

Scottish National Audit Programme

Demonstrating the value of national clinical audit

A Management information release for Scotland

Publication date: 10 December 2024





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Foreword

The Scottish National Audit Programme (SNAP) is integral to the Scottish Government's aim to promote safe, effective and person-centred healthcare in Scotland. Through its robust and recognised governance process, SNAP reduces variation in care and supports quality improvement, ensuring value, visibility and effectiveness nationally.

Good clinical engagement across the programme and building stronger links with lived experience communities has enhanced the programme's effectiveness in closing the audit loop and supporting NHS Boards to deliver their SNAP action plans. This has also led to benefits to policy teams in being better connected to the data underpinning clinical practice in their policy area.

The Scottish Government National Audit Programme Board (Health) (SGNAPB(H)) has oversight of SNAP, providing strategic ownership within Scottish Government ensuring it guides and advises the programme as well as enabling greater rigour in accountability.

We do this by working in partnership with stakeholders to audit clinical care.

We maintain a wide range of national clinical audits, many of which are speciality-based and involve clinical, government and voluntary sector stakeholders.

New audits have been commissioned to extend the programme to support service delivery in other clinical priority areas with the SNAP governance process providing actionable assurance that service variation is tackled directly with providers.

My thanks go to the members of the Programme Board for their invaluable support and contributions over the last year.

Professor Marion Bain

Deputy Chief Medical Officer

Chair, Scottish Government National Audit Programme Board (Health)

Introduction

The Scottish National Audit Programme (SNAP) is the cornerstone of clinical governance across specialties in each of the Scottish Health Boards. Our vision is: To provide an internationally recognised health intelligence service which, by working in partnership with stakeholders to audit clinical care, plays a key role in promoting safe, effective and person-centred healthcare in Scotland.

It is widely accepted that good, accurate and robust data are necessary to allow NHS Boards to make decisions based on credible evidence and fact. At Public Health Scotland (PHS) we use data to measure against agreed clinical standards or Key Performance Indicators, monitoring and taking action where practice falls short of the expectation described in the standard. SNAP is committed, on behalf of PHS to working collaboratively with NHS Boards and others, providing intelligence and resources to fully utilise data to continuously improve care and outcomes for patients. With the patient at the centre of everything we do, we aim to support a world-class public health system, with patients receiving the high quality care that they deserve, enabling them to live longer, happier and healthier lives at home or in a care setting near homes and communities.

Strength and effectiveness of the SNAP Governance Process is reporting on 68 positive outliers and 51 negative outliers, asking NHS Board to respond with action plans is key to delivering this vision ensuring that variation is monitored and acted upon, negative outliers are effectively managed to achieve improvements in care and outcomes and positive outliers are celebrated.

The programme is expanding due to this with the Scottish Fracture Liaison Service and the Scottish Robotic Assisted Surgery audit being commissioned with a new Scottish Pelvic Floor Audit in the final stages of commissioning.

Then National Strategic Framework for intracavity Robotic Assisted Surgery (RAS) in Scotland outlines ambitions to safely expand multi-specialty use of RAS in Scotland, to improve both equity of access and outcomes for patients.

The rest of the UK has collected fracture liaison data since 2021 but there is no fracture such service in Scotland. Here, patients with fragility fractures are disadvantaged as the quality, scope and impact of FLS services is not assessed. Work carried out by the Royal Osteoporosis Society (ROS) prior to the global pandemic, indicated that there was extensive variation between services including factors which would negatively impact patient care and outcomes and lead to potential health inequalities. A national audit to identify gaps in FLS would allow NHS Boards to drive improvement and reduce variation in practice across Scotland.

The programme is working toward creating the ability to describe multi-morbidities and population level factors across the audits to better understand and reduce inequalities in care and hope to make advancements in this during 2025.

We would like to thank our colleagues in NHS Boards across Scotland for their support for SNAP and continued commitment and resilience to improve patient care.

Professor Nick Phin

Director of Public Health Science and Medical Director

Public Health Scotland

Background

Overview

The Scottish National Audit Programme (SNAP) collects patient and service level data to report on the safety and performance of clinical care, procedures and patient pathways across specialities in NHS Scotland. This provides assurance that defined standards of care are met in clinical practice, with the ultimate aim of promoting safe, effective and person-centred healthcare in Scotland.

This national programme of audit brings together a wide range of nationally and internationally recognised audits and registries into a single programme and governance structure. The programme covers patient care across eleven specialty areas (Figure 1), with additional audits currently being commissioned to track care in new areas clinical practice.

Each audit area is aligned with current clinical practice and guidance specific to the area/specialism of interest. Clinical oversight and leadership is provided by individual steering groups or oversight committees. Membership of these groups comprises subject matter experts and representatives of various bodies and agencies and are chaired by a consultant practising in the individual specialty.

More about the constitution of these groups can be found [here](#).

Figure 1: The SNAP audit cycle

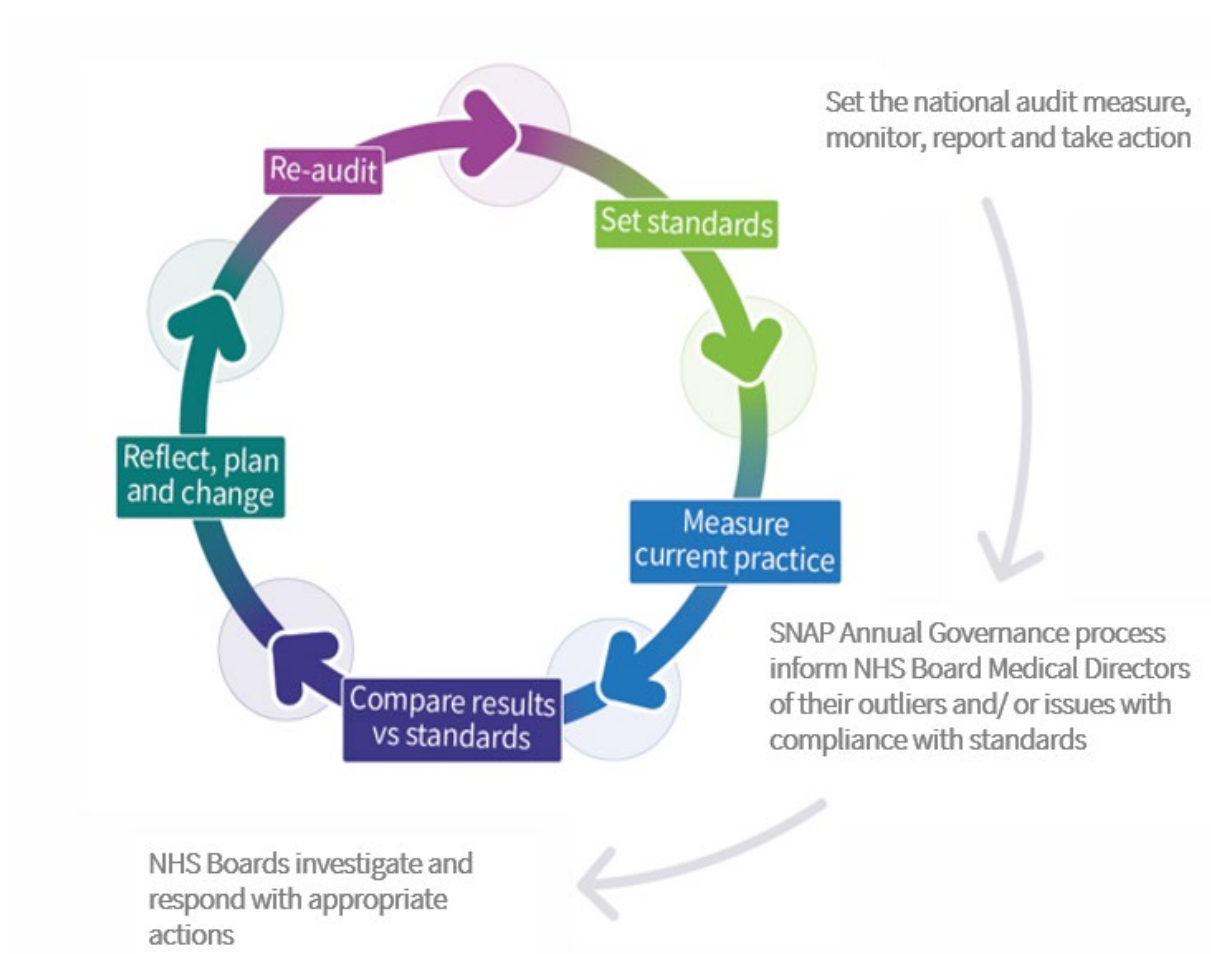
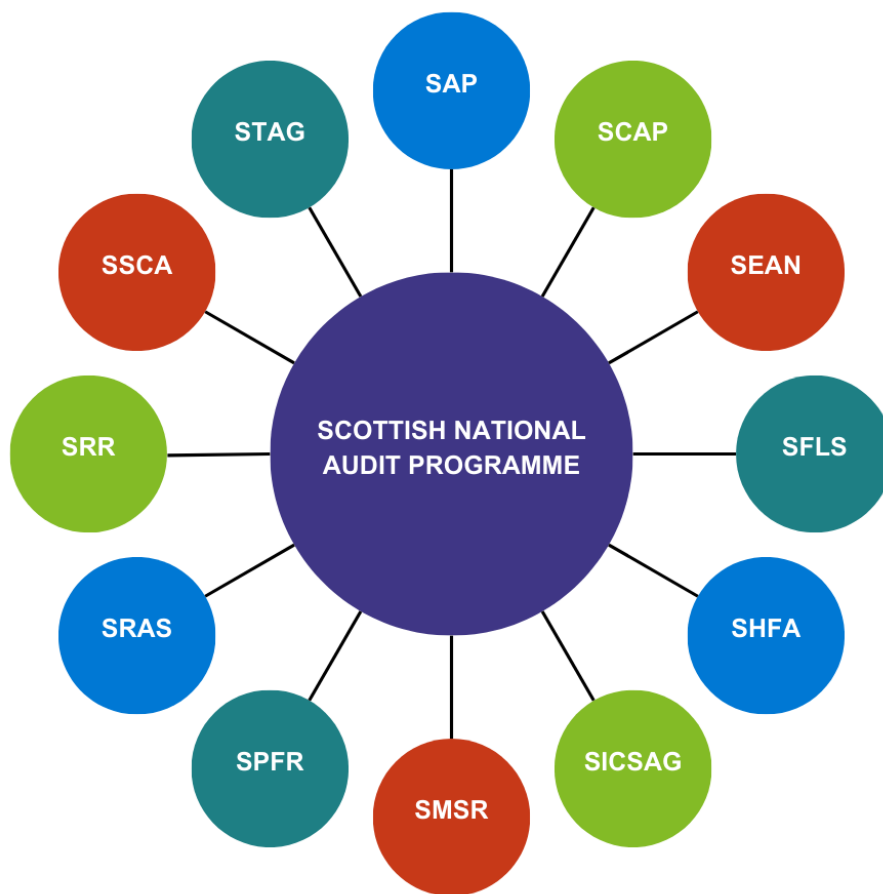


