcomes and presentation. The official statistics publications to which this assessment report relates are detailed below, with links to the BSO Family Practitioner Services Information Unit website.

[General Dental Services Statistics - Business Services Organisation \(BSO\) Website \(hscni.net\)](http://hscni.net)

Please forward your views on our assessment to:

Information Unit

HSC Business Services Organisation

2 Franklin Street

Belfast

BT2 8DQ

Tel: 028 95363691

E-mail: info.bso@hscni.net

Background

This assessment report highlights and continues to seek users' views on the key outcomes of our data quality assessment of administrative systems from which HSCNI BUSINESS SERVICES ORGANISATION/FAMILY PRACTITIONER SERVICES OFFICIAL DENTAL STATISTICS (OS) are sourced and produced. Assessment outcomes are detailed in terms of key strengths and weaknesses, and potential sources of error and bias.

[UK Statistics Authority \(UKSA\): Assessment of Administrative Sources](#)

This assessment was carried out, and details our findings, to help users of our statistics better understand the range of administrative sources and processes from which our dental statistics are sourced and produced. As our dental statistics are classified as Official Statistics, the assessment was carried out in line with the 'UKSA Regulatory Standard for the Quality Assurance of Administrative Data', as published on 29th January 2015 (see below).

To quote directly from the standard, *"The Authority produced this Standard in response to concerns about the quality of administrative data that emerged during its assessments of statistics on police recorded crime. The Standard recognises the increasing role that administrative data are playing in the production of official statistics and clarifies the Authority's expectations for what producers of official statistics should do to assure themselves of the quality of these data."*

Quality Assurance of administrative data

As explained within the UKSA standard, *"Quality assurance of administrative data is more than simply checking that the figures add up. It is an ongoing, iterative process to assess the data's fitness to serve their purpose. It covers the entire statistical production process and involves monitoring data quality over time and reporting on variations in that quality. Postcollection quality assurance methods, such as data validation, are an important part of the quality assurance process, but can be of limited value if the underlying data are of poor quality. The Authority encourages the application of critical judgment of the underlying data from administrative systems before the data are extracted for supply into the statistical production process. As with survey data, producers need to: investigate the administrative data to identify errors, uncertainty and potential bias in the data; make efforts to understand why these errors occur and to manage or, if possible, eliminate them; and communicate to users how these could affect the statistics and their use."*

Business Services Organisation (BSO) - Family Practitioner Services (FPS)

FPS sits within BSO's Operations Directorate and provides a range of essential business services to Health and Social Care (HSC) organisations, primary care contractors & patients and plays a critical role in the payment of over £800m annually to health professionals in the dental, pharmacy, GP and ophthalmic sectors. It is responsible for making payments to practitioners from the Pharmaceutical, Dental, Ophthalmic and General Practitioner professions in Northern Ireland who are under contract with the HSCB.

FPS maintains the central register of patients registered with General Medical practices in Northern Ireland, which includes issuing medical cards and processing changes such as name, address and doctor. FPS calculates payments made to General Medical and Dental Practitioners, Pharmacists and Community Optometrists throughout Northern Ireland, provides professional advice, support and information to customers and members of the public and maintains the pharmaceutical, dental, ophthalmic and the Northern Ireland Primary Medical Performers lists. FPS also provides the call and recall services for breast, cervical and bowel cancer screening in Northern Ireland.

The FPS Information Unit is made up of statisticians seconded from the [Northern Ireland Statistics and Research Agency \(NISRA\)](#). The in-house statistical team are responsible for producing quarterly and annual Official Statistics for Family Practitioner Services, in accordance with the code of practice for [Statistics](#).

FPS Administrative Systems and Assessment

Almost all of the statistics detailed within the FPS quarterly and annual OS reporting are derived from in-house BSO administrative systems. These systems and the business areas to which they relate are detailed below in summary:

- Medical Registration – National Health Application Infrastructure System (NHAIS)
- Pharmacy – Family Practitioner Services Pharmacy Payment System
- Dental – Family Practitioner Services Dental Payment System
- Ophthalmic – General Ophthalmic Payment System
- General Medical Services – Family Practitioner Services GMS Payment System

The assessment of in-house BSO administrative systems was carried out using the Quality Assurance Toolkit as detailed within the UKSA standard. The matrix approach to assessment advised by the UKSA has two components; namely, separate assessments of public interest in our statistics (low, medium, high) and data quality concern about our statistics (low, medium, high). The outcome of our assessment then determines the types and level of assurance and documentation required to keep our users informed about the quality assurance arrangements in place for the administrative systems from which our statistics are sourced.

As explained within the standard (page 4), “The need for investigation and documentation increases at each level of assurance ‘Basic’ (A1) to ‘Enhanced’ (A2) to ‘Comprehensive’ (A3).” There is also a ‘No assurance’ A0 level to indicate that, “Operational context and administrative data collection by supplier not investigated, managed or documented”. Assessment at this level means that statistics are not being produced in accordance with the Code of Practice for Statistics.

The outcomes of our completed assessment for our dental statistical series sourced from in-house BSO administrative systems are detailed in the sections that follow. Following assessment using the QA Toolkit, the level of assurance was assessed either as ‘Basic’ (A1) or ‘Enhanced’ (A2).

