

Dear Colleague

Ensuring the seamless delivery and reporting of Diagnostic Tests in order to support achievement the 18 Weeks Referral to Treatment Standard.

Summary

This letter is to provide Boards with the Diagnostics Task and Finish Group's Report and commend action in the key areas detailed below.

Background

A Diagnostics Task and Finish Group was sponsored by the Scottish Government's 18 Week Operational Delivery Team on the basis of identified risk against the 18 Week RTT Standard. The group is one of eight Task and Finish Groups, each group being made up of a small number of clinical and managerial specialists in each field.

Diagnostics Task and Finish Group Report

The outputs of the report are commended to you to underpin further assessment and intensive action where required. A primary aim of the report is to support opportunities for streamlined service management and ongoing improvement which is patient focused. We recognise that achieving the 18 Weeks RTT Standard will require whole systems ownership and strong organisational leadership from clinicians and managers, to embed and operationalise change on a sustainable basis. Ensuring the seamless delivery and reporting of Diagnostic Tests in order to support achievement the 18 Weeks Referral to Treatment Standard will be linked to the Scottish Government's support and escalation process and may be reviewed at the Chief Executives' Meetings and individual mid-year reviews.

Key Areas Commended for Action

The key areas commended to Health Communities for action are:

- Review 18 weeks RTT pathways which diagnostic tests affect, assess what risk they might pose to delivery and identify any elements that require improvement focus. Use technical solutions to incorporate diagnostic tests within 18 Weeks reporting systems, ensuring

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Addresses

For action

Chief Executives (NHS Boards)
Medical Directors (NHS Boards)
Chief Executives (Operating Divisions)
Medical Directors (Operating Divisions)
Director (Information Services Division)

For Information

Chief Executive (Golden Jubilee National Hospital)
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Chief Executives (NHS National Services Scotland)
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- clock stops occurring as a result of the outcome of a diagnostic test are captured.
- Ensure your Board is following the Diagnostic Definitions Guidance and that clock stops for diagnostic waits only occur once test results have been reported.
- Proactively promote detailed capacity planning, paying particular attention to understanding referral variations in relation to diagnostic tests.
- Utilise good practice examples to facilitate focused service redesign and pathway work, including opportunities for direct access to diagnostic services.

Actions to promote success

- Continue to share good practice
- Continue to pursue re-design opportunities
- Liaise with and seek support from colleagues in the Quality and Efficiency Support Team (QuEST) and with 18 Weeks local teams within Health Boards.

Should waiting times performance in diagnostics tests prove unsatisfactory, or impact significantly on specific clinical pathways, the escalation process could include action planning with the Access Support Team, more detailed tailored support intervention as needed and submission of detailed recovery plans.

I look forward to hearing of your success in implementing improvements in diagnostic tests.

Yours sincerely



Mike Lyon

Enc Diagnostics Task and Finish Group's Report

Diagnostics Task and Finish Group Report 18 Weeks Referral to Treatment Standard

**December 2011
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Introduction

Foreword and Commendations

The work of the Diagnostics Task and Finish Group is sponsored by the Scottish Government's 18 Weeks Referral to Treatment Operational Delivery Team, and ultimately by the Scottish Government's Health Delivery Directorate. The Task and Finish Group has, from a national perspective, considered how to manage identified risks in the delivery and reporting of diagnostic tests within the context of the 18 Weeks RTT Standard and this report details examples of this work.

The core elements of this report are commended to you by the Operational Delivery Team for action. Every Board is expected to ensure that each aspect is fully explored, progressed and embedded appropriately across their Health Community to support timely and high quality patient care. It is essential that all opportunities for streamlined service management and ongoing improvement and transformation are optimised, with the patient's interest right at the centre. Delivery and improvement require whole systems ownership and strong organisational leadership – both clinical and managerial – in order to embed and operationalise change on a sustainable basis.

The core elements commended to Health Communities and NHS Boards for action:

1.	Ensure that Diagnostic Tests are embedded in Boards' delivery plans, and identify those tests which impact on patient pathways and consequently the delivery of 18 Weeks RTT Standard.
2.	Use available IT systems to capture and record clock starts/stops for diagnostic tests. This will enable diagnostic services to manage waiting lists and provide detailed information which can be used for capacity and demand planning.
3.	Proactively promote detailed capacity planning in order to match capacity with demand, paying particular attention to understanding and then managing referral variations, especially in relation to the key diagnostic tests.
4.	Utilise good practice examples to facilitate focused service redesign and pathway work, including opportunities for direct access to diagnostic services. Examples of good practice within Diagnostic Services will be published as case studies on the Quality Improvement Hub at www.qihub.scot.nhs.uk .

Should performance with the timely delivery and reporting of Diagnostics Tests prove unsatisfactory, the escalation process triggered by the Scottish Government could include further action planning with the Access and Improvement Support Teams, more detailed tailored support or intervention as needed, together with submission of detailed recovery plans.

A handwritten signature in black ink that reads "Robert Calderwood". The signature is written in a cursive style with a large initial 'R'.

Robert Calderwood
Chair of the Operational Delivery Team

Chair's Reflections

I was pleased to be invited to chair the Task and Finish Group for Diagnostic Services, commissioned by the Operational Delivery Team of the 18 Weeks RTT Programme. The rationale for forming this Group was the high volume of referrals for diagnostic tests across a wide range of services with the potential to impact on the delivery of seamless care within patient pathways, and ultimately pose a significant risk to the delivery and maintenance of the 18 Weeks RTT across many specialties. The Diagnostic Task and Finish Group was formed to address the key factors impeding delivery of the 18 weeks RTT, to maintain momentum, tackle identified bottlenecks and commend critical actions to the service.

Ensuring Diagnostic Services are delivered and reported seamlessly is fundamental to achieving and maintaining the 18 Weeks RTT Standard. In order to facilitate this process, it is paramount that information systems are fully exploited across a whole range of tests, particularly those that are integral to 18 weeks pathways, in order to maximise efficiency of process. As well as ensuring diagnostics are linked to waiting times systems, there is a need for systems to support clinical outcome recording. This will help to ensure there are no delays in patients progressing to the next stage of a pathway.

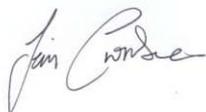
In tandem with this, it is essential that Boards undertake detailed Demand, Capacity, Activity and Queue (DCAQ) analysis for diagnostic tests as part of their whole system pathways and not in isolation. NHS Boards must ensure that diagnostic tests are embedded within their strategic plans for 18 weeks RTT delivery at December 2011 and are subject to performance management processes.

Direct Access to diagnostic tests can provide a significant positive effect on the patient journey and many Boards have succeeded in implementing these services to great effect. There are still opportunities for direct access to make a positive impact in other areas and this report identifies where there may be possibilities for Boards to explore.

Staff across NHSScotland have worked positively and innovatively to improve patients' access to diagnostic services and this report highlights a range of good practice initiatives which have contributed to timely access to these services. Sharing good practice and

linking specialists across NHS Scotland has been the cornerstone of the Task & Finish process and indeed its success. The Group has supported the development of a Diagnostic Service Managers' Network in partnership with the Improvement Support Team (IST) to share learning and develop capability and capacity in waiting list management to enable NHS Boards to deliver the diagnostic element of 18 Weeks RTT.

I would like to take this opportunity to thank members of the Diagnostic Task and Finish Group, and colleagues from the service who have been involved in these pieces of work, for their commitment and valuable advice over the past 18 months, and share with you this report for review and implementation in your Board area.

A handwritten signature in black ink, appearing to read "Jim Crombie". The signature is written in a cursive style with a light blue circular highlight behind it.

