National Radiology Quality Improvement Programme

2nd National Data Report
1 JAN - 31 DEC 2020

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WORKING GROUP, NATIONAL RADIOLOGY QUALITY IMPROVEMENT PROGRAMME

Dr Rachel Ennis (Chair)	Consultant Radiologist University Hospital Galway
Dr Peter Kavanagh	Dean, Faculty of Radiologists, RCSI Consultant Radiologist, Connolly Hospital Blanchardstown, Dublin
Dr Patricia Cunningham	Consultant Radiologist, Our Lady of Lourdes Hospital, Drogheda and Our Lady's Hospital, Navan
Dr Ferdia Bolster	Consultant Radiologist, Mater Misericordiae University Hospital, Dublin
Dr Angela Byrne	Consultant Radiologist, Children's Health Ireland at Crumlin
Dr Tadhg Gleeson	Consultant Radiologist, Wexford General Hospital
Prof Anthony Ryan	Consultant Radiologist, University Hospital Waterford
Dr Jennifer Kerr	Consultant Radiologist, Beaumont Hospital, Dublin
Dr Grainne Govender	Consultant Radiologist, St. James's Hospital, Dublin
Dr Darragh Halpenny	Consultant Radiologist, Tallaght University Hospital, Dublin
Dr Catherine Glynn	Consultant Radiologist, University Hospital Galway

PROGRAMME MANAGEMENT TEAM, RCPI

Joanna Swierczynska	Programme Manager, National Radiology Quality Improvement Programme, RCPI
Caitríona McGrath	Manager, Specialty Quality Improvement, RCPI

FOREWORD

We are pleased to present our the second annual National Data Report of the National Radiology Quality Improvement (NRQI) Programme. This report presents anonymised aggregate Quality Improvement (QI) data from the 48 participating public hospitals collected in 2020.

COVID-19 has had an enormous impact on all aspects of service delivery, and on non-clinical activities such as QI. Pandemic necessitated a dramatic change in working practices almost overnight in March 2020 and is ongoing today. As such, the support of IT and other departments was diverted and as a result, QI activities suffered in a number of areas.

More recently, the HSE Cyber attack in May 2021 resulted in severe chaos to all aspects of the health service once again. This had the additional impact of attacking the very nature of data collection and has contributed to the delayed publication of this report.

Of course, long-standing problems persist such as lack of resources, lack of protected time, minimal support and buy in from management. If the last year has demonstrated anything, it is the increasing importance of robust QI activities and processes. The QI data collected allow accurate assessment of workload and scope of practice; therefore, it is vital to ensure that best practice is followed and that patient safety is at the centre of what we do.

As in last year's report, conclusions are based on available data and are therefore inevitably incomplete. Early data demonstrates some immaturity which should resolve in subsequent reports. It is also important to stress that the purpose of this is to allow departments to compare themselves to the national aggregate data.

As always, we are deeply indebted to the QI Lead Radiologists and QI Technical Leads for the data collection, collation and all quality improvement initiatives in their departments.

I would like also to acknowledge the support and help of the Specialty QI Programme Steering Committee and the Faculty of Radiologists, the National QI Team, HSE and the Programme Management Team, RCPI for their continued support and commitment.

Dr Rachel Ennis
Chair of the National Radiology Quality Improvement Programme Working Group

KEY RECOMMENDATIONS

1 The Working Group recommend developing a schedule with the programme management for the summary data requiring manual upload, which should help to increase compliance. The schedule would indicate the times of the year when the data should be uploaded and will be made available to QI Tech Leads and QI Lead Radiologists.

See Chapter 2

2 Radiology departments must be resourced adequately and in line with European best standards to continue to provide the optimum level of service to patients and to ensure a reduced burden on existing staff to mitigate against burnout, this is strongly supported by international research.

There is a backlog of patients requiring radiological examination. The Working Group recommend that additional resources are put in place to ensure patients receive diagnoses in an appropriate timeframe.

See Chapter 3

3 Based on the 2019 findings and additional local knowledge, the Working Group recommended broadening the scope of Turnaround Time (TAT) in future reporting cycles. The goal is to measure total turnaround time, and its two separate components, technical TAT and report TAT. This will include the time from when the examination is requested, to when the examination is completed by the radiographer, to when the report for the examination is finalised by the radiologist. This work was postponed in May 2021 owing to the ransomware cyber attack, it will resume in 2022.

See Chapter 4

4 The Working Group strongly recommends QI Lead Radiologists feed any departmental improvement ideas back to the Group to assist in developing a more coordinated national solution with regards to QI activity, collection and reporting on QI data.

See Chapter 5

5 Radiology QI meetings should take place 5 times per year at a minimum and attendance where possible should be mandatory for all departmental Radiologists including Radiologists in Training.

See Chapter 7

KEY FINDINGS

1. In 2020, 2.56 million radiology cases were interpreted and reports generated in the 48 public Irish hospitals represented in this report.

2. The total case figure is 385,082 cases less than in 2019, which indicates the significant efforts made to maintain Radiology services across the country in 2020 but also reflects the impact of the pandemic on radiology services and patient management.

3. Owing to the impact of the pandemic, a significant decrease of 50% (approx. 123,000 cases) in workload was noted in April 2020 in comparison to April 2019. From June to December 2020 the radiology workload remained steady and was on average only 8% below 2019 levels for the same months.

4. In 2020, 23 out of 41 sites met or exceeded the recommended TAT target of 90%. This is an increase on 2019, when 17 out of 39 sites met or exceeded this target.

5. The percentages of cases referred for a Prospective Review are below 1.1%. The highest percentage of Prospective Reviews was recorded for Magnetic Resonance (MR) cases in 2020 at 1.1%. This was a 0.2% increase from 2019, which translates into 19% overall increase between 2019 and 2020 data.

6. In 2020, 79% of all recorded Retrospective Reviews were in concordance with the original report; this was 8% more than in 2019.

7. A decrease of 8% was seen in the cases submitted to Radiology Quality Improvement Meetings following a Retrospective Review from 22% in 2019 to 14% in 2020.

8. The majority of Radiology Alerts activated in the local systems, for each patient class in 2020 refer to Unexpected-Clinically Significant (U-CS) findings. The Outpatient (OP) referrals have seen the highest percentage of those alerts, at 95%.

GLOSSARY OF TERMS

Accession number	This is a number assigned to each case by the local information system.
Anonymisation	Anonymisation of data means that data are processed in such way that identification of persons or other data subjects is prevented. When data are anonymised, it is not possible to link it back to an identified or identifiable natural person.
Case	A case refers to a single examination. One case can contain one image (e.g. plain film) or multiple images (e.g. Magnetic Resonance).
CT	Computed Tomography, utilises x-ray photons and digital image reconstruction to create a two- or three-dimensional image.
DXA	Dual-energy X-Ray Absorptiometry, also called bone densitometry.
ED	An emergency department in a hospital. In this report ED relates to patients referred to a radiology department from an emergency department.
Exam	A request to a radiology department to carry out diagnostic imaging, an interventional procedure or some other service for a patient. For the Key Quality Indicators and purpose of this report.
Ext	External Referral. When a patient is referred to a radiology department from another hospital/centre.
External Registry Review	A review of a radiology procedure carried out by a third party.
FL	Fluoroscopy. This is an imaging modality that uses x-rays to allow real-time visualisation of body structures, often with the use of high-density contrast agents.
Focused Audit	A Focused Audit is a review carried out by a radiologist into an aspect of the radiology service.
GP	General Practitioner. In this report GP relates to patients referred to radiology department by a general practitioner.
HSE	Health Services Executive
ICT	Information and Communications Technology
IP	Inpatient. This is a patient referred to radiology department after they have been admitted to hospital.
IR	Interventional radiology. This is a therapeutic and diagnostic specialty that includes a wide range of minimally invasive image guided therapeutic procedures, including minimally invasive diagnostic imaging.
KQI	Key Quality Indicator. These are standardised, evidence-based measures of health care quality e.g. Report Turnaround Time.

MDM	Multidisciplinary Team Meeting. These meetings form an essential part of the clinical care of patients with cancer, suspected cancer or other clinical conditions and involve specialists in many areas coming together to agree on the best treatment options for individual patients. Radiologists have a key role these meetings contributing to patient management.
MG	Mammography. This modality uses low energy x-rays specifically for imaging of breast tissue.
Modality	A term used in radiology to describe the form of imaging (e.g. Computed Tomography, Ultrasound, Magnetic Resonance etc).
MR	Magnetic Resonance imaging. This is the use of magnetic fields and radio waves to visualise detailed internal structures, providing real time, three-dimensional image of body organs with good soft tissue contrast.
NIMIS	National Integrated Medical Imaging System. Public hospitals using NIMIS are connected on a single imaging platform to allow sharing of images between specialists.
NM	Nuclear Medicine. This involves use of radioactive tracers to visualise various organs. The radioactive tracer emits gamma radiation, which is then imaged using a gamma camera. The tracer can be injected, inhaled or inserted.
NQAIS	National Quality Assurance & Improvement System. A platform for the generation of local and aggregate national QI data activity reports. It is part of a Health Atlas Ireland platform https://www.healthatlasireland.ie/
NQAIS Site	Refers to the hospital or hospitals that are uploading data to NQAIS. Some smaller hospitals upload information under joint NQAIS accounts with bigger, model 3 or 4 hospitals in their hospital group. Each NQAIS account is referred to as NQAIS Site.
NRQI	Refers to National Radiology Quality Improvement Programme
OP	Outpatient. This is a patient referred to a radiology department without hospital admission at the time of radiological exam.
OUS	Obstetric Ultrasound. This is performed to assess the foetus and related structures in pregnant women.
Outcome Meeting	An Outcome Meeting is a meeting between Interventional Radiologists to discuss interventional procedures.
PACS	Picture Archiving and Communication System. Software used in radiology departments to store, review and report on radiology images across different modalities.
Patient Class	Describes the patient being examined based on referral source (i.e. General Practitioner referral, Inpatient referral).
peerVue QICS	peerVue Qualitative Intelligence and Communication System. This local data collection system used within PACS in radiology departments, which enables anonymised QI data exports to NQAIS-Radiology.
PET	Positron Emission Tomography. It uses small amounts of radioactive materials called radiotracers or radiopharmaceuticals to evaluate organ and tissue functions. By identifying changes at the cellular level, this imaging method may help the early detection of a disease.

Pseudonymisation	Pseudonymisation of data takes place when any identifying characteristics of data are replaced with a pseudonym or a value which does not allow the data subject to be identified. Pseudonymised data can no longer be attributed to a specific data subject without the use of additional information.
QI Activity	A quality improvement task carried out on a case. It is described by multiple QICS records and linked by the original case ID. There will be one key QICS record that identifies the QI Activity; the remaining QICS records provide additional information on the QI Activity.
Radiology Alert Acknowledgement Time	The time between when the Radiology Alert is activated in the peerVue system to the time this alert is marked as acknowledged in the peerVue system.
Radiology Department	The organisational structure within which a radiology service is provided. A radiology department can provide its service at one or more hospitals.
RCPI	Royal College of Physicians of Ireland
RCSI	Royal College of Surgeons in Ireland
Recommendation	Refers to suggestions for quality improvement put forward by the Working Group. They are based on the data presented in this report that should be implemented in each radiology department to support ongoing quality improvement activities.
RIS	Radiology Information System. The workflow engine supporting everyday activities of a radiology department in providing diagnostic imaging services to the hospital and patients.
RQI Meeting	Radiology Quality Improvement Meeting
SQI Team	Speciality Quality Improvement Team, based in RCPI.
TAT	Turnaround Time. This is the time between the moment an image is available for a radiologist to report on, to the time when the radiology report is finalised and authorised by the reporting radiologist.
TH	Surgical theatre
US	Ultrasound. This modality utilises high-frequency sound waves to provide cross-sectional images of the body.
VUS	Vascular Ultrasound. This is performed to assess heart and vascular structures.
XR	X-Ray (radiography). Use of electromagnetic radiation with short wavelengths, to visualise the internal structures of a patient. Also called plain film.

CHAPTER 1
INTRODUCTION TO THE PROGRAMME

The National Radiology Quality Improvement (NRQI) Programme has been at the core of quality improvements in radiology since 2009. The programme was launched by the Faculty of Radiologists, Royal College of Surgeons in Ireland (RCSI), in collaboration with the National Cancer Control Programme (NCCP) in response to findings of reports into cancer misdiagnoses at the time. The programme continues to be led by the Faculty of Radiologists, RCSI today.

The NRQI Programme is funded by HSE National Quality and Patient Safety Team and is managed by the Specialty Quality Improvement (SQI) Team, Royal College of Physicians of Ireland (RCPI).

> ## THE AIM OF THE NATIONAL RADIOLOGY QI PROGRAMME
>
> **To ensure a high quality, consistent and accurate radiology service nationally, providing the optimum patient experience with consistently high standards of quality care**
>
> **To improve patient safety and enhance patient care through timely, accurate and complete radiology diagnoses and reports**
>
> **To provide a safe space for learning and continuous improvement where QI activities are performed routinely by all**

The programme provides a national framework, which establishes routine reviews of performance, and highlights areas for improvement within quality activities and against national aggregate results, recommendations and agreed targets, in line with international best practice.

QI culture is actively promoted by engaging key hospital stakeholders in gathering and reviewing of relevant quality improvement data, identifying gaps in best practice and areas of good practice, and recognising and encouraging opportunities for improvement locally.

PURPOSE OF THIS DATA REPORT

The QI data collected by participating hospitals is submitted to NQAIS-Radiology for inclusion in the NRQI Programmes annual national data report.

This report facilitates informed decision making on the future steps necessary to support ongoing quality improvement processes within Irish radiology services.

> **The NRQI Working Group encourages participating hospitals to review their own data and discuss local performance against the targets, recommendations and national aggregate results with their colleagues in radiology departments, local hospital management and Quality and Patient Safety teams.**

Where findings suggest that there may be an area in need of improvement, these should be discussed locally using local hospital data extracted from NQAIS-Radiology.

WHAT IS BEYOND THE SCOPE OF THIS REPORT

This report cannot and should not be used to produce league tables or compare hospitals, as no two hospitals will have the same patient profile. Different hospitals specialise in treating patients with different and sometimes much more complex care needs, making comparisons between hospitals invalid.

Owing to varying resourcing levels some smaller hospitals must upload information under joint NQAIS site accounts with larger hospitals in their hospital group. When interpreting the data displayed in the report, it must be taken into consideration that a NQAIS site may represent a pairing of two or more hospitals or a single hospital and that each NQAIS site is unique.

This report cannot distinguish between the proportion of data that is recorded in an on-call environment or during high holiday season, versus normal working hours. This is important to highlight as differing levels of support are available.

OUTLIER MANAGEMENT

The NRQI Programme does not engage with individual sites that may be identified as outliers in this report. Hospitals are requested to report and manage the QI data within the radiology department and ensure the necessary actions to improve quality are initiated and/or referred to the appropriate person locally.

The programme requests that participating hospitals ensure QI data reports once generated and shared by the department, are reviewed by the Quality and Patient Safety teams or an appropriate local structure, linking with relevant hospital governance and programme structures as set out in the programme guidelines and taking action as required. All responsibility rests with participating sites to address any issues relating to their data and the potential to reach agreed targets or recommended standards.

OPPORTUNITIES AND CHALLENGES

The NRQI Programme is a key component in maintaining quality within radiology departments.

It is imperative that the support and resources required for successful quality improvement are provided by the hospital management.

Local leadership and quality management systems should be in place to support and coordinate quality improvement activities. Quality improvement must be woven into all systems of the department to achieve the best possible outcome.

NATIONAL DATA REPORT APPROVAL PROCESS

This report has been developed by the Working Group of the National Radiology QI Programme and the Programme Management Team.

It was submitted to the Faculty of Radiologists, RCSI, and Specialty Quality Improvement Programme Steering Committee for approval and sign off.

This report was approved for publication on 7 December 2021.

BENEFITS OF PARTICIPATION

Benefits of Participation

1 Improve patient safety, reduce risk and enhance patient care

2 Improve communication between institutions

3 Increase public confidence in diagnostic reporting

4 Demonstrate that participants are performing to a level consistent with national and/or international standards

5 Recognise and encourage opportunities for quality improvement locally

6 Actively promote a culture of QI by engaging key hospital stakeholders

7 Identify and share good practice

DATA QUALITY

National QI data relating to the following Key Quality Indicators insert (KQIs) were analysed in the preparation of this report:

- **REPORT TURNAROUND TIME**
- **PEER REVIEW**
- **RADIOLOGY ALERTS**
- **RADIOLOGY QUALITY IMPROVEMENT MEETINGS**

DATA SOURCE

The data source for this report is Health Intelligence Ireland – NQAIS-Radiology.

DATA AND INFORMATION LIFECYCLE

Fundamental to the programme is the extraction of encrypted QI data from the local information systems which are then submitted to The National Quality Assurance & Improvement System (NQAIS) for Radiology. This online platform is an essential component of the NRQI Programme. NQAIS-Radiology is the central database developed and validated by HSE's Office of Chief Information Officer (OoCIO), for QI data storage, analysis and report generation.

Data relating to predefined KQIs are automatically exported from peerVue to NQAIS-Radiology every night. A portion of QI activity data requires manual input into NQAIS-Radiology by a QI Lead Radiologist, as shown in Table 2.1 under Summary Data. Radiology departments can use the report to identify best practice and any variations on this, to review, improve and sustain the quality of their work in the context of national norms and targets.

The NRQI Programme management prepare the national data report using an extract from NQAIS-Radiology on an annual basis.

The majority of participating hospitals use NIMIS (National Integrated Medical Imaging System) which allows electronic sharing of images between specialists in different centres. The Radiology Information System (RIS) and Picture Archiving Communication System (PACS) within those hospitals are connected to a third part local information system which allows for recording QI activities input by radiologists daily.

LOCAL REPORTING

Each site has access to its own data and the ability to run reports on it using NQAIS-Radiology. They can use this information to identify areas for quality improvement in order to enhance patient care and minimise the potential for error.

The programme enables radiology departments to compare themselves against national aggregate data and targets and recommendations set in the programme guidelines.

As outlined in the Memorandum of Understanding issued to all participating sites the NRQI Working Group recommend that the QI Lead Radiologist communicates the local QI data reports to senior hospital management and clinical governance/Quality and Patient Safety teams including clinical director/consultant in administrative charge, at minimum on a quarterly basis.

How is QI Data collected?

Diagnostic Radiographers → PACS/RIS

Consultant Radiologists → peerVue

Summary Data Manual Input
- RQI Meetings
- Multidisciplinary Meetings
- Outcome Meetings
- Focused Audits
- External Registry Review

Consultant Radiologists

QI Activity Data Automatic Upload
- Prospective, Retrospective & Assigned Peer Reviews
- Radiology Alerts
- Report Turnaround Time

NQAIS Radiology

Reports available locally for Hospitals for review against National Aggregate Data **Driving Improvement Locally**

National Report based on Anonymised Aggregate National Data **Facilitating Learning Nationally**

NRQI Working Group and Programme Management

Consultant Radiologists →

Hospital Management → **Hospital Management Review**

DATA COLLECTION TIMELINE

The data contained in this report were collected between 1st January 2020 and 31st December 2020.

SCOPE OF THE REPORT

IN SCOPE:

Adult and paediatric cases are captured in the dataset; and while it is possible to distinguish these cases for analysis purposes, no distinction is made in the report at this time.

Inpatient and Outpatient cases are collected and differentiated in this report.

Data from cases arising from sources external to the hospital in which with the examination takes place are analysed and also specifically cases referred from general practitioners (GP).

OUT OF SCOPE:

Data from private sites are not included at this time.

The dataset does not contain data from obstetric ultrasounds.

Mammograms performed as part of the BreastCheck screening programme are not included in this dataset.

DATA COVERAGE
HOSPITALS WE WORK WITH
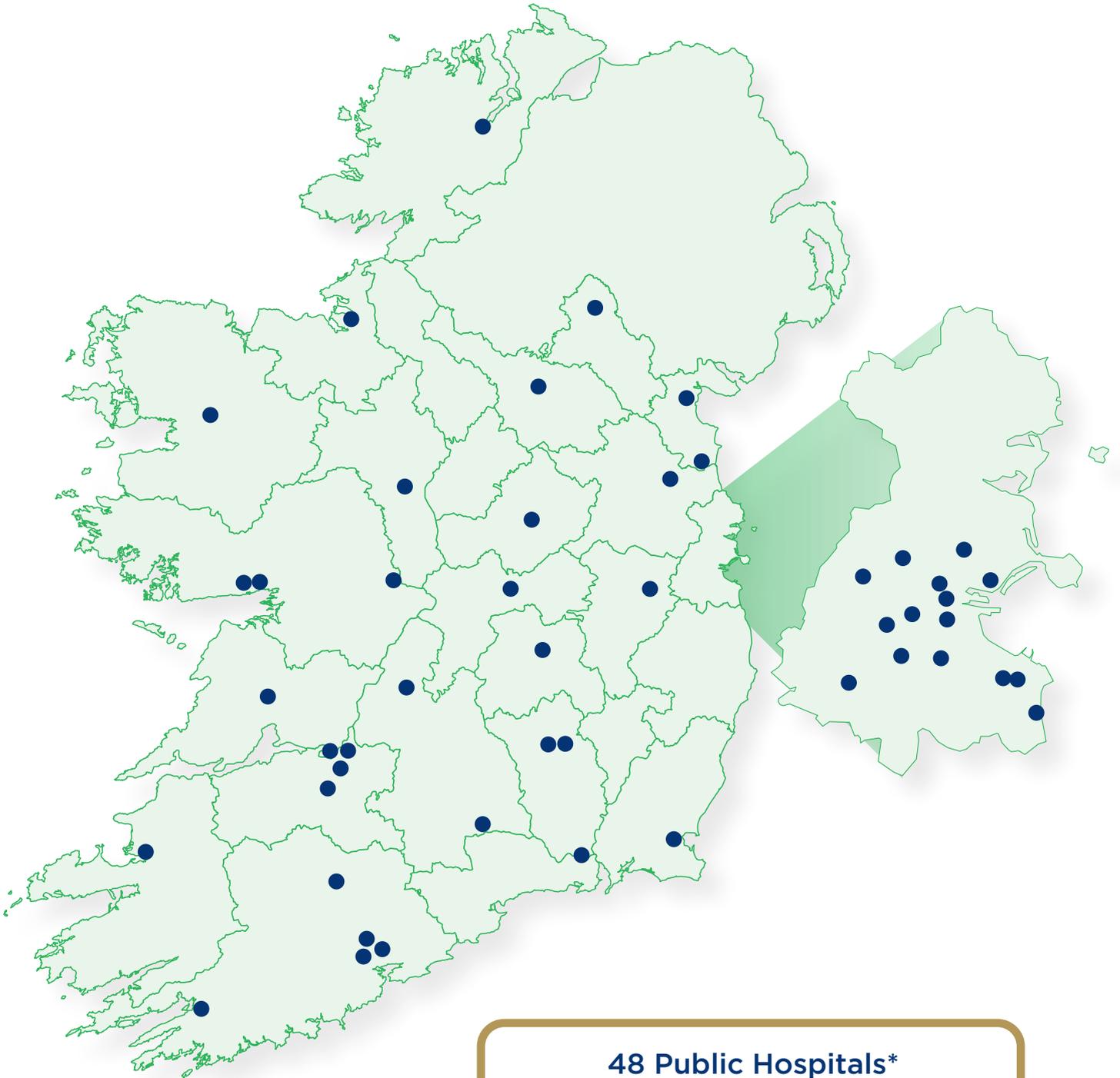
48 Public Hospitals*
Contributed QI Data to This
National Data Report 2020

*The number of hospitals does not correlate with number of NQAIS sites
as some hospitals upload data under joint NQAIS Account.