From the UKSA standard, summaries of each of the three possible assessment levels are detailed below:

A1: Basic assurance Statistical producer has reviewed and published a summary of the administrative data QA arrangements

A2: Enhanced assurance Statistical producer has evaluated the administrative data QA arrangements and published a fuller description of the assurance

A3: Comprehensive assurance Statistical producer has investigated the administrative data QA arrangements, identified the results of independent audit, and published detailed documentation about the assurance and audit

These three levels of assurance are applied across a range of four areas relating to administrative data provided for producing official statistics as outlined below:

- Operational context & administrative data collection
- Communication with data supply partners
- QA principles, standards and checks applied by data suppliers
- Producer's QA investigations & documentation

Within each of the sections that follow, presented in summary form is our assessed level of assurance for our statistical series, and the information available as supporting evidence in respect of the four areas above.

Review and Updates

As part of our ongoing commitment to maintain user and public confidence in our dental statistics, the administrative systems from which we source our data will be reviewed annually, or as required in line with planned changes to administrative systems. Reviews will be through formal consultation with data providers regarding changes/amendments to administrative systems which might then impact on our assessment of data quality concerns and changing public interest in our statistics. Should a revised assessment result in an

increased or a decreased level of assurance, we will then update our assessment report for relevant statistical series. Users will be notified of revisions/updates to this report at the earliest opportunity, probably at the same time as publication of the next release of our quarterly or year-end statistical report.

General Dental Statistics

General Dental Statistics present information on patients registered with a General Dental Practitioner in Northern Ireland, General Dental Practitioners (GDS), Dental Practices, BSO Payments processed on behalf of the Health and Social Care Board (HSCB) towards the overall cost of GDS Services, and UK Comparison data.

A number of administrative sources are used in this production and are listed below:

Family Practitioner Services Dental Payment System

The Dental Payment System, which resides with the FPS (Family Practitioners Service) unit, manages Dental patient registrations. It also includes all health service dental treatments carried out in Northern Ireland through the General Dental Services Regulations that are submitted by General Dental Practitioners to BSO for monthly payment. Information does not include any dental treatments delivered by Trust based dental services or any treatments carried out privately by health service dentists.

The Dental Payment Team within FPS is responsible for:

- the monthly payments to primary care General Dental Practitioners (dentists) for Health Service treatment carried out in Northern Ireland that are submitted to BSO;
- processing prior approvals for a number of specific dental treatments;
- maintaining the statutory Dental List.

Statisticians in the FPS Information Unit use FPS Dental Payment System data as the main source for published statistical outputs. This is combined with other data sources i.e. National Health Application and Infrastructure Services (NHAIS), Common Practitioner Model and the NISRA Central Postcode Directory to provide the following output:

- Dental Practitioners by age, gender and geographical location;
- Dental Practices by geographical location;
- Patients registered with a General Dental Practitioner in Northern Ireland by age, gender and geographical location;
- Treatments provided to patients by gender, age and geographical location;
- HSCNI payment towards Dental Services i.e. payments that FPS has processed on behalf of Health and Social Care Board (HSCB) towards the overall cost of Dental Services in Northern Ireland, by geographical location.

National Health Application and Infrastructure Services (NHAIS)

The NHAIS system, which resides with the FPS (Family Practitioners Service) unit, manages GP registrations and payments, GP patient lists and their demographics including a record level list of all persons on the GP registered Patients index (whether living, dead or gone

away). It also holds information on a patient's entitlement to primary care in Northern Ireland.

The Registration Team within FPS is responsible for:

- the registration and transfer of patients onto and between GP Practices within Northern Ireland and the rest of the UK,
- the transfer of medical records between GP Practices within Northern Ireland and the rest of UK, and
- the archiving of Medical Records of patients no longer registered with a GP Practice in Northern Ireland.

Statisticians in the FPS Information Unit link the Dental Payment System data to the NHAIS data (see above) in order to publish demographic breakdowns for dental patient registrations/treatments such as age, gender and geographical location.

Common Practitioner Model (CPM)

The CPM, which resides with the Professional Support Team, manages the General Dental Services contract list. It includes information on Dentist demographics, the Dental Practice to which they are assigned, their status at the practice. The CPM also holds information on Dental Practices including name, address, unique identifier, contact details etc.

The Professional Support Team within FPS are the administrators of the CPM and members of the team are authorised to make changes to front end of CPM (e.g. adding, amending and removing contracts). Back end changes are made by ITS.

The CPM is the data source for General Dental Practitioner (GDP) headcounts by Age, Gender and Geographical Location, and, counts of GP Practices by Geographical Location using the Central Postcode Directory. Dental Payment System and CPM data is combined along with NISRA Mid-Year Population Estimates and Population Projections to produce statistical outputs on Number of GDP's and Dental Practices per 100,000 Registered Population; proximity of patients to a Dental Practice and to inform statistics on BSO Payments towards Dental services.

Quality Assessment

Table 1 below details the outcome of our assessment of General Dental Statistics using the matrix assessment toolkit as explained in the previous section (pages 5 and 6), in terms of data quality concern and public interest. Dental Registrations and GDS Workforce statistics were typically assessed as Low for data quality concern and Medium for public interest, indicating that a low level of assurance is appropriate, which is A1 on our matrix classification. Dental Treatment and Payment Statistics were typically assessed as Medium for data quality concern and Medium for public interest, indicating that a medium level of assurance is appropriate, which is A2 on our matrix classification.