Figure 2: The national audits included within SNAP



The following list are the national audits that are part of SNAP.

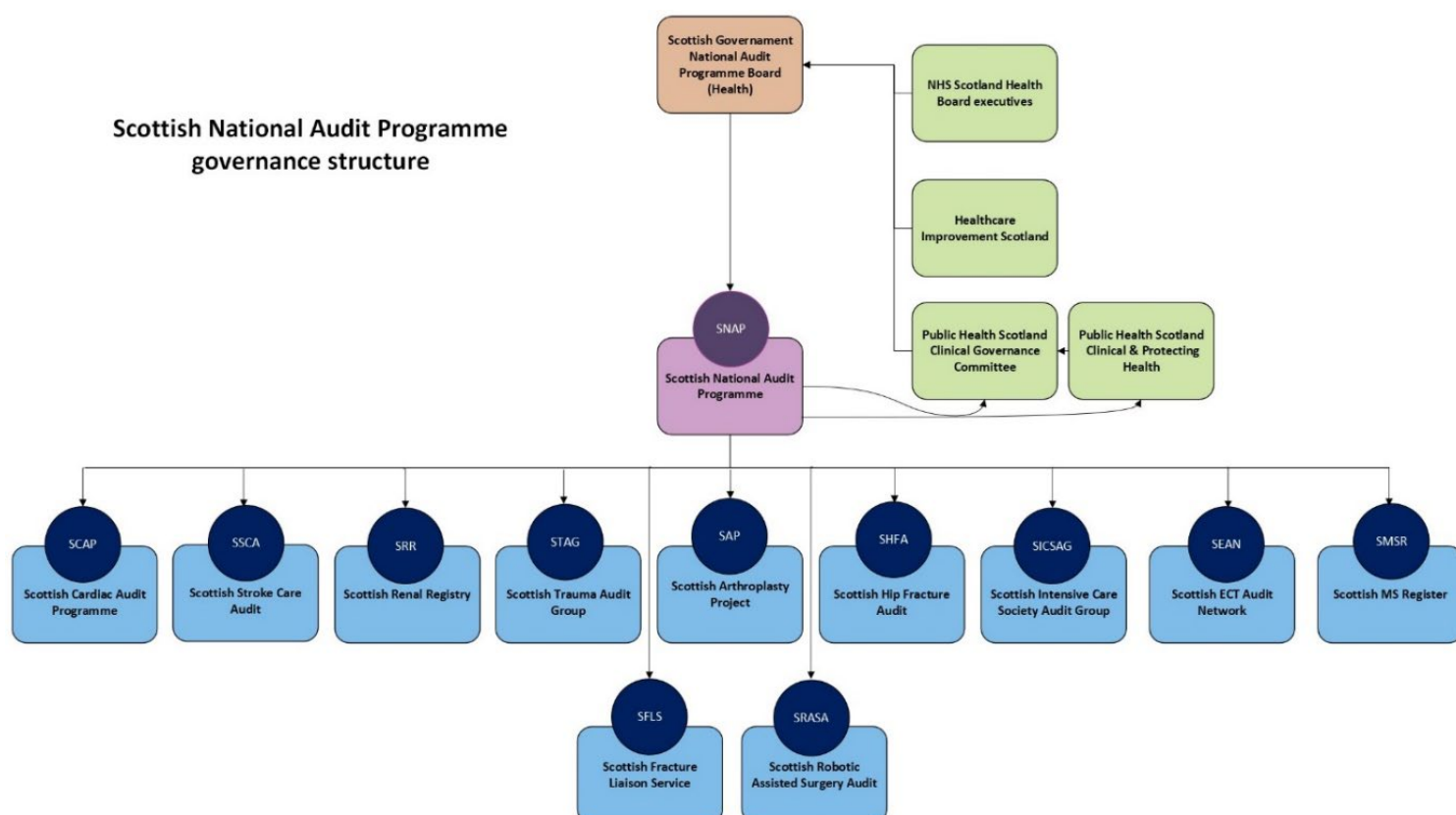
- **Scottish Arthroplasty Project (SAP)**
- **Scottish Cardiac Audit Programme (SCAP)**
- **Scottish ECT Audit Network (SEAN)**
- **Scottish Hip Fracture Audit (SHFA)**
- **Scottish Intensive Care Society Audit Group (SICSAG)**
- **Scottish Multiple Sclerosis Registry (SMSR)**
- **Scottish Renal Registry (SRR)**

- **Scottish Stroke Care Audit (SSCA)**
- **Scottish Trauma Audit Group (STAG)**

SNAP have also recently received commissions for following new programmes of work scheduled to begin in early 2025. The SNAP programme is expanding with the Scottish Fracture Liaison Service and the Scottish Robotic Assisted Surgery audit being commissioned with a new Scottish Pelvic Floor Audit in the final stages of commissioning

An important feature of SNAP is the robust clinical governance process illustrated in Figure 3 and discussed in more detail in later chapters. The governance process ensures that outliers in performance measures are dealt with at Board level to influence changes in service delivery (Figure 3).

Figure 3: SNAP governance structure



The SNAP Team

The SNAP vision is:

‘To provide an internationally recognised health intelligence service which, by working in partnership with stakeholders to audit clinical care, plays a key role in promoting safe, effective and person-centred healthcare in Scotland.’

The various roles within the team reflect the collaborative approach between clinical, data and programme governance expertise required to deliver such a comprehensive programme of audit.

The SNAP is overseen by a service manager who works closely with a senior nurse to provide governance leadership and overall direction to the team. Information analytics expertise is provided by principal information analysts who manage a team of senior and information analysts assigned to each audit.

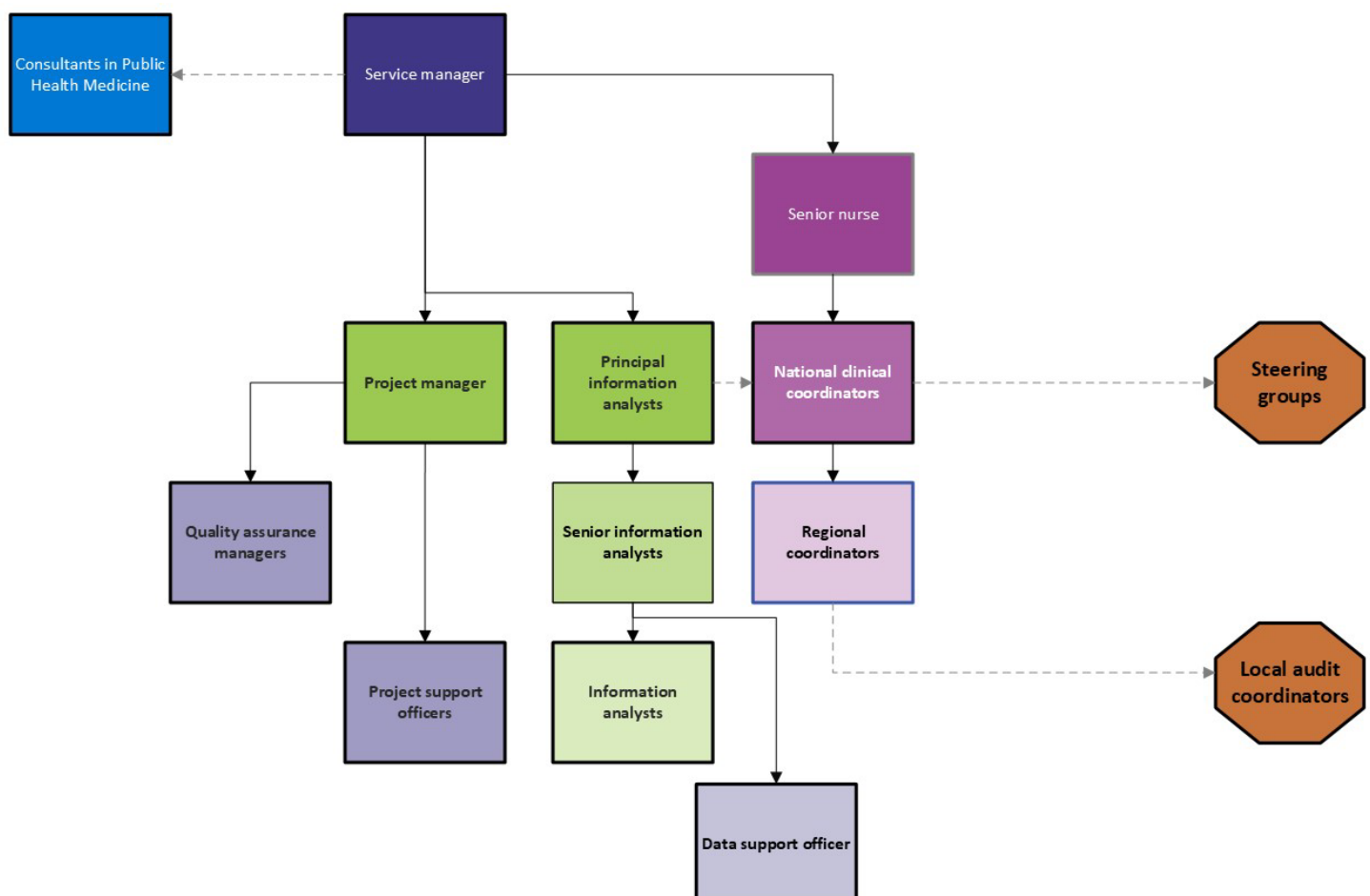
The audits that source bespoke data directly from health boards are managed by national clinical coordinators (CC), who led the development of data sets and actionable intelligence thus ensuring continuous improvement in adherence to standards of care. They coordinate the day-to-day management of audit activities as well as fulfilling a liaison role between clinical and analytical staff. The regional coordinators (RCs) deputise for the CCs and work with clinical teams and locally employed audit coordinators/data collectors to ensure the quality and consistency of data is maintained and local ownership of results adopted. Both the CCs and RCs are registered nurses, providing a unique clinical and nursing focus to the overall leadership of the audits.