TABLE 2.1. List of Public Hospitals participating in NRQI Programme and contributing to National Data Report 2020

Dublin Midlands Hospital Group	Saolta Hospital Group
Tallaght University Hospital	Letterkenny University Hospital
Coombe Women & Infants University Hospital	Mayo University Hospital
Midland Regional Hospital, Portlaoise	Portiuncula University Hospital
Midland Regional Hospital, Tullamore	Roscommon University Hospital
Naas General Hospital	Sligo University Hospital
St. James's Hospital	University Hospital Galway
St. Luke's Hospital, Rathgar	Merlin Park University Hospital
Ireland East Hospital Group	**South/South West Hospital Group**
Cappagh National Orthopaedic Hospital	Kilcreene Orthopaedic Hospital
Mater Misericordiae University Hospital	South Tipperary General Hospital
Our Lady's Hospital, Navan	University Hospital Kerry
Regional Hospital Mullingar	University Hospital Waterford
Royal Victoria Eye and Ear Hospital	South Infirmary Victoria University Hospital
St. Columcille's Hospital	Mercy University Hospital, Cork
St. Luke's General Hospital, Kilkenny	Cork University Hospital
Wexford General Hospital	Mallow General Hospital
RCSI Hospitals Group	Bantry General Hospital
Beaumont Hospital	**Children's Health Ireland (incl. TUH Paediatric RCSI Group)**
Cavan General Hospital	
Connolly Hospital Blanchardstown	Children's Health Ireland at Temple Street
Louth County Hospital	Children's Health Ireland at Crumlin
Monaghan General Hospital	**UL Hospital Group**
Our Lady of Lourdes Hospital, Drogheda	University Hospital Limerick
Rotunda Hospital	University Maternity Hospital Limerick
No Group	Ennis Hospital
National Rehabilitation Hospital	Nenagh Hospital
St. Mary's Hospital	Croom Hospital
	St. John's Hospital

DATA PROTECTION

The data collected and analysed in the radiology departments contain no patient identifiable information.

It must be also noted that data collected by the NRQI Programme do not include information which could identify radiologists or other members of the radiology department.

The principle of the NRQI programme is that each participating hospital owns its data and is the data controller in relation to data collected there. This means that the hospital is responsible for the integrity of its data and can authorise or deny access to data. This is performed under the direction and governance of local and hospital group management and in accordance with Data Protection Acts 1988 and 2003 and General Data Protection Regulation (GDPR).

DATA QUALITY

It is important that those collecting and using the QI data can have confidence in the quality of the data. The data collected must be reliable, accurate, relevant and timely, to facilitate decision making and associated quality improvements to provide safer higher quality care for patients.

HIQA recommends the use of a data quality framework, which will enable the programme to assess the current data quality and necessary improvements using the following four tools 1) data quality strategy 2) data quality assessment 3) reporting on data quality and 4) a data quality improvement cycle.[1]

Data Quality Statement

The NRQI Programme acknowledges the challenges that exist in relation to the quality of the data submitted and collected. The data collected are not subject to a sign-off process as authorised reports are automatically uploaded, the benefits of an automatic upload are many including consistency and efficiency.

The Working Group encourages sites to engage with this report and the QI Guidelines[2] to ensure participating departments are familiar with the data required for this and local reporting, and in particular the data that require manual input.

Data Quality Assessment

Here we consider data under the following five dimensions of quality: accuracy and reliability, timeliness and punctuality, coherence and comparability, accessibility and clarity and relevance [1].

Accuracy and Reliability

The QI data collected for the NRQI Programme consists of a range of KQIs, designed to measure quality at both a local and national level in radiology departments. Trends are analysed on an annual basis for each KQI in the national data report, comparing data points from 2019 and 2020 and in some instances, for 2018. Additional data visualisation provides information and comparisons between sites over the course of the year in relation to patient class and referral source.

The data coverage is outlined in Table 2.1, with 48 public hospitals participating, this represents significant coverage.

To avoid creation of duplicates, as a part of data validation process, automatic uploads system is configured in such way that only the most up to date version of each case is uploaded to NQAIS-Radiology from a local information system.

Completeness: The nature of the automatic data upload process ensures that vital data are included in the data extract used for the national data report, this results in almost a 100% data completeness level. However, the programme acknowledges a very low level of data completeness for those data that require manual input.

The data presented in this report are accurate at the time the dataset is extracted from NQAIS-Radiology.

Timeliness and Punctuality

Data relating to the same suite of KQIs is automatically uploaded nightly to NQAIS-Radiology. Additional data must be entered manually by the QI Clinical Leads, ideally on a monthly basis.

Some QI activity relating to the report timeline may be uploaded in the period between data extraction and publication of this report. Radiology departments are not formally requested to complete manual input for summary data by a certain date, as a result it is possible some data are not included in the annual national data report.

The programme acknowledges that summary data uploads which are performed manually can be time consuming, contributing to some expected delays in the uploading of data.

The annual national data report is launched within the 12 months after the reporting period.

Coherence and Comparability

Radiology departments are contacted on a quarterly basis by the programme manager and encouraged to access their own data in NQAIS-Radiology provided they have the appropriate permissions, here they can compare their own performance over time to the national aggregate and provide a report for colleagues and hospital management.

The current convention in the national data report is to identify hospitals with a pseudo-identifier, known only to the hospitals themselves. In the absence of hospital identifiable information sites may draw comparisons between similar centres such as cancer centres. The Working Group advise against using the report to produce league tables or to compare hospitals to one another as no two hospitals will have the same patient profile. Owing to varying resourcing levels some smaller hospitals must upload information under joint NQAIS site accounts with larger hospitals in their hospital group. When interpreting the data displayed in the report, it must be taken into consideration that a NQAIS site may represent a pairing of two or more hospitals or a single hospital and that each NQAIS site is unique.

The proportion of data that is recorded in an on-call environment or during high holiday season and during normal working hours are not distinguished in this report. This should be taken into consideration as differing levels of support are available during these times.

The current dataset reported on by the NRQI Programme in this report facilitates quality improvements within radiology but cannot be linked with datasets provided by the other National QI Programmes in GI Endoscopy and Histopathology or with the HIPE database.

A Data Dictionary is maintained by the programme manager, cataloguing and describing the structure and content of the data to maintain consistency in data collection.

Accessibility and Clarity

All participating radiology departments may access their own data in NQAIS-Radiology. Training is provided by the programme management to aid the reliability of this process.

Further training or any refreshing of specific elements can be requested from the programme manager.

The analysis of the data once extracted from NQAIS-Radiology is performed consistently by the programme management team and presented graphically in the national data report.

Previous reports can be viewed here.

Relevancy

The purpose of the data is to aid decision making in a busy radiology department relating to patient care. Detailed data are supplied on each of the KQIs in the QI Guidelines document to aid visualisation of both areas of improvement and those requiring increased scrutiny. The recent data-driven report on the impact of COVID-19 on cancer care in Ireland found the NRQI Programme data to be one of the more real-time sources of diagnostic data in the country and assisted significantly in representing the challenges faced by hospitals in meeting the needs of patients (see Chapter 3).

There are currently two different local information systems in operation across the country, not all sites are on NIMIS which contributes to challenges in the uniform collection of data.

The Working Group review and assess the KQIs on an ongoing basis in terms of relevance and based on feedback from colleagues. Additional work will commence in the coming year on the setting of evidence-based targets for specific KQIs.

The NRQI Programme has set out seven KQIs (see Table 2.2); however, not all are included in this report. The KQIs not covered in this report include those where the data in NQAIS-Radiology may not be currently reliable due to a low level of data completion and data immaturity.

REPORTING ON DATA QUALITY

Data quality is monitored by the programme management, with reports currently made to the Working Group and Steering Committee when issues arise.

CONTINUOUS IMPROVEMENT OF DATA QUALITY

The use of superior data analysis tools will permit a more in-depth consideration of data quality into the future, however limitations encountered in the data captured by local systems and the concerns regarding gaps in data collection must be factored in.

Greater discussion between all parties will indicate if the data currently available meets the needs of radiology departments and on the use of reports locally which will enable the programme to generate a more detailed picture on the use of the data such as service planning.

KEY RECOMMENDATION

The Working Group recommend developing a schedule with the programme management for the summary data requiring manual upload, which should help to increase compliance. The schedule would indicate the times of the year when the data should be uploaded and will be made available to QI Tech Leads and QI Lead Radiologists.

DATA COMPLIANCE

The Radiology Quality Improvement Working Group is concerned at the very low level of Radiology QI activity reflected in the National Data Report for 2020.

The following are the likely contributory factors for this:

1. Lack of protected time for Lead QI Radiologists, and all Consultant Radiologists, to engage in QI activities;
2. Too few Radiologists;
3. Concerns over medico-legal exposure due to the absence of protective legislation for doctors engaged in audit;
4. Technical incompatibility issues between PeerVue (the system used to capture QI activity) and some PACS platforms, especially hospitals with non NIMIS PACS systems;
5. Manual uploading of QI data required for some data;
6. Covid-related staff shortages at some sites.

It is clear that there is a low rate of recording of QI activity at multiple sites in Irish hospitals, albeit that the verbal feedback from departments is that QI activity is happening locally. Therefore, the data in the report does not accurately reflect national QI activity occurring, but it is what is available to work with currently. WG members are concerned about this and are eager to increase this activity and documentation of same. Low participation in radiology QI, if real, carries a potential risk for patient safety. In 2020, the COVID-19 pandemic distracted staff from all but the most essential activities and QI activity has fallen by the wayside. The HSE cyber attack in May 2021 precluded access to PeerVue system for a prolonged period which will further exacerbate the challenges relating to the ongoing COVID-19 pandemic, and high service demands.

Increasing engagement with local QI leads and highlighting the importance of QI activity both within a department as a whole and for individual radiologists likely requires a change in departmental cultures and in particular, time in one's weekly jobplan to do QI activities, and probably within the training programme itself also, so that QI is embedded in normal daily/weekly activity for new consultants joining departments and for the clinical leadership of radiology departments.

Proposed solutions and recommendations to address these issues include:

1. Hospital management should provide greater support for Radiology QI activities by complying with previously agreed recommendations to ensure protected time for Lead QI Radiologists (4 hours per week), and all other Consultant Radiologists (2 hours per week). Embedding these protected hours in revised work plans for all existing and new Consultant Radiologists is essential.
2. Resolve the critical shortage of radiologists in Ireland by increasing radiologist resourcing to better align demand for radiology services with the capacity to deliver it. This would facilitate radiologists in engaging in non-interpretive tasks (including QI) that are an essential part of their professional work.
3. Implement technical improvements to enhance automated uploading functionality: this would facilitate the recording of radiology QI activities which may be happening in practise but which are not being captured.
4. Advocate for the enactment of the Patient Safety Bill, to include a clause that indemnifies doctors who engage in audit and audit-related activities like QI.
5. Improve remote reporting functionality on NIMIS and other PACS platforms so that Radiology services and QI activities can be more efficiently delivered off-site when working from home, which can provide a greater level of safety for radiologist staff during pandemics.

As a separate issue, the Working Group is aware that there are issues regarding recording of QI activities for outsourced studies, particularly those outsourced to the private sector and then imported back into NIMIS. We are aware that QI activities are being implemented at these external sites but that there is a lack of ability to record on the national platform. This would likely need to be addressed at a national level. The Working Group recommends that service level agreements between hospitals and external private providers should specify that the responsibility for quality assurance of imaging and radiological reports, including alerts for critical, urgent and unexpected significant findings, lies with the external provider.

TABLE 2.2: NRQI Programme Key Quality Indicators, as outlined in "Guidelines for the Implementation of a National Radiology Quality Improvement Programme".

KEY QUALITY INDICATORS	
peerVue QICS Data - Automatic Nightly Upload to NQAIS-Radiology	
PEER REVIEW	
Prospective Review	Number of accession numbers with prospective peer review (expressed for each modality and as a % of total accession numbers for each modality
Retrospective Review	Number of accession numbers reviewed (expressed for each modality and accession number type and as a % of total accession numbers for each modality)
Assigned Review	Number of accession numbers referred for consideration at Radiology Quality Improvement meetings (expressed as a % of total cases reviewed, by modality) (Apply to both Retrospective and Assigned Review.)
RADIOLOGY ALERTS	
Critical	Number of Radiology Alerts where the acknowledgement was received within the guideline acknowledgement time (expressed as a % of the number of Radiology Alerts)
Urgent	Number of Radiology Alerts for each urgency level (expressed as % of total workload)
Unexpected – Clinically Significant	Number of acknowledged communicated cases of unexpected and clinically significant radiological findings (expressed as % of total workload)
REPORT TURNAROUND TIME	
The % of cases with Report Turnaround Times within either 24hrs or 72hrs for all and by referral source and modality	
Summary Data - require manual input to NQAIS-Radiology by Consultant Radiologist	
RADIOLOGY QUALITY IMPROVEMENT (RQI) MEETINGS	
Attendance expressed as percentage of persons in attendance out of all invited. Number of accession numbers reviewed at RQI meeting (expressed as a percentage of total workload) Number of accession numbers reviewed at RQI meeting by source: Peer Review, MDM (to include Clinico-Radiological conferences) Number of accession numbers reviewed at RQI meeting by outcome: (expressed as a percentage of total workload)	
MULTIDISCIPLINARY MEETINGS (MDM)	
Number of MDMs / Clinico-Radiological Meetings held Number of patients reviewed at these MDMs / Clinico-Radiological Meetings (expressed as a % of total patients) Number of patients referred to a Radiology Quality Improvement Meeting (expressed as a % of total patients reviewed at MDM / Clinico-Radiological Meeting)	
OUTCOME MEETINGS (Interventional Radiology)	
Number of meetings held Number of patients reviewed (expressed as a percentage of total accession numbers) Number of patients for which learning points were listed or difficulties perceived (expressed as a percentage of total accession numbers).	

Detailed characteristics of each discussed Key Quality Indicator can be found in the respective chapters.

WORKLOAD AND RESOURCES

3

It would be impossible to discuss the workload experienced by radiology departments across the country in 2020 without discussing the impact of the COVID-19 pandemic on patient management, work practices and resources.

From March 2020 radiologists, like so many of their colleagues, continued to provide a key service in unprecedented conditions, navigating new challenges each day to provide a quality service for their patients. These challenges included resource issues due to redeployment, social distancing among other public health regulations, illness and the knowledge that so many patients would not present for examinations out of fear.

Radiologists work in predominantly digital environments which facilitated working remotely in many instances, conferencing and continued education. They were able to utilise the technology available to maintain a quality service remotely and assist departments in complying with infection control measures and public health regulations on social distancing for example.

These digital capabilities also facilitate easy extraction of data for reports such as this one; however, this data does not necessarily provide the context or reveal the challenges that accompany this workload, nor do they capture all the activities of the radiologist or the radiology department.

In 2020, 2.56 million radiology cases were interpreted and reports generated in the 48 public Irish hospitals represented in this report (see 2020 Activity on page 23). These cases range in complexity from chest X-rays to PET scans and Interventional radiology procedures. This total case figure is 296,388 cases less than in 2019, which indicates the significant efforts made to maintain radiology services across the country in 2020 but also reflects the impact of the pandemic on radiology services and patient management. A comparison of workload can be seen in Figure 3.1 by participating hospital (NQAIS Site) between 2019 and 2020.

TOTAL CASES RECORDED
2,557,061
-10% DECREASE FROM 2019
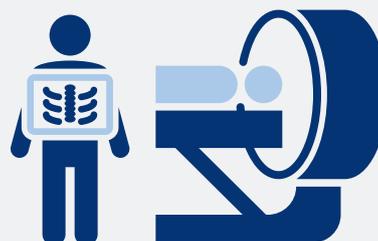
↓-1%

COMPUTED TOMOGRAPHY (CT)
360,813

↑3%

ULTRASOUND (US)
315,212

↓-31%

DUAL X-RAY ABSORPTIOMETRY (DXA)
14,877

↓-14%

X-RAY
1,545,710

↓-7%

MAGNETIC RESONANCE (MR)
142,965

↓-11%

NUCLEAR MEDICINE (NM)
18,147

↓-5%

MAMMOGRAM (MG)
42,381

↓-8%

THEATRE (TH)
29,188

↓-11%

FLUOROSCOPY (FL)
9,249

↓-14%

INTERVENTIONAL RADIOLOGY (IR)
22,306

↓-20%

VASCULAR ULTRASOUND (VUS)
40,818

↑2%

POSITRON EMISSION TOMOGRAPHY (PET)
4,210

FIGURE 3.1: Radiology Workload per NQAIS Site (2019 vs 2020)

2019   2020
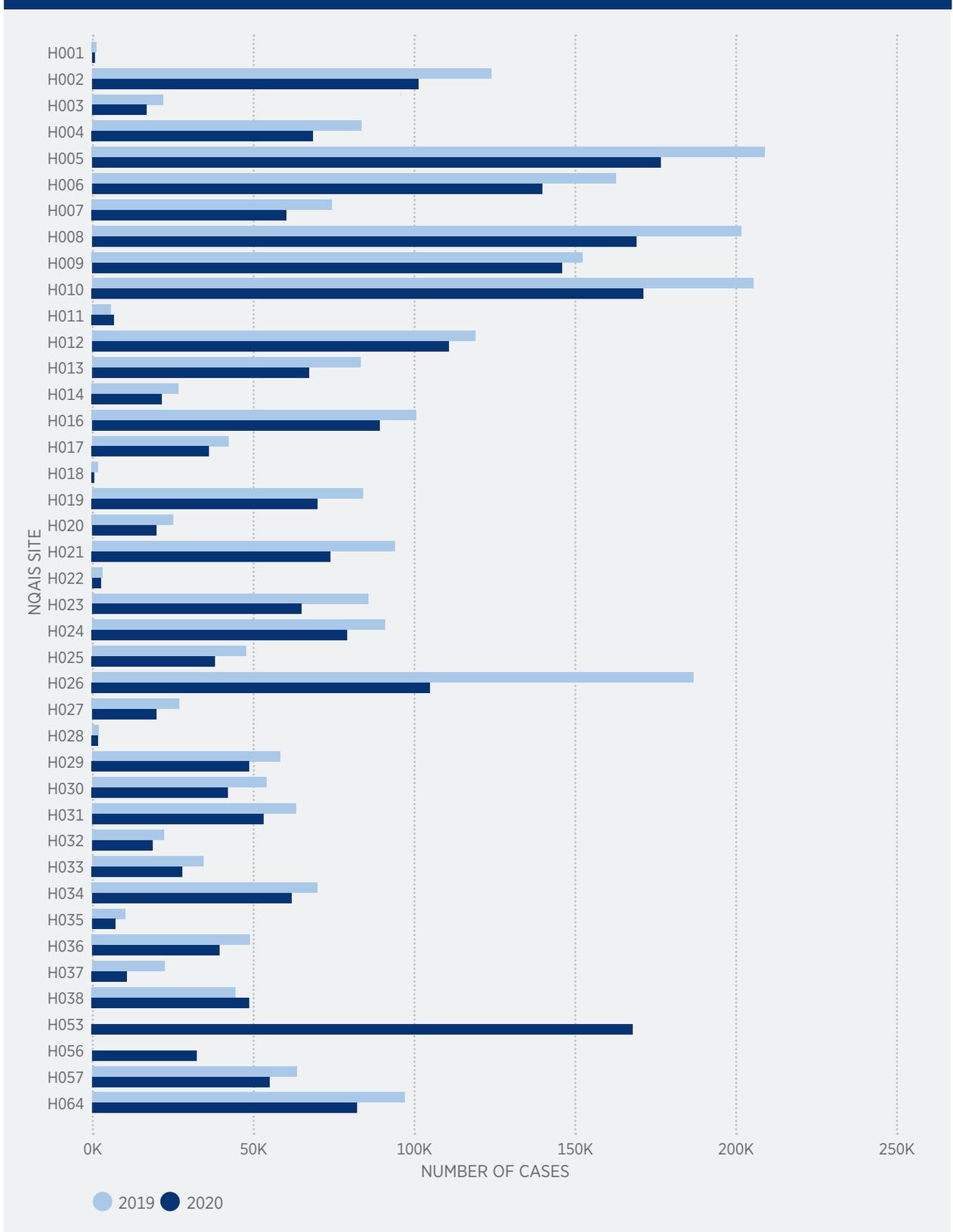
The number of cases decreased in all hospitals in 2020 in comparison with 2019, as can be seen in Figure 3.1.

FIGURE 3.2: Number of Cases Recorded, by Patient Class (Referral Source), in 2019 vs 2020
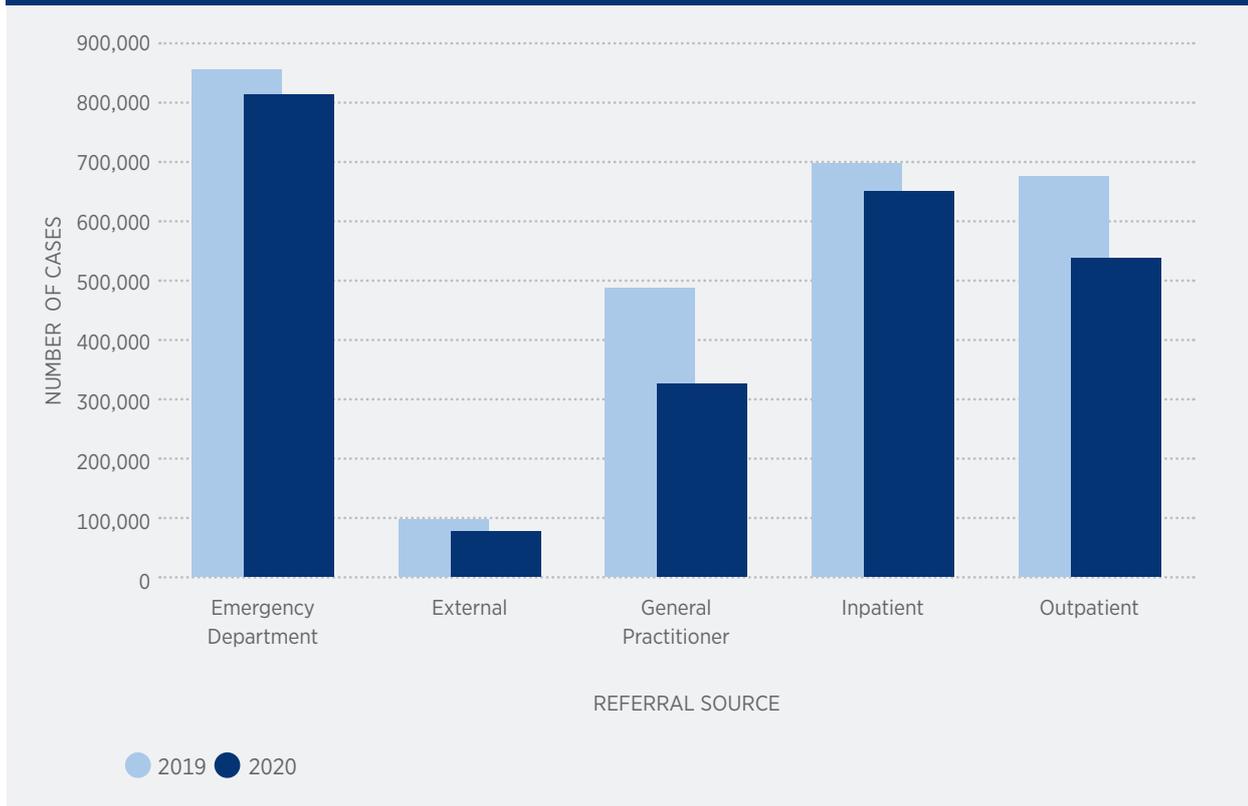
As illustrated in Figure 3.2, the number of cases in 2020 decreased across all referral sources, in comparison to 2019. The biggest decrease in 2020 referrals can be seen for patients referred by General Practitioners and Outpatients, which was likely influenced by the COVID-19 pandemic and patients' reluctance to attend clinics at the beginning of the pandemic.

