



Report of the HSE National Radiology Survey

December 2010

Foreword

In March 2010 Dr. Maurice Hayes was commissioned by the HSE to investigate the accumulation of unreported x-rays in Tallaght Hospital (AMNCH). At the same time as Dr. Hayes began this work, the HSE was also concerned with establishing if this was an issue in other HSE funded hospitals.

As a result a National Radiology Survey was undertaken to identify any radiology backlogs in other HSE funded hospitals and to report on the resolution of the backlogs. This work was carried out between 10th March and 4th November 2010.

These reviews take place in an environment where failures to diagnose disease due to incomplete or inaccurate reporting of radiology have occurred, over recent years. While incomplete or inaccurate reporting is not within the scope of this report, such incidents are always the subject of detailed investigations which are shared with affected service users.

This work was addressed in the face of significant infrastructural challenges, particularly in the area of ICT, while also developing new radiology guidelines contemporaneously. The Quality and Clinical Care directorate had established a National Radiology Programme led by Consultant Radiologist Dr. Risteárd O Laoide. This provided the mechanism for providing clinical guidance and defining clinical criteria in conducting the survey.

The implementation of the work arising from this report, the report of Dr. Maurice Hayes into Tallaght Hospital, the Faculty of Radiologist's Quality Assurance (QA) programme, and the roll out of the National Integrated Medical Information System (NIMIS) are all assisting in strengthening radiology services, quality and processes within our health system.

Dr. Joe Devlin
HSE Director of Quality, Safety and Risk
December, 2010.

Acknowledgements:

I would like acknowledge the contributions of the following in preparation of this report:

Ms. Anne Carrigy, Ms. Julie Flaherty, Ms. Maria Lordan-Dunphy, Ms. Geraldine Brady, Ms. Collette Burns, Mr. Ciaran Browne, Dr. Paul Kavanagh, Ms. Geraldine Donaghy and Ms. Cora McCaughan.

Executive Summary

In March 2010 Dr. Maurice Hayes was commissioned to investigate the circumstances which led to the accumulation of unreported x-rays in AMNCH. It was known at the outset that, in that hospital, x-rays had been found to have gone unreported by a Consultant Radiologist, which can be normal practice in certain clinical situations.

The externally chaired Hayes review had been set up specifically to investigate the issue in AMNCH, but it was also deemed necessary to conduct a survey in order to establish if this was an issue in other HSE funded hospitals. Initial contact with all hospitals indicated that some other units did have investigations reviewed by clinicians other than radiologists and not formally reported on by radiologists.

The Quality and Clinical Care Directorate (QCCD) of the HSE had established a National Radiology Programme which was already focussed on quality and safety in radiology. When this issue arose, QCCD began working with this programme to determine the circumstances where it was acceptable that x-ray investigations would not be reviewed by radiologists, and also the circumstances where a radiologist's report was a requirement. Subsequent to this work, a survey of all HSE funded hospitals was established. Guidance on the scope of the survey (both the type of X rays investigations requiring reporting by radiologists and the duration of the lookback) was provided by the National Radiology Programme and the Faculty of Radiologists. This was issued to all HSE funded hospitals with a template to respond with their level of compliance by 21st May 2010 (Appendix 1)

The following hospitals assured the HSE that they were in compliance with the guidance provided issued with the survey template. These were

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| <p>The Coombe Women’s Hospital Naas General Hospital Midland Regional Hospital, Mullingar St. James’s Hospital St. Luke’s Hospital, Rathgar National Maternity Hospital St. Michael’s Hospital, Dun Laoghaire Royal Victoria Eye and Ear Hospital St. Vincent’s University Hospital Cappagh National Orthopaedic Hospital The Mater Misericordiae Hospital Cavan General Hospital Monaghan General Hospital Louth County Hospital, Dundalk South Infirmary Victoria University Hospital Bantry General Hospital</p> | <p>Mallow General Hospital The Mercy University Hospital, Cork South Tipperary General Hospital Wexford General Hospital Merlin Park Hospital Galway University College Hospital, Galway Mayo General Hospital Portiuncula Hospital, Ballinasloe Letterkenny General Hospital Roscommon County Hospital Sligo General Hospital St. John’s Hospital, Limerick Midwestern Regional Hospital, Ennis Midwestern Regional Hospital, Nenagh Midwestern Regional Hospital, Dooradoyle</p> |
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Initial returns established that the following hospitals had areas of non-compliance with the guidance outlined with the survey template:

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| <p>Beaumont Hospital Connolly Hospital, Blanchardstown Kerry General Hospital Our Lady of Lourdes Hospital Drogheda St. Luke’s Hospital, Kilkenny Midland Regional Hospital, Portlaoise Our Lady’s Hospital for Sick Children Crumlin</p> | <p>Midland Regional Hospital, Tullamore St. Columcille’s Loughlinstown Waterford Regional Hospital Our Lady of Lourdes Hospital Drogheda Cork University Hospital Temple Street Hospital The Rotunda Hospital Our Lady’s Hospital, Navan</p> |
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Out of a total annual workload of more than 2.5 million examinations each year across all hospitals, the total number of investigations returned as unreported by a radiologist across all hospitals was 33,914. This represented less than 0.5% of all activity over the period (2008 – present) within our radiology services.