Projects which use routinely submitted data (such as SMR01) are led by principal information analysts with clinical and nursing leadership provided by the senior nurse.

A project manager provides cross audit expertise in a range of areas, such as the annual governance process and manages a team of quality assurance managers, data managers, project and data support officers

These combined roles ensure the application of clinically relevant standards and accurate and consistent collection of data via various routes, including electronic submission. Data quality is assured by in-system validations as well as additional validations being undertaken by analysts once data has been formally submitted to PHS. Some audits also have local audit coordinators based in the health boards that work closely with the SNAP teams to co-ordinate some aspects of local data management and clinical engagement.

Figure 4: SNAP team structure



Reports and publications

The reporting functions of each audit are fourfold; regular management information to clinical teams, an annual publication, ad hoc information requests and steering group led quality improvement projects. The reports are carefully designed to ensure that the content supports the purpose and provides intelligence rather than just data. For example, management information focuses on achievement of standards of care over time to allow clinical teams to identify actions and understand the impact of changes, annual reports summarise the previous year's activity and governance process outcomes and steering group led quality improvement provides insight into the effectiveness of standards of care.

The SNAP annual governance process concludes with the publication of a report from each audit which summarises activity and audit results from the previous year along with NHS board responses to outlier alerts. Each audit report follows a similar structure to provide consistency and ease of reading but continue to include elements bespoke to the subject area. This approach enables audits to retain aspects pertinent to their clinical area, while also standardising the common elements of reports across SNAP.

Further details of the [publication schedule](#) is on the PHS website.

In addition to expected accessibility standards, we are working with lived experience groups to ensure that our reports are accessible across a range of audiences and include measures that are important to a non-clinical audience.

Clinical standards: defining best practice



Setting the standards

The audit programmes highlight areas of best practice and agreed standards of care to be met across clinical services. Standards are based on agreed pathways of care across Scotland and are informed by national and international audit programmes and clinical consensus in each clinical area.

The steering groups for each audit develop the standards with input from services and support from the clinical co-ordinator and SNAP team. These are confirmed by the SGNAPB(H) and the plans for publication and clinical governance agreed in advance. Once defined, the SNAP team work closely with the clinical teams to establish consistent ways to define and measure the standards from locally held data mapping patient care. This engagement with clinical teams and relaying data back to the service helps to ensure that data accurately reflects clinical practice and that the standards maintain relevance to current clinical practice.

SNAP currently reports on performance on standards across the audit themes. These standards, which undergo regular review during reporting and publication, help map clinical pathways and enable teams to benchmark their services against others across Scotland, the UK, and internationally. Through the audit process, services can identify resource gaps and any service issues that may affect their ability to meet expected standards of care. During the course of 2024 SNAP added some 103,315 new individual records as shown Table 1 below, demonstrating the breadth of case notes reviewed and audited.

Table 1: New records added in 2024

Audit	Records
SAP	17,111 (all arthroplasty)
SCAP	19,174 procedures
SEAN	238 patients with 281 episodes
SHFA	8,355 fractures
SICSAG	17,119 ICU admissions: 20,586 HDU admissions
SMSR	455 newly diagnosed
SRR	635 (new incidence; 5,732 (prevalent inc. transplant)
SSCA	11,045 confirmed strokes
STAG	8,597 episodes
SNAP	103,315

Spotlight on standards across the audits

SMSR: ensuring referral to specialist services

Prompt referral to specialist services after a diagnosis of multiple sclerosis (MS) is vital to provide essential guidance on disease-modifying therapies (DMTs), help patients navigate their care pathway, and offer crucial support for managing daily life with MS.

The national standard requires contact from an MS nurse specialist within 10 working days of diagnosis. In 2023, this target was met for 89% of patients - marking the highest compliance rate since the register began in 2010.

SEAN: modernising the audit approach

SEAN was established in 1996 as a national audit programme examining the clinical practice of electroconvulsive therapy (ECT) treatment in Scotland. This programme of audit went through a review and refresh of processes in 2022.

June 2023 saw the implementation of the new Scottish Standards for ECT, marking a fundamental change in focus for the audit. The new standards now have a patient outcome and experience objective, adding to the previous process-based standards.

The new standards implementation process has included:

- The development of a new audit dataset and electronic data collection system (REDCap) and audit definitions document
- Monthly data validations to ensure that the data collected is robust, case note validation due to be implemented early in 2025 will further strengthen confidence in the quality of the data.
- All seventeen treatment locations now receive a monthly management report to allow them to track their progress against the new standards.

In 2025 SEAN will be subject to the SNAP governance process, completing the modernisation of the audit.

In addition to the data transformation, the new standards have led to changes in clinical practice and education:

- Clinicians involved in ECT treatment have been proactive in using the data the new audit has provided so far, creating a new SEAN Clinical Development group with the aim of creating a national consensus in areas such as the treatment review and follow up processes.
- ECT Nurses have worked with NES to develop an online ECT nursing resource that will soon be available via TURAS.

SCAP: re-establishing a national programme of audit

The Scottish Government commissioned PHS to establish a programme of audit for cardiac services across Scotland. As a first step in reporting and publishing on agreed clinical standards SCAP matched the standards and definitions from the UK wide National Cardiac Audit Programme (NCAP) from **NICOR** to map services for PCI, adult cardiac surgery, TAVI and congenital heart disease. The development of

standards across SCAP has continued with engagement with clinical steering groups using nationally and internationally agreed standard definitions.

STAG: evolution of established KPIs

The **Key Performance Indicators for the Scottish Trauma Network (Version 7.9)** have evolved following learning from SNAP governance reviews and collaboration with the STN and trauma regional networks. STAG are now progressing KPIs for frailty assessment and comprehensive geriatric assessment and will review all current KPIs following an update to the service specification for the STN later this year.

The process demonstrates the ability of the audit programme to be responsive to changes in clinical practice and patient demographics to ensure maximum benefit from the measures reported.

SAP: reducing complications

The SAP has implemented SNAP Governance Policy for NHS boards which are found to have complication rates significantly different from Scotland as a whole. Mortality, infection and revision rates are all currently monitored for both hip and knee arthroplasty procedures. Using the SNAP governance process has highlighted that low volume surgeons often have increased infection or revision rates which has led to national guidance detailing the minimum number of operations a surgeon must perform in order to be proficient in their practice and has resulted in a drop in both.

SICSAG: review of the Minimum Standards and Quality Indicators (MSQI)

The current MSQIs for SICSAG have been in place since 2015, these were due to be reviewed in 2020 but due to the pandemic this was postponed. In 2023 there were 50 volunteers from the Scottish Intensive Care Society (SICS) who began to review the current MSQI and look at potential new ones. Over the last year the list has been refined and a potential 21 new or amended standards or quality indicators have been

identified, shared with the steering group and SICS. Over the next few months these will go for wider consultation to all stakeholders with an aim of reducing to no more than 15 standards. Due to clinician time and the roll out of the new improved data collection system, this work is unlikely to be completed until 2025.

The integrity of the data included across the audit is crucial to be confident in the clinical performance measures reported on. The SNAP team work on the end-to-end data processes with clinical teams to ensure data quality. This involves support data extraction and any additional data entry systems and ensuring that data definitions are consistent across centres.

Supporting data capture

Where possible data is extracted from existing clinical systems to avoid additional data entry by the clinical teams. However, it is not always possible to extract data directly from clinical system reports and the SNAP team work with local teams to identify alternative solutions.