The European Cancer Organisation is launching the Time to Act Campaign across Europe in a bid to use data gathered in these countries to better understand, quantify and devise an action plan to manage the impact of COVID-19 on cancer services and to build a better cancer services into the future[3]. Data analysed by that group found that 100 million screening tests did not take place across Europe in the diagnostic specialties, including radiology.

In previous reports the programme has highlighted the ongoing issues facing all radiology departments as workload continues to increase and resourcing levels fail to grow in response. The Consultant Application and Advisory Committee (CAAC) Annual Report published by the National Doctors Training Plan (NDTP)[4] in Ireland in 2020 and the Royal College of Radiologists, UK (RCR)[5] Workforce Census of 2020 outline that current resourcing levels are unsustainable with outsourcing now accounting for a large percentage of the radiology workforce.

In 2017, the NDTP "Review of the Clinical Radiology Medical Workforce in Ireland" recommended at additional 15 posts per year over a 10-year period to bring the ratio of radiologists per 100,0000 population in line with the European average, which was at the time 8 consultant radiologists per 100,000 population[6].

The CAAC Annual Report 2020[4], published by the NDTP outlines that there are approximately 294 consultant Radiology posts in Ireland as of 31 December 2020 which is an increase of 9 posts in comparison to 2019 year, however this is still well below European average of 12.8 radiologists per 100,000 population[7].

The difficulties faced by radiologists and their colleagues in building quality improvement activities into their working day have also been outlined in previous reports. There is increased risk of error while workloads continue to grow in volume and complexity and staff shortages continue.

THE IMPACT OF THE COVID-19 PANDEMIC ON RADIOLOGY SERVICES

The NRQI Programme have been collaborating on an all-island report on the impact of the COVID-19 pandemic on cancer services with the Faculty of Pathology (RCPI) who are leading the work, the National Cancer Control Programme, DATA-CAN Northern Ireland, the National Cancer Registry Ireland and the National QI Programmes in Histopathology and GI Endoscopy. This report is due to be published in December 2021.

Owing to limitations in the collection of data from local systems, the NRQI Programme is unable to differentiate between cancer related cases and other cases; however, the monthly data provided and shown below clearly indicate the impact on CT, MR, US and PET specifically and the level of the recovery to 2019 levels that took place from June 2020 in some instances. Very similar findings were also reported in the Canadian Radiology Resilience Now and Beyond Report in October 2020[8]. The taskforce responsible for that report, outlined many of the same challenges faced by the radiology community in Ireland as a result of the COVID-19 pandemic.

The below figures were correct at time of extraction from NQAIS-Radiology; however, they will not necessarily match figures presented elsewhere in this report due to varying inclusion criteria and timelines.

FIGURE 3.3: Radiology Workload for All Exams, Comparison for All Participating Sites, 2019 - 2020

All Radiology Exams

An initial increase of 7% in radiology workload was seen from the data recorded in NQAIS-Radiology in January and February 2020 in comparison to the same period in 2019. Owing to the impact of the pandemic a significant decrease of 50% (approx. 123,000 cases) in workload was noted in April 2020 in comparison to April 2019.

The graph illustrates a continuous increase of completed radiology exams from April to June 2020, but this remains lower than 2019 levels for the same period. From June to December 2020 the radiology workload remained steady and was on average only 8% below 2019 levels for the same months.

Computed Tomography (CT)

**FIGURE 3.4: Computed Tomography, Comparison for All Participating Sites, 2019 - 2020**
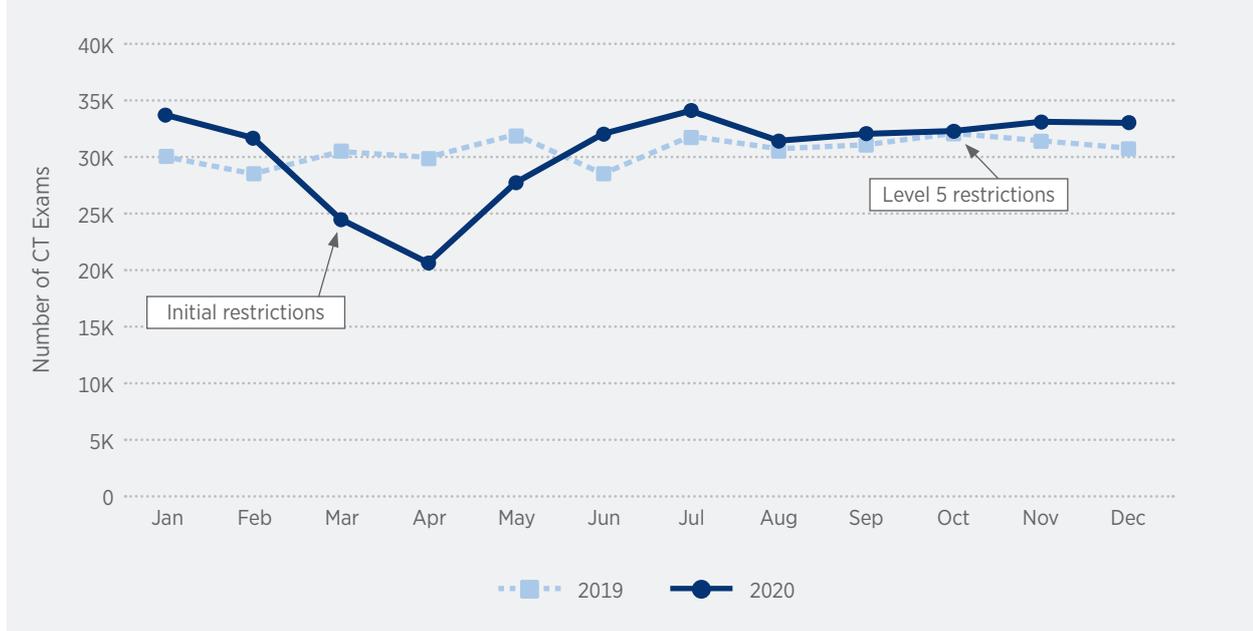
The first two months of 2020 showed an increase of CT exams of up to 12% when compared to same period in 2019. A decrease of 20%, 31% and 13% was seen in March, April and May 2020 respectively in comparison to data recorded in the same three months of 2019. This equates to 19,573 less CT exams completed between March and May 2020 (inclusively) than in the same period of 2019.

From May 2020 the number of completed CT exams began to return to expected levels and in June, numbers exceeded expected levels based on 2019 data, with an increase of 12% completed cases recorded in June 2020 compared with June 2019.

The number of CT exams remained steady and above expected levels for the remainder of the year in comparison to the same period in 2019. The total number of CT exams completed in 2020 was only 0.25% lower than figures for 2019.

Magnetic Resonance (MR)

FIGURE 3.5: Magnetic Resonance Imaging, Comparison for All Participating Sites, 2019 - 2020
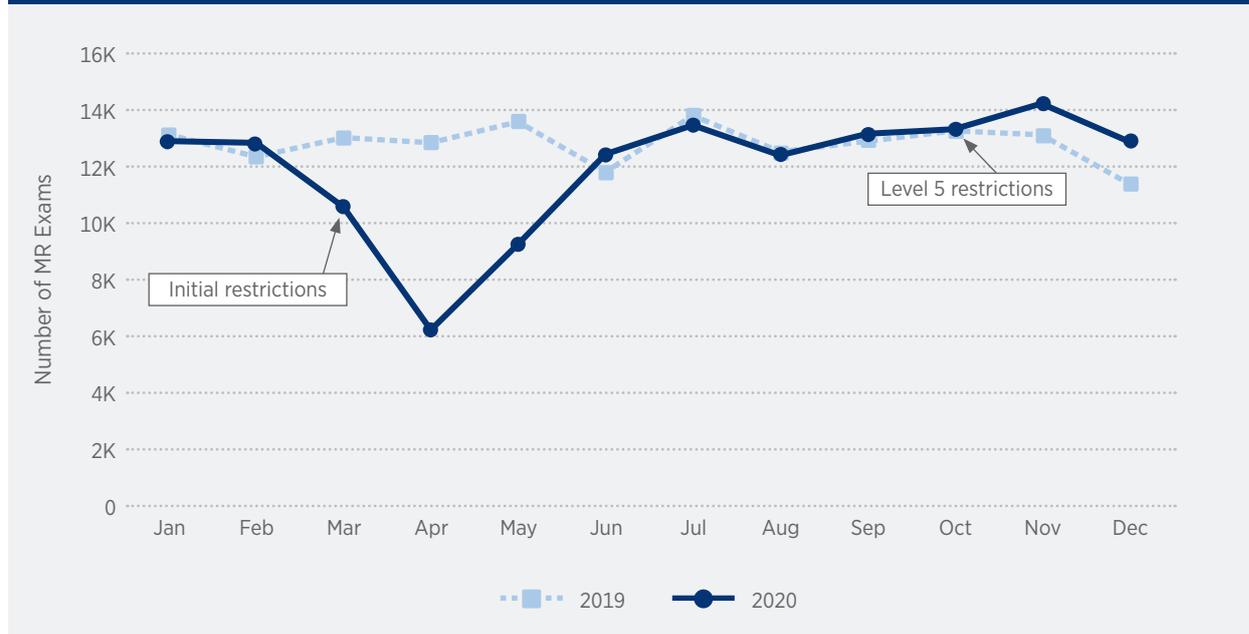
As illustrated in Figure 3.5, the largest decrease in MR exams was recorded in April 2020, where data reveal a decrease of 52% (6,646 exams), in comparison to April 2019.

In June 2020, the number of completed MR exams returned to expected levels and this trend continued throughout the year, with an increase of 13% cases recorded in December 2020 in comparison to December 2019.

The overall number of MR exams recorded in 2020 was 7% lower than in 2019.

Positron Emission Tomography (PET)

FIGURE 3.6: Positron Emission Tomography, Comparison for All Participating Sites, 2019 - 2020
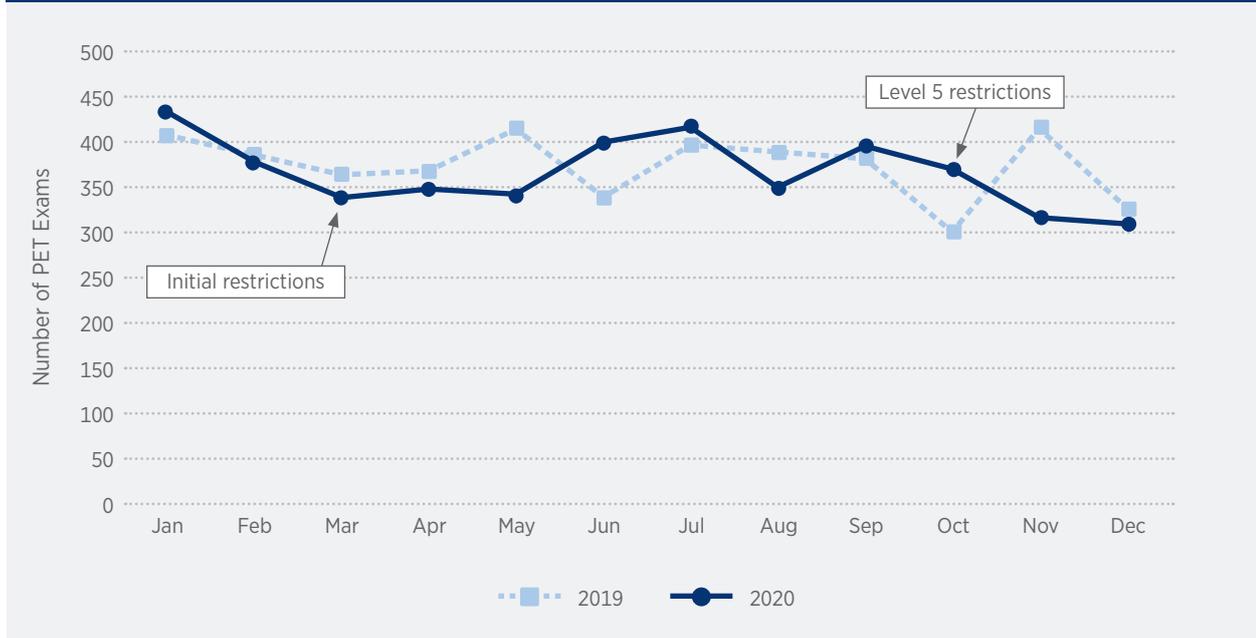
Data recorded in NQAIS-Radiology show no significant change in overall numbers of PET exams in 2020 when compared with 2019 records (Figure 3.6). In total there was a 2% decrease recorded equating to 94 less exams in 2020 than in 2019 overall. The extreme drop in cases in April 2020 observed in the other modalities listed here was not observed in this modality.

The decrease seen later in the year likely reflects that less cancers were diagnosed in 2020; this is likely due to suspension of screening and reluctance of patients with symptoms to attend clinics. An increase is expected in the number of PET exams this year (2021) as more late-stage cancers are diagnosed.

Ultrasound (US)

FIGURE 3.7: Ultrasound, Comparison for All Participating Sites, 2019 - 2020
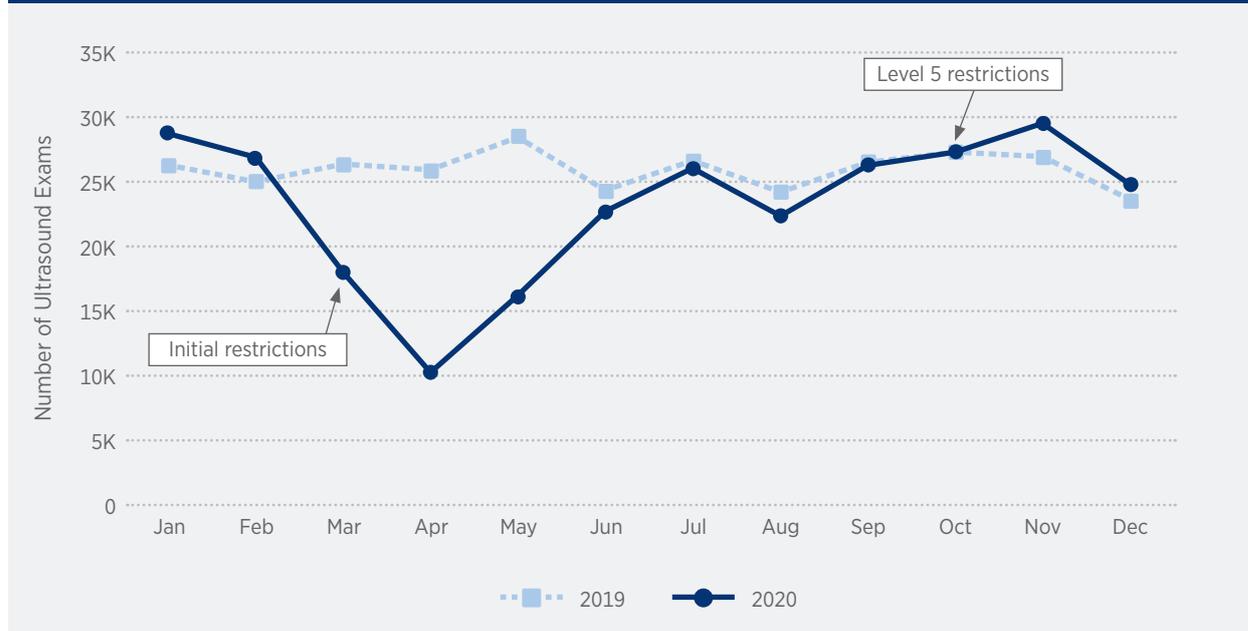
The biggest decrease in numbers of completed exams in 2020 in comparison to 2019, was recorded for ultrasound imaging. In April 2020, there was a decrease of 61% cases completed in comparison to the same month of 2019 (Figure 3.7). Taking into consideration that January and February of 2020 saw an increase of 9% and 8% from the first two months of 2019 respectively, the decrease in April 2020 was significant and equated to 15,728 less exams than were recorded in April 2019.

Similarly to CT and MR, the number of completed ultrasound exams returned to expected levels in June 2020 and remained close to figures recorded in 2019 for the remainder of 2020. The overall number of ultrasound exams recorded in 2020 decreased by 10% in comparison to 2019, however in November 2020 records show an increase of 10% (2,600) cases completed in the same month a year earlier.

Conclusion

The above graphs illustrate the impact the COVID-19 pandemic has had on radiology services and the significant efforts that have taken place to deal with the backlog of examinations that exists to achieve some recovery to pre-pandemic imaging levels. The RCR Clinical Radiology UK Workforce Census 2020 Report[5], outlines in detail the concerns expressed by radiology clinical Directors throughout the pandemic such as safety concerns owing to staff shortages, reporting delays which can translate into a risk for patients awaiting a cancer diagnosis, a shortage of sub-specialty expertise, insufficient CT and MR scanners and the stress endured by the workforce.

There has also been an impact on radiology training, with Trainees redeployed resulting in an interruption of their education and sub-specialty experience[3]. This has influenced departmental workload also as Trainees play a vital role in patient care.

In order to face future challenges and to continue to navigate current circumstances, radiology work practices and workload must be built and managed to ensure resilience. Targeted investment in radiology systems will also be key to ensure necessary upgrades and training take place.

The NRQI Programme plan to measure the total TAT for cases will provide valuable data that can be used for policy decisions on wait times and appropriate resourcing.

KEY RECOMMENDATION

Radiology departments must be resourced adequately and in line with European best standards to continue to provide the optimum level of service to patients and to ensure a reduced burden on existing staff to reduce the risk of burnout, this is strongly supported by international research.

There is a backlog of patients requiring radiological examination, The Working Group recommend that additional resources are put in place to ensure patients receive diagnoses in an appropriate timeframe.

REPORT TURNAROUND TIME (TAT)

4

Report Turnaround Time (TAT) is the time from when images from a completed examination are available to the radiologist for interpretation, to the time the report is authorised.

KEY QUALITY INDICATOR

The % of cases with Report TATs within defined timescales for all cases and by referral source and modality.

RECOMMENDED TARGET

The NRQI Programme Working Group encourage sites to achieve 90% reports completed within the set TAT.

This KQI is a marker of the resources available in a department compared to the volume and complexity of work demanded of it. Radiologist availability, subspecialty expertise and complexity of exams are among factors having the biggest impact on report turnaround time. The demands on radiologists' time go beyond 'simple' reporting, such as interventional caseload, multidisciplinary team meetings, administrative duties, quality improvement activities, teaching and research all have an impact on TAT.

Report TAT on its own does not represent the accuracy or correctness of radiology reports, however, it does contribute to timely diagnosis and quality of patient care.

Based on recommendations made in last year's national data report, the NRQI Working Group and programme management sought expressions of interest from sites to participate in a pilot project seeking to extend the TAT beyond the current reporting timeframe. This will include the time from when the examination was requested to when the examination is completed by the radiographer. This project is currently on hold owing to the challenges posed by the cyber attack in May 2021, however, a detailed project plan can be seen on page 39.

TABLE 4.1: Report TAT maximum targets for each modality depending on patient class (referral source).

Patient Class (Referral Source)	CT	MRI	US	XR
Emergency Department	12 hours			48 hours
Inpatient	24 hours			72 hours
Outpatient	10 days			
General Practitioner	10 days			

As outlined in Table 4.1, the NRQI Programme Guidelines specify target time for report completion depending on referral source for four modalities with the highest national aggregate cases count, Computer Tomography (CT), Magnetic Resonance (MR), Ultrasound (US) and X-Ray (XR). Cases referred for imaging from Emergency Department (ED) and Inpatient cases should be reported within a short timeframe, as appropriate for each modality. For outpatients (OP) and General Practitioner (GP) referrals, it is recommended that the radiology report is complete within 10 days for all the listed four modalities.

FIGURE 4.1: Percentage of Cases Where Specified Report Turnaround Times Have Been Achieved, for MR, CT, US, XR Combined, for All Patient Classes, by Participating Site, 2019 vs 2020
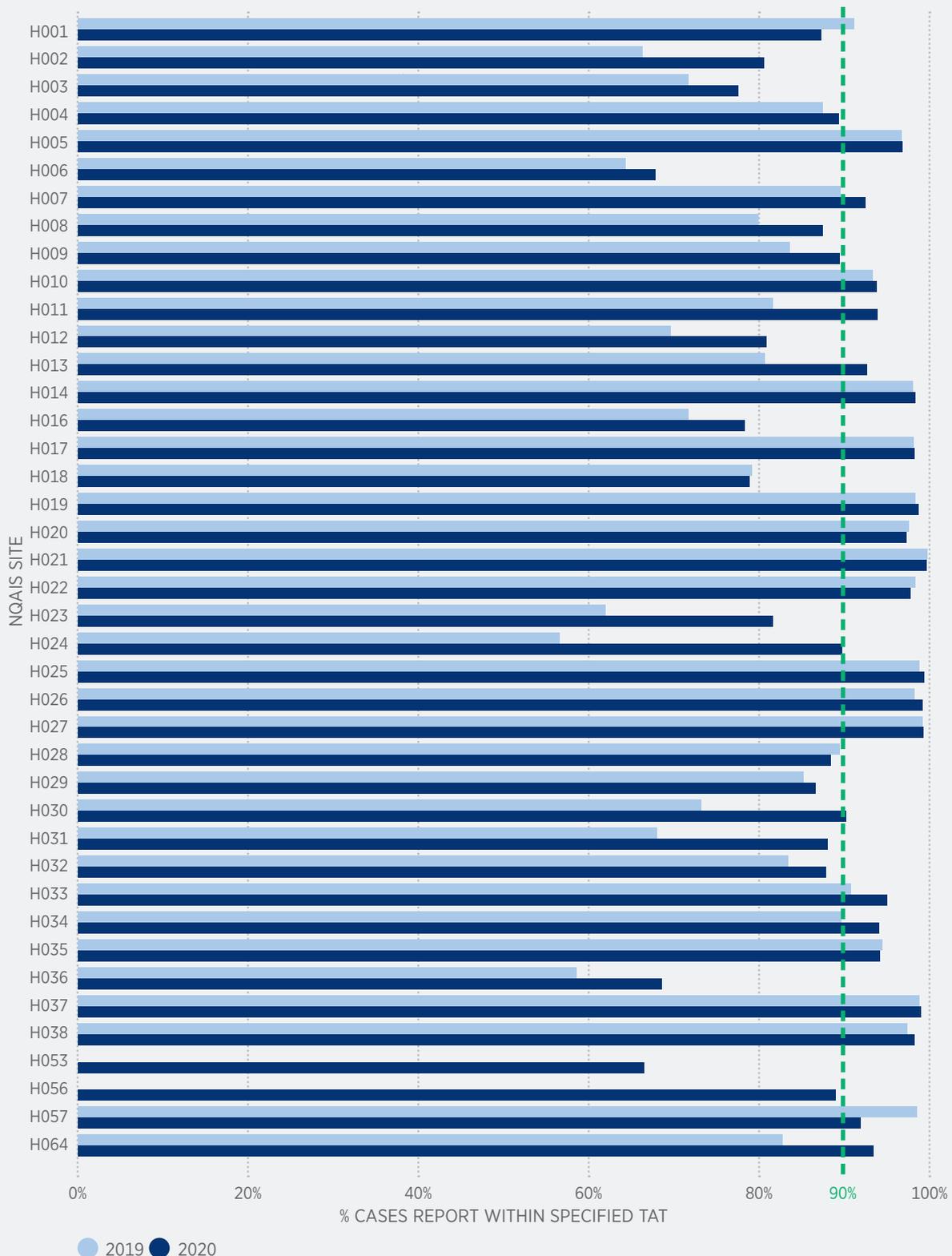
Where possible, a three-year comparison (2018 – 2020) has been provided for several quality measures. This clearly illustrates where improvements have taken place in the percentages of reports authorised within defined timeframes. This is particularly relevant where the impact of the COVID-19 pandemic and increased complexity of cases is considered.