Over the subsequent months, remedial actions were taken in all hospitals that had reported non compliance. These actions were to address the backlog of unreported investigations and ensure all outstanding examinations were now reported on by a radiologist. Initially, following advice from the HSE National Radiology Programme working group, endorsed by the Faculty of Radiologists, priority was given to chest investigations and to cross sectional images (such as CT scans and MRI scans). Subsequent to this, all remaining backlog investigations were reported, with completion of the process confirmed across all sites in October 2010.

During the work, it became apparent that some sites had difficulty locating small numbers of examinations, and even after extensive searching, some investigations were irretrievable. The Quality and Clinical Care Directorate's National Radiology Programme Lead derived management principles for missing investigations (Appendix Two) and all sites were additionally required to assure they were compliant with these principles.

In addition to the above, all sites were required to notify to the HSE Serious Incident Management Team any instance of adverse events affecting service users arising from delay in reporting of backlogs.

Among the 33,914 investigations reported on in this review, there have been no instances of adverse event (patient harm) reported to the HSE as a consequence of backlogs. This is in keeping with the initial assessment that the practices in place, while informal, were in practice appropriately identifying certain investigations as low risk and appropriate for reviewing by clinicians other than radiologists.

In one site an adverse event was reported relating to an instance of delayed cancer diagnosis due to an unreported x-ray. This had been noted prior to the national survey. This case has been investigated and fully communicated to the patient.

Background

Radiological investigation is one of a number of modalities used in the investigation of patients' conditions, either in a primary or community care setting (at the request of a primary care physician), or in a hospital setting (as part of the inpatient or outpatient management of a patient attending secondary care services). Like any modality of investigation, it sits within the triad that forms the totality of information available to a healthcare practitioner (HCP) in diagnosing, treating and following up their patients:

1. History – the story as recounted by the patient
2. Examination – the clinical examination performed by the HCP
3. Investigations – tests that add to the above, e.g. blood tests and radiological examination

It is the combination of these elements, in addition to their training and experience that allows a healthcare professional to advise and treat their patients.

Diagnostic radiology is a multi-step process where high-tech imaging equipment is used to assist health professionals in the diagnosis of a range of conditions. The key health professionals involved are radiographers and radiologists. Diagnostic radiographers use sophisticated equipment to produce high quality images of the internal human body. Radiologists are highly trained specialist doctors who interpret and report on the images generated by radiographers, in order to diagnose or treat diseases and conditions.

A critical step in diagnostic radiology is the radiologist's interpretation and evaluation of these images, in the light of given clinical circumstances. This evaluation and interpretation, by its very nature, contains a significant element of human perception and judgement. International studies suggest that the incidence of discrepancies and errors in general radiology practice lies between 2% and 20%. This range of errors is a worldwide phenomenon and includes all radiology departments, from academic departments to smaller district units. The number varies according to many factors, including the volume and complexity of the radiological images, the skill of the radiologist, and the reporting environment and the population studied.

Some modalities of investigation are performed with great frequency and during the consultation (e.g. weight, height, blood pressure measurement), while some are more technical (e.g. echocardiography), rely on others' skills (e.g. urodynamic study), or employ complex equipment distant to the consultation (e.g. PET or CT or MR imaging).

In the case of radiological investigation, there is a considerable range of sophistication of equipment and frequency of use, and also an enormous spectrum of complexity of clinical situation. For example, radiology input could be used in the diagnosis of an undisplaced metatarsal fracture requiring no specific treatment, or could be part of the diagnosis of the presence of a tumour only visible on high resolution CT scanning, with obvious therapeutic consequences of great significance for the service user.

This huge variation is accompanied by a considerable range of required input by specialists in radiological investigation (typically Consultant Radiologists, and associated training grades, and technical staff such as Radiographers).

Given the nature of radiological work as outlined above, and the internationally recorded potential for error and variance, the focus of all hospitals and health systems must be on minimising this potential, and on putting in place strong governance systems to ensure safe services.

In the wider health system, clinical audit and clinical governance is now recognised as a significant requirement for the delivery of safer patient services. The recent report of the Commission on Patient Safety and Quality Assurance has made strong recommendations on the need for formal clinical audit and governance in our health system, including a system of credentialing for clinicians.

Many doctors already participate in lifelong learning to make sure that they are competent to practice and participate regularly in educational activities on a voluntary basis, but the Medical Practitioners Act 2007 as amended formally provides for programmes of Competence Assurance for medical practitioners. This provision recently enacted, requires each medical practitioner to demonstrate that they are maintaining their skills in clinical practice.