PHS teams are able to provide bespoke data entry solutions for audit teams using REDCap software, a secure application. This allows teams to enter data items to complete the audit records. REDCap is used across the audits, including SEAN, SCAP, SHFA, SMSR, SRR, STAG; standardising and simplifying data entry on over 50 standards and over 1800 variables.

In addition to REDCap, there are examples of integration with clinical systems which supports data capture without the need for additional data entry and also has the added clinical benefit of embedding clinical pathways and performance measures into the electronic healthcare record. One example of this within SNAP is SICSAG and the recent upgrade of the SICSAG database. The new system is web-based which is more accessible to staff and will have the potential for changes to be made in a timely manner to be more responsive to changing service needs.

Another approach to improving data quality and completeness of the audit record is through record linkage with existing PHS datasets, including other audit data.

Linkage with other datasets means that the same measure is used across all of the audit sites and that sites do not have to enter or report these data items.

Data assurance

A supported programme of systematic case note validation is undertaken by the quality assurance managers and regional coordinators to provide assurance that audit data collected are of the highest quality to allow evidence-based decisions to be made in respect of care pathways/diseases being audited.

Spotlight on data quality



SCAP: linking to national data for completeness and consistency

The SCAP team utilise the audit data held within the Scottish Stroke Care Audit (SSCA) to further validate the data submitted from each of the sites in relation to stroke as a complication of the procedures.

STAG: identifying a hidden population

Through linkage with in-patient data, STAG has identified a 'hidden' trauma population who are either admitted via assessment units, injured in hospital or admitted to a less common medical pathway. The STAG has traditionally reviewed all ED admissions for inclusion. Often occult injuries are discovered later in the patient journey and the benefit of novel treatments and rehabilitation are not recognised. Work continues to identify these patients as early as possible. Educating staff in wards where trauma is uncommon is key to ensure these patients are flagged early to trauma teams.

SHFA: piloting remote quality assurance

During COVID, the regional co-ordinator for SHFA explored ways of carrying out remote quality assurance work with the local audit coordinators (LACs) and commenced small, regular quality assurance (QA) exercises. For each exercise, a data field was selected and 4-5 quick and easy questions around this data field were sent to every LAC. The questions were aimed at the definition of the data field, in particular how the LACs were interpreting the audit definition. The question set allowed the PHS team to check that the LACs understood the audit definition and were collecting the data accurately and consistently.

Process: The LACs are given 2 weeks to return their QA exercise. Their answers are collated onto a spreadsheet and looked at by the audit team, who discuss any areas of concern. Where a LAC has shown that they understand the audit definition and are collecting the data accurately, an e-mail is sent to them acknowledging this. For other LACs where there are any queries with their answers or it is evident that they are not collecting the data accurately, they are sent an e-mail, or a TEAMS meeting is arranged for further discussion and where any issues can be addressed. A short final report is created, summarising the finding of the QA exercise and distributed to the SHFA team and LACs.

These QA exercises are designed to be fully completed over 2 months, identify any data quality issues and areas where further training and support for LACs are required. Due to their success, these measures have been adopted as standard practice to ensure ongoing quality assurance.

Clinical governance: completing the audit cycle



Key themes

SNAP has developed a robust clinical governance process to communicate key performance measures and outcome measures to medical directors to ensure that there is ownership and awareness of any issues at the highest level in each of the health boards. The process gives directors and clinical teams the opportunity to investigate areas of practice, contributing factors and potential service improvements to address any issues in meeting standards of care. Central to the success of this process, are the supportive relationships between the national clinical coordinators and local clinical teams.

The governance process highlights areas where practice measures are not close enough to the accepted standard of care. These are referred to as outliers in performance, and boards are required to conduct an investigation and respond with an action plan and details of context and any explanation for the outlier status. In our most recent round of governance reviews there were 51 negative outlier reports reported to boards across each of the audits. Although for distinct and different areas of care, we have grouped these into themes describing the aspect of patient care where the standard has not been met (Table 2).

The governance process gives NHS boards the opportunity to account for any factors that might have contributed to the outlier status that may be outwith their control and will unlikely be impacted by improvement measures. However, it also allows exploration of areas where service can be improved to ensure that performance matches the expected standards in the area being audited.

Table 2: Negative outlier themes

Theme	Number of outliers
Patient assessment e.g. comprehensive geriatric assessment	13
Adherence to pathway	15
Procedure metrics	3
Complications more than expected	12
Outcome measures	8
Total	51

Contributing factors and areas of improvement

There are a number of factors that can contribute to outlier status including:

- services factors (staffing, service capacity and individual patient factors)
- adherence to pathway (time to CT scan or other services, patient flow measures, time to assessment)
- Repeat outliers which have not satisfactorily address the previous years issues
- Increased mortality may indicate poor treatment or other factors related to patient population such as age and comorbidities which require more detailed investigation.

The governance process allows identification of factors across the patient pathway that contribute to the delivery of the standard of care. This could involve more than one area of service and more than one element of practice. As an example, within STAG, responses included the need to recruit radiologists and rehabilitation consultants highlighting how the single issue of staff recruitment could improve both patient assessment and ongoing care. Other examples have included improvements

to other more practical aspects of patient pathways including physical access to buildings and transfer between facilities and specialist services.

The ability to look across the pathway also allows consideration of the knock on effect of factors on achieving standards in subsequent patients, an example highlighted in the STAG audit included the impact of delays in patient access to downstream services or care, adversely affecting patient care by prolonging times to assessment, investigation and onward disposition.

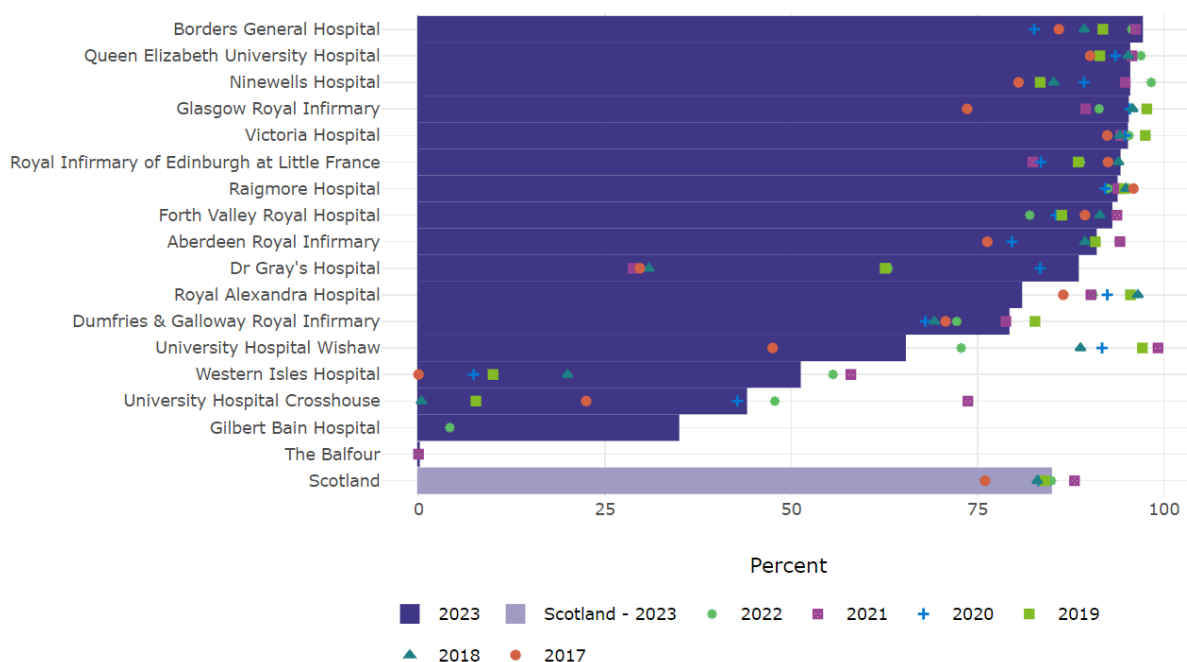
The governance process allows for detailed review of performance, investigation of contributing factors at service and patient level, and the development of action plans to improve quality of service in key performance areas. This aspect of the audit programme has had a positive impact in key areas and allowed staff to measure improvements in performance.