A comparison of the percentage of cases where specified report turnaround times have been achieved, for MR, CT, US, XR combined, for all patient classes between 2019 and 2020 is represented in Figure 4.1. In line with best practice, the NRQI Programme Working Group recommend that sites aim for 90% reports authorised within the defined TATs for these modalities.

In 2020, 23 out of 41 NQAIS sites met or exceeded the recommended TAT target of 90%. This is an increase on 2019, when 17 out of 39 sites met or exceeded this target. Seventeen of these sites have consistently met or exceeded the target in both 2019 and 2020.

Only six out of 41 sites have authorised less than 80% reports within the defined timeframe in 2020, which is a decrease from 11 out of 39 sites in 2019.

The data do not provide context with respect to complexity and volume of workload. However, when these data are compared with the volume of cases (Figure 3.1), this indicates that the results for individual sites are heavily dependent on workload and the resources available.

This chapter mainly focuses on the TAT for reports authorised for CT, MRI, US and X-Ray, for which the recommended 90% target applies. The remaining seven modalities which currently have no associated targets in relation to TAT are presented in Figure 4.3.

FIGURE 4.2: Percentage of Reports Completed Within 10 days for Outpatient Referrals, for CT, MR, US and XR, 2018 - 2020
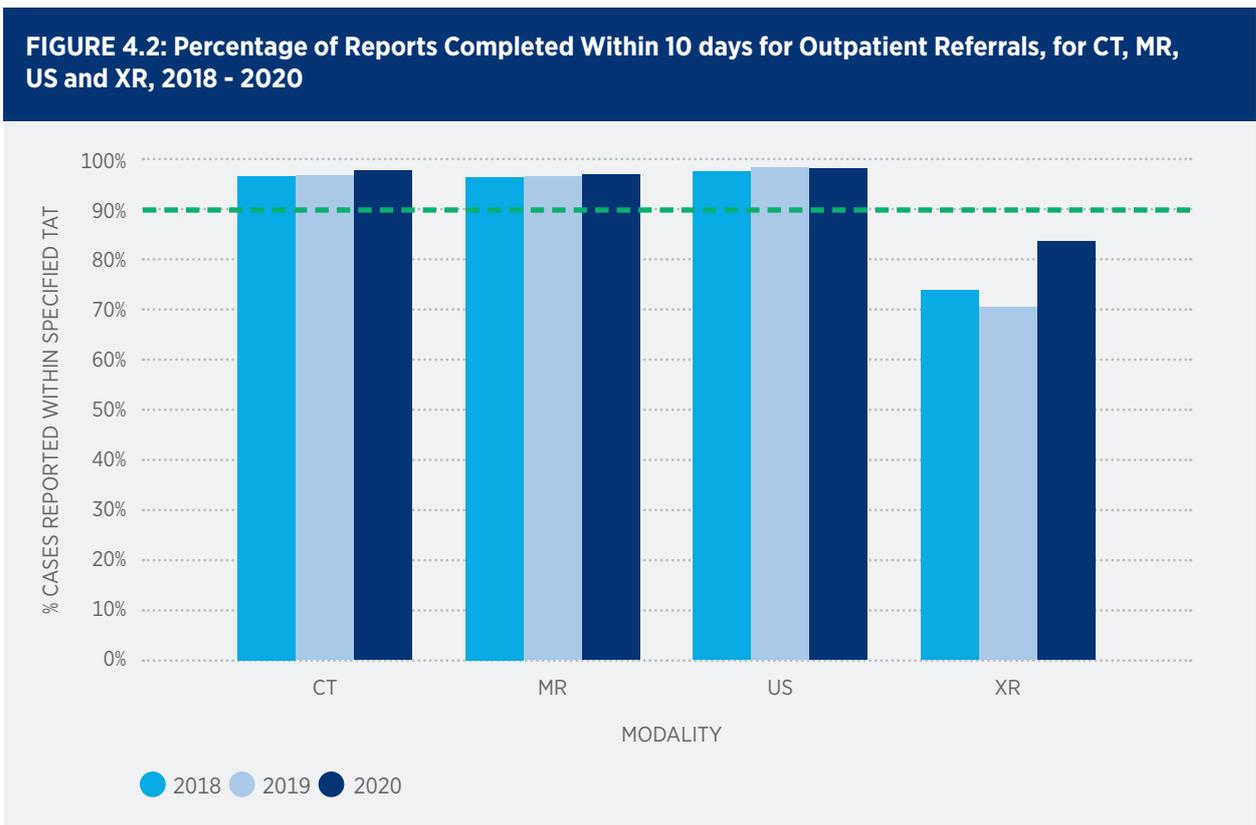

Figure 4.2 reveals a very similar pattern for OP referrals for CT, MR, US and XR TAT across 2018, 2019 and 2020. The percentage of sites authorising OP reports within 10 days or less increased by 2% from 2018, to 98% in 2020. The findings for MR have remained unchanged between 2018 and 2019, with a 2% increase to 98% in 2020. Similarly, a 1% increase was seen for US OP referrals TAT from 97% in 2018 to 98% in both 2019 and 2020. The percentage of XR reports authorised for outpatient referrals remains below the recommended target of 90% across the three years but with a significant increase in 2020 to 83%. This may reflect a significantly higher overall number of XR cases in comparison to other modalities, and a prioritisation of the more complex cases performed for patients requiring urgent or unscheduled care.

FIGURE 4.3: Percentage of Reports Completed Within 10 days for Outpatient Referrals, for All Modalities Without a Recommended TAT, 2018 - 2020
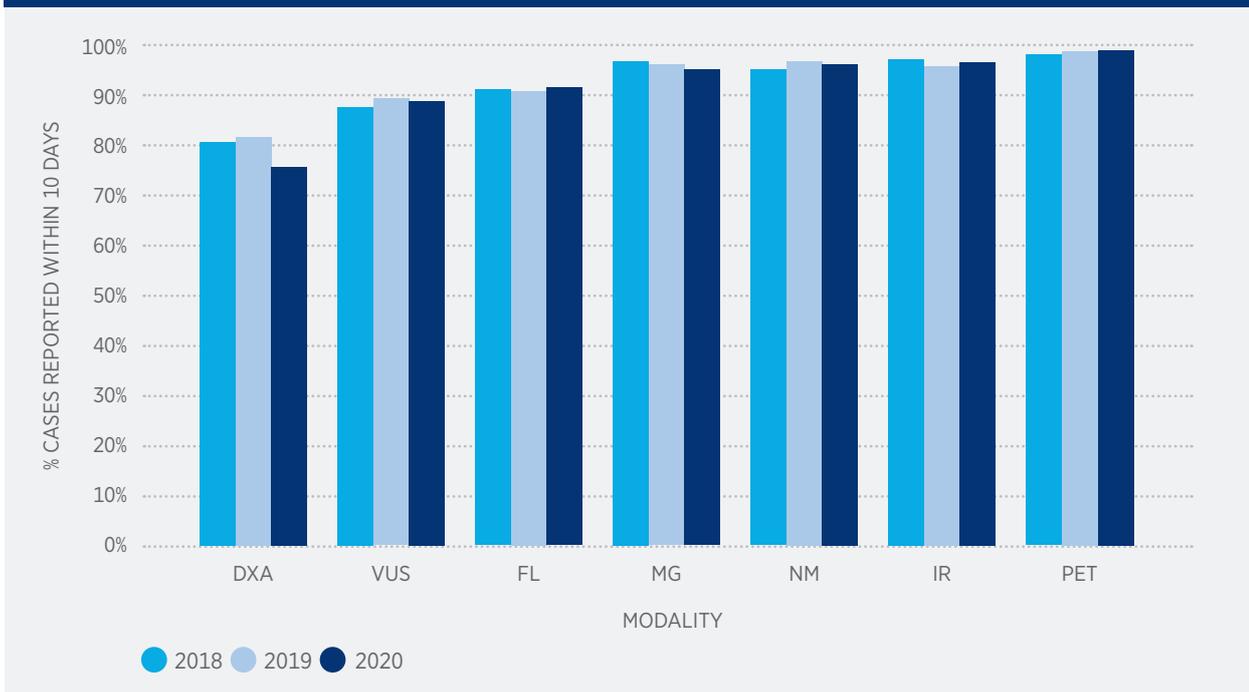

The percentages of report TATs on target for OP referrals for the modalities listed in Figure 4.3 have remained consistently high (above 90), with the exception of Vascular Ultrasound (VUS) at 89% in 2020 and Dexa Scans (DXA) which saw a drop to 75% in 2020 from 81% in 2019.

FIGURE 4.4: Percentage of Reports Completed Within 10 days for GP Referrals, for CT, MR, US and XR, 2018 - 2020
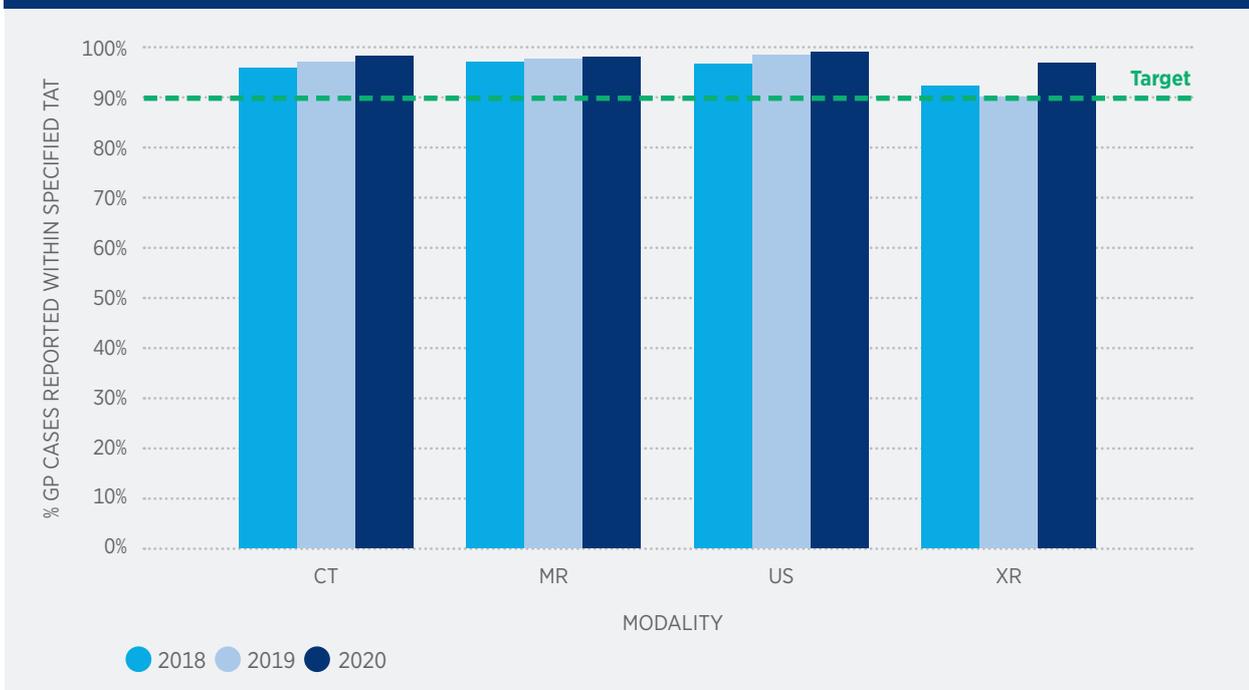
Cases referred for CT, MR, US or XR imaging by general practitioners should also be reported within 10 days. Figure 4.4 illustrates that for CT, MR, US and XR, all four modalities have achieved at least 90% of reports authorised within the required 10-day timeframe for 2018, 2019 and 2020.

NATIONAL RADIOLOGY QUALITY IMPROVEMENT PROGRAMME

FIGURE 4.5: Percentage of Reports Completed Within 10 days for GP Referrals, for Modalities Without a Recommended TAT, 2018 - 2020
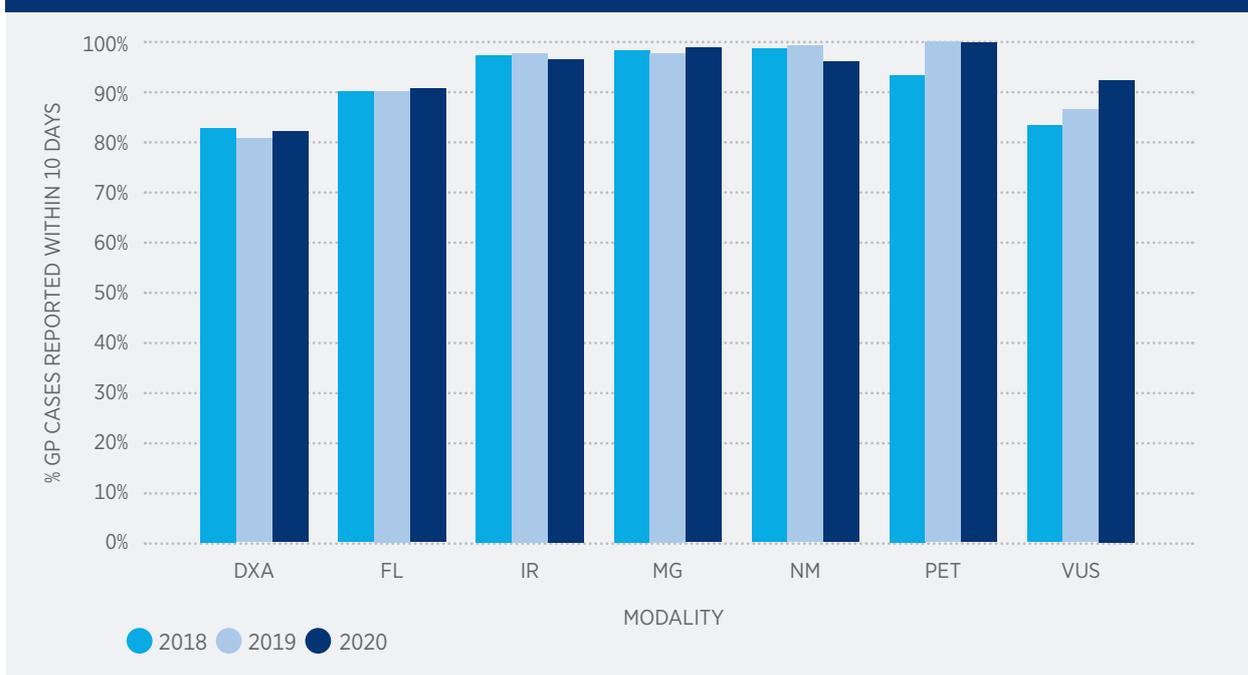
The percentage of reports authorised for GP referrals within the 10-day timeframe has remained consistently high (at minimum 80%) for the majority of modalities represented in Figure 4.5 from 2018 to 2020. PET scans reached 100% reports authorised within the GP referral based 10-day timeframe in both 2019 and 2020.

FIGURE 4.6: Percentage of Reports Completed Within Specified Timeframe for Emergency Department Cases: 12 hours for CT, MR, US and 48 hours for XR, 2018 - 2020
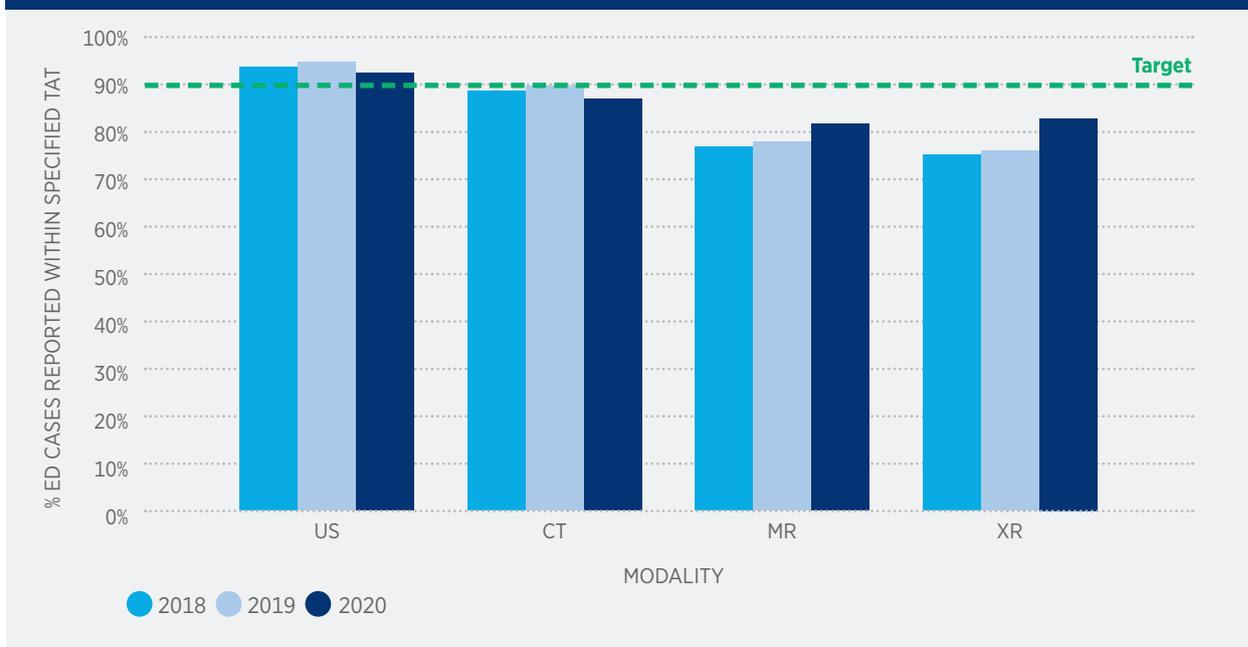
As outlined in Table 4.1, specified report TAT for CT, MR and US referred from the ED is 12 hours, while XR reports should be completed within 48 hours from when an image is available.

Figure 4.6 reveals that reporting time for MR and XR has improved across the past three years

but consistently remains below the recommended target of 90%. The percentage of CT reports authorised when referred from the ED experienced a drop of 3% in 2020 to 87% while US reports TAT remained above 90% at 92%.

FIGURE 4.7: Percentage of Reports Completed Within Defined Timeframe for Inpatient Cases, 24 hours for CT, MR, US and 72 hours for XR, 2018 - 2020
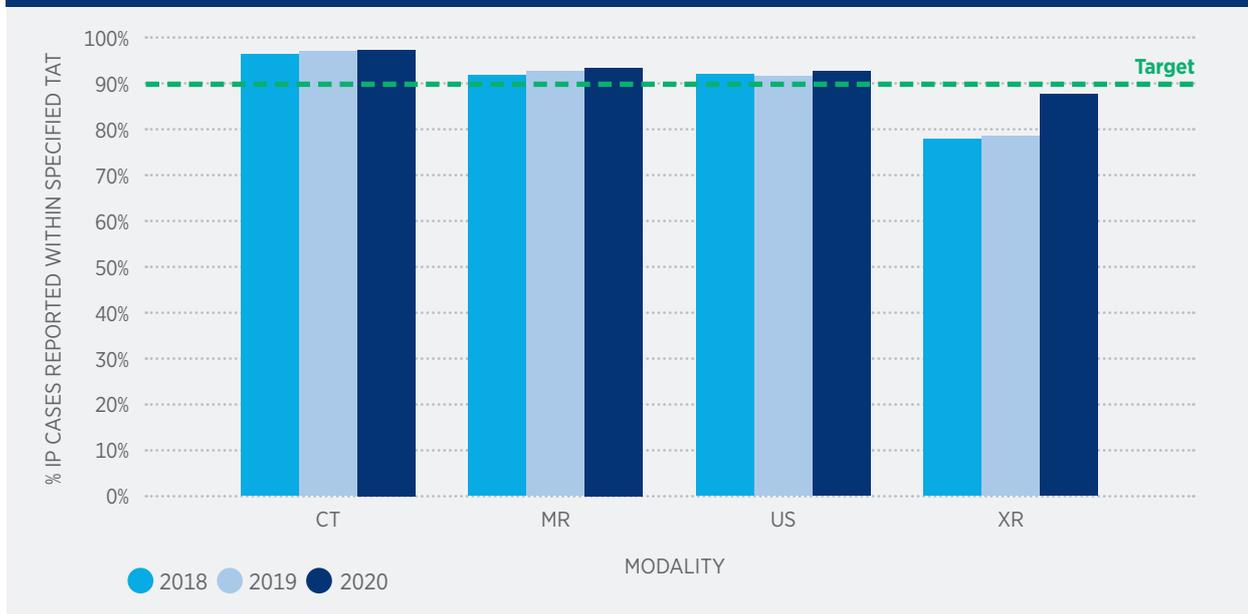
For inpatient cases, CT, MR and US images should be reported within 24 hours, while the specified TAT for reporting XR images is 72 hours. Improvements can be seen for each modality in Figure 4.7 in the percentage of reports authorised for Inpatient (IP) cases from 2018 to 2020 within the defined timeframes. The greatest increase is seen for XR reports, from 78% in 2018 and 2019 to 87% in 2020.

In teaching hospitals, overnight on call preliminary reports are issued by radiology specialist registrars for ED and inpatient cases.

The findings above highlight the performance of radiologists and colleagues in 2020. The national percentages of reports authorised for each modality within the defined timeframes for OP, GP, ED and IP referrals have maintained or increased in 2020. This is an achievement taking into consideration the significant impact the COVID-19 pandemic has had on radiology services.

To maintain current improvements and to continue to achieve faster TATs overall, an uplift in radiologist numbers is required across the country.

As numbers improve, in time, sub-analysis may identify capacity in one hospital to aid another in the same health region via NIMIS.

KEY RECOMMENDATION

Based on the 2019 findings and additional local knowledge the Working Group recommended broadening the scope of TAT in future reporting cycles. The goal is to measure total turnaround time, and its two separate components, technical TAT and report TAT. This will include the time from when the examination is requested, to when the examination is completed by the radiographer to when the report for the examination is finalised by the radiologist.

This work was postponed in May 2021 when the HSE suffered a ransomware cyber attack and will be resumed in 2022. Sites have already expressed interest in participating in this pilot project. Further details on this project can be found on page 39.

NATIONAL RADIOLOGY QUALITY IMPROVEMENT PROGRAMME

TURNAROUND TIME PILOT PROJECT

Following on from the recommendation in the 2019 National Data Report the TAT Project idea was born.

This project will involve review of the process used to collect data at specific points in time of the patients' journey through the radiology department. The focus will be on one modality only, CT, to ensure the project scope can be controlled appropriately.

Report TAT is currently calculated from the time when the images from a completed examination are made available to the radiologist for interpretation, to the time the report is authorised.

Following the recommendation included in the 1st National Data Report issued in December 2020, the main objective of this Pilot Project is to create a revised KQI which will include a set of three measurements that will allow for calculation of Total TAT and its two components:

✔ Time from when referral is logged into radiology department local information system to when the exam is performed and image available for reporting

✔ Time from when an image is available for reporting to when the report is authorised (current Report Turnaround KQI).