Table 1: Assessment of General Dental Statistics

Statistical Theme	Admin Source	Data Quality Concern	Public Interest	Matrix Classification
Dentists Practitioners (GDS) Headcount by Age, Gender and Geography	FPPS_D, CPM	Low	Medium	A1
Dentists Practitioners (GDS) per 100,000 resident population by Geography	FPPS_D, CPM, CPD, MYPE	Low	Medium	A1
Dental Practices (count and per 100,000 resident population) by Geography	FPPS_D, CPM, CPD, MYPE	Low	Medium	A1
Dental Patient Registrations (Count & Percentage of Population Registered) by Age, Gender and Geography	FPPS_D, NHAIS, CPD, MYPE	Low	Medium	A1
Dental Registration Rates	FPPS_D, NHAIS, MYPE	Low	Medium	A1
Dental Treatments by Age, Gender and Geography	FPPS_D, NHAIS, CPD, MYPE	Medium	Medium	A2
BSO Payments processed on behalf of HSCB towards cost of Dental Services by Geography	FPPS_D, CPD, MYPE	Medium	Medium	A2
Population weighted distance to nearest Dental Practice	FPPS_D, NHAIS, CPD, CPM	Low	Medium	A1
GB Comparisons	FPPS_D, NHAIS, MYPE, GB Data	Low	Medium	A1

Operational Context and Administrative Data Collection

FPS Dental Payment System (FPPS D)

In Northern Ireland residents can register for Health Service Dental Treatment with a dentist if they have a medical card which will have a patient's Health and Care Number (HCN) on it. The HCN provides a unique identifier that allows the various elements of information used in the delivery of clinical and social care services to be matched to the correct individual patient, enabling analysis to be provided using demographic data

The FPS Dental Payment System details all health service dental treatments carried out in Northern Ireland through the General Dental Services Regulations that are submitted by general dental practitioners to the BSO for payment. It also includes the management of GDP registered lists and all other payments made to GDPs each month. Information is not held on any dental treatments delivered by Trust based dental services or any treatments carried out privately by health service dentists.

The new FPPS System was developed by KAINOS and BSO ITS in 2015 and hosted on the BSO ITS data centres. It provided a payment system for each of the three main contracted bodies (Pharmacists, Dentists, GPs) using a common technology platform and approach for each which incorporated greater validation than the previous dental system. This new system meant claims which were payable in the old payment system may not pass the stricter validation in the new system.

The main elements of the solution are:

- External web portals for each contracted body.
- Internal web portals for BSO for each contracted body.

- Shared components where common functionality exists, such as login, payment creation, logging, etc.
- Shared K2 workflow engine and services layer.
- Separate payment databases for each contracted body, albeit with common schema elements.

The FPPS System enables payments to be made by:

- collating claims received through existing systems,
- receiving claims directly through external online entry or manual internal entry from paper submissions,
- calculating payments due in respect of claims based on contract rules,
- calculation of other payments due under the contracted schemes and employment rules of each professional entity.

The new dental payment system includes previous treatment details from the old system however this is incomplete due to historical data migration issues. The new payment system carries out a number of validations to ensure the payment claims submitted meet the criteria laid down within the Statement of Dental Remuneration. It will check that the claims are not duplicates, the dentist is eligible for payment, and cross-check the treatment against the previous history of treatments for each patient to ensure the claim is eligible to be paid etc. The new payment system had many technical issues in the first 18 months which may have delayed payments on certain types of claims until those issues were resolved. The previous issues identified primarily related to internal system recording processes with the most significant issue relating to multiple ID codes sometimes being assigned to the same patient. This potentially could have led to some patient registrations being double counted however that particular coding field is not used in the production of our statistics. Instead we use Health and Care Number when extracting these data, which is unique to each patient, so the double counting issue is avoided. As such this does not affect any comparisons between current and past published statistics nor the quality of data included in our publications. The quality of the dental data is continually improving. As issues are addressed in the system, and where possible the historical data is corrected, payments are either returned to or taken from dentists to manage the inaccuracies.

The main source of data is from Dental surgery systems via [Electronic Data Interchange \(EDI\)](#). This is a two way flow of information between the BSO and the Dental Practice with the ability to add, delete and amend patient, treatment and dentist information at either side subject to validation.

Claims are also submitted via the [FPPS Dental Portal](#) which is used in the dental service payment process. Although Dental payment claims can be submitted through these methods, practices also submit claims via paper (HS45). Whichever method is chosen, all

data are entered onto the dental payment system in a standard way either by the dentist directly (online option) or by BSO staff.

Regardless of submission method they all enter the FPPS dental system and are validated and it is at this stage it is decided if they enter K2 workflow. Those claims that don't automatically pass validation go to the K2 workflow and are reviewed by either the Dental Payment Team, Dental Advisors or Professional support. Examples that may enter the K2 workflow for review are:

- Prior approvals
- Null HCN on claim
- Multiple Submissions
- Tooth/mouth failed status check
- Discretionary fees
- Block Transfers

At this point those claims may be approved or unapproved for payment.