Spotlight on clinical governance as a driver of improvement

SHFA: reinforcing standards of care

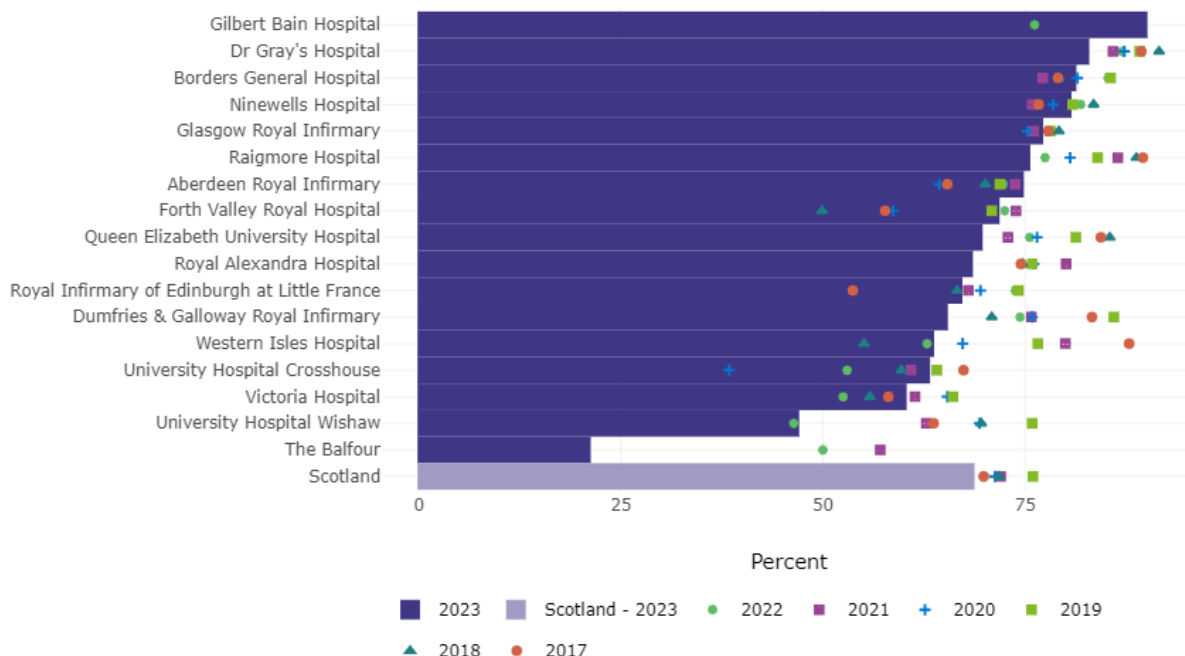
There are two themes which have dominated the outlier profile of hip fracture performance across Scotland since 2021: the provision of orthogeriatric services and delays to surgical repair of the fracture. Both standards of care are well accepted by clinicians and have high quality evidence which demonstrates the impact on outcomes including death¹.

Figure 5: SHFA Standard 8. Comprehensive geriatric assessment is commenced within 3 days of admission



Despite the negative impact that these delays can have on patient outcomes, for some NHS boards resolving the factors related to lack of achievement of these standards has proved challenging. Unable to recruit and staff shortage are described as reasons why there is not adequate orthogeriatric provision in hospitals such as University Hospital Crosshouse, Western Isles Hospital and Dumfries and Galloway Royal Infirmary, however, the reasons are likely to be multifactorial and include lack of prioritisation. NHS boards who achieve in excess of 90% (Figure 5) have done so for a number of years, suggesting that pathways and models of care are well established.

Figure 6: Standard 6 - Surgical repair of the hip fracture is performed within 36 hours of admission



SCAP: focus on the patient pathway

With specialised expertise in the PCI dataset and clinical pathways for patients undergoing PCI for STEMI, the SCAP team collaborated effectively to develop more granular data for a site facing challenges in meeting the door to balloon time target. The SCAP team visited the centre, presenting detailed data to help them identify potential delays within their care pathway and highlighting performance differences compared to other sites across Scotland. By linking our data to the Unscheduled Care Datamart, we provided the centre with an enhanced dataset, enabling a more comprehensive view of their performance.

During a face-to-face meeting, SCAP presented this enhanced data, allowing the team to pinpoint additional areas for improvement, some of which extended beyond direct clinical control. SCAP continues to support the centre by providing this granular data on a quarterly basis via our clinical dashboard, allowing close monitoring and ongoing performance improvement.

STAG: University Hospital Wishaw (UHW) response from major trauma clinical lead

UHW was identified as a STAG mortality outlier for 2017 – 2019 inclusive. As a result, a high-level multidisciplinary mortality review process of all trauma deaths was conducted. This is now established as an essential part of the UHW major trauma annual clinical governance process.

The mortality review identified three key areas for quality improvement initiatives due to the excess mortality demonstrated:

- Frailty
- Chest wall trauma (including rib fractures)
- Cervical spine injuries not for surgical fixation

These initiatives commenced during 2021 and coincided with the employment of the NHS Lanarkshire major trauma coordinator who has driven them forward. The quality improvement initiatives were supported by extensive education of medical, nursing and AHP staff and have led to significant improvements in mortality in patients with rib fractures and those with cervical spine injuries not for neurosurgical intervention.

UHW engaged with the SNAP governance process and submitted well-received investigation reports that recognised a clear commitment to improving care. As a result of work around frailty and excess mortality by UHW, STAG progressed early discussions on inclusion of frailty scores and an ambition to include this when calculating probability of survival in the future.

A continued improvement in mortality data was demonstrated and it was highly encouraging that in the STAG 2024 Annual Report, UHW were no longer Scottish mortality outliers. This sustained improvement in mortality demonstrated the case for an additional major trauma coordinator to allow expansion of the service. Going forward, the clinical governance processes have identified patients with head injuries that are not for neurosurgical intervention or transfer to a neurosurgical centre as a

patient group for ongoing improvement as well as sustaining the improvements already made.

STAG have shared and promoted this learning, and more hospitals have introduced QI work for the groups of patients identified.

The boards' perspective

The feedback from boards around the governance process is generally positive as the audit data and the accepted national standards provide them with a basis to improve performance and to develop business cases to fund areas requiring additional resource or capacity.

NHS Lanarkshire had been an outlier for an aspect of the PCI pathway. Missing data had led to difficulties in measuring performance and through closer working with the PHS team to address the data gaps, this issue was resolved. Dr Ross McGeoch, NHS Lanarkshire PCI Lead and Chair of the Heart Disease Taskforce was positive and he reflected on the ability to now be able to have a person and a team they can speak to about data and audit whereas previous process data was submitted to an organisation within NHS England without any established relationship for meaningful conversations.

NHS Lanarkshire's Clinical Audit Programme Manager reflected that the SCAP audit had facilitated stronger working relationships between Lanarkshire's clinical audit team and lead Cardiology clinicians, as the team worked together to understand the deficits in the data collection process and to develop an improvement plan. The flexible support from the PHS team has also contributed to this positive journey, when we have needed to source supplementary data or to better understand data definitions. It genuinely feels very much like a collaborative effort. Our internal governance process for national audit has been refreshed to align with the SNAP governance processes and this has resulted in a fairly smooth process, where everyone understands their role and we can incorporate key activity dates into work plans.

Feedback from the Scottish Trauma Network (STN)

“The STAG is an integral part of our ability to manage traumatic injuries in Scotland. Year on year the STAG produces a high quality, validated and insightful annual report, however, their remit and output goes far beyond a singular report. Through the local audit coordinators, highly accurate data are input in near time into an interrogatable database for use at local, regional and national level. Careful analysis, on both a clinical and statistical level, allows trends and patterns in the epidemiology and management of severe traumatic injuries to be seen.

The STN began a phased implementation in 2018 following significant investment from the Scottish Government. STAGs output helps to validate our current structure and strategies for managing traumatic injury in Scotland. It also provides valuable insight into the strengths and weaknesses of the STN service that help drive quality improvement. The collaboration between the STN and the STAG remains strong and is synergistic.

The key performance indicators (KPIs) continue to evolve as the STN develops and our trauma population changes.

Longitudinal analysis of patient outcome data in terms of mortality, functional status, experiences and ability to work following traumatic injury remains important to assess how the STN is performing and developing. Quality of life and functional outcome following traumatic injury are perhaps the more important markers of ‘success’ rather than crude numbers of patients treated or mortality. Whilst the latter obviously remain important, patient centred care focussed on achieving the best outcome for that individual is paramount. With an aging trauma population, as seen in the latest report, the focus on realistic medicine is even more pertinent.

This year’s report, as with previous years, shows that the vast majority of severe trauma in Scotland is caused by falls and moving vehicles. Falls account for 76% of traumatic injuries across all ages, rising to 90% in those over 65 years old. Prevention strategies remain essential in reducing this largely avoidable burden with much work still needing to be done.

The report's conclusions represent a considered view of the data and their analysis, identifying both where service development is needed and where additional work should be focussed in order to better understand the meaning of the data."

Dr Timothy Hooper National Clinical Lead, Scottish Trauma Network Consultant in Anaesthesia, Raigmore Hospital, Inverness

Working with the policy teams

In addition to the work with clinical teams, SNAP also works closely with the policy teams to ensure that policy discussions are informed by up-to-date clinical performance measures. Oversight from the SGNAPB(H) keeps government colleagues and teams across NHS Scotland in touch with key messages for the health service. Collaborative and partnership working are key between SNAP and policy leads to ensure that the direction of the programme is able to monitor and report on key policy areas for government ensuring that appropriate evidence based standards are in place to monitor variation and achieve improvement in quality of services and outcomes for patients.

Including lived experience across the audits



In addition to key clinical measures, SNAP is committed to including measures of the lived experience of care across clinical services and involving patients and those with lived experience in the development of the audit programme. Involvement takes the form of membership on steering groups for some of the audits, close partnership with third sector organisations and for SCAP in particular a partnership with **Health and Social Care Alliance Scotland** and regular engagement with their cardiac lived experience group.