Jim Crombie

Chair of the Diagnostics' Task and Finish Group

Context

The 18 Weeks Referral to Treatment Target

The Cabinet Secretary for Health and Wellbeing has pledged: *“a whole journey waiting time target of 18 Weeks from referral to treatment by December 2011.”* 18 weeks will therefore be the maximum wait from receipt of referral into secondary care to first definitive treatment, for non-emergency conditions.

The 18 Weeks National Delivery Structure

In order to ensure a cohesive approach between the Scottish Government and NHS Boards in the delivery of this target, while ensuring maintenance of high quality patient focussed care, a national delivery approach was established. The 18 Weeks' Programme Board oversees the work of four Delivery Teams – focussing on Information, Emergency Access, Operational Issues, and Diagnostics – which in turn brings a wealth of knowledge, experience and expertise to each specialist area.

Task and Finish Groups

As a consequence of analyses undertaken through the Operational Delivery Team (ODT), a number of Task and Finish Groups were formed. The rationale for forming these short life working groups was to focus on those specialties, at an operational level, identified as posing the greatest risks to the delivery and maintenance of the 18 Weeks Referral to Treatment (RTT) Standard. Each group was set up with a small number of clinicians, service managers, GPs and additional professionals involved in the specialty, supported by members from the Scottish Government's Health Delivery Directorate. The first five 'at risk' specialties to have Task and Finish Groups established were: Audiology, Dental Specialties, Neurological Services, Orthopaedics and Plastic Surgery. Subsequently, Task and Finish Groups were established in Dermatology, Diagnostics and Demand and Capacity Management. All groups have focussed on a series of common work strands, namely:

- Measurement and Definitions
- Demand/Capacity/Activity /Queue Analysis

- Demand Side Solutions
- Performance Management
- Service Redesign and Transformation
- Culture/Change
- Workforce
- Communication

The groups' reports can be viewed at: <http://www.18weeks.scot.nhs.uk/how-to-achieve-and-maintain-18-weeks/task-and-finish-groups/>

Diagnostics Task and Finish Group

The Diagnostics Task and Finish Group held its first meeting in July 2009, with membership consisting of clinical and managerial expertise, to ensure a systematic and pragmatic approach could be adopted and enable any work undertaken within the group to be in keeping with patient focused holistic care. Membership is listed at Appendix One.

Objectives

The main objectives of the Diagnostics Task and Finish group were:

- To develop and launch the nationally mandated Diagnostic Test Monthly Management Information Return (DMMI) data collection exercise to include proposals for further waiting times information on additional diagnostic tests that pose a risk to 18 weeks RTT delivery.
- To develop a mechanism for regular review of DMMI data to identify risks, propose actions to address issues, and identify and share successes.
- To assess and document the risks to delivery of 18 Weeks RTT relating to:
 - 8 key tests;
 - 6 additional tests reported through revised DMMI; and
 - all other diagnostic tests.
- To provide advice and guidance to help ensure that Information Systems support Diagnostics and the need to meet 18 Weeks RTT requirements. In particular that:
 - Diagnostic Tests can be recorded on systems;
 - Systems being developed meet the needs of Diagnostic services; and
 - Systems are capable of supporting Clinical Outcome Recording.
- To ensure that NHS Boards are recommended a consistent methodology to measure, monitor and report Demand, Capacity, Activity & Queue (DCAQ) for diagnostic tests as part of pathway and patient flow management.

- To undertake a review of Direct Access to Diagnostic Services and make available examples of Good Practice.
- To support the development of a Diagnostic Service Managers' Network in partnership with the Improvement and Support Team (IST) to share learning and develop capability and capacity in waiting list management to enable NHS Boards to deliver the diagnostic element of 18 Weeks RTT.
- To investigate and document issues with Nerve Conduction Studies and highlight key issues and recommendations for how these can be addressed, including identifying where there is a need for further support.
- To liaise with NHS Boards and provide ongoing support in reducing waits for Diagnostic Tests through regular interaction, identification of issues and prompts to undertake specific actions.

Diagnostics' Waiting Times

What is a Diagnostic Test?

A 'Diagnostic' test is a test or procedure that is used to identify a patient's disease, condition or injury to enable a diagnosis to be made.

Diagnostic Tests are a key component of many patient pathways (see section 'Pathways'); failure to promptly report on the results of diagnostic tests may unnecessarily protract the patient journey.

Since 2006, Boards have been submitting Diagnostic Monthly Management Information (DMMI) to the Scottish Government's Access Support Team on 8 key diagnostic tests, which at that point in time, had anecdotally long waits:

- Upper Endoscopy;
- Lower Endoscopy;
- Colonoscopy;
- Cystoscopy;
- CT Scan;
- MRI Scan;
- Barium Studies; and
- Ultrasound.

In February 2008, the 'Diagnostics' Test Reporting; Scoping Study' identified 213 different diagnostic tests which were offered across Scotland. From that list, the Diagnostic Task and Finish Group developed the existing DMMI to include waiting times information on a further 6 diagnostic tests which had the potential to pose a particular risk to the delivery of 18 Weeks pathways. Following a Chief Executives' Letter with guidance, a revised DMMI commenced at the end of October 2009 which was collected as a census snapshot, and along with the key diagnostic tests already collected, the following tests were added:

- 24 hour ECG and 24 hour Blood Pressure;
- Echocardiography;

- Nerve Conduction Studies;
- Sleep Studies; and
- Spirometry.

It is important that Boards ensure they are adhering to the Diagnostic Definitions; the most recent version can be found at:

<http://www.isdscotland.org/Health-Topics/Waiting-Times/Diagnostics/>

This may assist Boards in terms of eliminating patients who are not on an 18 Week pathway from the delivery figures.

Key Message: Measurement and Reporting of Diagnostic Tests

To ensure accuracy and comparability across NHSScotland, it is important that all Boards follow the Diagnostic Definitions Guidance. This can be viewed at:

<http://www.isdscotland.org/Health-Topics/Waiting-Times/Diagnostics/>

It should also be stressed that measurement should be from referral to report received (not from the date the patient attended for the test).

Key Message: Reporting of Diagnostic Tests

Clock stops for Diagnostic waits should only occur once tests results have been reported.

Diagnostic Waiting Times' Progress

Since the DMMI commenced, there have been significant improvements in diagnostic waiting times across NHSScotland. Figure 1 below shows the reported number of patients who waited over 4 and 6 weeks for the 8 key tests, from October 2010 to September 2011.