BSO have a range of service delivery targets (KPIs) which are monitored using the Dental payment system. These include:

- 96% of claims paid within month
- 95% of claims automatically paid
- 99% accuracy based on claims paid
- Paper claims to be processed within 22 days

The Dental Payments team within FPS is responsible for processing these claims supplied by the dental practices for monthly payments to General Dental Practitioners following validation. To ensure all claim data is updated and recorded accurately, the BSO have detailed process maps and accompanying Standard Operating Procedures (SOP's) outlining the steps for inputting HS45 paper claims, maternity payments etc. These process maps and SOP's have been made available to Statisticians.

At the end of any given month, 98-99% of claims are paid with around 94-96% paid automatically.

NHAIS

In Northern Ireland residents can register with a GP for the provision of general medical services and advice, depending on their settlement status. For example, those born in Northern Ireland provided with a medical card at birth are normally entitled to register with a GP and move between GPs in Northern Ireland without any restrictions.

Persons coming to Northern Ireland to live are required to meet the ‘Ordinarily Resident Test’ in Northern Ireland, i.e. you must be lawfully residing in Northern Ireland and have an identifiable and settled purpose here. To satisfy this test you must have indefinite leave to remain in the United Kingdom (UK), and provide proof of your settled purpose e.g. to work, and confirmation of your Northern Ireland address. An eligible visitor is a visitor to Northern Ireland who is lawfully present in Northern Ireland and satisfies a relevant exemption from charges such as students, workers and asylum seekers in accordance with the [Health and Personal Social Services Provision of Health Services to Persons Not Ordinarily Resident Regulations \(Northern Ireland\) 2015](#).

NHAIS is the system used to register the entitled patients/clients to state funded health and care services in Northern Ireland, the management of GP lists and to calculate the Global Sum payments¹ each quarter. It captures details of the relationship between patients, GPs and their practices. Registrations are collected from GP systems through dedicated links and/or by contacting BSO directly. The Registration team within FPS is responsible for maintaining GP Registered Patients Index. NHAIS also contains data on previously registered patients however this is incomplete due to historical data migration issues.

A significant number of bodies such as NISRA, ONS, The Electoral Office and the GRO rely on data from NHAIS to perform their functions; extracts of the NHAIS index are used to provide these bodies with the data they need to inform decision making in these other bodies.

The main source of data is from GP systems via GP Links. This is a two way flow of information via an Electronic Data Interchange between the BSO and the GP Practice with the ability to add, delete and amend patient records at either side subject to validation. Registration Links has sufficient functionality to ensure that both the GP Practice and NHAIS systems are kept in line with one another.

The Health and Social Care Board (HSCB) also operate two way information flow with BSO by way of emails, spreadsheets and databases to inform medical registration data. The General Register Office (GRO) provide death data to BSO; notification of these deaths may already have occurred from other sources but the GRO data is the official source. The Health and Care team operate a two way flow of patient information with the BSO including registration status. NHS Scotland and England also operate a two way flow of information with the BSO in relation to patients who have moved between jurisdictions.

The Registration team within FPS is responsible for maintaining GP Registered Patients Index. To ensure all registration data is updated and recorded accurately, the BSO have detailed process maps and accompanying Standard Operating Procedures (SOP’s) outlining the steps for completing medical registrations, adjustments, deductions etc. These process maps and SOP’s have been made available to Statisticians.

¹ The Global Sum Payment is the payment to GP practices for services provided to their registered patients.

At the end of any given month there are between 2,000 and 3,000 registrations that are outstanding (have been entered on to the system but have not been completed). Of these approximately 80% are from either GB or non-UK countries. This lag is normally as a result of additional documentation that is required to complete the registration and a number of these may be deemed not entitled. Less quantifiable is the number of registered patients who no longer reside in Northern Ireland but have left without notifying their GP or BSO.

Common Practitioner Model (CPM)

The Common Practitioner Model is a user interface to facilitate BSO users to add, edit and view details of practices, employees and their contracts. The dental data held on CPM is the “Dental List” and allows dentists to submit claims to the dental payment system. A contractor must be on CPM to enable payments to be made to them as CPM feeds into the FPPS Payment systems. Prior to CPM, each discipline used to have separate databases (Denlist, PMPL, Medlist) but it was agreed that these should be brought together to make the best use of resources. The Health and Social Care Board is the organisation which holds the contracts with dentists to provide General Dental Services within a practice. Therefore any dentists looking to provide General Dental Services are required to complete the HS48 application to apply to HSCB for a Dental List Number. More information on when a HS48 should be completed and what information is collected can be found here: [New Entrants to the NI Dental List \(hscni.net\)](#). Once the information supplied on the application is signed off by the HSCB, this is then passed to the Professional Support team within BSO for input into CPM.

The Professional Support team within FPS are the administrators of the CPM and members of the team are authorised to make changes to the front end of the CPM. Back end changes are made by ITS. Information such as GDC number, name, DOB, sex etc. are collected about the dentists, along with the Dental Practice to which they are assigned, their status at the practice etc. Once this data is entered into CPM, it generates a cipher for them and links them to a dental practice. It is this cipher number that allows them to submit claims to the payment system and order prescriptions. The CPM also holds information on Dental Practices including name, address, unique identifier, contact details etc. CPM also generates a practice number for new surgeries.