Capturing the lived experience of care

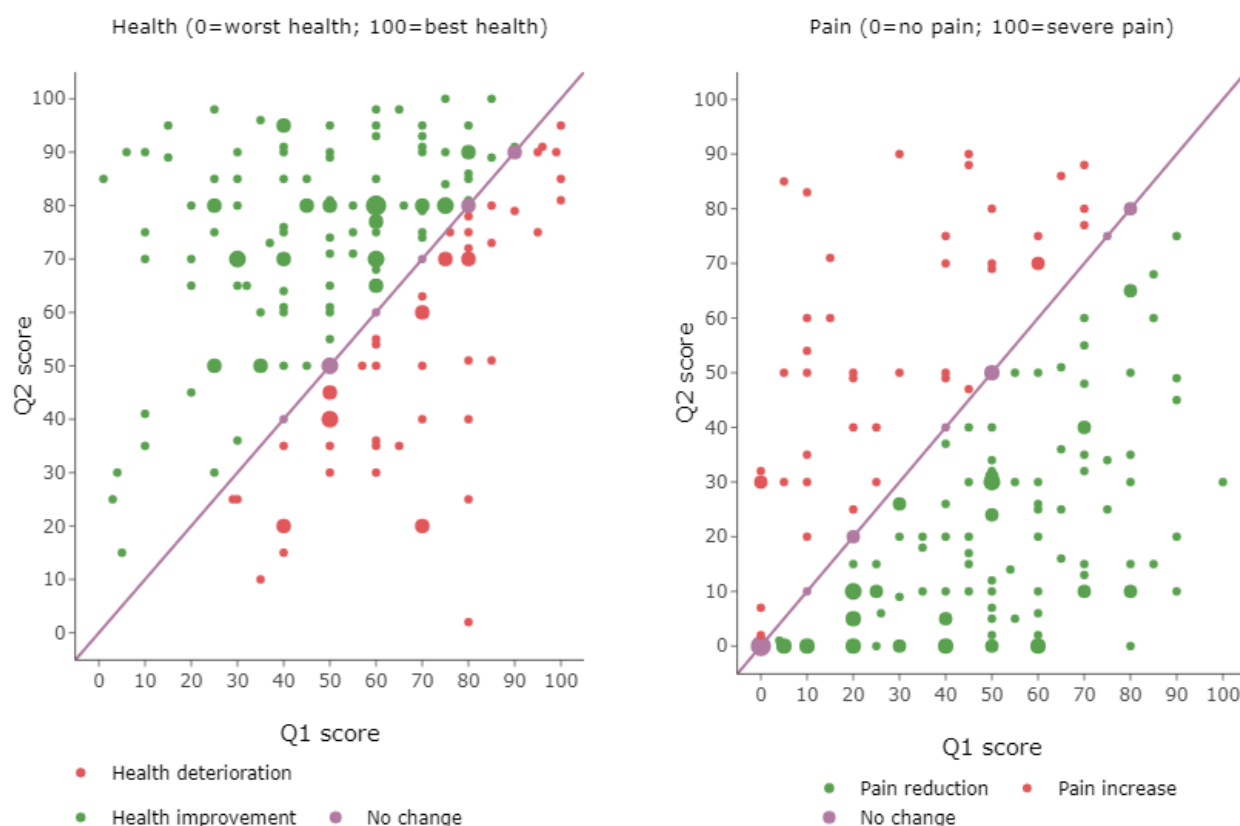
As well as including the perspective of lived experience in the development and oversight of each of the audits, some of the audits capture patient reported outcome measures (PROMs) and patient reported experience measures (PREMs) as an additional measure to assess the care delivered.

STAG PROMs

STAG includes early rehabilitation assessment and plan as KPIs to ensure patients optimum functional outcome is achieved. The inclusion of patient reported outcome measures (PROMs) allows STAG to demonstrate functional outcome at six and twelve months post injury and has shown positive outcomes that would not have been evident from other measures included in the audit:

- less patients reported moderate/extreme problems with pain, mobility and self-care in 2022-2023 ([EQ-5D-5L](#) methodology)
- patients who reported "lower severe disability", requiring dependence on others for care, reduced from 7% in 2018-2021 to 3% in 2022-2023 (Glasgow outcome scale extended)
- 79% of patients in full or part time employment at the time of their injury returned to work in 2022-2023 compared to 66% in 2018-2021
- Figure 7 shows that for most patients there is an improvement in health and a reduction in pain at six months between questionnaires (in hospital and six months follow up)

Figure 7: STAG PROMs: Health and pain reported in hospital (Q1) and at six months (Q2)



SICSAG: including patient and family perspectives

SICSAG is unique in collecting patient and family experiences of care as part of the audit measures.

The collection and analysis of patient/family experience is an important method of identifying and addressing problems, improving quality of care and recognising excellence².

This quality indicator requires critical care units undertaking patient/family experience surveys on an annual (or more frequent) basis. The Covid-19 pandemic had a detrimental effect on units' ability to meet this indicator due to staffing, unit pressures and the fact that no visitors were allowed. However, efforts are being made to improve compliance, including many units incorporating the use of online feedback

platforms which allow patients, families and staff to share experiences and receive feedback.

Figure 8: Percentage of units that comply with the patient/ family experience quality indicator

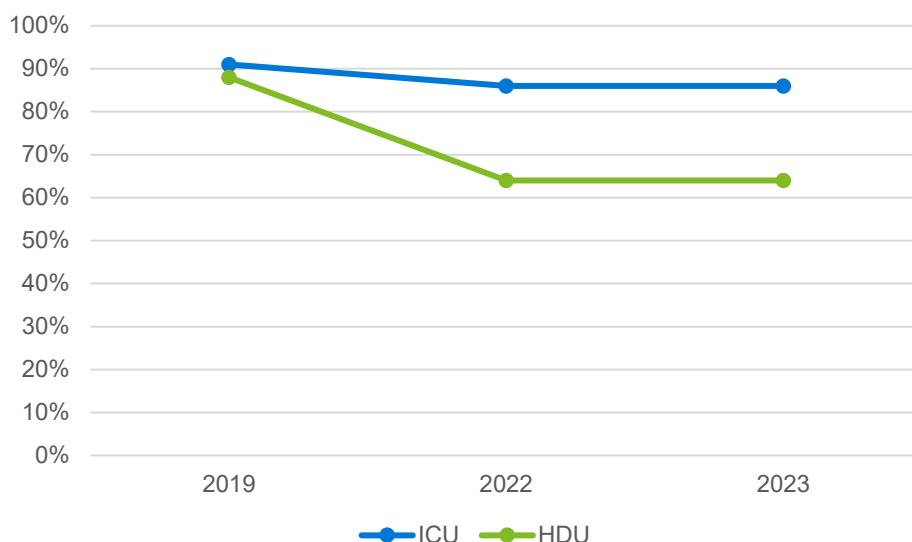


Figure 8 shows that pre-pandemic this quality indicator (QI) was being met in 91% of ICU or combined ICU/HDU units and 88% of HDU units. During the COVID-19 pandemic units struggled to meet this quality indicator, visiting was either stopped or reduced for long spells. Whilst some units tried to collect feedback using online methods many stopped altogether. Over the last year many of the units have started collecting their data via **Care Opinion** using QR codes.

One mum described on Care Opinion how hysterical she was when notified her daughter had been admitted to ICU, on arrival at what was the ICU department, she found it had moved and there was no signage or instructions to get to the new unit. Access to the new unit is via the outside of the hospital however if you enter through the emergency department there is nothing to tell you how to get to the department.

Following this feedback the unit staff now have the contact number for the ICU unit clearly displayed in the emergency department and a member of staff will collect relatives.

Units who are not using Care Opinion are now all working on their own unit feedback and are hopeful this will be achieved in 2024.

Data informed care



Clinical engagement

One of the key elements of success of SNAP is the direct involvement with clinical teams to define and set standards, contribute to publications and the governance process. Each audit has a clinical lead and a steering group structure to ensure that measures in the audit match current practice and clinical consensus. The steering groups allow clinicians from across Scotland to hear about challenges beyond their health board experience and share best practice. Steering groups are multi-disciplinary in nature and have contributions from lived experience and third sector organisations.

Spotlight on site participation

SCAP: increasing site participation through clinical engagement

Historically, data collection for cardiac rhythm management procedures (CRM) sent to NICOR was poorly completed in terms of data quality and consistency across Scotland. SCAP has since reintroduced the national audit for CRM and in doing so has increased participation from 5 out of 20 sites to 19 out of 20. One very low volume centre was unable to submit any data. Four centres in Scotland now perform ablation therapy, in the final year that data was submitted to NICOR, only 1 centre provided data. However, this year we have received data from all 4 centres.

Developing a REDCap data entry tool to support the standardised collection of data for TAVI, cardiac devices, congenital heart disease, cardiac rehab, transcatheter structural heart interventions, inherited cardiac conditions and supporting the congenital teams' aspiration to develop a congenital registry.

STAG: maintaining site participation

The STAG have participation from 29/30 hospitals with an ED, where patients with severe injuries are treated. The one site not yet submitting data is low volume and is progressing the resource required to participate from 2025. There is a strong and collaborative relationship with the STN, with STAG having representation on all STN working groups and attendance at regional network governance meetings. All participating hospitals have a STAG clinical lead, and there is representation from all regions and trauma specialties on the steering group.

Clinician facing data tools: data dashboards

Provision of dashboards and quarterly reporting to allow clinical teams to visualise and report on their own data. This supports a more active engagement with the information their data provides on their area of service delivery and allows them to act on what the data tells them to drive improvements in practice. This more direct engagement also helps improve data quality as teams quickly spot where data does not match the clinical reality.

Areas for improvement can be highlighted from the more informal review of reported data, without the formal alerts and clinical governance process associated with outlier status. As an example, the most common mechanism of injury reported in STAG was falls (on the same level and from height) (58% of patients in 16-65 year olds and 90% of patients in people 65 years and over). In order to address this and try to reduce falls and associated injury, falls management and preventing injury in the home approaches were highlighted as crucial areas for improvement.

Spotlights on audits as a driver of change

SAP: clinical consensus and improvement

The arthroplasty rehabilitation in Scotland endeavour (ARISE) was formed following an initial consensus meeting held at the Royal College of Surgeons, Edinburgh in May 2019. The meeting was convened to help address variation in surgical and

anaesthetic management with the aim of developing a national pathway for enhanced recovery after surgery (ERAS). The **consensus statement** for the perioperative care in total hip and total knee replacement formed the basis of pathway.