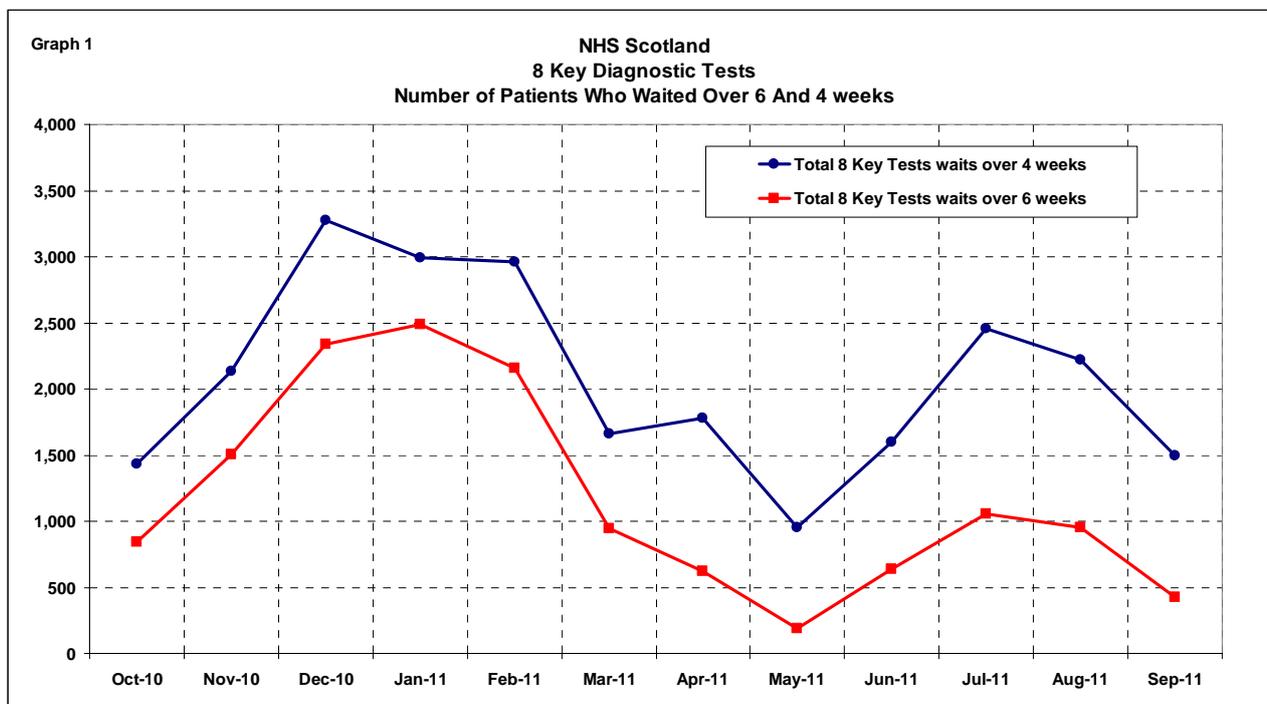


Figure 1: Number of Patients Who Waited Over 6 and 4 weeks for Key Tests

The rise between October 2010 and February 2011 was due to a significant issue in Endoscopy in one particular Board. A recovery plan to address this was implemented and this issue has now been resolved. The data for patients who waited over 4 weeks can be viewed by each individual test in Figure 2 below:

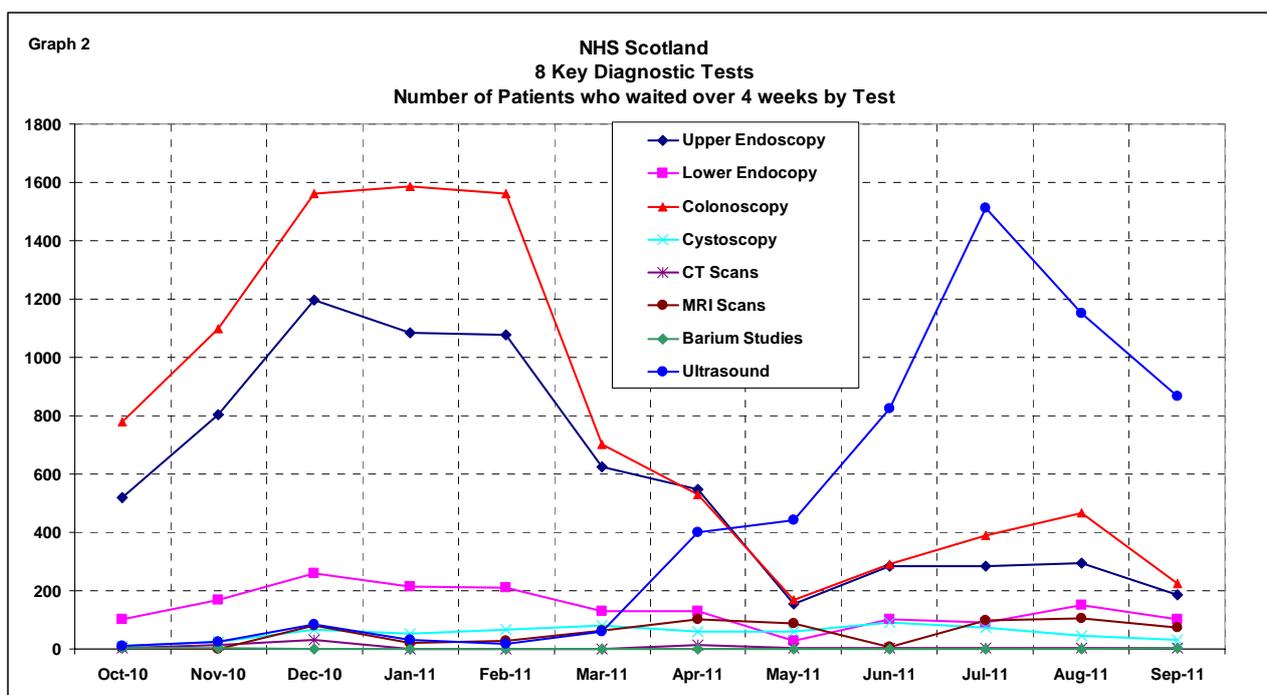


Figure 2: Number of Patients Who Waited Over 4 Weeks For Each Key Test

The peak in the number of patients waiting over 4 weeks for an ultrasound test occurred in one Board, which has since been addressed. The Board is continuously and proactively working to avoid any further build up of long waiting patients.

Endoscopy

Although Boards are managing, in the main, to keep their waiting times for Endoscopy between 4-6 weeks, at times this can present a significant challenge. In particular, managing cancer patients within 2 weeks can be difficult. There are also issues around surveillance patients, who are not appropriate to be included in the 18 Weeks RTT Standard as they are on a much longer recall programme, however, they do require to be seen within a defined clinically appropriate timeframe and it is important that clinical priorities are not distorted due to waiting times standards. This particular issue is being discussed with the Cancer Strategy Team and a Colonoscopy short Life Working Group has been formed to undertake a national piece of work around this.

Extended DMMI

In terms of the improvement in waiting times for the 6 additional tests, Figure 3 below shows that this is still a significant challenge, however, good progress has been made. Individual performance by test can be seen in Figure 4.

Figure 3: Number of Patients Who Waited Over 6 and 4 Weeks for Additional 6 Tests