The Professional Support team are also responsible for removing dentists from the Dental List when they leave a practice/retire or transfer to another practice. Dentists are required to provide 3 months’ notice to the HSCB and BSO plus complete a HS50 form for the block transfer of patients.

BSO have service delivery targets (KPIs) which are used to monitor CPM. The KPIs measure the number of days taken to issue a cipher.

To ensure all data is updated and recorded accurately, the BSO Professional Support Team have detailed checklists and detailed Standard Operating Procedures (SOP's). These have been made available to Statisticians.

Communications with Data Supply Partners

FPS Dental Payment System (FPPS D)

NISRA Statisticians within BSO can access Dental Payment information directly via tables held in Microsoft SQL Server Management Studio which sits on a secure network server within BSO. This data is only accessible following a written request to IT within BSO and is only granted following managerial approval. These SQL tables are created by IT staff within BSO in conjunction with other BSO business areas and tested prior to being used. IT staff have also set up an automated process so that certain SQL tables gets updated nightly.

Statisticians within FPS Information Unit work closely with the BSO FPS Dental Payment team, BSO Data Analysts and relevant IT staff which helps facilitate frequent informal and formal contact to discuss/review statistical methodology and requirements (advice on variable list and functionality) as well as data quality issues. Tailored guidance has been circulated and formal presentations given to ensure that data providers are aware of their responsibilities under the Code of Practice for Statistics and particularly with regard to pre-release practices including that figures or a trend in the figures is not publicly released ahead of publication.

Statisticians within FPS Information Unit are also represented on the FPPS Service Review Group. This was formed to coordinate the FPPS solutions maintenance and management going forward when the new system was introduced. Some objectives of this are:

- Work with FPS Solutions Team in the recording, monitoring and resolution of issues and problems with FPPS System as and when they arise
- Identify and agree changes to FPPS System and establish business justifications for any additional spend
- Prioritise system developments in conjunction with business need
- Co-ordinate any updates and changes to FPPS System as and when necessary
- Compile and deliver a report of their activities to the FPS and ITS ADs on at least an annual basis.

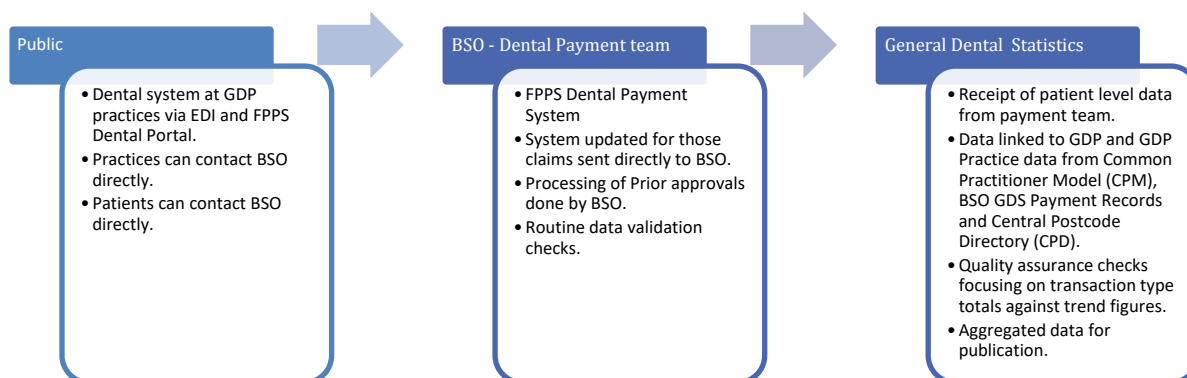
Also the BSO Analysts Liaison Group (ALG) provides an information sharing forum between the NISRA statisticians based in FPS Information Unit and the data analysts embedded in each of the FPS payment teams. It can also be used to commission and take forward

projects that will be of mutual benefit to the information function within FPS. Some objectives of this group are:

- To inform each other with regard to any planned changes to existing data tables, development of new data tables or implementation of new/updated coding classifications.
- To highlight any data quality issues that may have been unearthed, consider possible resolutions and to discuss ways to improve FPS data quality in general.
- To update each other as to how FPS information is being used both within the payment teams, as part of projects and to develop Official Statistics.

Communication between the BSO FPS Dental Payment team and Dental Practices is regular. Detailed guidance on submitting dental claims for payment is provided to Dental Practices. The BSO FPS Dental Payment team also monitor volumes and processing times to ensure processes are efficient and KPI targets are met.

Flow:



NHAIS

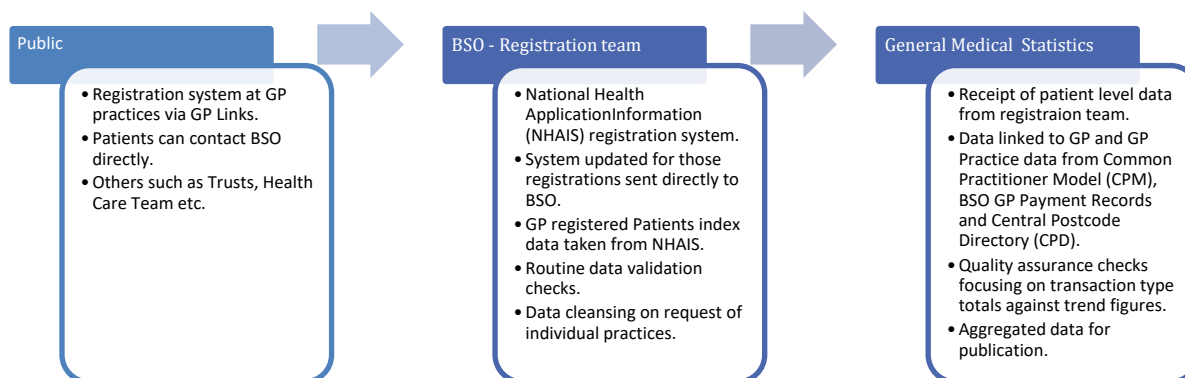
NISRA Statisticians within BSO can access GP Registration information directly via tables held in Microsoft SQL Server Management Studio which sits on a secure network server within BSO. This data is only accessible following a written request to IT within BSO and access is only granted following managerial approval. These SQL tables are created by IT staff within BSO in conjunction with other BSO business areas and tested prior to being used. IT staff have also set up an automated process so that certain SQL tables are updated nightly.

Statisticians within FPS Information Unit work closely with the BSO FPS Registration team and relevant IT staff which helps facilitate frequent informal and formal contact to discuss/review statistical methodology and requirements (advice on variable list and functionality for future NHAIS replacement, for example) as well as data quality issues. Tailored guidance has been circulated and formal presentations given to ensure that data

providers are aware of their responsibilities under the Code of Practice for Statistics and particularly with regard to pre-release practices.

Communication between the BSO FPS Registration Team and GP Practices is regular. Detailed guidance on the registration process is provided to GP Practices with volumes and processing times monitored to ensure processes are uniform and efficient.

Flow:



Common Practitioner Model (CPM)

For the Dental list applications the Data suppliers are HSCB. These applications are then emailed to ProfessionalSupportTeam@hscni.net. Before entering the application details onto CPM, staff are required to check the application has a cover sheet signed and dated by an HSCB signatory.

A Standard Operating Procedures document has been developed for use by BSO staff to support governance procedures around issuing a dental list (ds number). It provides instructions on the following:

1. Accessing and Searching
2. Recording a new Dental surgery employee on CPM
3. Adding an employee contract to facilitate the issue of a Dental List number
4. Editing employee details
5. Taking a dentist offlist
6. Reinstating a dentist

Stakeholders are then advised via email of changes to the Dental List e.g. new dentist, retiring dentist, change of surgery address.

Statisticians within FPS Information Unit are also represented on the FPPS Service Review Group. If any changes are required to CPM, this group will agree, monitor and resolve problems with it as and when they arise. If at any point the HSCB changed their process regarding how dentists are added to the Dental List, BSO would have to fall into line and change theirs which would possibly mean changes to CPM. These changes would go through

this FPPS Service Review Group and prioritise system developments in conjunction with business need.

Quality Assurance Principles, Standards and Checks by Data Supplier

FPS Dental Payment System (FPPS D)

There are numerous checks carried out on Dental claim and prior approval data to minimize the risk to data quality both at source e.g. GDP Practice and upon receipt of data in the BSO.

Checks done at source include claims meeting the provisos set out in the Statement of Dental Remuneration (SDR), checks against the patient's previous dental history and all required fields are completed. Once a claim or prior approval enters the FPPS system via 1 of the 3 methods, EDI, paper (keyed to the portal by BSO staff) or Portal (keyed by dentist) they are validated and it is at this stage it is decided if they enter K2 workflow.

Those claims that don't automatically pass validation go to the K2 workflow and are allocated to a different worklist depending on the characteristics such as validation errors, number of submissions, number of interactions, observations or previous actioner. They are reviewed by either the Dental Payment Team, Dental Advisors or Professional support.

Issues that arise and that enter the K2 workflow are:

- Prior approvals
- Null HCN on claim
- Multiple Submissions
- Tooth/mouth failed status check
- Discretionary fees
- Block Transfers

At this point those claims may be approved or unapproved for payment.

A Counter Fraud and Probity Unit within BSO look into fraudulent claims, be this via monitoring reports from Units within BSO or through the Counter Fraud helpline. On occasions Information Unit have also identified potential fraud cases through routine or ad-hoc work and this had been passed on to Probity and also fed back to the Dental Payment team should the need arise that an additional validation check should be added to the payment system.

Staff within FPS provide high level aggregated data to feed into Key Performance Indicators (KPI'S) to direct attention to areas of the Registration process that require attention/intervention. This includes information on volumes and processing times of both claims paid and accuracy of payments.

NHAIS

There are numerous checks carried out on Patient Registration data to minimize the risk to data quality both at source e.g. GP Practice and upon receipt of data in the BSO. Types of checks include checking for duplication against pre-existing registration details on internal and external systems, checking that all required fields are complete and checking supporting documentation such as proof of address where appropriate. Issues that arise are duplicate registrations, poor data entry, incorrect demographic details e.g. postcode etc. Quality indicators include no duplication of patients, 100% check of all new patient registrations at BSO side, and, validation of registration work by management.

Further to checks carried out at time of transaction as detailed above data are cleaned at the end of each quarter by the BSO using, for example, the following checks:

- checking countries of origin/destination are complete and the correct codes have been assigned,
- ensuring dates are in the correct format,
- ensuring that information has been collected for all records, and
- checking that reasons for movements are standardized across the records.