For the first time in the SAP report, addition of the ARISE data enables greater understanding of patient demographics, processes within surgery and recovery and immediate outcomes. Over time, the data demonstrate the gradual reduction in the use of intrathecal opioids as per the national consensus guidance, improvements in early mobilisation on the day of surgery and resultant length of stay reductions across Scotland.

Data insights: supporting service design and delivery

The data collated as part of the audit can also inform service design and delivery and we work closely with management teams to make data available for this purpose

SCAP: modernising the patient pathway in a health board

The work of the Scottish Cardiac Audit Programme (SCAP) offers substantial benefits to local health boards by providing access to specialised clinical and analytical expertise. For example, the integration of a clinician with in-depth knowledge of cardiology and a data analyst with comprehensive understanding of locally collected nationally linked data, enhances the capacity of boards to make informed decisions about patient care and service provision.

A prime example of SCAPs value can be seen in their support for NHS Dumfries and Galloway (D&G) when clinical and operational teams were re-evaluating their current service level agreement for patients requiring percutaneous coronary intervention (PCI). With new services available at Carlisle Hospital, there was a need to assess whether the existing agreement with University Hospital Hairmyres and Golden Jubilee University National Hospital remained the optimal choice for patient care. The SCAP team provided crucial insights by analysing data on all D&G patients transferred to both Hairmyres and Golden Jubilee, presenting comprehensive

activity, outcome, and geographical data. This information, developed in collaboration with the Geographic Information Systems (GPS) team within Public Health Scotland (PHS), supported the development of an options appraisal document.

The detailed analysis not only enabled the D&G team to gain a deeper understanding of their own patient data but also allowed them to benchmark their performance against other regions in Scotland. This comparative view facilitated a more robust evaluation of the service options available, ensuring that decisions were data driven and aligned with the best interests of the patient population. Moreover, this collaboration proved highly beneficial to the board as it saved them the time and resources required to source and analyse the data internally. The expertise provided by the SCAP team allowed access to high quality data that would not have been available otherwise, significantly enhancing the board's ability to make well informed decisions without the need for additional internal capacity.

SRR: Using data to inform care approaches

Linkage with COVID vaccination data and the Scottish Renal Registry illustrated the uptake of Covid-19 vaccination booster doses was progressively declining in both dialysis and transplant patients from the previous two years, compared with uptake of the first three doses of vaccine. This resulted in some targeted communication (Nov 2023) for both clinician's and patients, identifying the ongoing vulnerability of kidney disease and the availability of a booster COVID-19 vaccination. This resulted in an increased uptake with 42.8 % of transplant and haemodialysis patients receiving the Spring 23 booster and 63.9% receiving the Winter 2023 booster.

This example highlights how clinicians can use audit data to understand and inform care approaches not directly related to the performance measures included in the audit.

STAG: informing fall prevention approaches

It is recognised that triage of older patients is challenging, particularly those sustaining major trauma from what appears a low mechanism of injury such as a fall

from standing³. Another group of patients are unable to give a history of injury due to cognitive impairment and injuries can be discovered later in the patient stay. The STAG local audit coordinators are now embedded within the local trauma teams supporting them with identification of patients who have not triggered a pre-alert or trauma call and are often in wards where trauma is uncommon and the best care may not be able to be provided e.g., regional anaesthesia for chest injuries is normally not available in a medical ward. Identifying these patients early is key to ensuring equity of care and the best possible outcomes for patients.

Building a picture of patient care across SNAP



SNAP captures details of patient pathways across a range of clinical specialties and procedures. This information provides direct measures of performance and safety to inform clinical governance and improvement of the services involved in specific patient pathways. In addition to specialty specific information, SNAP data also offers the opportunity to look at patterns across audit areas to inform population health insights and identify any areas of shared learning.

Cross-audit insights

As part of a cross-audit review, we have identified that SNAP has documented over 400,000 care episodes in over 350,000 patients over a five-year period (2018-2022). This demonstrates the value of SNAP in providing comprehensive information on pathways of care and in building a picture of how care episodes are connected. Some patients care will be documented in more than one audit as an expected part of their care pathway e.g., adult cardiac surgery and SICSAG; for others, having a record in more than one audit may reflect progression of a condition or a related complication.

We plan to develop the cross-audit review with the guidance of the CPHM team and the individual audit steering groups to maximise the value of SNAP data and build a

picture of comorbidities and demographics of patients receiving care across Scotland's health service. Aligning with approaches used across PHS to code health related factors will add bring consistency to enable SNAP data to be linked with other datasets adding valuable detail to analysis and interpretation.

The inclusion of additional data to describe multi-morbidity, frailty and social determinants of health will be included in ongoing development of this cross audit area of work, making the audit data more relatable to other PHS datasets and initiatives.

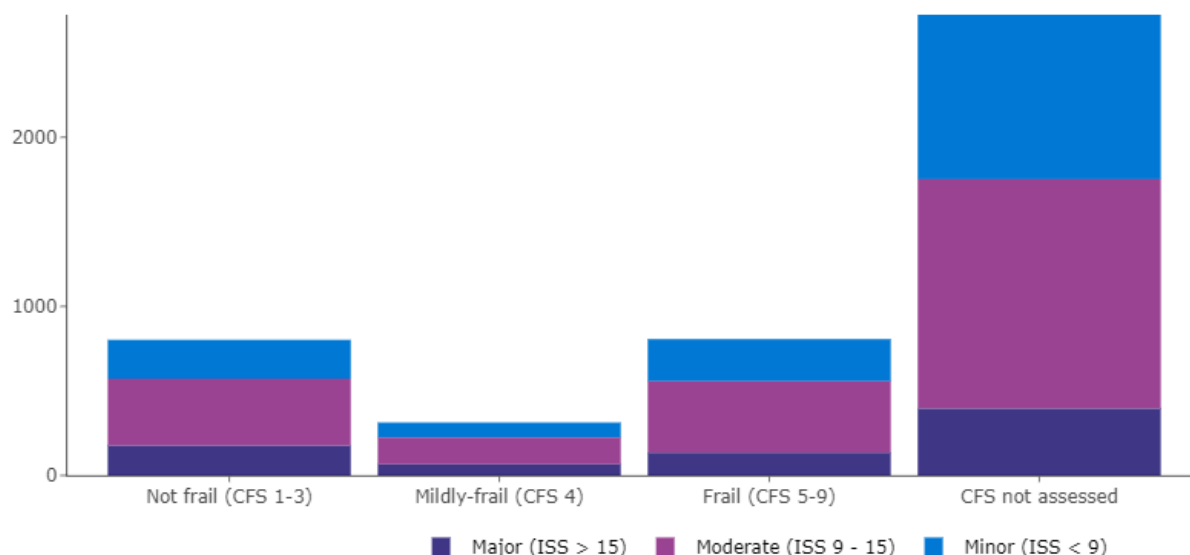
Frailty

Frailty is a factor in several of the audit's populations including STAG, SHFA and SICSAG. The importance of frailty assessment to ensure decision making is person centred and achieves the best outcome for our patients is key^{4 5}. The audits are helping promote this message and welcome the release of the [Ageing and frailty standards by Healthcare Improvement Scotland](#) published in November 2024.

STAG will introduce two KPIs next year (Clinical Frailty Score (CFS) assessment for patients with major trauma ≥ 65 years) and comprehensive geriatric assessment (CGA) for major trauma patients that are frail.

The [STAG annual report](#) showed that 41% of patients 65 years or over were assessed for frailty in 2023 (see Figure 9 below). This is a rise from 21% in 2021, however more work is needed to ensure this is embedded in all our hospitals.

Figure 9: Clinical frailty scale (CFS) outcome by severity of injury (2023)



SNAP: Adding value to research



Service level data across the audit programme is a valuable resource for clinical research and SNAP data has contributed to research programmes through recognised approval processes and with the oversight and approval of the audit's steering committee.

Spotlights on research from across SNAP

SICSAG: extending our reach

A SICSAG intern is currently undertaking work under the supervision of a SICSAG short life working group which will support analyses relating to recommendations from the [Scottish Government's out of hospital cardiac arrest: strategy 2021 to 2026](#).

Specifically, Chapter 6 of the strategy focusses on hospital care for patients admitted after a cardiac arrest: “Making better use of the high-quality information stored in Scotland’s unique healthcare databases could enhance our audit systems.”

The key objectives of the project are to:

1. Report the epidemiology, processes and outcomes for patients admitted after an out of hospital cardiac arrest
2. Evaluate data quality relating to this subgroup of patients, and scope additional data fields which would enhance quality of care if added to the SICSAG dataset.
3. Evaluate performance of the risk prediction model in this subgroup of patients.

To date, a cohort has been defined from the wider SICSAG database, and analyses to report baseline epidemiology completed.

SRR: understanding the impact of renal disease

Two of the honorary contract staff aligned with SRR are looking at cancer incidence and outcomes in the Scottish dialysis and haemodialysis population, using SRR data to analyse time trends and patient outcomes.

Individuals with end-stage kidney disease have an increased risk of developing and succumbing to cancer compared to the general population and examine which cancers kidney transplant recipients are at greatest risk of developing. This work will assess how cancer incidence has changed over time within the Scottish dialysis population.