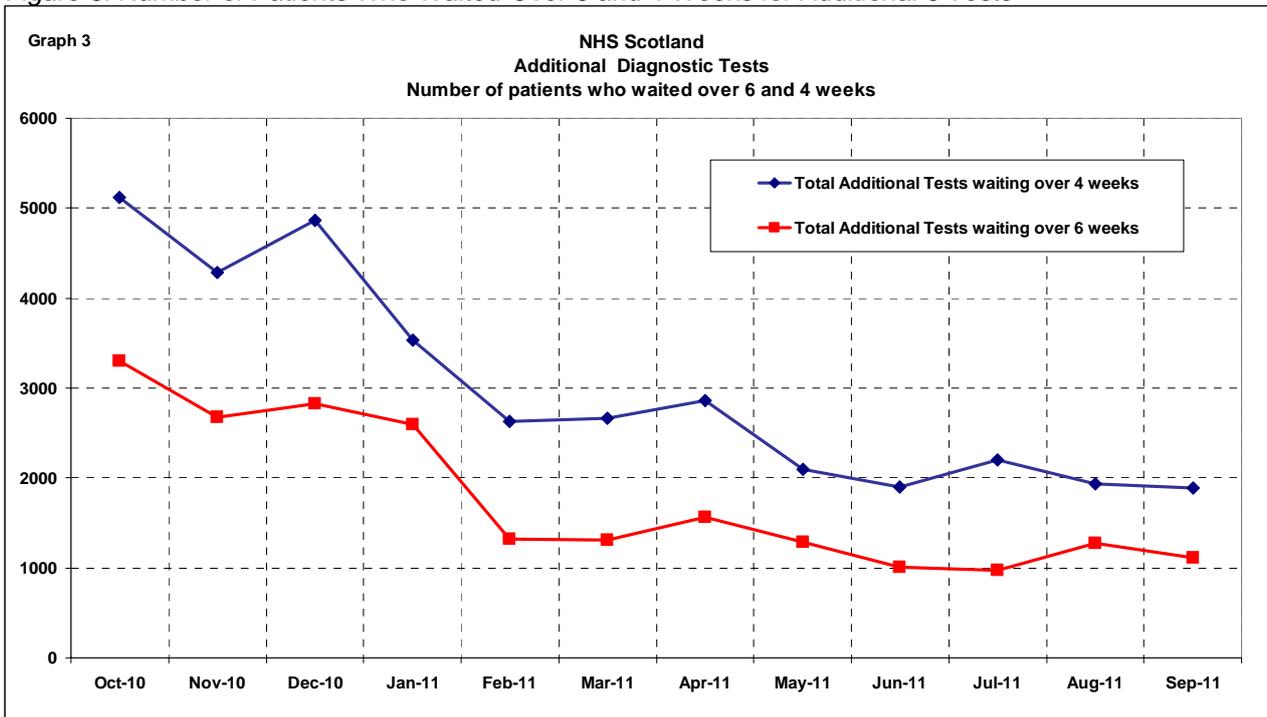


Figure 4: Number of Patients Who Waited Over 4 Weeks For an Additional Test (from 6 reported)

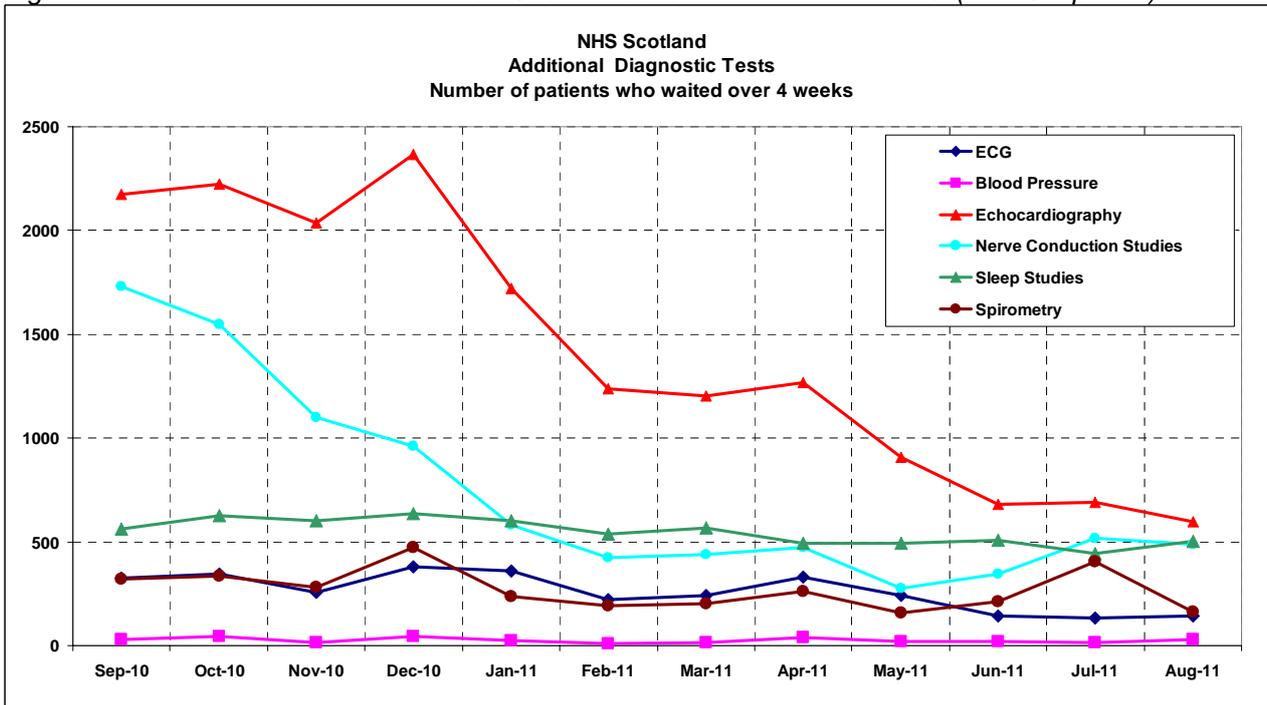


Figure 4 shows the impact of focused improvement efforts, where sites providing nerve conduction studies have made significant inroads to reducing waits.

From the reported figures for echocardiography, it would appear that a significant decrease in waiting times has occurred across NHSScotland between Sep 2010 and Aug 2011, however, this may be due to improved accuracy in the reporting process and therefore may not be as significant as it might appear.

There are of course a huge number of diagnostic tests not reported in the DMMI that could impact on the delivery of 18 Weeks RTT. A list of identified tests is at Appendix Two although this list is not exhaustive.

Mapping of Tests Within Patient Pathways

A lack of data availability for all other diagnostic tests prevents assessment of waiting times in other areas and comparison across Boards. Boards are encouraged to improve recording of waits for diagnostic tests to ensure that the discipline of rigorous waiting list management is applied to these areas. This will also enable risk assessment of the impact of waits in these areas on overall 18 Weeks pathways and will allow local teams to target improvement accordingly. Many Boards have now taken steps to improve the administration of all other diagnostic tests, traditionally managed through paper systems, onto core Patient Administration Systems; this is commended to other Boards.

Key Message: Data Capture

Boards should have technical solutions to incorporate Diagnostic Tests within their 18 Weeks Reporting Systems; ensuring clock stops occurring as a result of the outcome of a diagnostic test are captured.

Key Message: Risk Management around Diagnostic Tests

What is important now is to look at which 18 Weeks RTT pathways these diagnostic tests effect, what risk they might potentially pose to delivery, and whether there are elements within those pathways that require improvement focus.

Capacity and Demand Management

A significant amount of work has been undertaken within NHS Boards to understand Demand, Capacity, Activity and Queue (DCAQ) for the 8 key diagnostic tests. This work was led through the Diagnostics Collaborative between 2006 and 2008. The Diagnostics Task and Finish Group have worked with colleagues from the Improvement and Support Team and local 18 Weeks teams in order to provide specific support to Boards. Teaching sessions were delivered at each of the national diagnostic events, in order to ensure that a consistent approach to DCAQ was maintained. This approach builds on the work started during the Diagnostics Collaborative Programme, and NHS Boards should focus on ensuring that a rigorous approach to DCAQ remains, particularly in endoscopy and imaging services. The same rigour should also be applied to other diagnostic areas to

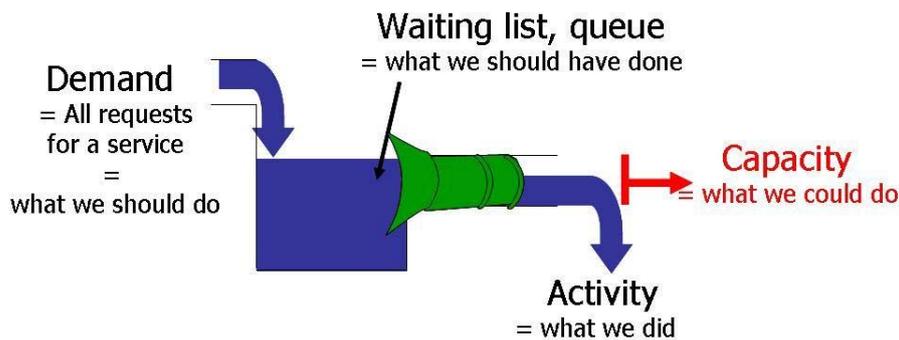
understand the capacity requirements of each service and to be able to make the necessary adjustments to manage variation in demand, thereby avoiding queue growth.