When NHAIS was first implemented in NI in 2004-2006, BSO Established a Data Quality Team to help tackle GP list inflation. Using NHAIS information, Dental information and the Electoral Roll, GP Practices were visited to establish if registered patients were accessing NHS treatment. Outcomes included patient detail changes such as address updates, patients being classified as 'whereabouts unknown/left NI' and subsequent removal, and, BSO writing directly to the patient with removal being a potential outcome. Unfortunately, no documentation exists quantifying the number of records that were cleaned/removed as a result of this exercise. Currently the BSO do not currently have a data quality team. A project is underway to replace the NHAIS system and as part of this project FPS Statisticians and FPS Registration team have sought assurances that a data cleanse exercise will take place after migration of data to the new system to ensure data held and future data input is in a consistent format.

The BSO Registrations team along with external consultants carried out a Kaizen (lean) Project in 2018 with focus on improving the processing of patient registrations. Actions that followed included data collection guidance booklets and posters being issued to GP Practices, ongoing training provided to GP Practice Managers, and, actively monitoring registration processing times through Key Performance Indicators.

A Counter Fraud Unit within BSO look into fraudulent registrations and claims, and the Access to Health Team in BSO carries out further post registration eligibility checks.

Statisticians within FPS provide high level aggregated data to feed into Key Performance Indicators (KPI's) to direct attention to areas of the Registration process that require attention/intervention. This includes information on volumes and processing times of both complete and incomplete registrations (available at Practice Level and by registration type).

Common Practitioner Model (CPM)

Before entering the application details onto CPM, HSCB staff have to provide a signed and dated cover sheet along with the completed HS48 form to the Professional Support Team. If this is not provided it is referred back to the HSCB. If data such as address or details of the dentist are not correct these are also referred back to HSCB.

In order to minimise risk when Professional Support Team register a dentist/dental practice or edit changes on CPM, this is checked by another member of staff for accuracy. Trial payments are also carried out prior to the final dental payment as this would highlight inaccuracies if dentists were not linked to surgeries properly.

During the data collection process, staff within the HSCB carries checks on the application form. In addition, internal audit and external auditors carry out checks on the data within CPM.

Producers Quality Assurance Investigations and Documentation

FPS Dental Payment System (FPPS D)

As the main source of Dental Registration and Treatment data is independent contractors, statistical producers' ability to influence the data collection quality assurance is more limited than would be the case if we were dealing with other public bodies. Influence involves providing advice on data quality issues uncovered and proposing solutions.

The main validation checks on Dental Data within BSO are carried out by the Dental Payment and Data Analyst teams prior to import of data into SQL tables used by statistical producers. On a quarterly basis data held in Microsoft SQL Server Management Studio is run to produce official statistic outputs. As part of this process there are checks to ensure that data is robust such as comparing counts of Registrations, Dental Treatments, Claims and Practitioners etc with trend figures for consistency. While there is no set measure of tolerance in terms of quarterly/annual differences, records of back series comparisons help the statistical producer to judge if particular data is out of kilter with historical trend. If significant anomalies in the data are found, SQL code used is first reviewed and if correct,

this is then fed back to the Dental Payment and Data Analyst Team to ensure that all data has been captured correctly and an explanation provided for the change in trend.

FPS Statisticians are currently creating detailed SOPs for the above processes and checks. In addition, official publications include information on Data sources, Definitions and User Guidance to help users use the data.

NHAIS

As the main source of GP Patient Registration data is independent contractors, statistical producers' ability to influence the data collection quality assurance is more limited than would be the case if we were dealing with other public bodies. Influence involves providing advice on data quality issues uncovered and proposing solutions. The HSC R1 form used to capture GP Patient Registrations at contractor side was designed with the aid of statisticians to ensure that all relevant data was captured in a consistent format to serve both primary and secondary purposes.

The main validation checks on GP Patient Registration Data within the BSO are carried out by the Registrations team prior to import of data into SQL tables used by statistical producers. On a quarterly basis when data is imported into tables held in Microsoft SQL Server Management Studio from NHAIS code is run to produce outputs. This code includes checks to ensure that data is robust such as comparing counts of Registrations, Deductions, Amendments etc with trend figures for consistency as well as quantifying data gaps e.g. country of origin for non-UK registrations. While there is no set measure of tolerance in terms of quarterly/annual differences, records of back series comparisons help the statistical producer to judge if particular data is out of kilter with historical trend. If significant anomalies in the data are found, this is first fed back to the IT Team responsible for producing the SQL Tables to ensure that all data has been captured correctly.

Issues identified with individual records are fed back initially to the BSO Registrations team for investigation and if necessary to the data supplier. Examples include:

Missing country of origin data is quantified and fed back to FPS Registration team to trigger manual searches against registration forms to populate the missing data.

Issues arising from GRO Death data not matching NHAIS data are fed back to the BSO Registrations team who will investigate and if required communicate back to the data supplier.

Overall counts of Registered Patients are checked against Global Sum payment calculation lists to ensure that all patients are allocated to the correct practice and that relevant practices are included. Practice data comes from the Common Practitioner Model (CPM) which serves many purposes and for administrative or clinical reasons a practice may

appear still functional on CPM e.g. to allow for outstanding payments or test results to be returned. Checking against Global Sum data ensures that only active practice data is included in published statistics for a given point in time.