The HSE is also making clinical governance a priority in the wider health system in Ireland. A Directorate of Quality and Clinical Care has been established to improve clinical governance, drive quality improvement and effective risk management, and define national clinical standards and protocols.

The implementation of the work arising from this report, the report of Dr. Maurice Hayes into Tallaght Hospital, the Faculty of Radiologists Quality Assurance programme, and the roll out of the National Integrated Medical Information System (NIMIS) are all assisting in strengthening radiology services, quality and processes within our health system.

Adelaide & Meath incorporating National Children's Hospital (AMNCH)

A review was commissioned by the HSE in March 2010 following reports in the public domain of 57,000 unreported x-rays and a number of unopened GP referral letters at Tallaght Hospital. This review was chaired by Dr Maurice Hayes, and its scope was limited to AMNCH.

Since this issue had arisen in a hospital funded by the HSE, it was necessary to determine if this problem also existed in other hospitals funded by the HSE.

National Radiology Survey

HSE funded hospitals of all types that have radiology units, other than AMNCH, were in scope for this review. This includes general hospitals providing a wide range of services (including 24 hour emergency departments), smaller hospitals, hospitals with particular focus (e.g. Cappagh National Orthopaedic Hospital), maternity hospitals, and children's hospitals.

The range of radiological modalities provided at these sites varies considerably, with some sites, in addition to plain x-ray, also providing MRI, CT, PET scanning and other modalities such as ultrasound, and radio-isotope studies. All these fall in scope of this work.

The sites that were included in this survey are listed here:

HSE Dublin North-East: Beaumont Hospital, Connolly Hospital, Our Lady of Lourdes Hospital Drogheda, Temple Street Hospital, The Rotunda Hospital, Our Lady's Hospital Navan, Cappagh Orthopaedic Hospital, The Mater Misericordiae Hospital, Cavan General Hospital, Monaghan General Hospital, Louth County Hospital

HSE Dublin Midlands: Our Lady's Hospital for Sick Children Crumlin, Midland Regional Hospital Portlaoise, Midland Regional Hospital, Tullamore, St. Columcille's Loughlinstown, The Coombe Women's Hospital, Naas General Hospital, Midland Regional Hospital Mullingar, St. James's Hospital, St. Luke's Hospital Rathgar, National Maternity Hospital, St. Michael's Hospital, Royal Victoria Eye and Ear Hospital, St. Vincent's University Hospital Elm Park

HSE South: Kerry General Hospital, Lourdes Orthopaedic Hospital Kilcreene, St. Luke's Hospital Kilkenny, Waterford Regional Hospital, Cork University Hospital, South Infirmary Victoria Hospital, Bantry General Hospital, Mallow General Hospital, The Mercy University Hospital, South Tipperary General Hospital, Wexford General Hospital

HSE West: Merlin Park Hospital Galway, University College Hospital Galway, Mayo General Hospital, Portiuncula Hospital, Letterkenny General Hospital, Roscommon County Hospital, Sligo General Hospital, St. John's Hospital Limerick, Mid Western Regional Hospital Dooradoyle, Mid Western Regional Hospital Ennis, Mid Western Regional Hospital Nenagh.

Role of the National Radiology Programme

It was clear from the outset that there was a practice at some sites where certain types of radiological investigation were not being reported by consultant radiologists. The National Radiology Clinical Lead within the Quality and Clinical Care Directorate developed a definition of types of investigation that could appropriately fall into this category. The subsequent recommendations of the National Radiology Programme working group were endorsed by the Faculty of Radiologists, RCSI.

Two types of investigations very commonly reported only by clinicians other than radiologists. These were identified by the National Radiology Lead and endorsed as appropriate for reporting in this way as above:

1 Return fracture or orthopaedic clinic investigations

In the care of a fracture or other orthopaedic problem, radiology is a routine part of clinical assessment of the patient. The investigations are almost always examined directly by the treating orthopaedic surgeon. At many hospitals, this examination has historically constituted the report i.e. a consultant radiologist has not subsequently issued a formal report of all studies.

2 Fluoroscopy or screening studies performed by clinicians other than radiologists

Examples include where a procedure involves the insertion of a device under x-ray screening (fluoroscopy). Here, a doctor skilled in the procedure (but who is not a radiologist) uses x-ray imaging (fluoroscopy) to place the device accurately. In this instance a report from a radiologist can be superfluous since the professional inserting the device can be appropriately placed to fulfil this role, and furthermore the role may be fulfilled through the record of the procedure rather than as a filed "x-ray" report.

Apart from the 2 categories outlined above, all other types of study should be reported by radiologists, even when also examined by other healthcare professionals in their routine practice. Such studies include all chest x-rays, index orthopaedic investigations (the first investigation in a fracture series or clinic visit), and all cross sectional imaging (such as CT, MRI scans).