Definitions of Demand, Capacity, Activity and Queue

- **Demand** is the total work required to undertake clinical service needed. Different types of referrals will require different resources to process. With regard to Endoscopy services, patients may require 1, 2 or 3 slots to process.
- **Capacity** is the total resource available to do the work; this can be made up of, and be constrained by staff, equipment, rooms etc. Measurement of capacity should be iterative, as calculations based on one source alone are unlikely to be accurate. Therefore it is important to step through the process of measurement, drawing on clinic templates, job plans and using service knowledge from stakeholders to consolidate this information.
- **Activity** is the total work in undertaking the clinical service, again, different types of activity will take different resource in order to process. It is important to note that activity in one clinical area can create demand in another, simply this could be a diagnostic (activity) being sent for an inpatient procedure (demand).
- **Queue** is defined simply as where something or someone is held while waiting to be processed. In the context of many healthcare situations, a patient will wait in a virtual queue (as the patient need not be present) to be appointed and attend a diagnostic clinic.

The queue as a whole needs to be understood to assess the specialty/modality, as a queue can be large and manageable or small and unmanageable when compared with the capacity available in order to manage the queue. Over time, the queue can be analysed to see trends in growth and management.

Demand, Capacity Activity & Queue



Streamlining Diagnostics Service Provision

Managing Demand into Diagnostic Services

Many Boards through the 'Closer Working' projects or other locally developed projects have begun to examine variation in referral practice into key specialities and diagnostic services. This has enabled an open dialogue between primary and secondary care about the needs of general practitioners when assessing a patient and choosing the most appropriate intervention or onward referral route.

A combination of strategies rather than one single solution have helped NHS Boards to develop an effective relationship between primary and secondary care and to reduce variation in referral practice into some specialities. These include:

- the development of easily accessible care pathways agreed between primary and secondary care for particular presenting complaints detailing the appropriate assessment, intervention and onward referral routes;
- easily accessible advice routes for referrers into secondary care colleagues to inform the referral decision including telephone advice or advice only referrals through SCI Gateway;
- opportunities for reflective practice on referral patterns using comparative data between peer practices with input from secondary care;

- access to training to support the management of patients in primary care.

Developments to the GP contract this year through the Quality Indicators Project provide opportunities for all NHS Boards to examine variation in referrals for chosen pathways and to open a dialogue between practices with input from secondary care.

A significant amount of work has also been undertaken within NHS Boards to understand Demand, Capacity, Activity and Queue (DCAQ) for the 8 key diagnostic tests.

Application of DCAQ Methodologies

DCAQ allows comparisons to be made of the elements involved.

- Comparisons of demand and capacity will show where there is an excess or a shortfall in the capacity required to meet the demand.
- Comparisons of demand and activity will show where there is insufficient activity to meet the demand, resulting in growth in the queue.
- Comparisons of capacity and activity will show where there is under or over utilisation of resources.
- Analysis of the queue over time will show how efficient and equitable the booking processes are and where 'book in turn savings' could be made.

This process does rely on systematic and consistent application of measurement and categorisation of the data. The Improvement and Support Team has developed some tools to help facilitate the analysis of DCAQ within specialties.

- Waiting List and booking Process Demonstrator:
- Capacity and Queue Calculator

For further information regarding these tools, please contact:

Laurence.Keenan@scotland.gsi.gov.uk

Key Messages: Applying DCAQ

- Review DCAQ analysis carried out in Endoscopy and Imaging to ensure there is the correct balance of capacity to meet the variation in demand.
- Extend the rigour of capacity management in the key diagnostic tests to other diagnostic areas, applying DCAQ methodology to ensure there is the correct balance of capacity to meet the variation in demand.
- Apply a consistent approach to booking across diagnostic services, ensuring that patients are booked, where possible, in turn, allowing for clinical urgency, and which follows the principles of effective booking.
- Develop a system to assess DNA rates, cancelled slots and slot utilisation i.e. of all slots available, how many were used, to ensure that use of capacity is maximised.

Rapid Access to Services

Rapid access to Diagnostic Services by Direct Access or Straight to Test can be a key element of improving referral management and 18 Weeks RTT pathways, and as such, there is a greater need to better understand the good practice examples across NHSScotland and how these might assist other Boards in developing more streamlined diagnostic pathways. Good practice examples are listed in Appendix Three.

Direct Access

- Direct Access describes any service, or part of a diagnostic service e.g. CT / MRI / Spirometry, where a patient is referred without having been seen directly by a medical consultant or referred to a pathway under the auspices of a medical consultant.

Straight to Test

- Straight to Test describes any service, or part of a diagnostic service e.g. Endoscopy, where a patient is referred into secondary care under the auspices of a medical consultant or pathway, but is triaged for a diagnostic investigation without having been first seen directly by a medical professional.

Early dialogue between primary and secondary care colleagues about referral criteria is important. Those NHS Boards who have developed direct access to particular diagnostic tests have stressed that working together from the onset to develop a dialogue between primary and secondary care is essential and helps build a strong basis for making direct access services work effectively. The development of an easily accessible route for advice from secondary care colleagues, the opportunity to discuss the need for a referral, together with educational sessions with practices, have all proved invaluable prior to the opening of any new direct access services.

We would commend Boards to:

- Pull together a comprehensive picture of Direct Access and Straight to Test Diagnostic Services available within your Board;

- Use these and any relevant national good practice examples identified to explore opportunities for areas of direct access development within diagnostic services;
- Highlight innovation in the provision of Direct Access Diagnostic Services in your Board to help others learn from your good practice;
- Explore the reasons for variation in referral practice for diagnostic services by routinely examining referral data and establishing a regular dialogue with GPs and other referrers to examine the reasons for this variation which may be reduced through improved access to advice, care pathways or additional training;
- Establish links with NHS Board's Community Health Care Partnerships to further develop the dialogue between primary and secondary care around referral practice, establishing links with those leading the Quality Indicators Project;
- Explore the use of SCI Gateway Advice Only functionality and other advice only routes to improve access to advice for primary care referrers.

Key Message: Review Rapid Access Possibilities

Pull together a comprehensive picture of Direct Access and Straight to Test Diagnostic Services available within your Board;

Use these and any relevant national good practice examples identified to explore opportunities for areas of direct access development within diagnostic services;

Highlight innovation in the provision of Direct Access Diagnostic Services in your Board to help others learn from your good practice.

Sharing Good Practice

Over the last two years the Diagnostics Task and Finish Group has hosted a series of events to facilitate a collaborative approach to improvement of Diagnostic Services across NHS Scotland.

The Managed Diagnostic Imaging Clinical Network (MDICN) has worked closely with the diagnostic Task & Finish Group to identify current levels of imaging access for primary care, understand the reasons for variation and identify the barriers to increased access.

A joint event between the 18 week RTT team and the MDICN focused on providing a forum to explore the arguments for and against increased access from primary care. Most boards reported an intention to increase access to general practitioners, however were wary of the potential impact on workload when increasing the pool of referrers. The importance of developing a local group that permitted a focus for protocol development and demand management and better interaction between primary care and Imaging departments was recognised.

The Managed Diagnostic Imaging Clinical Network (MDICN) main work-plan supports the key elements of the Diagnostic Task and Finish Group. Major themes for the network include improving effectiveness through a collaborative benchmarking project and improving national data standardisation. Within its work-plan the network has developed a national imaging dataset that provides high level data on referral trends including the ability to monitor and compare levels of primary care access for all Boards across Scotland.

In 2011, the MDICN are leading a major workstream in developing quality measures for Imaging departments in Scotland. The primary indicators are currently being developed but the group has identified the importance of timeliness and a high level indicator measuring time from request to report availability for referring clinician has been prioritised.