TOTAL TURNAROUND TIME

Technical TAT	Report TAT
Referral Registered	**Image Complete**	**Report Authorised**
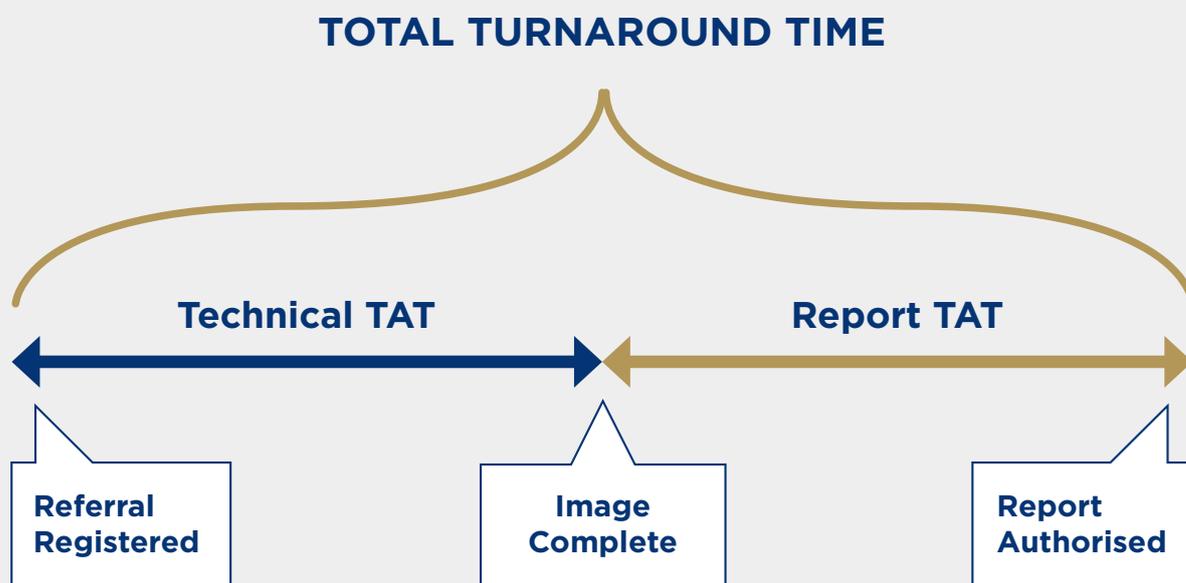
The project aims and objectives are as follows:

1. Collect data on technical TAT, from when a referral is logged in the local system to when a study is ready for reporting.
2. Use the data collected to map the length of the patient journey through the process and ascertain how it may be reduced.
3. To increase the effectiveness of the NRQI Programme in driving quality improvements that positively impact patient diagnosis and care.
4. Achieve process improvements using data gathered.
5. Investigate a process improvement within local IT systems to ensure data collection is as efficient and automated as possible, reducing burden on physical resources.

Why is this review needed?

Analysis of the available TAT data for CT, MR, US and XR combined, since 2018, reveal that many sites face challenges in achieving 90% of reports authorised within the defined time frames.

Data demonstrate that 19 out of 38 sites met or achieved the recommended TAT target of 90% in 2018, in 2019, 17 out of 39 sites reached this target and in 2020, 23 out of 41 sites met or exceeded this target, an increase of six sites from 2019.

However, these data do not provide context with respect to complexity and volume of workload, nor on the significant impact of resourcing in radiology departments. To assist sites in achieving a higher rate of reports authorised within these time frames (see Figure 4.1) a greater understanding of where the obstacles lie is required. This can be achieved by extending the current KQI to measure the time from when the referral is logged, which will also provide a more comprehensive view of the patients' journey through a radiology department.

Expressions of Interest

All sites were contacted in March of 2021 and asked to submit an expression of interest (EOI) if they wanted to participate in the pilot project.

The criteria outlined were as follows:

Essential:
• Ability to set up Project Team locally with representatives from each discipline
• Be live on the NIMIS
• Adequate time to engage with the programme management team and the Working Group

Desired:
• While applications for EOIs from teaching hospitals would have advantages, EOI from model 3 hospitals are equally encouraged
• Analytical and decision-making skills
• Project management skills within the team
• Location which can support electronic referrals from GP

Four eligible sites quickly expressed interest in taking part. One site was selected, and the Working Group agreed to roll the project out to those additional sites that applied, on a staged basis as soon as possible. It is the intention of the Working Group to ensure the impact of the learnings are applied as widely as possible across all sites participating in the programme, the opportunity to compile lessons learnt in these preliminary sites will greatly benefit the roll out into the future.

Duration of the TAT Pilot Project

Short, medium and long-term goals will be set for this project. Short term goals will be set in collaboration with the pilot site, the Working Group and the Specialty Quality Improvement (SQI) programme management team.

What are the benefits of participation in this project?

This project presents an opportunity to lead a QI project with the support of the SQI Programmes, NRQI Working Group and Faculty of Radiologists which will be replicated in public hospitals nationally.

While it is the programmes' intention to keep the identity of the pilot site anonymous, the participating Team may publish their work should they wish to. Opportunities to present at the Faculty's events will also be possible.

The SQI programme management team will provide hands-on support for the set-up of the project and project management expertise required throughout the duration of this pilot project, including mapping local processes, gathering baseline data, stakeholder engagement, analysing findings, outlining potential process improvements and ensuring a control plan is in place to sustain these improvements.

The NRQI Programme strongly advocates for a department wide team-based approach to ensure all aspects of the process are mapped and any quality improvement benefits the whole department and ultimately the patients.

Staged approach

Aim to engage all 4 interested sites over a period of time

Consideration given to negative impact of COVID-19 and recent cyber attack

Timelines will be agreed with sites individually
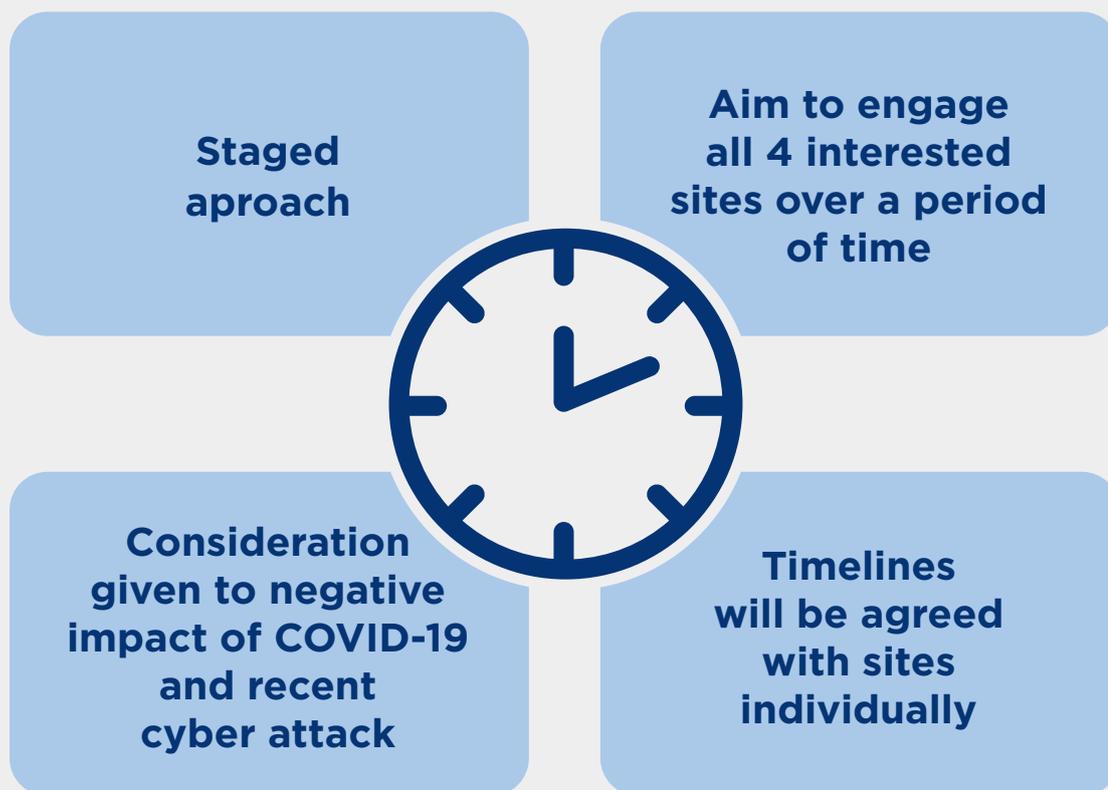
CHAPTER 5
PEER REVIEW

5

5.1 INTRODUCTION

Peer Review is a process of evaluating the diagnostic accuracy and completeness of radiology reports on past and current exams and is promoted by the NRQI Programme as a way of maintaining safe, high quality patient care.

The Guidelines for the Implementation of a National Radiology Quality Improvement Programme outline three types of peer review:

✔ **PROSPECTIVE** – review conducted on a report which has not been yet authorised.

✔ **RETROSPECTIVE** - process of evaluating the diagnostic accuracy of a previously authorised report.

✔ **ASSIGNED** – performed on a previously authorised report where cases completed within the previous seven days are randomly assigned by the peerVue system on a weekly basis.

FIGURE 5.1: A Timeline of a Radiology Report from the Moment an Image is Available for Reporting, Through to the Moment of Authorisation, to When the Completed Report is Stored and Available for Future Referencing.

Image available for Radiologist to report on

Final report authorised

PROSPECTIVE REVIEW

A second opinion is requested prior to report completion

Includes routine double-read and ad hoc consultation

ASSIGNED REVIEW

Review and evaluation of a previously authorised report

5 randomly selected contemporary cases assigned automatically on a weekly basis

RETROSPECTIVE REVIEW

Review and evaluation of a previously authorised report

- when previous examinations are available for comparison

- during routine preparation of cases for discussion at MDM

TABLE 5.1: Number of Cases Completed in 2020 by Modality

Modality	Number of Cases 2019
CT	357,128
DXA	14,531
FL	8,096
IR	21,942
MG	42,381
MR	138,902
NM	17,262
OUS	9,163
PET	4,210
TH	26,994
US	304,081
VUS	40,555
XR	1,481,808
TOTAL	**2,467,053**

Throughout this chapter it is important to look at the findings in the broader context of the overall workload for each modality (Table 5.1). It must also be considered that most cases consist of multiple images which must be reviewed with equal attention.

5.2 PROSPECTIVE PEER REVIEW

Prospective Peer Review occurs when a radiologist seeks a second opinion from another radiologist on a particular case prior to authorising a radiology report.

A radiologist is generally advised to seek a second opinion if there is any doubt regarding a reported diagnosis, particularly if the colleague consulted has subspecialty training or particular expertise relevant to the case. Peer-to-peer review serves as an important education function and is likely to improve the reporting radiologist's performance on similar cases in the future.

Participation in routine double reporting and ad hoc prospective reviews are considered a form of Prospective Review.

Radiologists should record the involvement of colleagues, with their consent, in the radiology report.

KEY QUALITY INDICATOR

Number of accession numbers with Prospective Peer Review (expressed for each modality and as a % of total accession numbers for each modality)

This KQI demonstrates what percentage of cases (accession numbers) were completed within a defined timeframe and were reviewed by an additional radiologist before completion of the radiology report.

FIGURE 5.2: Percentage of Cases Completed (National Aggregate) Where Prospective Review has been Recorded in the Local System for the Four Modalities with the Highest Number of Cases (CT, MR, US and XR), 2019 vs 2020
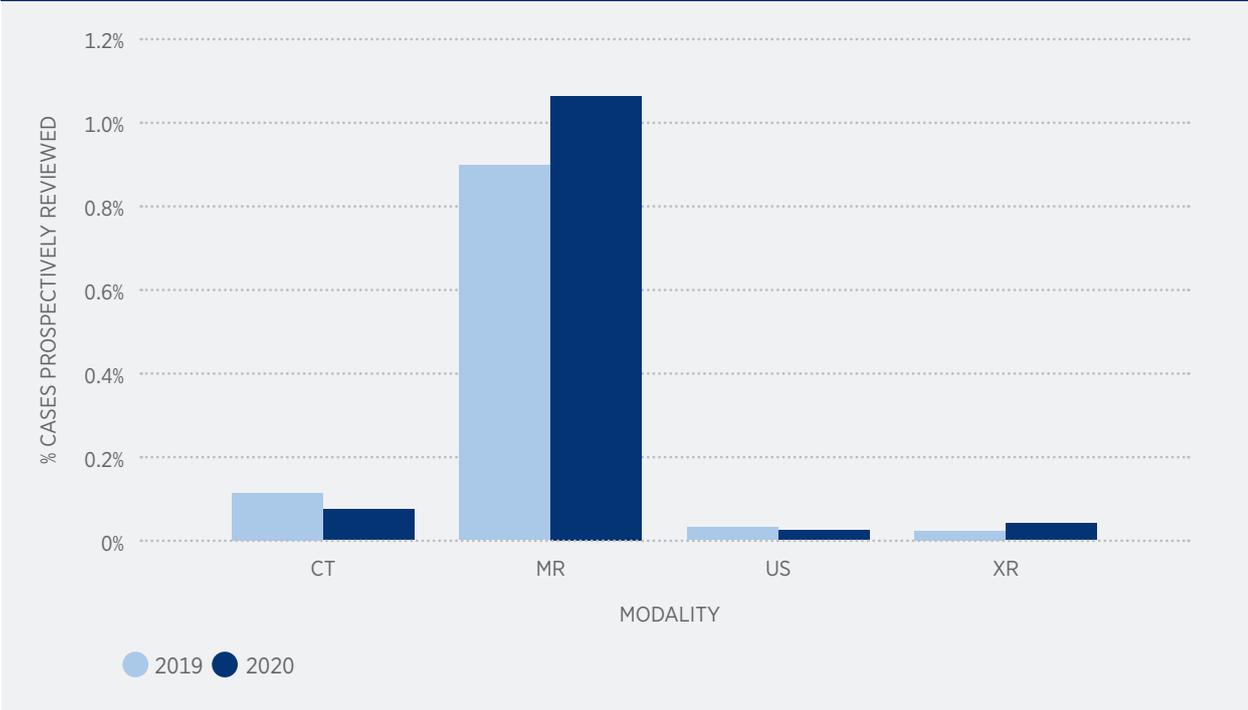

Figure 5.2 presents a comparison of data for those modalities with the highest number of cases for which Prospective Review was recorded in the peerVue system in 2019 and 2020. Overall, the percentages of cases referred for a Prospective Review are low, below 1.1%. The highest percentage of Prospective Reviews took place for MR cases in 2020 at 1.1% and was a 0.2% increase from 2019, which translates into 19% overall increase between 2019 and 2020 data.

FIGURE 5.3: Percentage of All Cases Completed (National Aggregate) Where Prospective Review has been Recorded, for All Other Modalities, 2019 vs 2020
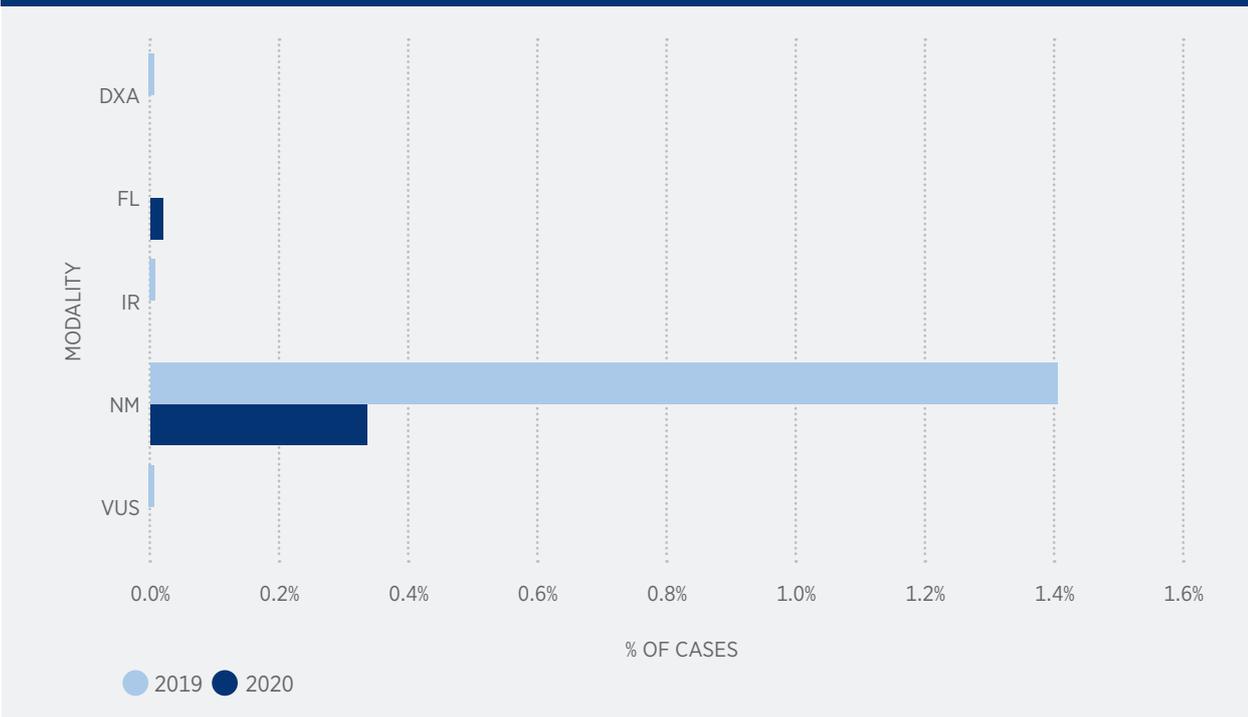
In 2020 the number of Prospective Reviews linked to NM cases decreased 1.1% below 2019 levels which accounts for 75% overall decrease in 2020 in comparison to 2019. Prospective Reviews for the remaining modalities remained consistently low or no reviews took place or were recorded in the local system.

> It is important to highlight that due to the interruptive nature of the communication required, only a portion of Prospective Peer Reviews that are taking place in hospitals are being recorded in the system. The NRQI Programme and the Faculty of Radiologists continue to work with the software suppliers to develop improved ways of recording this activity.

FIGURE 5.4: Percentage of Prospective Reviews by Modality Expressed Against All Prospective Reviews Recorded for Cases Completed, 2019 vs 2020
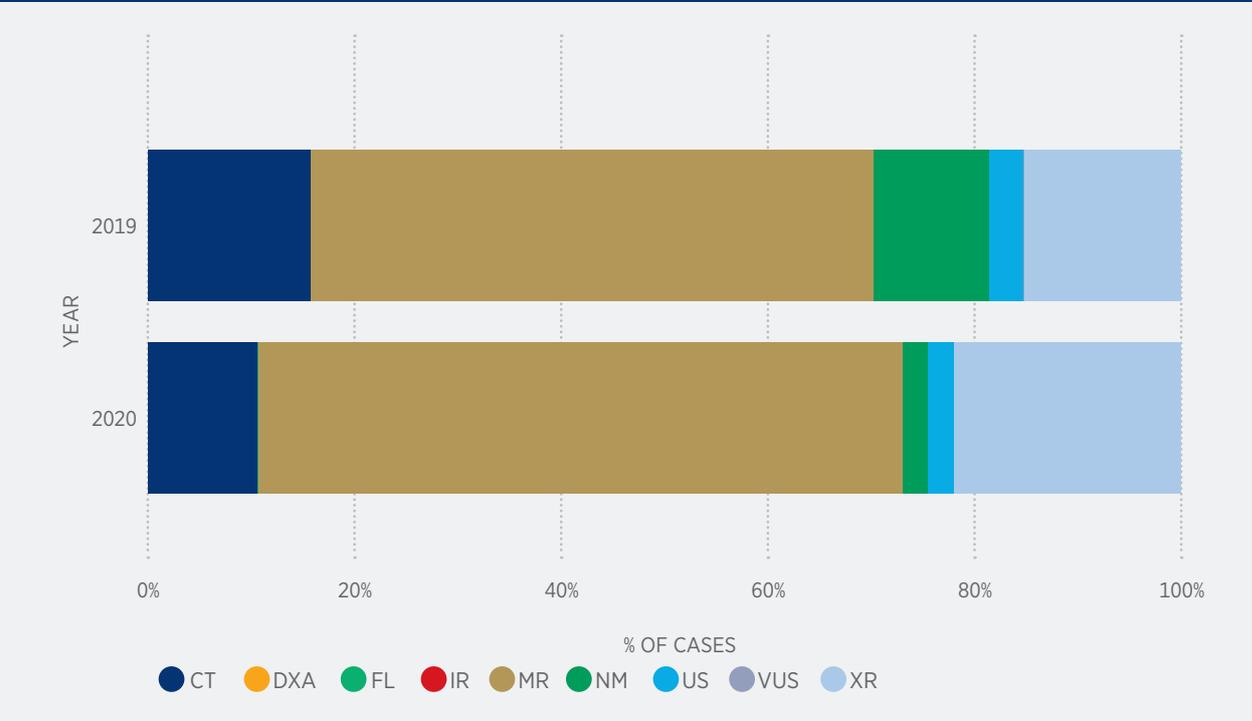
When the volume of cases is factored in, data recorded for MR accounts for the majority of Prospective Reviews at 62.4%. XR and CT account for the next highest volume of Prospective Reviews at 22% and 10.6% respectively. These findings are similar to those in 2019 but with a decrease seen in the Prospective Reviews carried out for CT and NM. There was an increase in XR related Prospective Reviews in 2020.

5.3 RETROSPECTIVE PEER REVIEW

A radiologist may be required to review a previous examination in the course of patient management, where they form an opinion regarding the accuracy of that report. In this instance, a Retrospective Peer Review has taken place and they record it as such in the local system.

The reviewing radiologist should record the level of agreement with the original reporting radiologist's report, using the scale shown in Figure 5.9.

In the process of Retrospective Peer Review, the original image and report are reviewed by a second radiologist. This type of Peer Review may be performed during:

✔ Routine review of prior images while interpreting a new image
✔ Routine preparation of exams for discussion at an MDT Meeting
✔ Review based on new clinical findings or information
✔ Focused peer review of a specific set of exams

Radiology departments should try to ensure a representative number of cases are retrospectively peer reviewed across a range of modalities in line with best practice.

Focused Peer Review is an additional category which are also retrospective reviews but commonly performed as radiology academic exercises that attempt to highlight best practice.

Where potential quality issues arise, the details should be communicated to the original reporting radiologist where possible to afford them the opportunity to engage in further discussion

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KEY QUALITY INDICATOR

Number of accession numbers retrospectively reviewed (expressed for each modality and accession number type and as a % of total accession numbers for each modality).

Number of accession numbers referred for consideration at Radiology Quality Improvement meetings as a result of retrospective review (expressed as a % of total cases reviewed, by modality).

Retrospective Reviews are performed as a part of everyday activity in radiology departments, however, currently only a small percentage of Retrospective Reviews are being recorded by participating sites.

The Working Group are aware that this is mainly due to the current cumbersome process of recording peer review coupled with limited time available for recording QI activity on top of a heavy daily workload.

Most radiologists will perform multiple Retrospective Reviews as part of their daily reporting and MDM preparation but many of these are not being recorded in peerVue as it adds extra time to each report which can cumulatively be time significant over the course of the day.