Where it was found that these types of investigation were backlogged, the National Radiology Program, in conjunction with the Faculty of Radiologists, provided guidance that retrospective reporting should be undertaken, as per the following priority order:

1. PA Chest x-rays for 2008, 2009, and 2010 to date
2. Index (i.e. the radiograph taken during the patient's first investigation) fracture and orthopaedic studies for 2009 and 2010 to date
3. Cross sectional imaging studies, emergency department radiographs and GP studies for 2008, 2009 and 2010 to date
4. Portable chest investigations for 2010 to date

Assurance from Hospitals

It was deemed necessary to conduct a survey to determine the level of compliance with the above recommendations. This was issued to hospitals, with an accompanying survey template for completion by all sites, and for submission through the regional offices of the HSE to the director of the Serious Incident Management Team by May 21st 2010. This is reproduced in full in Appendix One. It required notification of backlogs and adverse events relating to any backlogs.

In addition to identifying the types of investigations which a radiology department may delegate for reviewing by clinicians other than radiologists, other requirements were simultaneously placed on hospitals, namely that a local policy should be devised containing the following elements:

- A formal agreement between the radiology department, the clinicians and hospital management using formal local protocol arrangements
- The protocol should include the necessity for a written note by the clinician in the patient's clinical record with respect to the radiology findings
- The protocol should note that quality assurance, radiation protection, staff training and supervision, equipment maintenance and rostering remain within the remit of the radiology department. This remit should be exercised in accordance with national legislation and guidelines.
- The protocol should also include a statement which recognises that radiologists remain available to report on any investigations delegated to clinicians, should the clinician wish.

All sites were further required to indicate if the service had a policy and protocol to prospectively prevent the accumulation of radiology reporting backlogs and to indicate whether the service has a system in place to monitor for the accumulation of radiology reporting backlogs.

Initial Returns:

The following sites provided assurance to the HSE that they were compliant with the above recommendations:

The Coombe Women's Hospital
Naas General Hospital
Midland Regional Hospital, Mullingar
St. James's Hospital
St. Luke's Hospital, Rathgar
National Maternity Hospital
St. Michael's Hospital, Dun Laoghaire
Royal Victoria Eye and Ear Hospital
St. Vincent's University Hospital
Cappagh National Orthopaedic Hospital
The Mater Misericordiae Hospital
Cavan General Hospital
Monaghan General Hospital
Louth County Hospital, Dundalk
South Infirmary Victoria University Hospital
Bantry General Hospital

Mallow General Hospital
The Mercy University Hospital, Cork
South Tipperary General Hospital
Wexford General Hospital
Merlin Park Hospital Galway
University College Hospital, Galway
Mayo General Hospital
Portiuncula Hospital, Ballinasloe
Letterkenny General Hospital
Roscommon County Hospital
Sligo General Hospital
St. John's Hospital, Limerick
Midwestern Regional Hospital, Ennis
Midwestern Regional Hospital, Nenagh
Midwestern Regional Hospital,
Dooradoyle

The following sites identified that they had a backlog of unreported radiology in one or more of the specified areas (PA chest x-ray, Index fracture or orthopaedic, cross sectional imaging, GP studies, Emergency Department investigations, and portable chest x-rays) for the specified periods:

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| Beaumont Hospital Connolly Hospital, Blanchardstown Kerry General Hospital Lourdes Orthopaedic Hospital Kilcreene St. Luke's Hospital, Kilkenny Midland Regional Hospital, Portlaoise Our Lady's Hospital for Sick Children Crumlin | Midland Regional Hospital, Tullamore St. Columcille's Loughlinstown Waterford Regional Hospital Our Lady of Lourdes Hospital Drogheda Cork University Hospital Temple Street Hospital The Rotunda Hospital Our Lady's Hospital, Navan |
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In addition to providing the data above, all sites also were required to provide a description of the methodology use to validate the above returns. (see appendix one)

The total number of investigations returned as unreported was 33,914. This figure represents a small amount of total radiology activity over the period.

A precise figure of total activity is difficult to assess, however analysis of Healthstat radiology data suggests that activity in participant hospitals is approximately 2.5 million examinations per year. Inclusion of non-participant sites would increase this figure. The figure of 33,914 unreported examinations therefore represents a maximum 0.5% of studies over the period 2008 – 2010.

There was a considerable range of backlog in affected sites: the single biggest was 3605 in any one category, with the smallest a backlog of 4 investigations between all categories on one site.

The different types of investigation backlogged were represented differently across the system, reflecting a different activity profile, and differences in practice, and differences in radiology and other infrastructure. For example, one site with a substantial number of orthopaedic images backlogged had no backlog of any other modality.

During the work, it became apparent that some sites had difficulty locating small numbers of examinations, and even after extensive searching, some investigations were irretrievable. The Quality and Clinical Care Directorate's National Radiology Programme Lead derived management principles for missing investigations (Appendix Two) and all sites were additionally required to assure they were compliant with these principles. In all instances these cases have been resolved without any harm having occurred to service users.