Events have covered a range of topics and have spanned a wide selection of diagnostic services including neurophysiology, cardiac and respiratory physiology, radiology,

endoscopy and laboratories. Delegates who work in diagnostic services across NHS Scotland were invited to attend and share their local improvements as well as to learn lessons and build networks with colleagues from other NHS Boards.

Diagnostics – An Integral Part of 18 Week Patient Pathways (31 March 2011)

<http://www.qihub.scot.nhs.uk/quality-healthcare-resources/continuous-improvement-in-healthcare/18-weeks-service-redesign-and-transformation/diagnostics-%E2%80%93-an-integral-part-of-18-week-patient-pathways.aspx>

We would commend Boards to:

- View the resources (presentations from events, case studies and newsletter articles) on the 18 Weeks Service Redesign and Transformation pages on the Quality and Improvement Hub website to access what can be learnt from other NHS Boards and applied locally; <http://www.qihub.scot.nhs.uk/quality-healthcare-resources/continuous-improvement-in-healthcare/18-weeks-service-redesign-and-transformation.aspx> Examples of good practice within Diagnostic Services will become available as case studies on the Quality Improvement website.
- Build on those peer networks already developed to aid local improvement work by drawing on experiences from other NHS Boards as well as existing documentation which may be adapted for local use.

Appendix One: Membership of the Diagnostic Task and Finish Group

Members	Board and Role
Jim Crombie (Chair)	Director of Surgery and Anaesthetics NHS Greater Glasgow & Clyde
Jim Cannon	National Network Manager Managed Diagnostic Imaging Clinical Network (MDICN)
Dr Alan Cook	Associate Medical Director for The Access Directorate NHS Tayside
Helen Eunson	Project Officer Access Support Team, Scottish Government
Laura Jones	National Programme Manager Improvement and Support Team, Scottish Government, Health Directorate
Nicky McNaney	Programme Director Access Support Team, Scottish Government
Alan Kerr	Access Support Team Scottish Government / NHS NSS Corporate Programme Office
Michael Pearson	Director of Operations, Anaesthetics and Theatres, Critical Care, Laboratory Medicine, NHS Lothian
Dr John Wilson	Consultant Gastroenterologist NHS Fife
Joyce Wardrope	Information Consultant, Access Support Team, Scottish Government

Appendix Two: Other Tests

Audiology	
ADULT	Adult audio-vestibular assessment
ADULT	Balance assessment
ADULT	Bone anchored hearing aid (BAHA) assessment
ADULT	Referral for cochlear implant candidacy assessment (adult)
ADULT	Referral for complex needs hearing aid assessment
ADULT	Referral for hearing aid assessment (new patients)
ADULT	Re-referral for hearing aid assessment
ADULT	Tinnitus assessment
Other	Unspecified
PAEDIATRIC	Audiological assessment at 2nd and 3rd tier clinic (pre-school and school-age)
PAEDIATRIC	Paediatric hearing services following newborn screening
PAEDIATRIC	Referral for cochlear implant candidacy assessment (paediatric)
Cardiology	
CARDIAC INTERVENTION	Coronary angioplasty and other coronary Interventions
CATHETER LAB PROCEDURES	Cardiac biopsy +/- right heart catheters
CATHETER LAB PROCEDURES	Cardiac catheterisation: Diagnostic
CATHETER LAB PROCEDURES	Cardiac catheterisation: GUCH / neonatal / paediatric / congenital
CATHETER LAB PROCEDURES	Implantable ECG recorder
CATHETER LAB PROCEDURES	Implantable ECG recorder: Follow-up
CATHETER LAB PROCEDURES	Invasive cardiac output measurement
CATHETER LAB PROCEDURES	Pacemaker / bi ventricular pacemaker: Follow-up
ECG & BLOOD PRESSURE	Ambulatory BP
ECG & BLOOD PRESSURE	Ambulatory ECG monitoring
ECG & BLOOD PRESSURE	Electrocardiograms (standard and 12 lead)
ECG & BLOOD PRESSURE	Exercise tolerance testing
ECG & BLOOD PRESSURE	Metabolic exercise testing
ECG & BLOOD PRESSURE	Patient activated ECG monitoring
ECG & BLOOD PRESSURE	Pharmacological challenge
ECG & BLOOD PRESSURE	Tilt testing and autonomic function
ECHOCARDIOGRAPHY	Echocardiograms bubble
ECHOCARDIOGRAPHY	Echocardiograms dobutamine stress echo
ECHOCARDIOGRAPHY	Echocardiograms GUCH
ECHOCARDIOGRAPHY	Echocardiograms TOE
ECHOCARDIOGRAPHY	Echocardiograms TTE
ECHOCARDIOGRAPHY	Intraoperative TOE
ELECTROPHYSIOLOGY	Electrophysiological Study (EPS)
ELECTROPHYSIOLOGY	EPS + carto
Other	Unspecified
Endoscopy	
ENT	Laryngoscopy
GASTROENTEROLOGY	Capsule endoscopy
GASTROENTEROLOGY	Endoscopic retrograde cholangio-pancreatography (ERCP)
GASTROENTEROLOGY	Endoscopic ultrasound (EUS) *
GYNAECOLOGY	Colposcopy
GYNAECOLOGY	Hysteroscopy
GYNAECOLOGY	Laparoscopy
Monthly	Colonoscopy
Monthly	Flexi sigmoidoscopy
Monthly	Gastroscopy (UGIE)
ORTHOPAEDICS	Arthroscopy
Other	Unspecified
RESPIRATORY	Bronchoscopy
UROLOGY	Diagnostic endoscopic examination of bladder including the prostate
UROLOGY	Diagnostic endoscopic examination of ureter
UROLOGY	Diagnostic endoscopic examination of urethra

Imaging	
CT	Colonography computed tomography
CT	Computed tomography (excluding colonography)
FLUOROSCOPY	Fluoroscopy: Barium study (excluding Barium enema)
FLUOROSCOPY	Fluoroscopy: Cystograms, sinograms, venograms (excluding barium enemas or meals)
INTERVENTIONAL	Imaging guided diagnostic procedures (includes biopsies)
INTERVENTIONAL	Interventional procedures (vascular and non-vascular)
MAMMOGRAPHY	Mammography: excluding NHS breast screening programme
Monthly	DEXA scan (bone density scan)
Monthly	Fluoroscopy: Barium enema
MRI	Cardiac magnetic resonance imaging
MRI	Magnetic resonance imaging (excluding Cardiac MRI)
NUCLEAR MEDICINE	Nuclear Medicine: V/Q
NUCLEAR MEDICINE	Nuclear Medicine: Bone scan for cancer staging
NUCLEAR MEDICINE	Nuclear Medicine: Bone scan for rheumatology
NUCLEAR MEDICINE	Nuclear Medicine: Dynamic renal scan (DTPA or MAG3)
NUCLEAR MEDICINE	Nuclear Medicine: Gated cardiac (MUGA / gated ventriculography) for monitoring chemotherapy
NUCLEAR MEDICINE	Nuclear Medicine: GFR
NUCLEAR MEDICINE	Nuclear Medicine: Routine myocardial perfusion study
NUCLEAR MEDICINE	Nuclear Medicine: Thyroid scan
Other	Unspecified
PET	PET/CT
ULTRASOUND	Ultrasound: General (excluding gynae and obstetric *)
ULTRASOUND	Ultrasound: Gynaecological (excluding obstetric)
UROGRAM	IVUs
X-RAY	Diagnostic arteriography
X-RAY	Plain film X-rays
Laboratories	
BIOCHEMISTRY	Biochemistry other
BIOCHEMISTRY	Catecholamines and tumour markers
BIOCHEMISTRY	Endocrinology
BIOCHEMISTRY	Paediatric/metabolic screening
HAEMATOLOGY	Bone marrow
HAEMATOLOGY	Haematology other
HAEMATOLOGY	Thrombophilia and coagulation
HISTOPATHOLOGY	Diagnostic histology
HISTOPATHOLOGY	Histopathology other
IMMUNOLOGY	Allergy
IMMUNOLOGY	Autoimmune serology
IMMUNOLOGY	Immunochemistry
IMMUNOLOGY	Immunology other
MICROBIOLOGY	Chlamydia
MICROBIOLOGY	Microbiology other
MICROBIOLOGY	Mycology
MICROBIOLOGY	Serology and virology
MICROBIOLOGY	TB identification
MICROBIOLOGY	TB susceptibility testing
GI Physiology	
LOWER GI	Ano rectal manometry +/- balloon expulsion
LOWER GI	Ano rectal ultrasound *
LOWER GI	Barostat
LOWER GI	Colonic manometry (+/- ambulatory)
LOWER GI	Gut transit marker study
LOWER GI	Lower GI ambulatory ano-rectal/rectal manometry
LOWER GI	Pudendal nerve stimulation
Other	Unspecified
UPPER GI	Ambulatory bile +/- pH studies
UPPER GI	Ambulatory combined manometry and pH
UPPER GI	Ambulatory oesophageal manometry
UPPER GI	Ambulatory pH monitoring
UPPER GI	Biliary manometry
UPPER GI	Breath tests
UPPER GI	Electrogastrography
UPPER GI	Fluoromanometry
UPPER GI	Intubation under sedation
UPPER GI	Oesophageal impedance +/- pH and manometry
UPPER GI	Pain provocation tests
UPPER GI	Small bowel manometry
UPPER GI	Static oesophageal manometry
UPPER GI	Telemetric pH monitoring