SHFA: data driven research

Alongside its standard-setting (governance) and quality measurement (audit) functions, the SHFA facilitates data-driven research in order to deliver a ‘performance trifecta’ approach to improving patient care⁶, and studies conducted using SHFA data have featured prominently in the global hip fracture discourse^{7 8}. Farrow et al.

demonstrated that adherence to the Scottish Standards of Care for Hip Fracture Patients (SSCHFP) was associated with better outcomes⁹, and Ferguson et al. showed that routine audit of key performance indicators was associated with better quality¹⁰. A detailed analysis of care delivery in Scotland identified daily variation in some clinical services which could affect patient outcomes according to the day of the week on which they were admitted, providing evidence and incentive to administrators and clinicians to ensure a consistently high standard of care wherever possible¹⁰.

Routine nationwide data collection produces large datasets, capturing information relating to the breadth of patient demography and regional variation of services. Furthermore, NHS Scotland utilises a unique patient identifier (community health index, CHI) which is used across all health records and national datasets. This facilitates data linkage across multiple health databases in order to construct population-level research studies that can examine complex clinical questions, including: the role of blood transfusion in acute hip fracture patients¹¹; the prevalence and effects of delirium around the time of surgery¹²; the risk of sustaining a second hip fracture¹³, and the impact of socioeconomic deprivation on hip fracture risk and outcomes¹⁴.

The ability to collect highly granular and validated national audit data, and the inherent compatibility with other large, linkable health datasets, was integral to the SHFA playing a leading role in the global response to the COVID-19 pandemic^{15 16}. Alongside partners, the SHFA delivered the International Multicentre Project Auditing COVID-19 in Trauma and Orthopaedics (IMPACT) which produced key research articles into the short- and long-term effects of COVID-19^{17 18 19}, guided service-level and government policy, and demonstrated the value of audit collaboration in the fragility trauma community.

STAG: contributing to national research priorities

STAG is another example of a research active audit where data contributes to a broader research agenda.

1. **Epidemiology of major trauma in older adults (MTOA) within Scotland: A national perspective from the Scottish Trauma Audit Group**

“MTOA is likely to be a rising health care burden, requiring larger quantities of health and social care resource. Urgent preventative strategies are required to reduce low velocity trauma (standing height falls), as well as the high mortality and morbidity of MTOA”.

2. **Exploring the impact of traumatic injury on mortality: An analysis of the certified cause of death within one year of serious injury in the Scottish population**

“An extended period of survival uncertainty in this patient population with mortality due to index trauma lasting up to six months post-hospitalisation. Over 65s represent the bulk of deaths in the trauma population as seen in previous years; in the absence of concrete frailty data, further studies are required to appropriately delineate a valid connection between frailty and trauma mortality”.

Major trauma and rehabilitation coordinators in some areas have introduced follow up reviews with patients, allowing support and signposting to services when required.

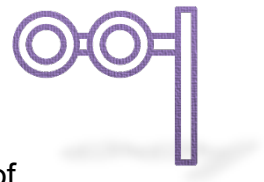
The STN research and innovation group and STAG recognise that research should be prioritised over the coming years. STAG are currently seeking permission to link data with the PHS social care and prescribing data to demonstrate social care requirements and long term need for analgesia and anti-depression medication following severe injury.

SAP: adding to the evidence base for arthroplasty

- The number of revision shoulder arthroplasty procedures performed in Scotland and what the reasons for revision were.

- the number of shoulder arthroplasty procedures performed in Scotland, what implant design has been used, and what conditions shoulder arthroplasty has been used for.
- This paper looks at the number of total ankle replacement procedures performed in Scotland, what implant design has been used, and what conditions shoulder arthroplasty has been used for.

Looking ahead



SNAP continues to develop and grow in its influence across areas of clinical practice, although the value of the audits is well recognised, there are a number of challenges across the sector that we need to be conscious of.

As clinical services come under increasing pressure, capacity to support the audit process at a local level may be impacted and our audit teams need to maintain strong links with clinical teams to see where we could support audit processes through some of the data management and linkage measures mentioned earlier.

Our report formats continue to evolve and an update to the PHS public facing audit websites has begun with the aim to improve navigation and accessibility and provide metrics to help inform future content creation and design.

Next steps

Each of the audit areas has identified a programme of improvement and development specific to their own clinical area with some of these spanning across SNAP.

Extending our measures

We continue to explore extending our patient reported outcome and experience measures across the audits and sharing learning to build consistency across SNAP

Extending to other determinants of health and well being is another area that the audits are focussed on. Scottish Government through Centre for Sustainable Delivery (CfSD) are having great success in reducing the environmental impact of theatres through their Green Theatre Project. CfSD intend to support Scottish renal services in a similar fashion: The Green Renal Project.

This work is only at the very early stages of planning and is an important step as we consider strategies of how best to manage the disproportionate environmental footprint of kidney care.

Summary

SNAP provides vital information on clinical service performance across well-defined areas of patient care and is set to extend coverage to other commissioned areas of healthcare. We will continue to deliver on our vision to:

...provide an internationally recognised health intelligence service which, by working in partnership with stakeholders to audit clinical care, plays a key role in promoting safe, effective and person-centred healthcare in Scotland...

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Glossary

AHP	Allied health professional
ARISE	Arthroplasty rehabilitation in Scotland endeavour
CC	Clinical coordinators
CfSD	Centre for Sustainable Delivery
CPHM	Consultant in public health medicine
CRM	Cardiac rhythm management procedures
DMT	Disease modifying therapies
ECT	Electroconvulsive therapy
EQ-5D-5L	EuroQol-5 Dimensions-5 Levels
ERAS	Enhanced recovery after surgery
FLS	Fracture liaison service
KPI	Key performance indicators
LAC	Local area coordinators
MS	Multiple sclerosis
MSQI	Minimum Standards and Quality Indicators
NCAP	National Cardiac Audit Programme
NICOR	National Institute for Cardiovascular Outcomes Research
PCI	Percutaneous coronary intervention
PHS	Public Health Scotland
PREMs	Patient reported experience measures
PROMs	Patient reported outcome measures
QA	Quality assurance
QAM	Quality assurance manager
QI	Quality indicator
RC	Regional coordinators
REDCap	Research Electronic Data Capture
ROS	Royal Osteoporosis Society
SAP	Scottish Arthroplasty Project
SCAP	Scottish Cardiac Audit Programme
SEAN	Scottish ECT Audit Network
SFLS	Scottish Fracture Liaison Service

SGNAPB(H) (Health)	Scottish Government National Audit Programme Board
SHFA	Scottish Hip Fracture Audit
SICS	Scottish Intensive Care Society
SICS	Scottish Intensive Care Society
SICSAG	Scottish Intensive Care Society Audit Group.
SMR01	Scottish Morbidity Records
SMSR	Scottish MS Register
SNAP	Scottish National Audit Programme
SPFR	Scottish Pelvic Floor Repair
SRAS	Scottish Robotic Assisted Surgery
SRR	Scottish Renal Registry
SSCA	Scottish Stroke Care Audit
STAG	Scottish Trauma Audit Group
STEMI	ST elevation myocardial Infarction
STN	Scottish Trauma Network
TAVI	Transcatheter aortic valve implantation
UHW	University Hospital Wishaw

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Further information

Further information and data for this publication are available from the [publication page](#) on our website.

The next release of this publication will be November 2025.

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Appendices

Appendix 1 – Acknowledgements

Name	Role	NHS Board/ Other place of work
Marion Bain	Deputy Chief Medical Officer and Co-chair, SGNAPB(H)	Scottish Government
Stuart Baird	Service Manager	PHS
Claire-Louise Cassidy	National Clinical Coordinator	PHS
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Ros Hall	National Clinical Coordinator	PHS
Angela Khan	National Clinical Coordinator	PHS
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Neil Muir	National Clinical Coordinator	PHS
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Emma Ramsay	National Clinical Coordinator	PHS
Fiona Strachan	Programme Lead	PHS/ IHDP
Kirsty Ward	National Clinical Coordinator	PHS

We would also like to acknowledge the work of:

- Our stakeholders in NHS Boards across Scotland. Working collaboratively, they help to further develop the SNAP and make it the success it is today.

- Every member of the SNAP team who continually strive to improve the audits/ registers and most importantly outcomes for patients.
- Members of the Scottish National Audit Programme Board (Health) for their continued support and leadership.

Meaning that jointly we can achieve the SNAP vision to audit clinical care and promote safe, effective and person-centred healthcare in Scotland.

Appendix 2 – Early access details

Pre-release access

Under terms of the 'Pre-release Access to Official Statistics (Scotland) Order 2008', PHS is obliged to publish information on those receiving pre-release access ('pre-release access' refers to statistics in their final form prior to publication). The standard maximum pre-release access is five working days. Shown below are details of those receiving standard pre-release access.

Standard pre-release access:

Scottish Government Department of Health and Social Care (DHSC)

NHS board chief executives

NHS board communication leads

Early access for management information

These statistics will also have been made available to those who needed access to 'management information', i.e. as part of the delivery of health and care:

Early access for quality assurance

These statistics will also have been made available to those who needed access to help quality assure the publication:

Appendix 3 – PHS and official statistics

About Public Health Scotland (PHS)

PHS is a knowledge-based and intelligence driven organisation with a critical reliance on data and information to enable it to be an independent voice for the public's health, leading collaboratively and effectively across the Scottish public health system, accountable at local and national levels, and providing leadership and focus for achieving better health and wellbeing outcomes for the population. Our statistics comply with the [Code of Practice for Statistics](#) in terms of trustworthiness, high quality and public value. This also means that we keep data secure at all stages, through collection, processing, analysis and output production, and adhere to the Office for National Statistics '[Five Safes](#)' of data privacy.

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