The returns for all sites are illustrated in the following tables.

| | Network | Hospital | PA Chest | | | Index fracture and orthopaedic studies | | Cross sectional imaging | | | Emergency Department Radiographs | | | GP studies | | | Portable Chest X-rays |
|---------------------------------------|----------------------|--|-------------|-------------|-------------|--|-------------|-------------------------|-------------|-------------|----------------------------------|-------------|------------|------------|------------|------------|-----------------------|
| | | | 2008 | 2009 | 2010 | 2009 | 2010 | 2008 | 2009 | 2010 | 2008 | 2009 | 2010 | 2008 | 2009 | 2010 | 2010 |
| Dublin Midlands | Dublin Mid Leinster | Adelaide & Meath incorporating the National Children's Hospital Tallaght | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | The Coombe Women's Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Naas General Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Midland Regional Hospital at Tullamore | 0 | 0 | 0 | 2905 | 1129 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Our Lady's Hospital for Sick Children, Crumlin | 0 | 0 | 0 | 204 | 350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Midland Regional Hospital at Portlaoise | | | 519 | 0 | 221 | 0 | 0 | 0 | 0 | 0 | 325 | 0 | 0 | 78 | 25 |
| | | Midland Regional Hospital at Mullingar | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | NETWORK TOTAL | 0 | 0 | 519 | 3109 | 1700 | 0 | 0 | 0 | 0 | 0 | 325 | 0 | 0 | 78 | 25 |
| | Dublin South | St. James' Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | St. Luke's Hospital Rathgar | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | National Maternity Hospital, Holles Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | St. Michael's Hospital, Dun Laoghaire | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Royal Victoria Eye & Ear Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | St. Vincent's University Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| St. Columcille's Hospital | | 32 | 32 | 8 | 47 | 3 | 0 | 0 | 7 | 294 | 206 | 66 | 0 | 0 | 9 | 6 | |
| NETWORK TOTAL | 32 | 32 | 8 | 47 | 3 | 0 | 0 | 7 | 294 | 206 | 66 | 0 | 0 | 9 | 6 | | |
| REGION TOTAL | 32 | 32 | 8 | 3156 | 1703 | 0 | 0 | 7 | 294 | 206 | 391 | 0 | 0 | 87 | 31 | | |
| Dublin North | Dublin North | Cappagh National Orthopaedic Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Mater Misericordiae University Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Beaumont Hospital | 488 | 611 | 1637 | 27 | 451 | 140 | 0 | 0 | 255 | 203 | 1056 | 68 | 61 | 80 | 549 |
| | | The Children's University Hospital | 0 | 0 | 0 | 0 | 129 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | The Rotunda Hospital | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Connolly Hospital, Blanchardstown | 1028 | 784 | 178 | 678 | 95 | 0 | 0 | 0 | 1090 | 103 | 46 | 36 | 3 | 9 | 62 |
| | NETWORK TOTAL | 1516 | 1395 | 1816 | 705 | 675 | 140 | 0 | 3 | 1345 | 306 | 1102 | 104 | 64 | 89 | 611 | |
| | North East | Cavan General Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Monaghan General Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Louth County Hospital, Dundalk | 3 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Our Lady of Lourdes Hospital Drogheda | | 18 | 0 | 114 | 0 | 70 | 12 | 0 | 36 | 153 | 0 | 432 | 4 | 0 | 18 | 50 | |
| Our Lady's Hospital, Navan | | 9 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 26 | 16 | 2 | 0 | 0 | 0 | 0 | |
| NETWORK TOTAL | 30 | 10 | 116 | 2 | 70 | 12 | 0 | 36 | 179 | 16 | 434 | 4 | 0 | 18 | 50 | | |
| REGION TOTAL | 1546 | 1405 | 1932 | 707 | 745 | 152 | 0 | 39 | 1524 | 322 | 1536 | 108 | 64 | 107 | 661 | | |