FIGURE 5.5: Percentage of Cases Completed Where Retrospective Review Has Been Recorded, by NQAIS Site, 2019 vs 2020
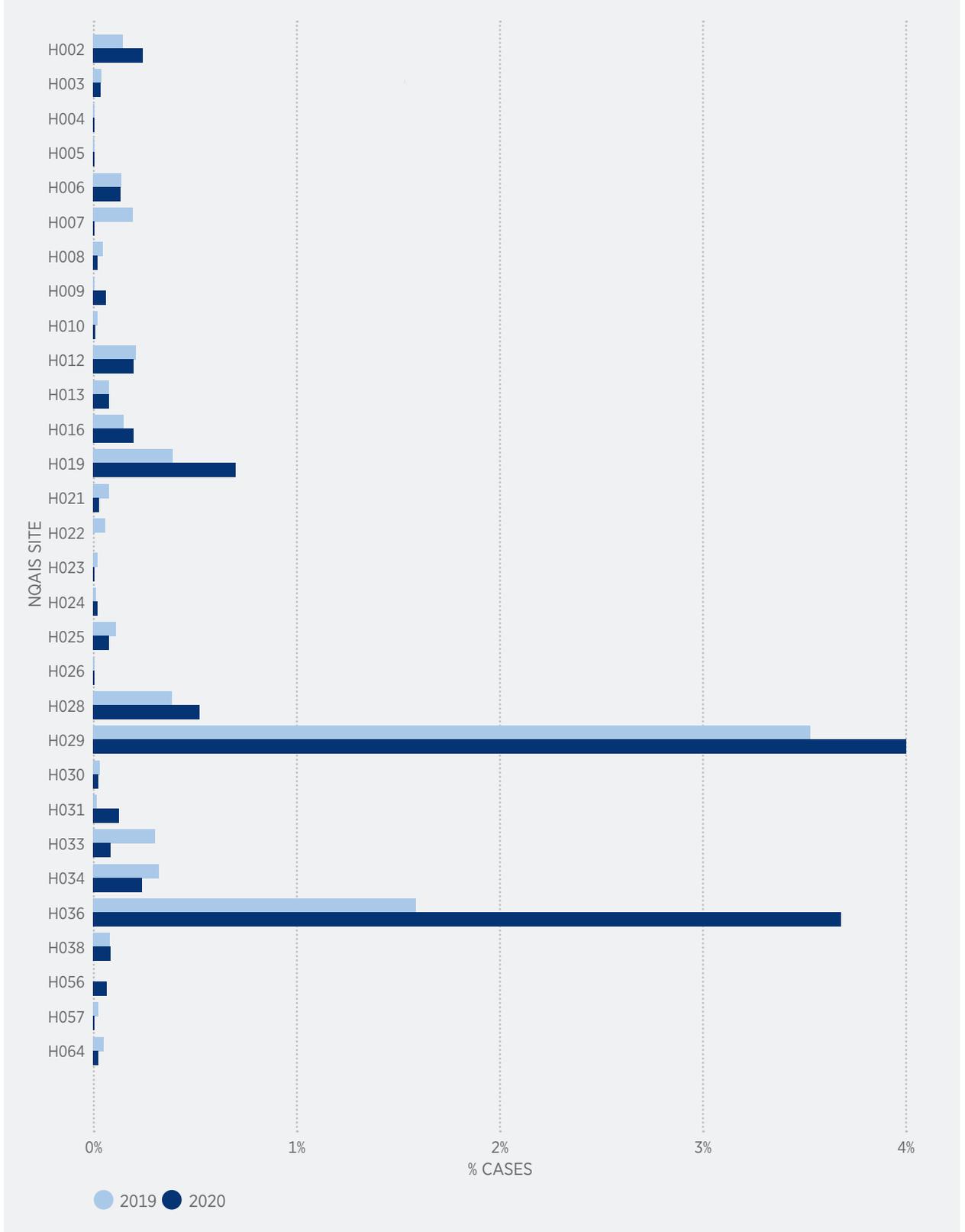
When interpreting Figure 5.5, it should be noted that these percentages represent only those Retrospective Reviews that were recorded in the local system and uploaded into NQAIS and not all the reviews that may have been completed but not recorded.

Overall, the percentage of completed cases subject to a Retrospective Review in 2020 is quite low, similar to 2019 figures. High workload will impact the percentage of reviews carried out. Other factors may also include ongoing compliance with the process of submitting these data to peerVue, particularly as the current process continues to be time consuming. Sites with increased staff turnover and with locums in place may also find a reduced inclination by staff to engage with this Retrospective Peer Review process. Departments should ensure that locum radiologists know how to use peerVue and encourage them to use it as an important part of their duties.

In 2020, as in 2019, most sites recorded Retrospective Peer Reviews for less than 1% completed cases, in most instances these are the same sites each year. The site that recorded the highest percentage of retrospectively reviewed cases in previous years, also achieved the highest percentage in 2020.

FIGURE 5.6: Percentage of Cases Completed (National Aggregate) Where Retrospective Review Has Been Recorded, by Modality, 2019 vs 2020
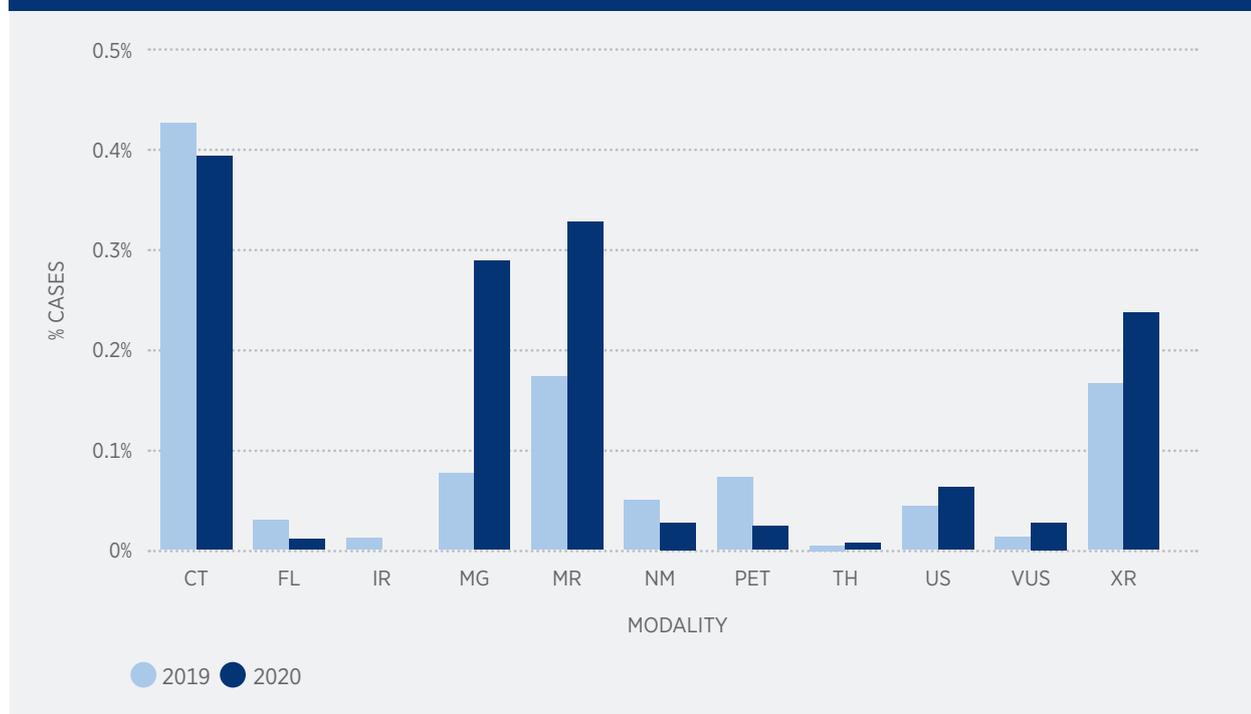
Figure 5.6, shows a comparison of Retrospective Reviews recorded for cases completed between 2019 and 2020 for each modality. The highest increase of Retrospective Reviews carried out in 2020 can be seen for MG reaching 0.3% from 0.1% in 2019. A slight drop of 0.1% was observed for CT in 2020. The largest percentage of Retrospective Reviews were recorded for CT in 2020, and similarly in 2019. MR is a close second in the percentage of Retrospective Reviews at 0.3% which is a 0.2% increase from 2019. The largest percentage of Retrospective Reviews were recorded for CT in 2020, and similarly in 2019. A slight drop was observed for CT in 2020.

FIGURE 5.7: All Retrospective Peer Reviews Recorded for Cases Completed, by Modality, 2020

CT 24.2%
MG 2.1%
MR 7.9%
NM 0.1%
US 3.3%
VUS 0.2%
XR 62.2%

● CT ● FL ● MG ● MR ● NM ● PET ● TH ● US ● VUS ● XR
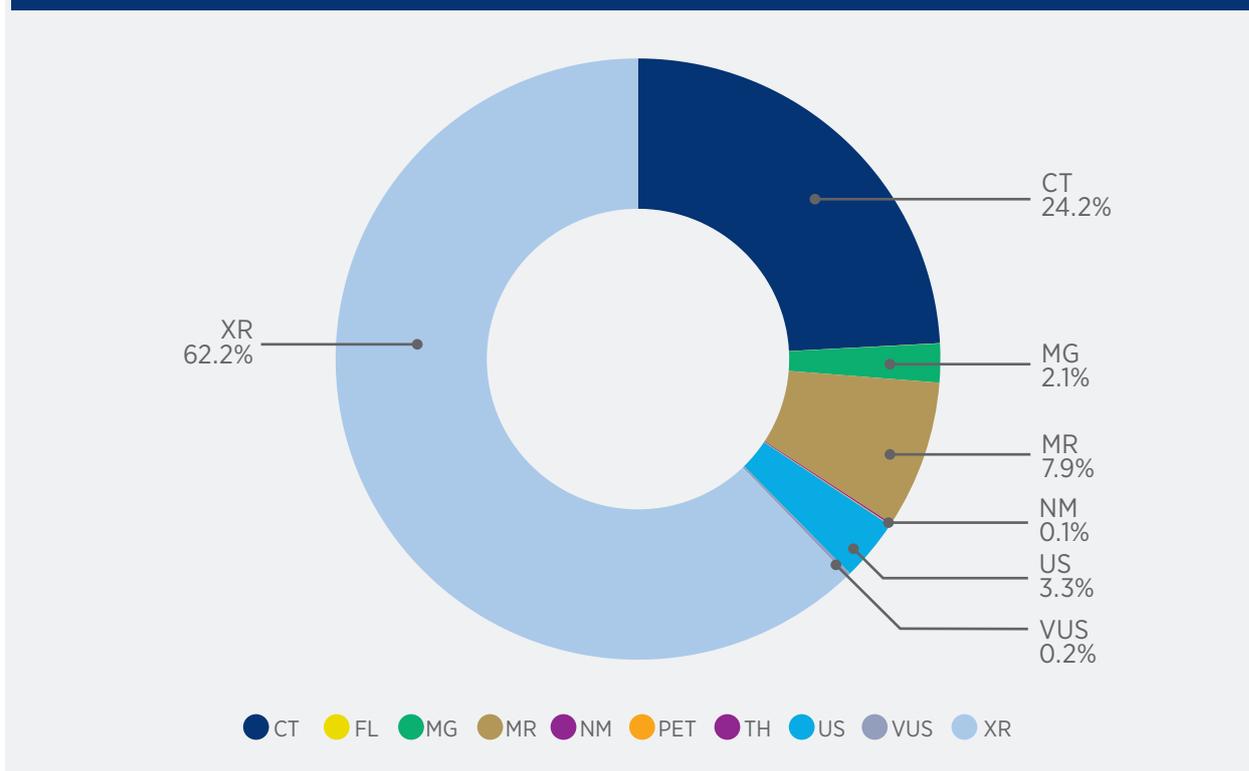
Figure 5.7 reveals that over half, 62.2% of all Retrospective Reviews, were recorded in 2020 for XR reports, as was the case in 2019. This is a reflection of the fact that XR forms the largest part of the national radiology case count with 1,545,710 cases in 2020.

5.4 ASSIGNED PEER REVIEW

Radiologists are assigned five cases to review on a weekly basis through the local system. The purpose of an Assigned Peer Review is to make contemporary cases, not older than 7 days, available to radiologists for review.

Radiologists are provided with cases to review across a spectrum of cases representative of their usual practice; however, cases can be assigned across all subspecialties. If the radiologist does not practice the subspecialty in the assigned case, they can choose to reject the case and not complete that Peer Review.

KEY QUALITY INDICATORS

Number of accession numbers reviewed as part of the Assigned Peer Review process (expressed for each modality and accession number type and as a % of total accession numbers for each modality)

Number of accession numbers referred for consideration at Radiology Quality Improvement meetings (expressed as a % of total cases reviewed, by modality)

Only cases reviewed as part of the Assigned Review process contribute to the data set, the findings do not take into account the total number of cases made available for assigned review.

In 2020, the NRQI Working Group recommended that Assigned Reviews should be more subspecialty focused, which would allow for higher number of reviews to be completed, by reducing number of reviews rejected due to inappropriate subspecialty assigned.

Owing to the impact of the COVID-19 pandemic the programme has not been in a position to collaborate as planned with software suppliers to investigate a more tailored approach.

FIGURE 5.8: Percentage of Cases Reviewed as a Part of Assigned Reviews, by NQAIS Site, 2019 vs 2020
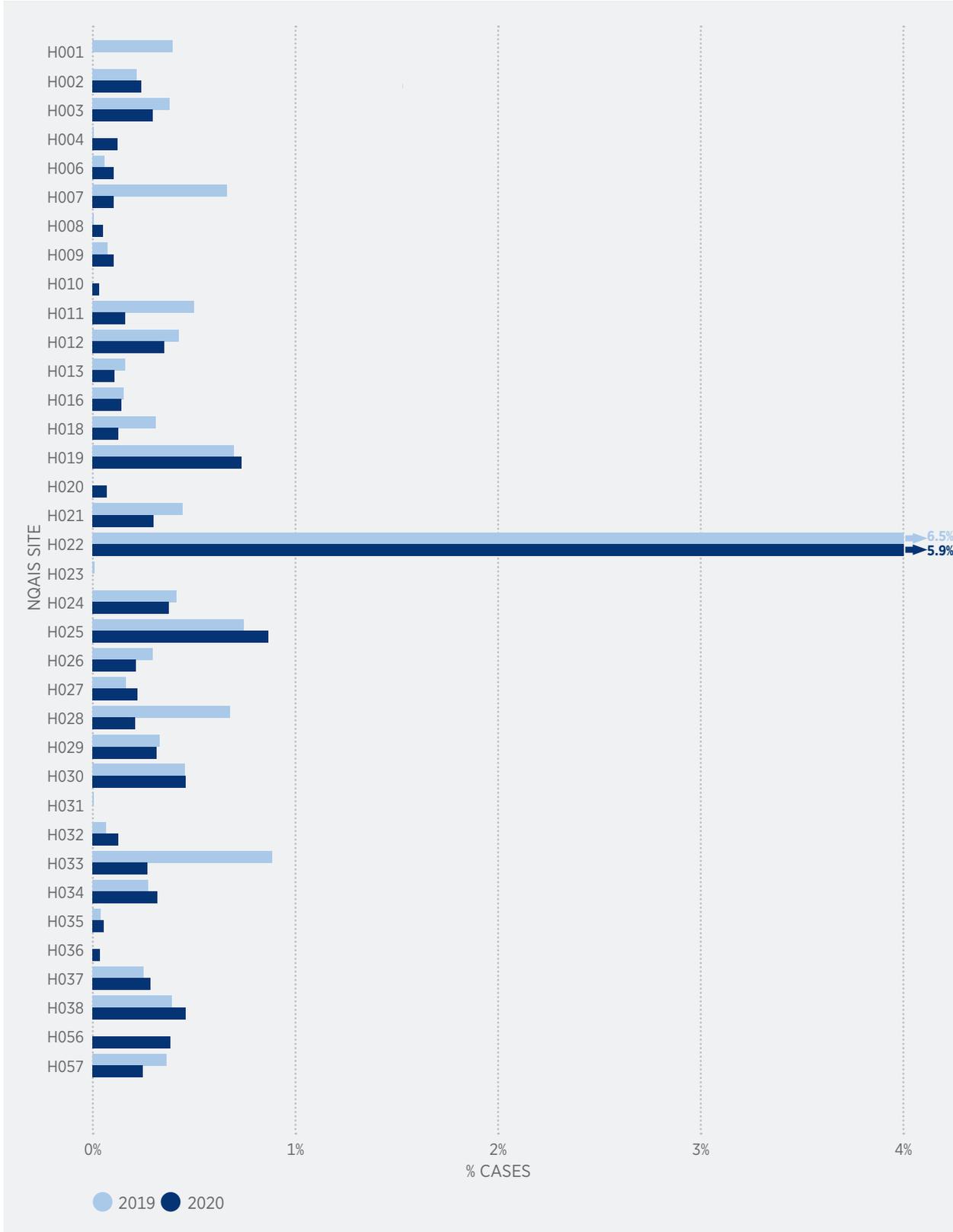
As illustrated in Figure 5.8, the percentage of cases reviewed in the Assigned Review process is quite similar between 2019 and 2020 for almost all NQAIS sites.

Radiology departments, along with all other disciplines in healthcare have faced unprecedented challenges in 2020 due to the COVID-19 pandemic. The impact on workload and the significant efforts made to recover to pre-pandemic levels of work are detailed in Chapter 3.

The completion of assigned reviews is heavily reliant on resources available. In a busy department, Assigned Peer Review may be deemed less of a priority and so may be neglected in favour of clinical work and more urgent administrative activity.

All sites, with the exception of one, completed a number of Assigned Reviews representing under 1% of their cases in 2020.

5.5 PEER REVIEW - OUTCOMES

Peer Review outcomes are used in conjunction with Retrospective and Assigned Peer Reviews. The reviewing radiologist should record the level of agreement with the original reporting radiologist's report, in the local system, using one of the following options:

✔ Concur with interpretation

✔ Minor Discrepancy – no further action required

✔ Consider for RQI Meeting

FIGURE 5.9: Possible Peer Review Outcomes Available for Selection in the Local System
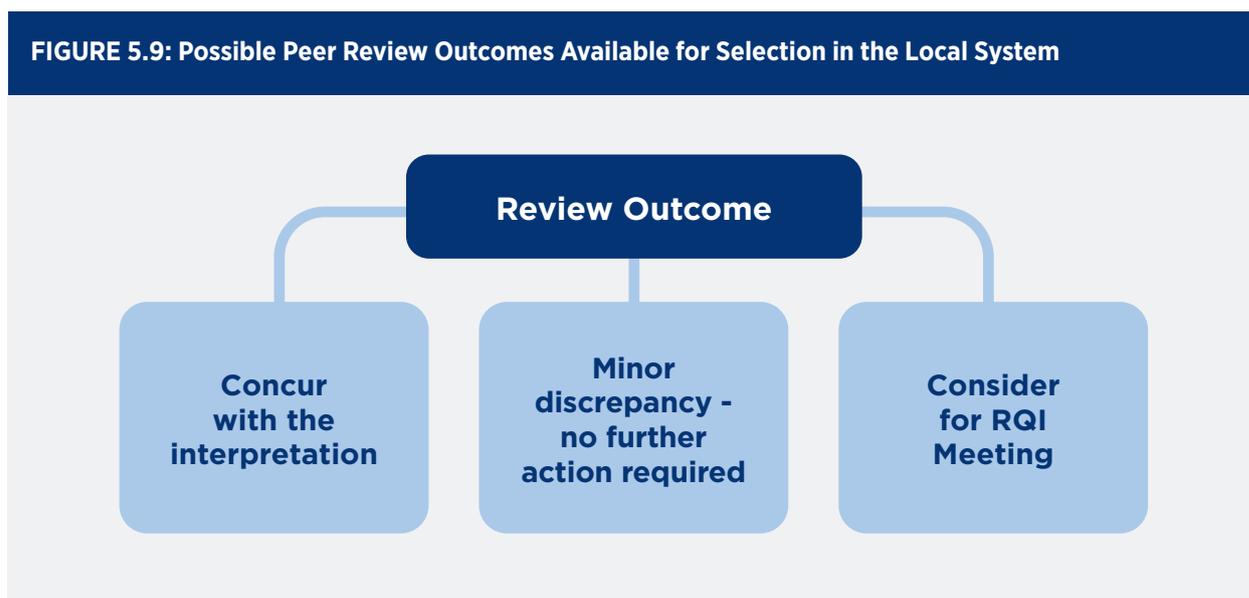
5.5.1 RETROSPECTIVE PEER REVIEW – OUTCOMES

FIGURE 5.10: Retrospective Reviews by Outcome, as a Percentage of All Retrospective Reviews Recorded for Cases Completed, 2019 v 2020
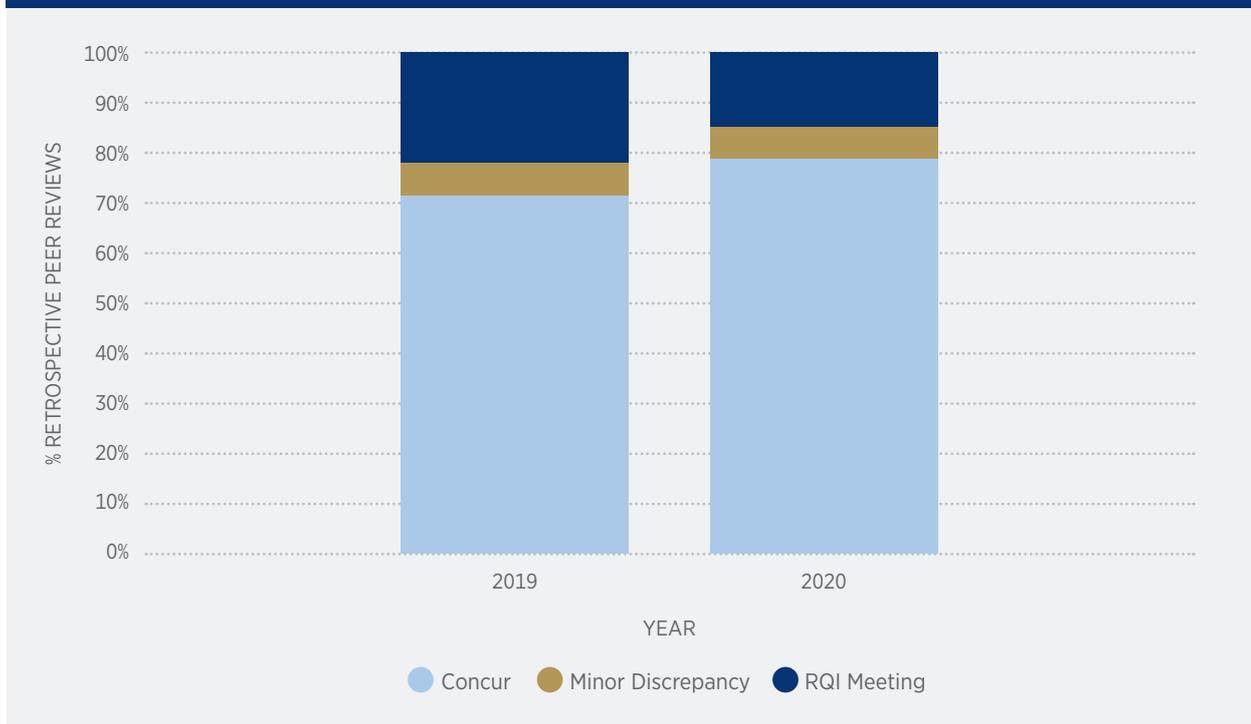
Figure 5.10 presents a comparison of the percentage breakdown of all Retrospective Reviews performed on cases completed in 2019 and 2020 by review outcome.

In 2020, 79% of all recorded Retrospective Reviews were in concurrence with the original report, this was 8% more than in 2019. A decrease of 8% was seen in the cases submitted to RQI Meetings following a Retrospective Review from 22% in 2019 to 14% in 2020. A minor discrepancy was highlighted in 7% reviews as was the case in 2019.