Neurophysiology	
ELECTROENCEPHALOGRAPHY (EEG)	Ambulatory recording
ELECTROENCEPHALOGRAPHY (EEG)	Depth recordings
ELECTROENCEPHALOGRAPHY (EEG)	Sleep recording (sleep deprived or drug induced)
ELECTROENCEPHALOGRAPHY (EEG)	Standard recording
ELECTROENCEPHALOGRAPHY (EEG)	Video telemetry
EVOKED POTENTIALS	Brain stem auditory evoked potentials (BSAEPs)
EVOKED POTENTIALS	Electroretinogram (ERG) *
EVOKED POTENTIALS	Somatosensory evoked potentials (SEPs)
EVOKED POTENTIALS	Visual evoked potentials (VEPs) *
Other	Unspecified
PERIPHERAL NEUROPHYSIOLOGY	Carpal tunnel screening testing
PERIPHERAL NEUROPHYSIOLOGY	Electromyography
PERIPHERAL NEUROPHYSIOLOGY	Nerve conduction studies (medic)
PERIPHERAL NEUROPHYSIOLOGY	Nerve conduction studies (non medic)
Ophthalmic Science	
BIOMETRY	Biometry / axial length measurement
CLINICAL TESTS	Clinical history, examination, routine and adjunctive tests
ELECTROPHYSIOLOGICAL TESTS	Electro-oculogram/electroretinogram/VEP/electromyo/electro-nystag *
OPHTHALMIC IMAGING	Diagnostic ultrasonography
OPHTHALMIC IMAGING	Ocular Angiography
OPHTHALMIC IMAGING	Ocular imaging with light and lasers - Ant/Post segment of the eye
Other	Unspecified
PSYCHOPHYSICAL TESTS	Visual field assessment, acuity, glare, contrast, colour, adaptometry etc
REFRACTIVE MEASUREMENTS	Focimetry, contact lens assessment, low vision assessment
REFRACTIVE MEASUREMENTS	Keratometry, corneal topography
REFRACTIVE MEASUREMENTS	Refraction, autorefraction
Respiratory Physiology	
ACUTE & DOMICILIARY SERVICES & SUPPORT	Ambulatory oxygen assessment
ACUTE & DOMICILIARY SERVICES & SUPPORT	Nebuliser provision
ACUTE & DOMICILIARY SERVICES & SUPPORT	NIV provision (non-invasive ventilation)
ACUTE & DOMICILIARY SERVICES & SUPPORT	Oxygen provision (long term therapy assessment)
ACUTE & DOMICILIARY SERVICES & SUPPORT	Oxygen provision (short burst therapy assessment)
GAS EXCHANGE	Blood gas analysis (invasive)
GAS EXCHANGE	Blood gas analysis (non-invasive)
GAS EXCHANGE	Distribution of blood flow and ventilation
GAS EXCHANGE	Physiological and anatomical shunts
GAS EXCHANGE	Transfer factor and components
LUNG MECHANICS	Airways resistance
LUNG MECHANICS	Flow volume curves
LUNG MECHANICS	Lung & chest wall compliance
LUNG MECHANICS	Peak expiratory flow (PEF)
LUNG MECHANICS	Respiratory muscle assessment (non-invasive)
LUNG MECHANICS	Respiratory muscle assessment: complex (pdi / snip / sniff)
LUNG MECHANICS	Spirometry
LUNG MECHANICS	Static lung volumes
Other	Unspecified
PHYSIOLOGICAL RESPONSES TO EXERCISE	6/12 minute walk tests, step tests
PHYSIOLOGICAL RESPONSES TO EXERCISE	Cardio-respiratory exercise testing
PHYSIOLOGICAL RESPONSES TO EXERCISE	Exercise induced asthma
PHYSIOLOGICAL RESPONSES TO EXERCISE	Gas analysis: O2 uptake, CO2 output
PHYSIOLOGICAL RESPONSES TO EXERCISE	Shuttle walk tests (incremental and endurance)
RESPONSES TO THERAPEUTIC INTERVENTIONS	Monitoring and response to: NIV
RESPONSES TO THERAPEUTIC INTERVENTIONS	Non-pharmacological interventions
RESPONSES TO THERAPEUTIC INTERVENTIONS	Pharmacological interventions
SLEEP PHYSIOLOGY (Diagnostic)	Basic tests – actigraphy
SLEEP PHYSIOLOGY (Diagnostic)	Basic tests – oximetry
SLEEP PHYSIOLOGY (Diagnostic)	Cardiopulmonary sleep studies (non EEG)
SLEEP PHYSIOLOGY (Diagnostic)	Full somnography (EEG EOG EMG)
SLEEP PHYSIOLOGY (Diagnostic)	Multiple sleep latency test / maintenance of wakefulness test
SLEEP PHYSIOLOGY (Diagnostic)	Nasal CPAP
SYSTEMIC & AIRWAY RESPONSIVENESS	Bronchial challenge testing
SYSTEMIC & AIRWAY RESPONSIVENESS	Bronchodilator response
SYSTEMIC & AIRWAY RESPONSIVENESS	Cold air exchange
SYSTEMIC & AIRWAY RESPONSIVENESS	Skin allergen testing
VENTILATORY CONTROL AT REST	Exhaled breath test
VENTILATORY CONTROL AT REST	Hyperventilation responses
VENTILATORY CONTROL AT REST	Hypoxic challenge
VENTILATORY CONTROL AT REST	Tidal breathing pattern and minute ventilation