| | Network | Hospital | PA Chest | | | Index fracture and orthopaedic studies | | Cross sectional imaging | | | Emergency Department Radiographs | | | GP studies | | | Portable Chest X-rays |
|---------------------------------------|---------------------|--|-------------|-------------|-------------|--|-------------|-------------------------|------------|------------|----------------------------------|-------------|-------------|-------------|------------|------------|-----------------------|
| | | | 2008 | 2009 | 2010 | 2009 | 2010 | 2008 | 2009 | 2010 | 2008 | 2009 | 2010 | 2008 | 2009 | 2010 | 2010 |
| South | South | South Infirmary Victoria University Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Kerry General Hospital | 764 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 32 | 0 | 0 | 0 |
| | | Bantry General Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Mallow General Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Cork University Hospital | 3605 | 0 | 0 | 1500 | 600 | 183 | 0 | 5 | 204 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Mercy University Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | St. Mary's Orthopaedic Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | NETWORK TOTAL | 4369 | 0 | 0 | 1500 | 600 | 183 | 0 | 5 | 249 | 0 | 0 | 32 | 0 | 0 | 0 |
| | South East | Waterford Regional Hospital | 37 | 346 | 0 | 0 | 0 | 144 | 175 | 35 | 3315 | 2660 | 1216 | 125 | 90 | 34 | 137 |
| | | South Tipperary General Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | St. Luke's and Lourdes Hospitals, Kilkenny | 207 | 85 | 44 | 0 | 0 | 15 | 4 | 0 | 1170 | 176 | 215 | 0 | 0 | 0 | 0 |
| | | Wexford General Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | NETWORK TOTAL | 244 | 431 | 44 | 0 | 0 | 159 | 179 | 35 | 4485 | 2836 | 1431 | 125 | 90 | 34 | 137 |
| | REGION TOTAL | | | 4613 | 431 | 44 | 1500 | 600 | 342 | 179 | 40 | 4734 | 2836 | 1431 | 125 | 90 | 34 |
| Mid West | | Merlin Park Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | University College Hospital, Galway | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Mayo General Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Portiuncula Hospital, Ballinasloe | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Letterkenny General Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Roscommon County Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Sligo General Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | NETWORK TOTAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Mid West | St. John's Hospital, Limerick | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Mid Western Regional Orthopaedic Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Mid Western Regional Hospital, Dooradoyle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Mid Western Regional Maternity Hospital | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Mid Western Regional Hospital, Ennis | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mid Western Regional Hospital, Nenagh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| NETWORK TOTAL | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| REGION TOTAL | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| NATIONAL TOTAL | | | 6191 | 1868 | 2503 | 5363 | 3048 | 494 | 179 | 86 | 6552 | 3364 | 3358 | 265 | 154 | 228 | 829 |

Adverse Events

As in any healthcare system, within the HSE there are a large number of incidents reported and these range greatly in severity. The HSE has an incident reporting system, the purpose of which is to learn from adverse events or near misses, and reduce their likelihood of recurrence through implementing change.

Adverse events are clinical incidents where harm has occurred to a service user as a result of a failure in service delivery. All sites were required to notify where adverse events occurred in relation to the backlog of investigations returned as unreported.

None of the 33,914 investigations examined in this process gave rise to reported adverse events.

On one site an adverse event had arisen in the time preceding the work described in this report. It is noted herein for completeness, and an investigation into this incident has been completed. The incident has been described to the service user by the local clinical director, and the service user is fully aware of a delay in diagnosis which occurred as a consequence of an investigation not being reported by a radiologist. Although this was not one of the 33,914 films returned in May as unreported, the incident was consistent with the concerns of the HSE in conducting this review and is therefore reported here. The HSE deeply regrets this incident.

In all instances the reporting of the 33,914 investigations by a radiologist has not led to adverse events. This confirms initial opinion on hospital sites that the majority of these investigations were very low risk. Reasons for this included the fact that they were reviewed by the requesting clinicians, included large numbers of patients unlikely to have cancer or other serious illnesses or were repeat investigations for patients with known pathologies.

Current Report

The work of addressing the radiology backlog across the system is complete. All sites have now assured the HSE that they have in place systems to prevent the recurrence of backlogs. All sites have completed the reporting of available investigations (those in file or not irretrievable after extensive search). All sites where there is where reporting only by clinicians other than radiologists have developed local protocols where delegation of reviewing of images to clinicians other than radiologists is taking place or projected to take place.

Irretrievable investigations: there are occasions where it is not possible to retrieve an investigation. This can occur for investigations whether they have been reported by a radiologist or not. Possible reasons for this can include:

- Investigation misfiled
- Investigation sent elsewhere
- Data corruption / data management difficulty
- Investigation destroyed

The HSE and National Radiology Programme Lead circulated principles of management for missing investigations and these are reproduced in Appendix 2. All sites have assured the HSE that they are using these principles where applicable. In some cases, the need to repeat the examination is avoided, for example, where a later test has already been done and reported on. In others, the clinical situation may no longer justify an investigation – in these instances the treating GP or hospital doctor must review the case. This work is now complete.

Protocols: Where protocols were not in place concerning delegation to healthcare professionals other than radiologists, all sites in which there is insufficient radiology capacity have such protocols in place.

The HSE's Quality and Clinical Care Directorate welcomes has developed the healthcare audit function. This audit function is independent of provision of service across hospitals and communities, and its remit will include audit of quality improvement work in the area of radiology. In this way the HSE will be in a position to establish by means independent of the relevant hospital sites that backlogs have been addressed and that systems are in place to prevent their recurrence.

Conclusions:

The HSE at the time of presentation of this report is also planning the implementation of the recommendations of Dr Maurice Hayes' report on the accumulation of the backlog of unreported radiology in AMNCH. The lessons learned from both processes will assist in this implementation.

The Faculty of Radiologists has recently launched a Quality Assurance document. This document sets out a range of activities that when implemented will reduce the possibility for error, and in particular reduce the risk of adverse events. The Quality Assurance programme will commence implementation in early 2011.