Studies are submitted to RQI meetings as shared learning exercises and comprise examples of both best practice and learning opportunities for improvement.

5.5.2 ASSIGNED PEER REVIEW - OUTCOMES

Similar to performing Retrospective Peer Review, the radiologist completing an Assigned Review should record the level of agreement with the original reporting radiologist's report using the scale shown in Figure 5.9.

FIGURE 5.11: Assigned Reviews by Outcome, as a Percentage of All Assigned Reviews Completed, 2019 v 2020
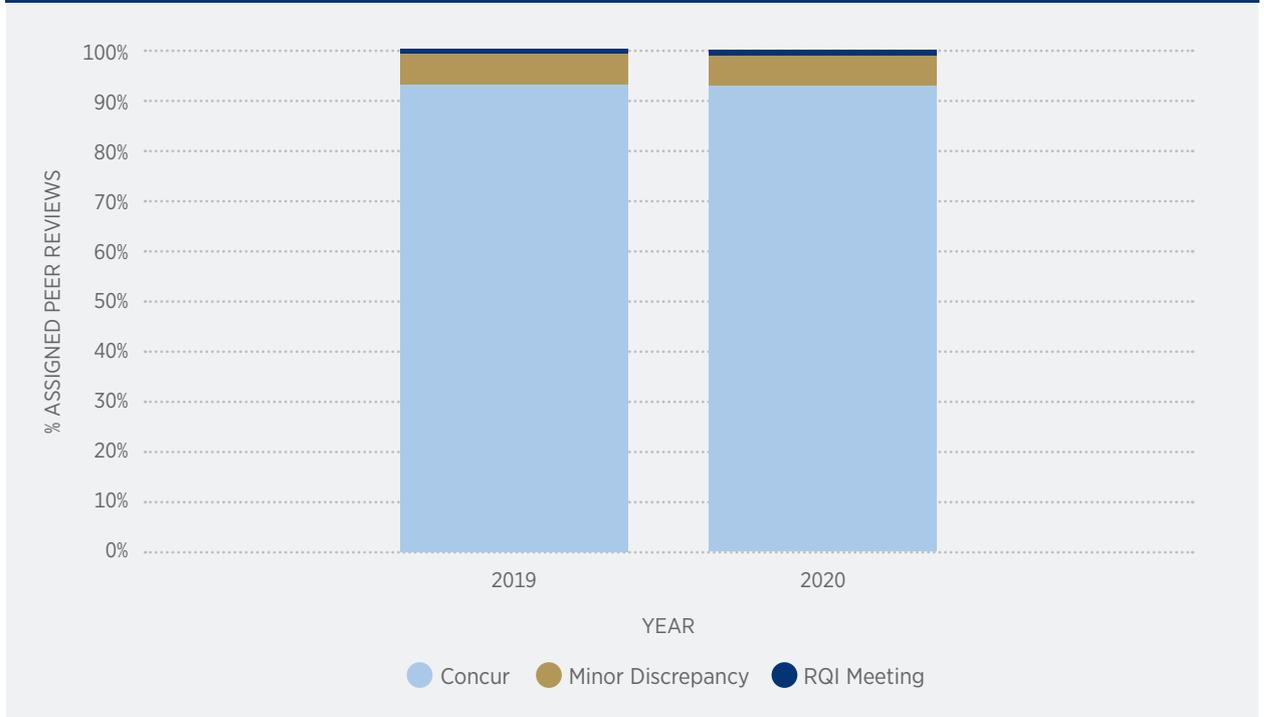
As shown in Figure 5.11, the outcomes recorded for the Assigned Peer Review process are the same in 2019 and 2020. In 93% of completed Assigned Reviews the reviewing radiologist recorded their agreement with the previously authorised report. In 6% of Assigned Reviews minor discrepancy was identified. Only 1% of reports reviewed as a part of the Assigned Review process were recommended for referral to the RQI Meeting.

As outlined earlier in this chapter, Retrospective Review usually occurs in conjunction with another process, such as routine review of a patient's record when a new case or unknown earlier clinical information becomes available, or during preparation for MDM. Assigned reviews are randomly chosen by the system and always include contemporary cases, not older than seven days. The random allocation of the review process may contribute to the higher percentage of cases referred for RQI meetings for Retrospectively reviewed cases than those assigned for review.

Recording a Retrospective or Prospective Peer review requires the radiologist to tick the appropriate box in the local system on completion. This will then ensure the work is logged and contributes to both that hospitals and the national QI dataset.

In 2019, the Working Group suggested that an automatic notification system to remind radiologists to document their Assigned Peer Reviews would be beneficial and in addition simplify data for the radiologist to submit as part of their annual Continuing Medical Education (CME) requirements. The peerVue system now notifies radiologists on a weekly basis regarding this compliance. It is difficult to say if this software addition has resulted in greater compliance taking into account the unprecedented working conditions of 2020.

KEY RECOMMENDATIONS

The Working Group strongly recommend QI Lead Radiologists to feed any departmental improvement ideas back to the group to assist in developing a more coordinated national solution with regards to QI activity, collection and reporting on QI data.

6.1 INTRODUCTION

This chapter provides details on the three categories of Radiology Alerts, the acknowledgment of these alerts and the timeframes in which this should be completed.

An alert is defined as the communication of a high priority finding or report from one healthcare professional to another.

KEY QUALITY INDICATOR

Number of Radiology Alerts for each urgency level (expressed as % of total workload)

Number of acknowledged communicated cases of unexpected and clinically significant radiological findings (expressed as % of total workload)

Number of Radiology Alerts where the acknowledgement was received within the guideline acknowledgement time (expressed as a % of the number of Radiology Alerts)

Radiology Alerts are broken into three categories of findings: Critical, Urgent, or Unexpected-Clinically Significant. Each of those categories has a defined acknowledgement timeline, as illustrated in Figure 6.1 below.

FIGURE 6.1: Radiology Alerts Acknowledgement windows as defined in the Guidelines for the Implementation of a National Radiology Quality Improvement Programme - Version 3.0.

CRITICAL	URGENT	UNEXPECTED - CLINICALLY SIGNIFICANT
60 MINUTES	**24** HOURS	**6** DAYS

Radiology alerts require acknowledgement from an appropriate individual, typically the referring physician or an appropriate member of their team. The acknowledgement window begins when a Radiology Alert is activated in the local system, its duration is calculated from the moment that the alert is activated until the moment that the alert is marked in the system as acknowledged.

> **Acknowledgement by the referring clinician is treated as a confirmation that the receiver is aware that the report contains high priority information, is aware of the urgency and will follow-up and act on the Radiology Alert as appropriate.**

It is the responsibility of each hospital/radiology department, in conjunction with the referring clinicians and hospital management, to establish a local policy that clearly defines the processes for communication, and the responsibilities of the radiologists, the referring clinicians and hospital management within that process.

An escalation procedure regarding activated radiology alerts should involve the Radiology department and specifically the radiology clinical director/consultant radiologist in administrative charge and be managed by a designated person within the department. The department should take appropriate actions to ensure adherence to the standards.

> **In the event where communication of a radiology alert has not been acknowledged, a locally agreed escalation procedure should be in place.**

6.2 RADIOLOGY ALERTS OVERVIEW

Some NQAIS sites use different local systems to record Radiology Alerts. Depending on the local system being used in a hospital, some alerts are captured in a manner different to what is described in this chapter. Therefore, as with other KQIs detailed in this report, the volumes of Radiology Alerts included here represent only a portion of all alerts activated in 2020.

The manual nature of the input of Alerts and the appropriate outcome also contribute to incomplete records.

FIGURE 6.2: Percentage of Activated Radiology Alerts for Each Referral Source (Patient Class) by Urgency Level, 2020
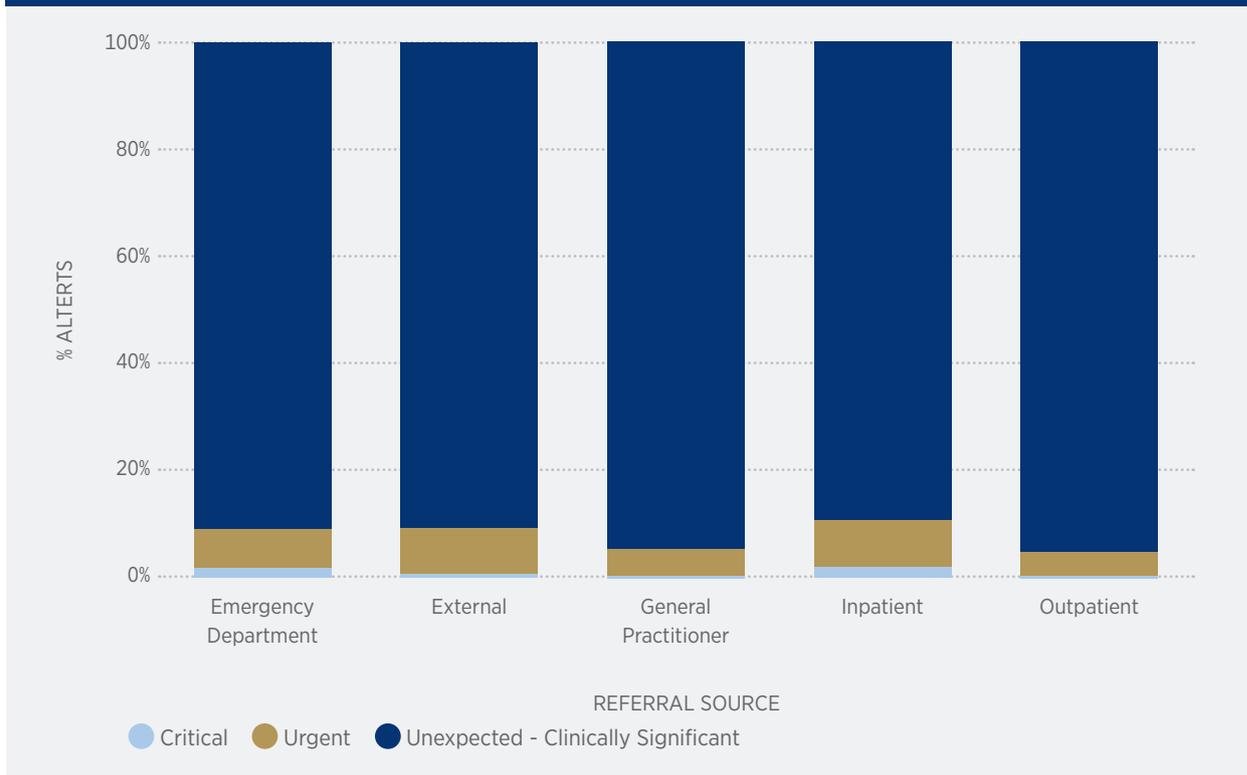
The majority of Radiology Alerts activated in the local systems, for each patient class in 2020 refer to Unexpected-Clinically Significant (U-CS) findings, with the highest seen for Outpatient (OP) referrals at 95.1% (Figure 6.2). Alerts related to Critical and Urgent results are being activated less frequently. In 2020, 8.8% or less of alerts raised were categorised as urgent for each referral source.

FIGURE 6.3: Number of All Radiology Alerts (National Aggregate) by Referral Source (Patient Class), 2019 v 2020
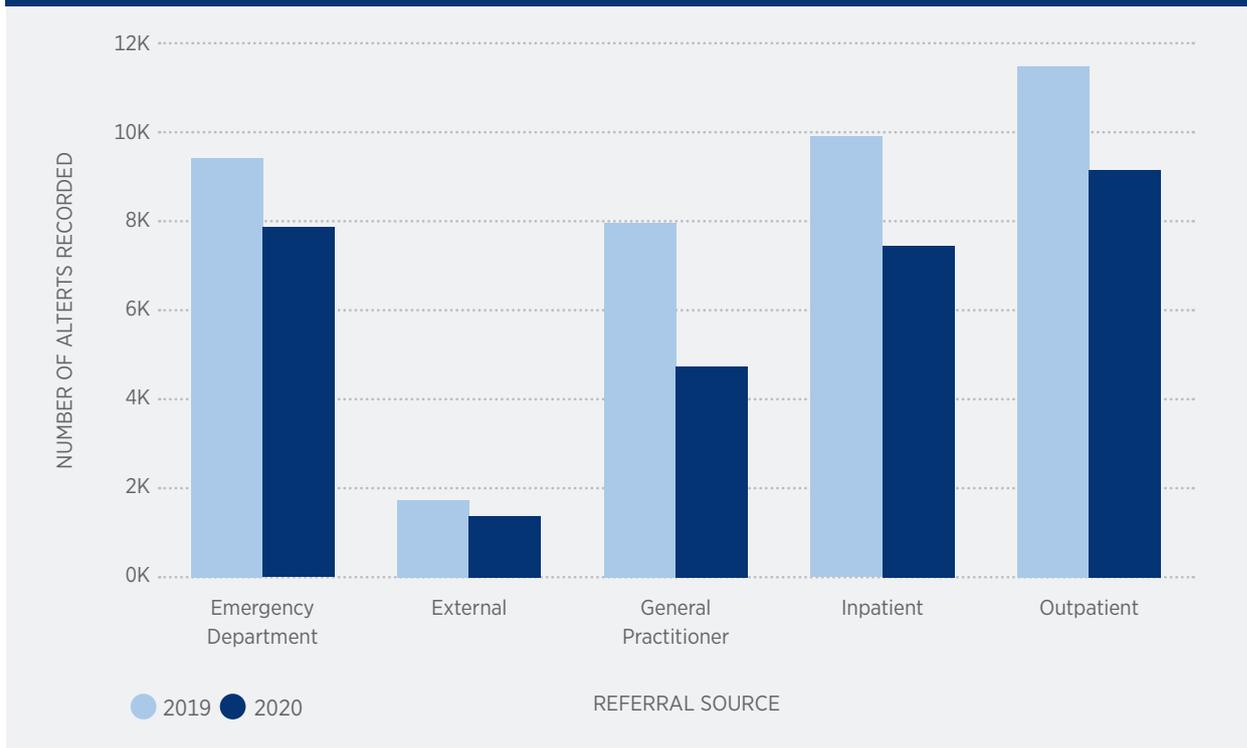
As presented in Figure 6.3, that the overall number of alerts activated in 2020 was lower than 2019 records across all referral sources. The total number of alerts activated in 2019 was 40,750 which reflects 1.4% of total case count, while 2020 records show 30,725 alerts activated which represents 1.2% of total cases.

Similar to 2019, the highest number of cases with activated Radiology Alerts has been recorded for OP cases. In 2020 it was 9,132 which was 2,332 less than in the previous year. A similar drop has been recorded in number of cases, where patients were referred for examination from ED and IP referrals where data show 7,851 and 7,435 alerts recorded respectively. The most notable change, by 3,211 recorded alerts, can be seen in the number of cases referred by GP, from 7,947 in 2019 where alerts were activated for 1.6% of all total cases to 4,736 in 2020, where 1.5% cases had alerts activated against them.

The above results, particularly differences in records between 2019 and 2020, must be reviewed in the broader context of annual workload and the impact of the COVID-19 pandemic (refer to Chapter 3).

FIGURE 6.4: Number of All Radiology Alerts Recorded (National Aggregate) by Urgency Level, 2019 v 2020
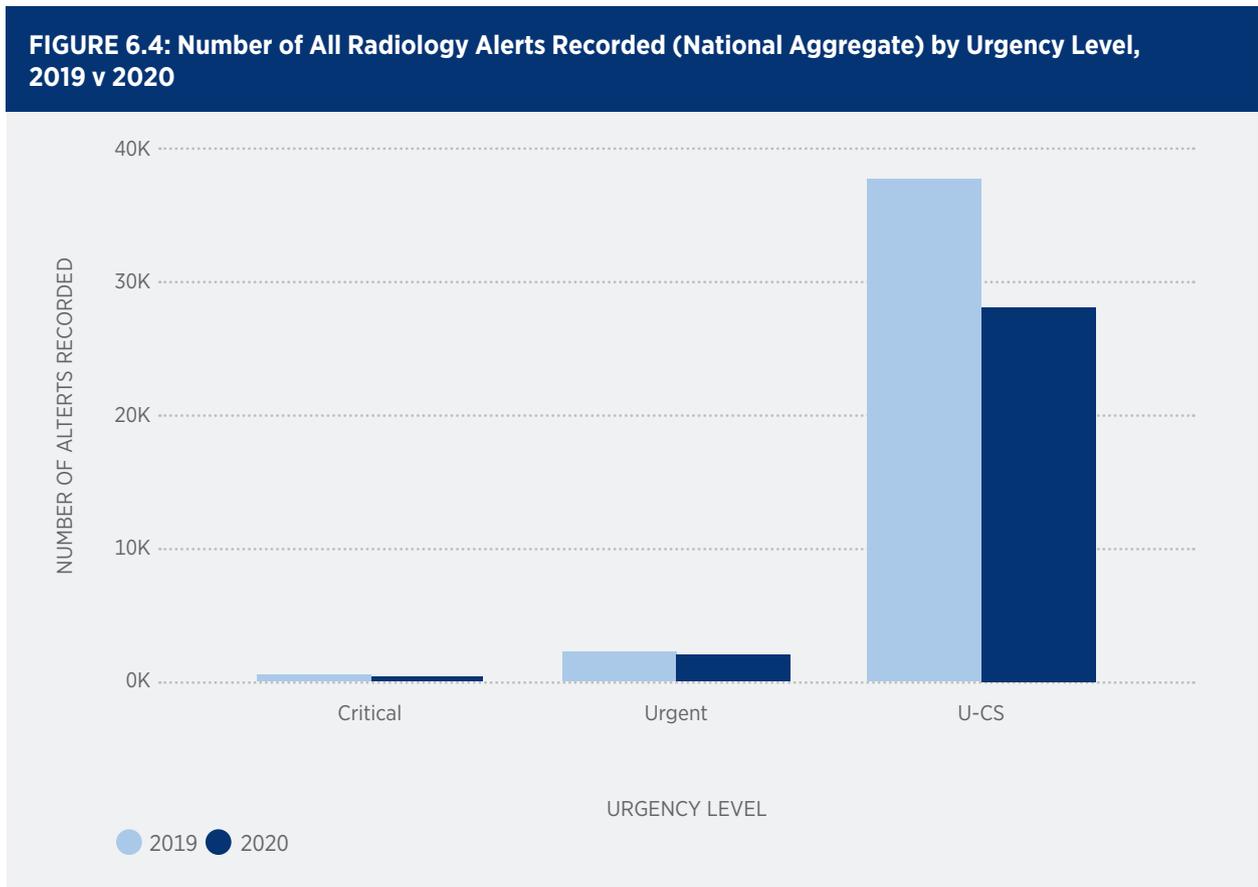

Figure 6.4 demonstrates a decrease in Urgent and Critical Alerts in 2020 from 2019 figures, however a large decrease of 9,605 Unexpected-Clinically Significant (U-CS) alerts was recorded in 2020 when compared with 2019 data. In the context of a total annual workload, in 2020 the U-CS Alert was activated for 1.2% cases, while in 2019 it was activated for 1.3% cases. In 2019 the U-CS category of radiology alerts noted an increase of nearly 7,611 activated alerts in comparison to 2018 records. It is likely that the effect of the COVID-19 pandemic is visible here, as radiology departments were impacted by the restrictions imposed on the public in terms of attendance at ED, GP and hospital clinics.

FIGURE 6.5: Percentage of Radiology Alerts (National Aggregate) Acknowledged Within Set Timeframe out of All Recorded Radiology Alerts, by Referral Source, 2019 vs 2020
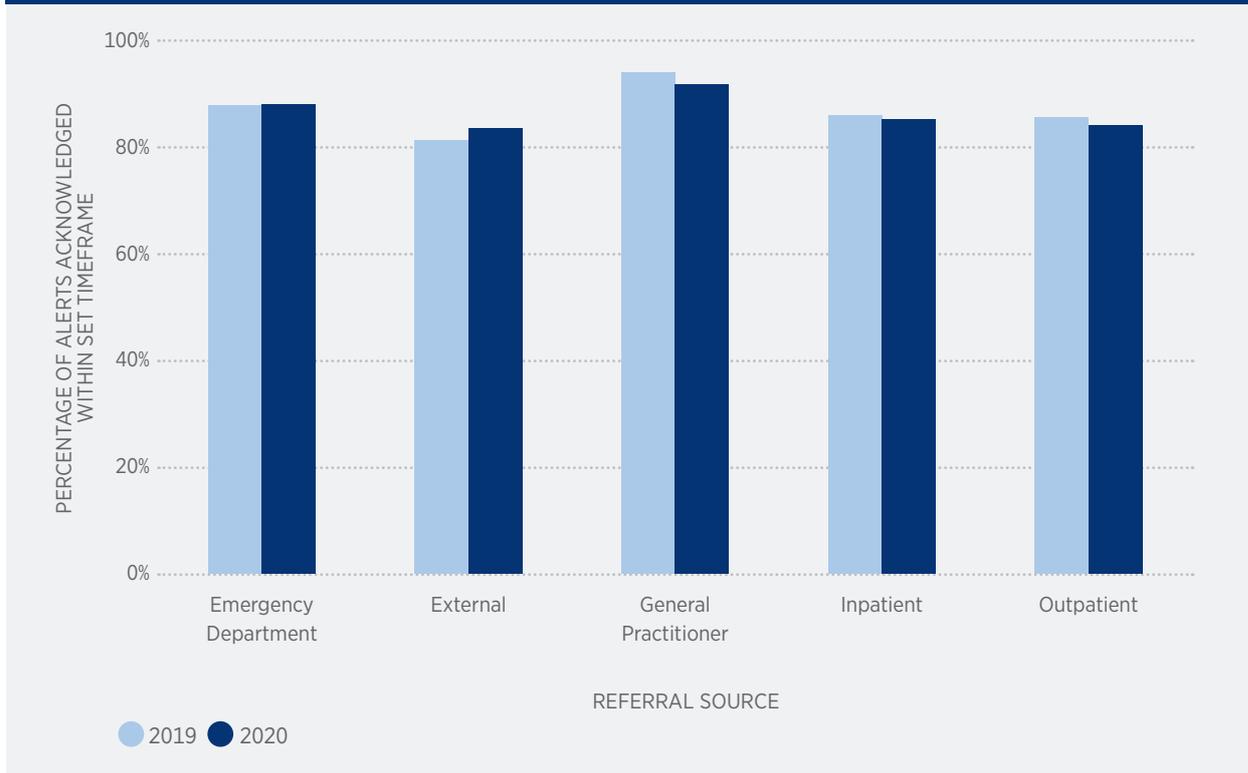
As illustrated in Figure 6.5, the percentage of Radiology Alerts acknowledged within set timeframe in 2020 remain at a similar level to the previous year, and above 80%. While no major increase in Radiology Alerts acknowledged is seen from one year to another, the percentages remain high particularly when viewed in the context of the volume of cases involved and the impact on work practices by the COVID-19 pandemic.

6.3 UNEXPECTED – CLINICALLY SIGNIFICANT RADIOLOGY ALERTS

Any new or unexpected findings that suggest a patient's condition could result in significant morbidity if not appropriately managed but are not immediately life-threatening are classified as Unexpected – Clinically Significant (U-CS).

> **Unexpected–Clinically Significant Alerts should be acknowledged within six days of alert activation.**

Communication of Unexpected-Clinically Significant Radiology Alert should be from the reporting radiologist to either the referring clinician or appropriate member of their healthcare team, either via a direct conversation or via an alternative locally approved method of communication.

The dictated report should clearly specify the clinical finding of concern. As for all alerts, a defined local escalation process must be in place.