Statisticians also carrying out hierarchical matching of NHAIS addresses against the Land and Property Services Pointer Address List to create a Master Address File that includes a Unique Property Reference Number (UPRN) for each address recorded. However, the majority of data cleansing happens outside the NHAIS system.

FPS Statisticians have created detailed SOPs for the above processes and checks.

Common Practitioner Model (CPM)

As the administrators of CPM are the Professional Support Team and the data suppliers are the HSCB, statistical producers' ability to influence the data collection quality assurance is more limited. Influence involves providing advice on data quality issues uncovered and proposing solutions.

The main validation checks on CPM within BSO are carried out by the Dental Payment through trial payments as this would highlight inaccuracies if dentists were not linked to surgeries properly. This is a live system which statisticians have access to via Microsoft SQL Server Management Studio tables. On a quarterly basis data held in Microsoft SQL Server Management Studio is run to produce official statistic outputs. As part of this process there are checks to ensure that data is robust such as comparing counts of Dentists and Dental Practices with trend figures for consistency. While there is no set measure of tolerance in terms of quarterly/annual differences, records of back series comparisons help the statistical producer to judge if particular data is out of kilter with historical trend. If significant anomalies in the data are found, SQL code used is first reviewed and if correct, this is then fed back to the Professional Support Team/Dental Payment to ensure that all data has been captured correctly and an explanation provided for the change in trend.

Strengths

FPS Dental Payment System (FPPS D)

- Dental Registrations and Dental Treatments carried out in the HSC is a comprehensive source of information that can be used as an indication of Oral Health in Northern Ireland using demographic characteristics of patients at Geographical Level. It also helps inform the official NI Mid-Year Population Estimates by showing that a person has been active within the health service in a specified time period.

- The data are used to inform payments to contractors and hence are subject to extensive scrutiny and periodic audit.
- Data are collected in a consistent format using the Dental Portal, EDI or Paper submission which contains detailed completion guidance/training along with relevant links and contacts. (<https://bso.hscni.net/directorates/operations/family-practitioner-services/dental-services/contractor-information>)
- Unit record data are available, allowing patient level matching and a greater depth of analysis to be undertaken.
- Dental data are subject to monthly KPI reporting by BSO. This ensures that focus on data quality within BSO is maintained on an ongoing basis.
- Data suppliers and producers are in regular communication to aid understanding of processes and facilitate resolution of issues.
- These data provide policy makers with the necessary information to formulate and evaluate health services and are helpful in assessing the effectiveness of resource allocation in providing services that are fully responsive to patients' needs. Additionally, dental information is used to inform the media, special interest groups and academics and to answer ad-hoc queries from the public.
- Data are published not only within the annual publication, but are also available in quarterly downloadable Excel spreadsheets that allow more detailed and historical analyses of data to be undertaken.

NHAIS

- The GP Registered Patients Index is a comprehensive source of information that can be used to present demographic characteristics of patients at Geographical Level.
- The data are used to inform payments to contractors and hence are subject to extensive scrutiny and periodic audit.
- Data are collected in a consistent format using the [HSC R1 form](#) which contains detailed completion guidance along with relevant links and contacts. GP Practices are also provided with additional guidance and training to aid standard completion of the form.
- Unit record data are available, allowing patient level matching and a greater depth of analysis to be undertaken.

- The process for collection, quality assurance and storage of GP Registered Patient data has been recently audited and audit recommendations are being actioned.

Common Practitioner Model (CPM)

- A dentist can be traced using any data on CPM such as name, GDC Number, practice address.
- The required data is not onerous to input.

Weaknesses

FPS Dental Payment System (FPPS D)

- Data is submitted by multiple contractors (approx. 1,100 dentists) via one of three submission formats so possibility for errors but this is mitigated against by all of the various checks and validation in place.
- Not all dental treatments are collected by BSO. This data does not cover private work or secondary care activity including work carried out by the Community Dental Service.
- A dentist can submit a treatment for payment up to 6 months after the end date of the treatment. Therefore breakdown of treatments by financial year are based on the payment year and this is not necessarily the year it was carried out.
- Small proportion of unknowns in our demographic/geographic analysis each year due to not getting a match of the HCN on the dental claim with NHAIS. The number of unknown is small and has reduced over the last few years.
- Historical data from the old dental payment system (pre 2015) was migrated across however this data went through less stricter validation for payment. This data is used only though to support projects and is improved as residual issues come to light and are corrected.

NHAIS

- Not all outflows are measured fully by the GP Registered Patients Index as they require the patient to notify the GP or BSO.

- It is assumed that there is a lag between the date of arrival in Northern Ireland and appearing on the GP Registered Patients Index. Similarly, it is assumed that there is a lag between leaving Northern Ireland and deregistration.
- Free text input of data in the existing system can lead to some error and inconsistencies but this will only have minimal impact on the overall statistics.
- The GP Registered Patients Index is subject to list discrepancy of approximately +5%. However this is only a weakness if using to inform Northern Ireland Population counts but remains an accurate count of number of live GP Registrations.

Common Practitioner Model (CPM)

- Dentists need to keep BSO and HSCB up to date if their details change. They are required to complete paperwork and give three months' notice, if they move surgeries, or if their practice changes address.