The role out of the NIMIS project which leads to an integrated filmless radiology infrastructure will significantly reduce the likelihood of lost studies by avoiding the future use of physical storage systems of packets of x-ray films. Instead archived digital images will be readily available and much less susceptible to loss.

While the large numbers of investigations reviewed as part of the work outlined here did not result in any adverse events, there was nonetheless an understandable anxiety among patients that this could have occurred. The HSE regrets this and apologises to all affected persons.

There is, in any health process, a potential for human and systems error, which we must work together to minimise. Radiology is as a specialty subject to an expected international rate of error in interpretation, which is why focus must lie in building safe systems within Radiology Services, to minimise that interpretation error rate. The HSE is committed to making every effort that the error rate is minimised. However, where error does occur this is deeply regretted and these are rigorously investigated with the input of service users.

The implementation of the work arising from this report, the report of Dr. Maurice Hayes into Tallaght Hospital, the Faculty of Radiologists Quality Assurance programme, and the roll out of the National Integrated Medical Information System (NIMIS) will assist the work of the National Radiology Programme in strengthening the quality of radiology services, within our health system.

Appendices: Appendix One

Memorandum

Re: Prevention and management of radiology reporting backlogs
To: Each HSE Regional Director of Operations
Copy: Dr. Barry White, National Director,
Quality and Clinical Care Directorate;
Ms Laverne McGuinness, National Director, Integrated Services Directorate (PFM);
Dr. Joe Devlin, Director of Quality, Safety and Risk Management, Quality and Clinical Care Directorate;
Ms Cora McCaughan, Deputy Director, HSE Serious Incident Management Team;
Ms Edwina Dunne, Director of Assurance, Quality and Clinical Care Directorate.

From: Ms Anne Carrigy, National Lead - Acute Hospitals, Integrated Services Directorate, HSE, Dr. Steevens' Hospital

Date: 05th May 2010

1 Introduction

Recent events at the Adelaide and Meath Hospitals Incorporating the National Children's Hospital, Tallaght have highlighted the need for HSE operated or funded services to have a robust and consistent approach to the prevention and management of radiology reporting backlogs which considers any potential risks to patients safety.

In response, the National Director of the Quality and Clinical Care Director requested the Lead for the National Radiology Programme within the HSE Quality and Clinical Care Directorate, to examine the issues and provide advice.

Based on this advice, the following should issue to services operated or funded by the HSE to direct the prevention and management of radiology reporting backlogs; arrangements for implementation and monitoring are also set out.

2 Prevention and management of radiology reporting backlogs

Direction on the prospective prevention of radiology reporting backlogs and retrospective management of radiology reporting backlogs is now presented under separate headings.

2.1 Prospective prevention of radiology reporting backlogs

Services wherein demand for radiology reporting and availability of radiologists is such that timely reporting of radiology is assured should continue with current arrangements; however monitoring should be in place to provide ongoing assurance that backlogs in reporting are not accumulating. If the situation arises that monitoring information indicates that a backlog has accumulated, or is likely to accumulate, a policy and protocol should be developed for the delegation of review of radiology to other clinicians.

Wherein demand for radiology reporting and availability of radiologists is such that timely reporting of radiology cannot be continuously assured, a policy and protocol should be developed for the delegation of review of radiology to other clinicians.

Radiology suitable for delegation from radiologists to other clinicians is as follows:

- (a) Return fracture and orthopaedic clinic investigations;**
- (b) Fluoroscopy and screening studies performed by clinicians other than radiologists where real time decisions are made by clinicians on the basis of screening procedure at this time.**

The local policy and protocol should be developed in line with HSE procedure (see OQR029 HSE Procedure for Developing Policies, procedure, Protocols and Guidelines). Important elements are as follows:

- A formal agreement between the radiology department, the clinicians and hospital management using formal local protocol arrangements.
- The protocol should include the necessity for a written note by the clinician in the patient's clinical note with respect to the radiology findings.
- The protocol should note that quality assurance, radiation protection, staff training and supervision, equipment maintenance and rostering remain within the remit of the radiology department. This remit should be exercised in accordance with national legislation and guidelines.
- The protocol should also include a statement which recognises that radiologists remain available to report on any investigations so delegated to clinicians, should the clinician wish.

2.2 Retrospective management of radiology reporting backlogs

Wherein radiology reporting backlogs exist in any service operated or funded by the HSE, clearing of these backlogs need to be approached in a way which considers the potential risk to service users. Clearing also needs to take into account local arrangements vis-à-vis policy, protocol and practice on prioritisation of reporting and information systems.