FIGURE 6.6: Number of Cases with Unexpected-Clinically Significant Radiology Alerts, per NQAIS Site 2019-2020

NUMBER OF CASES WITH U-CS ALERTS ACTIVATED
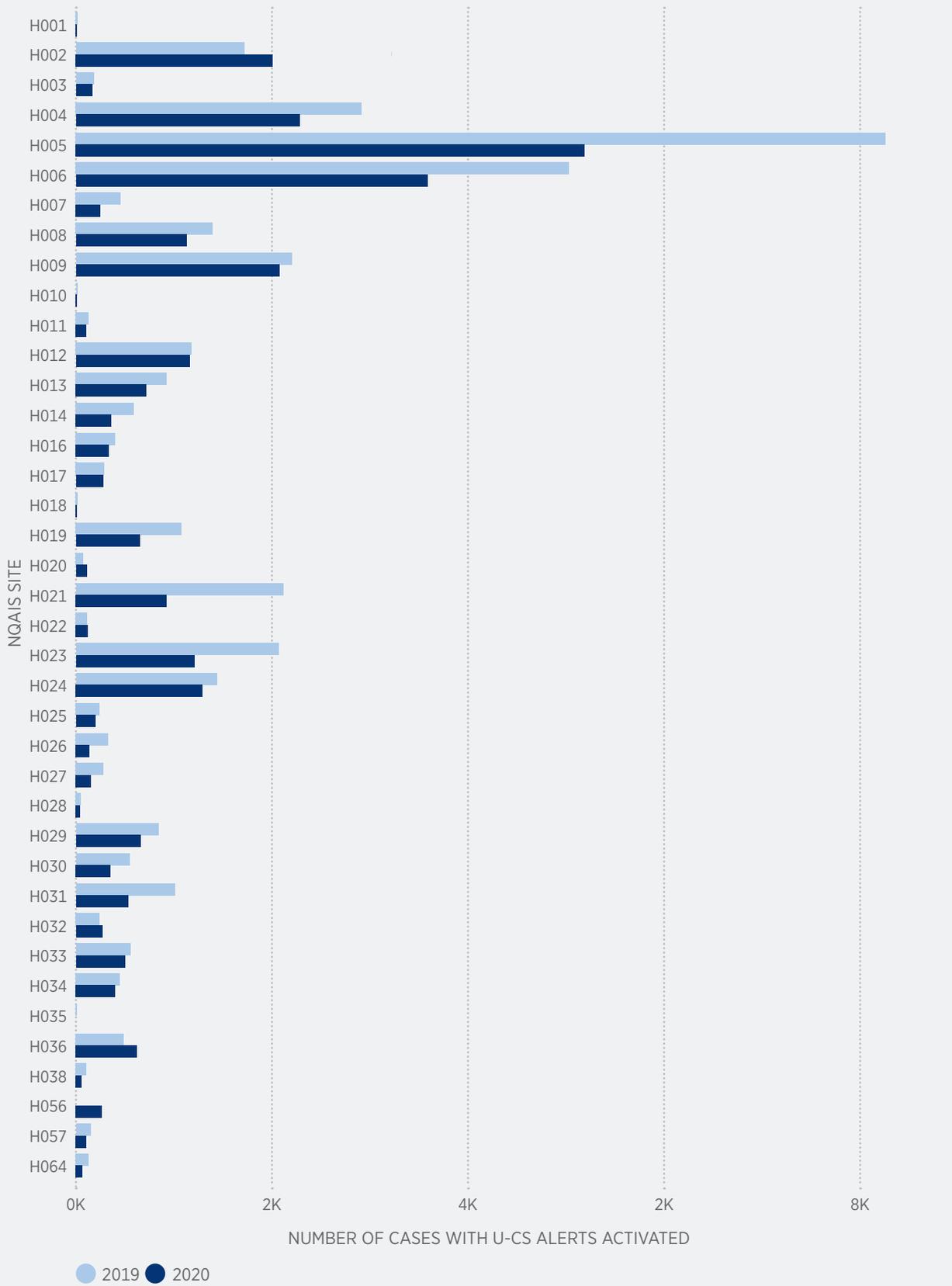
● 2019 ● 2020

FIGURE 6.7: Percentage Unexpected-Clinically Significant Radiology Alerts Acknowledged Within 6 Days, per NQAIS site, 2019-2020
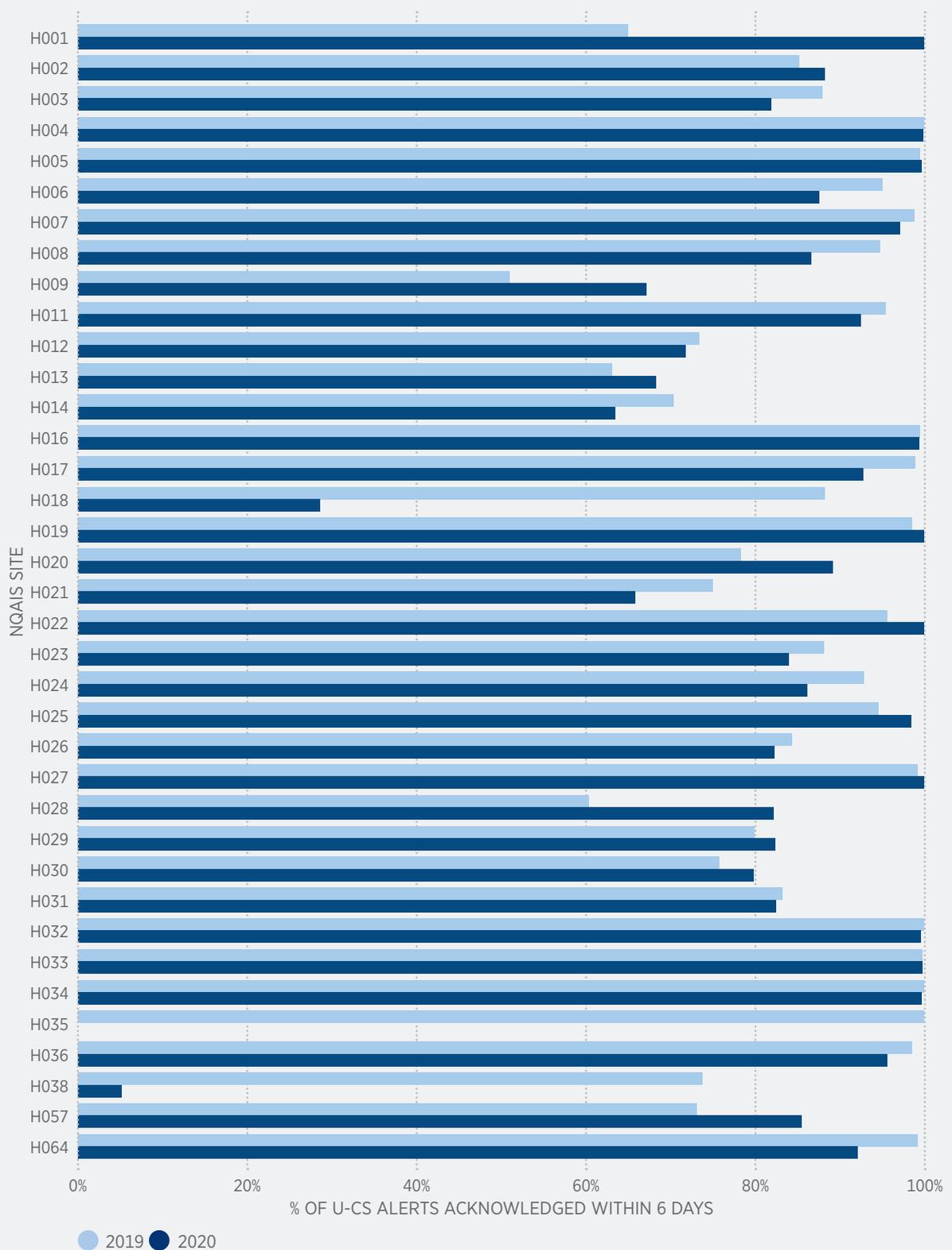
[Please note also that where a site has not either recorded an alert or is using a system compatible with NQAIS, they do not appear on the above graphs.]

The above graphs in Figures 6.6 and 6.7 should be viewed in conjunction with one another to provide the necessary context in relation to the volume of Unexpected-Clinically Significant alerts raised and the percentage of those acknowledged in the recommended timeframe.

In 2020, 37 out of 41 sites provided data for Unexpected – Clinically Significant Alerts acknowledged on time within 6 days, this is two sites less than in 2019. The data reveal that 16 out of those 37 sites recorded over 90% Alerts acknowledged on time in 2020.

Comparison of 2019 and 2020 records for Unexpected-Clinically Significant alerts shows that generally the volume of alerts and the percentage acknowledged were lower in 2020. There is no apparent correlation between the number of alerts activated within NQAIS sites and the percentage of alerts acknowledged from year to year, further highlighting that acknowledgement of an alert is an external event, outside the control of the radiologist.

In the case of U-CS Alerts, administrative staff play an important role in executing and recording acknowledgements, by providing support to clinicians in monitoring this type of radiology alert. Availability of such support varies between sites and may also contribute to the length of time before an acknowledgement is recorded in the ICT system.

6.4 URGENT RADIOLOGY ALERTS

Urgent Alerts should be activated for any new or unexpected findings in conditions that could result in mortality or significant morbidity if not addressed urgently.

The communication of an Urgent Alert should come from the reporting radiologist to either the responsible clinician or other healthcare team member who can initiate the appropriate clinical action for the patient.

> **Urgent Alerts should be acknowledged within 24 hours.**

If possible, Urgent Alerts are best communicated via a direct conversation with the responsible clinician or other licensed caregiver, otherwise, via an alternative method approved by the participating hospital, with a defined escalation process.

Radiology reports are a critical part of patient care and overall diagnostic decision making and communicating this information in a timely manner is crucial for ensuring the best possible patient outcomes.

Currently hospital ICT systems are not tailored to recording and monitoring Critical and Urgent alerts quickly and easily.

> **Direct verbal communication remains the safest method for communicating these findings at present.**

More communication is required with radiologists to ensure this occurs and to discuss possible improvements on how the system can capture this information.

6.5 CRITICAL RADIOLOGY ALERTS

A Critical Radiology Alert is activated when a new or unexpected clinical finding is discovered that is potentially life-threatening or requires immediate clinical action in patient management.

> **The acknowledgement should be recorded by the reporting Radiologist within 60 minutes of initial alert activation.**

A Critical Radiology alert must be communicated by a radiologist via a direct conversation with the referring clinician or a member of their team. A defined escalation process should be put in place by the participating hospital.

> **Critical Results require immediate, interruptive communication with the referring clinician, a covering clinician or other healthcare team member who can initiate the appropriate clinical action for the patient.**

The low number of Critical Alerts that were recorded in 2020 can be seen, as below 2% for each referral source, as was the case in 2019 also (Figure 6.2).

Communication of Critical Alerts can result in delays in recording acknowledgements in the local recording system while immediate patient care is prioritised. It is, therefore, not unusual for the recording of a critical alert acknowledgement to take place long after the conversation with the referring clinicians has occurred and not within the recommended 60 minutes.

The NRQI Programme continues to collaborate with the Faculty of Radiologists and software suppliers to ensure the mechanisms for recording are continuously improved.

CHAPTER 7
RADIOLOGY QUALITY IMPROVEMENT MEETINGS

Radiology Quality Improvement (RQI) Meetings form a vital component of the departmental educational process. The main role of those meetings is the facilitation of collective learning and promotion of safe environment in which to practice radiology.

By providing opportunities for routine review and knowledge sharing during discussions of examples of best practice, RQI meetings support continuous quality improvement, which is key to improvements in patient care.

KEY QUALITY INDICATOR

Percentage of Attendance

**Number of accession numbers reviewed at RQI meeting
(expressed as a percentage of total workload)**

Number of accession numbers reviewed at RQI meeting by source: Peer Review, MDM (to include Clinico-Radiological conferences) or other

**Number of accession numbers reviewed at RQI meeting with assigned category
(expressed as a percentage of total workload)**

Regular RQI meetings promote learning and awareness amongst participants. They afford the opportunity to highlight review areas and can allow identification of suboptimal practice in certain instances. A mutually beneficial and non-adversarial environment promotes learning for all attendees and result in service improvements that benefit patients. Positive feedback and examples of good practice are equally as important in promoting excellence and self-reflection. Denigration of performance must be avoided.

The meetings provide a forum for peer-to-peer education where a radiologist with subspecialty training or particular expertise in an area can provide educational feedback to colleagues without such training / expertise, usually in the realms of misinterpretation, educational feedback and report completeness.

RQI is a separate but parallel process to peer feedback and open disclosure and cases should only be listed for meetings when appropriate alert systems and open disclosures have been initiated and ideally concluded.

KEY RECOMMENDATION

Radiology Quality Improvement meetings should take place five times a year at a minimum and attendance where possible should be mandatory for all departmental Radiologists including Radiologists in Training.

FIGURE 7.1: Attendance at Radiology QI Meetings in 2019 vs 2020, by NQAIS site as recorded in NQAIS Summary Data.
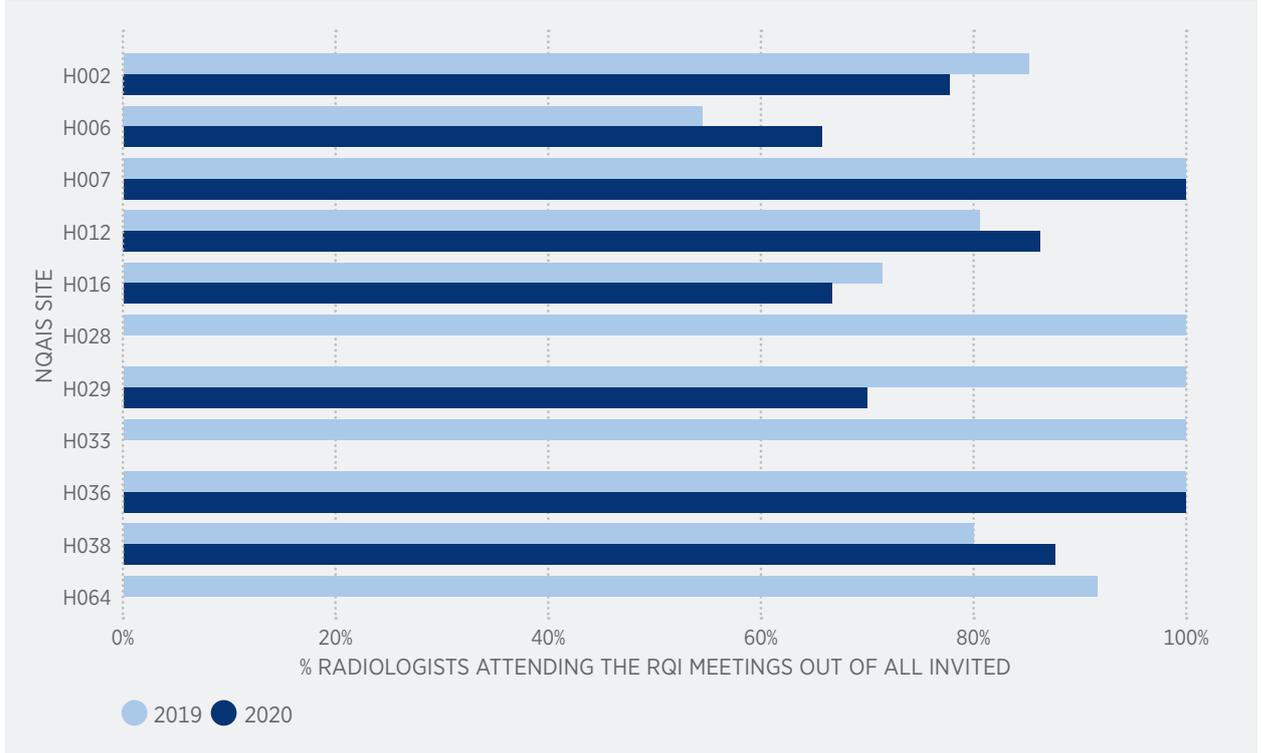
Recording Attendance at RQI Meetings requires manual input to NQAIS-Radiology under the Summary Data section, by each individual NQAIS Site where such meetings take place.

Data input requires details such as RQI Meeting date, number of radiologists invited to that meeting and number of radiologists who attended the meeting. No further information is collected.

Figure 7.1 illustrates the attendance at RQI meetings in sites where data were recorded in NQAIS in 2020 and those sites that provided data in 2019. Sites that did not provide data in either of those years are not represented on this graph, further highlighting the absence of data recorded for this KQI. It is important to highlight that RQI meetings are routine activity in every radiology department and therefore it can be assumed that they are taking place in all sites. However, not all departments are recording attendance in the online data repository and those who are recording it, do it sporadically, which results in difficulties regarding the measurement and reporting on this quality indicator accurately.

In 2020, 20% of sites provided data on the number of RQI meetings taking place. As this is based on manual input of data to NQAIS-Radiology, it is likely that more sites are holding RQI meetings, but the laborious nature of the input is inhibiting data collection.

The Working Group is aware of the fact that in the initial phase of the COVID-19 pandemic, RQI meetings were affected. Attempts were made to continue to hold meetings on site where possible; however, with social distancing guidelines in place, some sites were unable to accommodate such meetings in their departments. Where possible, virtual meetings were adopted; nevertheless, due to available local information systems and IT hardware constraints, online meetings were not deemed an appropriate solution in some instances.

Following review at RQI Meetings, cases are assigned to one of the below categories in peerVue (adapted from *Guidelines for the Implementation of a National Radiology Quality Improvement Programme*).

TABLE 7.1: Categories Outlining Rationale for Review at RQI Meeting

Rationale	Description
Observation	The consensus is that the report failed to highlight a finding that may have had an impact on patient care.
Interpretation	The consensus is that the significance of an observed finding may have been overstated or understated.
Misleading Patient Data	The consensus is that there was inadequate or ambiguous patient data upon which the original report was based.
Report Completeness	The consensus is that the initial report was incomplete and the missing information may have been material to the patient's episode of care.
Inter-observer Variability	The consensus is that of a persistent difference in interpretation and/or perception of clinical relevance of the same finding between radiologists.
Information and Educational Feedback	This refers to the provision of clinical and radiologic follow up to aid more informed judgments in the future.
Compliment	The consensus is that this case illustrates a high standard of performance by the reporting radiologist with resultant benefit of shared learning.
Technical	The consensus is that an opportunity to form an accurate diagnosis was impaired by the poor technical quality of the source data.
Other	The "Other" category can be used if the outcomes do not fall into one of the reasons above.

FIGURE 7.2: Percentage of Cases Reviewed at RQI Meetings Categorised by the Rationale Offered, 2019 vs 2020
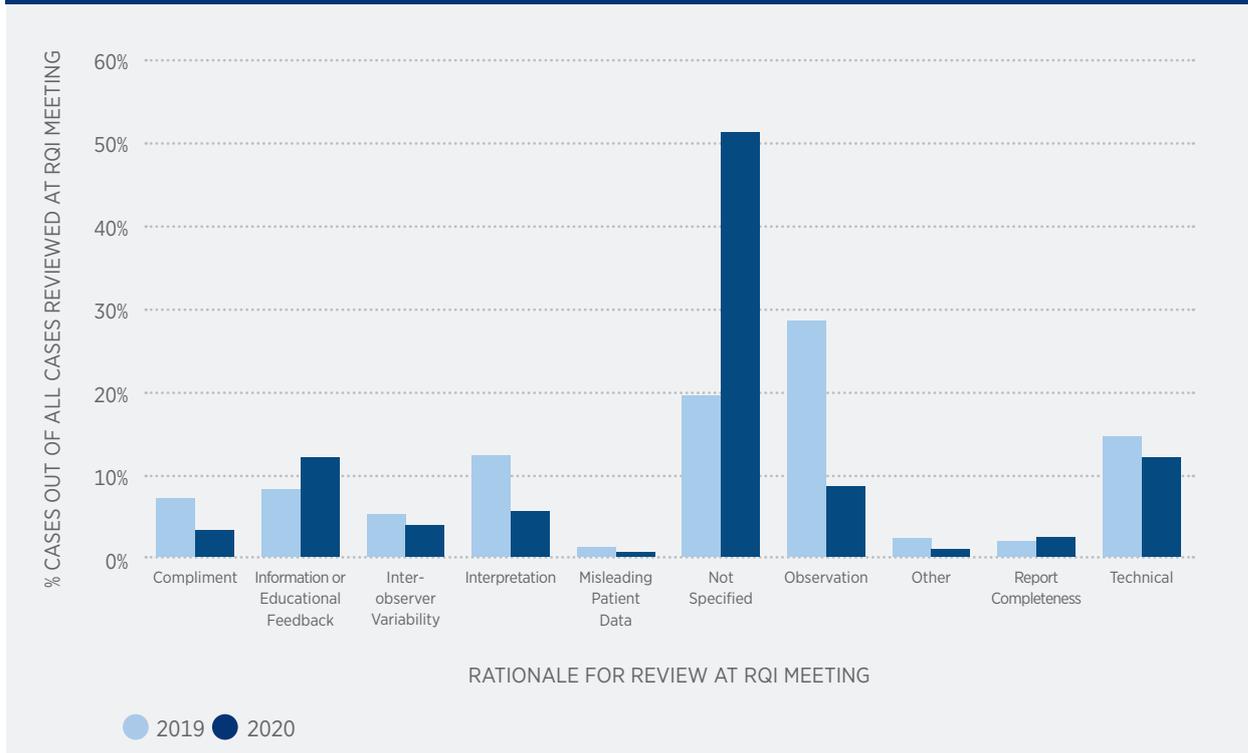
As presented in Figure 7.2 data recording accuracy related to categorisation of cases reviewed during RQI Meetings by their rationale, has decreased in 2020 in comparison to the previous year. While in 2019 a rationale for review was not specified for 20% of reviewed cases, the 2020 data show that more than half of cases reviewed were not assigned to any category.

The impact of this can be noted in drop of percentages classified under specific categories. The most significant change between the 2019 and 2020 data can be noted for cases classified as an "Observation", were a drop from 29% in 2019 to 9% in 2020 was recorded. Similar to that, the percentage of reviewed cases categorised as Compliment and Interpretation was more than 50% lower in 2020 than in 2019.

RECOMMENDED QI PRACTICE

The Working Group recommends that language used in relation to RQI meetings avoid negative terminology such as "error", "miss" "review" and should encourage a culture of mutual respectful learning with emphasis on positive learning and feedback with "good pick up" cases forming a central role.

CONCLUSION

In 2020, 2.56 million radiology cases were interpreted and reports generated in the 48 public Irish hospitals represented in this report. However, from March 2020 radiologists, like so many of their colleagues, continued to provide a key service in unprecedented conditions, navigating new challenges each day to provide a quality service for their patients. These challenges included resource issues due to redeployment, social distancing among other public health regulations, illness and the knowledge that so many patients would not present for examinations out of fear.

The last two years have demonstrated the increasing importance of having QI activities and processes in place locally and nationally. Long-standing problems persist such as lack of resources, lack of protected time, minimal support and buy in from management; however the Working Group is committed to continuously reviewing KQIs, appropriate targets and more efficient methods of data collection and reporting for colleagues across the country.

QI culture is actively promoted by engaging key hospital stakeholders in gathering and reviewing of relevant quality improvement data, identifying gaps in best practice and areas of good practice, and recognising and encouraging opportunities for improvement locally.

It is vital to ensure that best practice is followed and that patient safety is at the centre of what the programme hopes to achieve.

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Notes

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SQIProgrammes@rcpi.ie