Urodynamics	
Other	Unspecified
PRESSURES & FLOWS	Ambulatory urodynamics
PRESSURES & FLOWS	Cystometry (filling and voiding)
PRESSURES & FLOWS	Free flow rate (uroflowmetry)
PRESSURES & FLOWS	Non-invasive pressure/flow
PRESSURES & FLOWS	Residual urine assessment by ultrasound
PRESSURES & FLOWS	Urethral function tests
PRESSURES & FLOWS	Video-urodynamics (videocystourethrography)
URODYNAMICS TESTS	Pad tests
Vascular Technology	
ARTERIAL	Ankle & brachial pressure index measurement (ABPI)
ARTERIAL	Aortic aneurysm surveillance (exc planned)
ARTERIAL	Arterial duplex (lower limb)
ARTERIAL	Arterial duplex (Upper Limb)
ARTERIAL	Arterial fistula surveillance (exc planned)
ARTERIAL	Assessment of graft patency (graft surveillance exc planned)
ARTERIAL	Carotid duplex
ARTERIAL	Continuous wave doppler assessments
ARTERIAL	EVAR surveillance (exc planned)
ARTERIAL	Pre & post exercise ABPI (treadmill testing)
ARTERIAL	Pre arterial fistula assessment
ARTERIAL	Transcranial doppler
ARTERIAL	Visceral assessment
Other	Unspecified
VENOUS	Assessment of venous reflux
VENOUS	DVT
VENOUS	Vein mapping
VENOUS	Vein marking

Appendix Three: Good Practice Examples

NHS Greater Glasgow and Clyde Clinical Neurophysiology Service Improvement

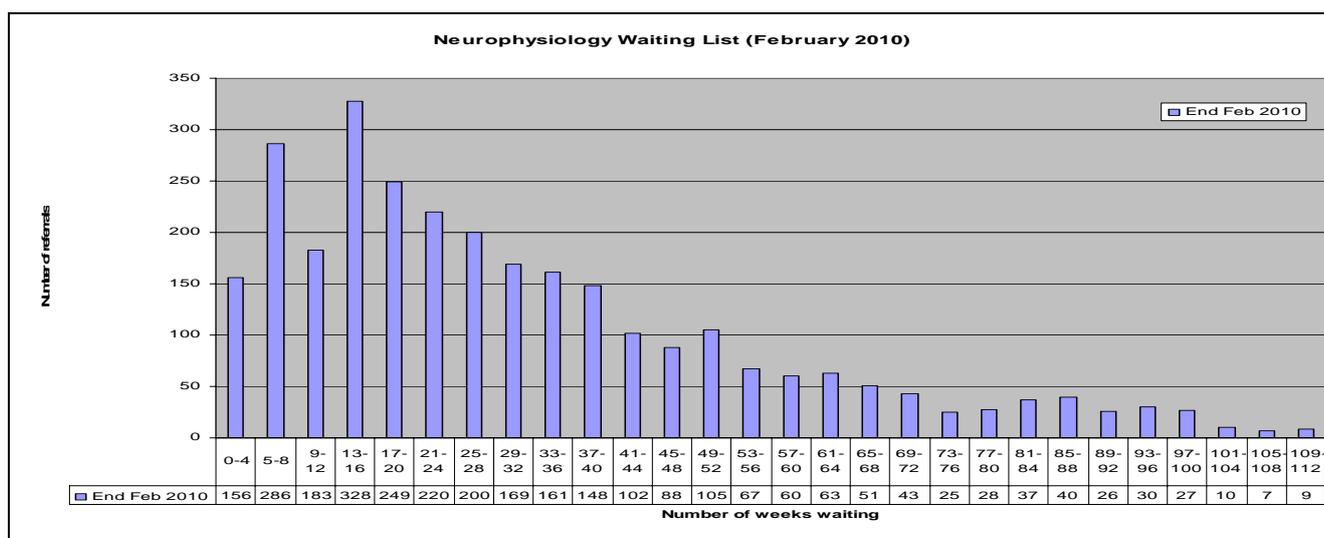
History of Neurophysiology

- In July 2009 patients on list awaiting investigations from 2007.
- Carried out 'clean up' of routine NCS/EMG waiting list in July 2009 with 19% removed.
- Pathway mapped Neurophysiology Department October/November 2009.
- Held one day event December 2009 with highlighted issues and Action Plan agreed.

Highlighted areas from Event

- Three Consultants, One Locum Consultant.
- All four consultants managed their own waiting list.
- 14 classifications – T1, TT1, T2, T3, T4, ASAP, soon varied from 6/52 – 18/12, routine, appt by diary, combined GP, combined other, OP non urgent.
- Manual appointment system.

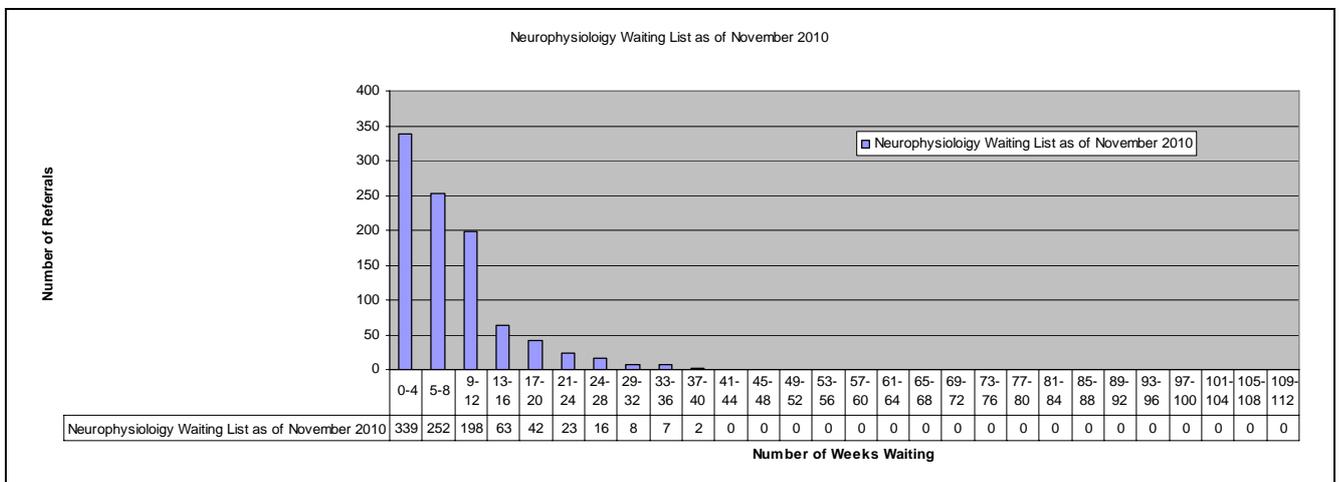
Waiting List as of February 2010



What did we achieve?

- Additional consultant capacity.
- Common vetting – urgent, routine tech.
- Pooled Waiting List routine referrals.
- Pooled waiting list tech clinics.
- Additional clinic activity.
- Introduced HIS into department – clinic profiles, appointment letters etc.

Where are we now?



All available patients appointed and as of January 2011 working to nine week waiting list.

For further information, please contact: Gina.Clark@ggc.scot.nhs.uk

NHS Ayrshire and Arran Emergency Based Improvements Leading to an Increase in Diagnostic Capacity

Development of a Transfusion Dependent Anaemia pathway

This aimed at reducing patients' hospital stays. Suitable patients are identified by Physicians at discharge before entering the pathway at the next transfusion. The patient's GP submits a transfusion sample which allows the ward and lab to agree when blood will be ready before arranging the patient's admission. The patient is then admitted directly to the ward rather than via A&E.

Reduction in duplicate blood sampling

Approximately 30 patients are admitted each day to the emergency receiving ward in Crosshouse Hospital from A&E. Before the improvement work began, around 9% of these patients had blood samples taken in A&E and these were repeated in the receiving ward (within 24 hours) for no clear reason. The improvement involved introducing the use of a clerk-in form in A&E whereby the tests taken were already logged on the form. Unnecessary repeated tests were reduced to 2% of the patient group, or a saving of 764 tests per year.

This improvement also led to the bloods being taken routinely in A&E rather than waiting till the patient was admitted, which reduced the turnaround time for results by an average of 4 hours.

For further information, please contact: Joan.McGhee@aaaht.scot.nhs.uk