Notwithstanding differences in local arrangements, **examinations in the following categories should be identified and enumerated and then prioritised for reviewing and reporting by a radiologist:**

- (a) PA chest radiographs for 2008, 2009 and 2010 to date**
- (b) Index (i.e. the radiograph taken during the patient's first investigation) fracture and orthopaedic studies for 2009 and 2010 to date**
- (c) Cross sectional imaging studies, emergency department radiographs and GP studies for 2008, 2009 and 2010 to date.**
- (d) Portable chest investigations for 2010 to date**

For each patient, excluding fractures, the most recent examination for the modality in question should be checked. If it is negative for significant disease, or already has been reported as such, there is no need to go behind the image in question chronologically.

Bearing in mind that there may be differences in historic arrangements across local services, while the principles set out above should be adhered to, there may be a need to extend any backlog clearing initiative based on findings.

Section 3 - Implementation and monitoring

The Integrated Services Directorate should, through the Regional Directors of Operations, drive and oversee the implementation of this memo.

*A position statement should be sought from each service in relation to these issues. **This should be completed and signed by the responsible service manager/CEO.** A template for same is attached.*

*This should be forwarded to my office no later than **12 midday on Friday 21st May.** Note these responses should be collated at regional level before being forwarded.*

Actions for hospitals indicating a current backlog in the position statement are as follows:

- **The backlog should be registered with the HSE Serious Incident Management Team using relevant documentation.***
- **You should satisfy yourself that all reasonable and practical support has been provided to ensure timely clearance of any backlogs.***
- **Fortnightly performance reports should be sought in relation to progress being made to clear the backlogs. These should be sent from the office of the Regional Director of Operations to my office and to the HSE Serious Incident Management Team using relevant documentation.***
- **Any clinical incidents arising during the clearance of existing backlogs should be managed in line with policy (see OQR 006 HSE Incident Management Policy and Procedure and OQR 8 Toolkit of Documentation to Support HSE Incident Management). A report should be escalated to the office of the Regional Director of Operations and such incidents should also be reported to the HSE Serious Incident Management Team.***

Section 4 - Assurance

There should be ongoing 3 monthly reporting of compliance to the Integrated Services Directorate; compliance may at any stage be the subject of audit by the Healthcare Audit Division of the Quality and Clinical Care Directorate.

ENDS

HOSPITAL RETURN TEMPLATE

Re: Prevention and management of backlogs in radiology reporting

To: Regional Director of Operations (insert name)
From: Service (insert name) Responsible Service Manager/CEO (insert name)

I confirm the following as the position of the service for which I am responsible in relation to the prevention and management of backlogs in radiology reporting as of Friday 21st of May 2010.

1. The service requires a policy and protocol to prospectively prevent the accumulation of radiology reporting backlogs – Yes/No
2. The service have a system in place to monitor for the accumulation of radiology reporting backlogs – Yes/No – If Yes, provide brief description

3. The service currently has a backlog of radiology reporting in the following areas (provide numbers and target completions dates)
 - (a) PA chest radiographs for 2008, 2009 and 2010 to date – Yes/No
 - (b) Index (i.e. the radiograph taken during the patient’s first investigation) fracture and orthopaedic studies for 2009 and 2010 to date – Yes/No
 - (c) Cross sectional imaging studies, emergency department radiographs and GP studies for 2008, 2009 and 2010 to date – Yes/No
 - (d) Portable chest investigations for 2010 to date – Yes/No

If yes to any of (a)-(d) above, complete the following table

| Category | 2008 | 2009 | 2010 | Target Completion Date |
|--|------|------|------|------------------------|
| PA chest radiographs | | | | |
| Index fracture and orthopaedic studies | | | | |
| Cross sectional imaging | | | | |
| Emergency Department radiographs | | | | |
| GP studies | | | | |
| Portable Chest X-rays | | | | |

4. Provide a brief description of the method used to validate response to 3 above

Appendices: Appendix Two

Management of Missing Investigations

Management of missing investigations must preserve patient safety as paramount. All local management plans should include the following elements, bearing in mind that once a test is ordered by any clinician, he or she has a responsibility for acting upon the results (even if undeceived by them after an interval). This obligation does not relieve radiology departments of their responsibility to process completed investigations in a timely manner and communicate results. It is therefore essential that radiology departments and referring clinicians co-operate to rapidly resolve this issue.

- 1. Confirmation that the examination took place.*
- 2. Review of clinical scenario by referring clinician and a decision by the referring clinician if repeat examination is necessary.*
- 3. A short timeline for completion of this process.*
- 4. A hospital consultant lead overseeing completion of this task.*

In relation to the first above, where not possible to confirm or refute, then a review of the clinical details will be necessary.

In relation to missing investigations that are thought to be due to transfer to another institution this must be confirmed by recourse to clinical records.

In all sites there must also be a communication plan addressing:

- How this information is communicated to patients*
- How worried service users unaffected by this process are re-assured*
- How further actions (such as further investigations, or referrals to a clinical service, or treatments / procedures) arising from the reported investigations (whether the originals or a repeat examination) will occur immediately and not subject service users to any further delay.*
 - An early completion date by which service users can be reassured no further outstanding investigation results are unresolved.*

ENDS