

Healthcare Science National Delivery Plan

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Healthcare Scientists

Lab/Pathology Sciences

- Analytical Toxicology
- Anatomical pathology
- Blood transfusion science/transplantation
- Clinical biochemistry including paediatric metabolic biochemistry
- Clinical genetics/Genetic Science
- Clinical embryology & Reproductive Science
- Clinical immunology
- Cytopathology including cervical cytology
- Electron microscopy
- External quality assurance
- Haematology
- Haemostasis and thrombosis
- Clinical Immunology
- Histocompatibility & immunogenetics
- Histopathology
- Microbiology
- Molecular pathology of acquired disease
- Phlebotomy
- Tissue banking

Physiological Sciences

- Audiology
- Autonomic neurovascular function
- Cardiac physiology
- Clinical perfusion science
- Critical care science
- Gastrointestinal physiology
- Neurophysiology
- Ophthalmic and vision science
- Respiratory physiology
- Urodynamic science
- **Vascular science**

Bioinformatics including

- Clinical Bioinformatics and Genomics
- Computer science and modelling
- Specialist Health Informatics & analysis

Physical Sciences and Biomedical Engineering

- Biomechanical engineering
- Clinical measurement & Development
- **Clinical Pharmaceutical Science**
- **Diagnostic radiology & MR physics**
- Equipment management & clinical engineering
- Medical electronics & instrumentation
- Medical engineering design
- Clinical photography
- **Nuclear medicine**
- Radiation protection & monitoring
- Radiotherapy physics
- **Reconstructive Science**
- **Rehabilitation engineering**
- Renal dialysis technology
- Ultrasound & non-ionising radiation

These specialisms are found across the health and social care system in the UK inclusive of the NHS, Public Health and in the private & third sector delivering NHS services for patients

Many of these specialisms have important links with the other professional areas, with some staff having joint registration

Scottish Healthcare Science National Delivery Plan 2015–2020

I urge NHS boards and healthcare scientists to seize this opportunity and realise their significant potential to deliver results.

Healthcare scientists are integral to today's multi-disciplinary healthcare team, contributing to prevention, diagnosis, treatment and rehabilitation services.



What is the
HCS NDP?



Jacqui Lunday Johnstone Chief Health Professions Officer Scottish Government



Shona Robison, MSP Cabinet Secretary for Health, Wellbeing and Sport

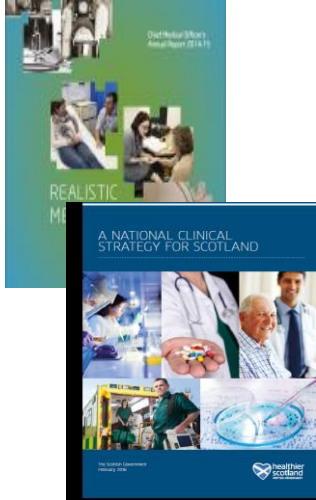
Framework of Improvement Programmes to help maximise the contribution healthcare science makes to NHSScotland



Healthcare Science National Delivery Plan

Improvement programme	Deliverables for NHS boards and their Healthcare Science Leads, Managers and Heads of Service
Streamlining health technology management	NHS board healthcare science leads will work with stakeholders to deliver a high-quality, sustainable, coherent and whole-systems approach to the management of health technology.
Point-of-care testing	NHS board healthcare science leads will work with medical directors and clinical teams to develop a local implementation plan that ensures clinical governance and effective roll-out of point-of-care testing.
Demand optimisation	NHS board healthcare science leads will work with stakeholders to develop local improvement plans to reduce unnecessary testing across primary and secondary care. This will free-up capacity to address rising demand and deliver testing that positively affects the patient pathway, supports primary care preventive measures and reduces hospital referrals and admissions.
Developing sustainable services	NHS board healthcare science leads will work with stakeholders to explore new and developing healthcare science roles that support areas of service pressure and have the potential to free-up medical capacity, with the initial focus on histopathology services.
A new integrated model for clinical physiology services	NHS board healthcare science leads will work with stakeholders to develop a sustainable integrated service model to enhance clinical physiology service delivery and quality.

What is
the HCS
NDP?



HCS NDP

Improvement
Programme
1

Improvement
Programme
2

Improvement
Programme
3

Improvement
Programme
4

Improvement
Programme
5

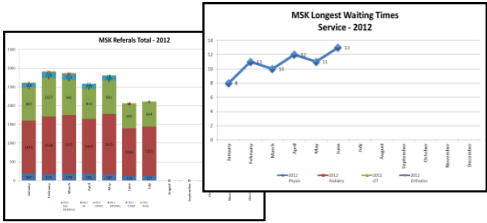
TOC
1

TOC
2

TOC
3

TOC
4

How are we doing it.....



Monitoring Progress



Setting Up For Success



Making Change Last



Creating A Shared Need



Mobilising Commitment

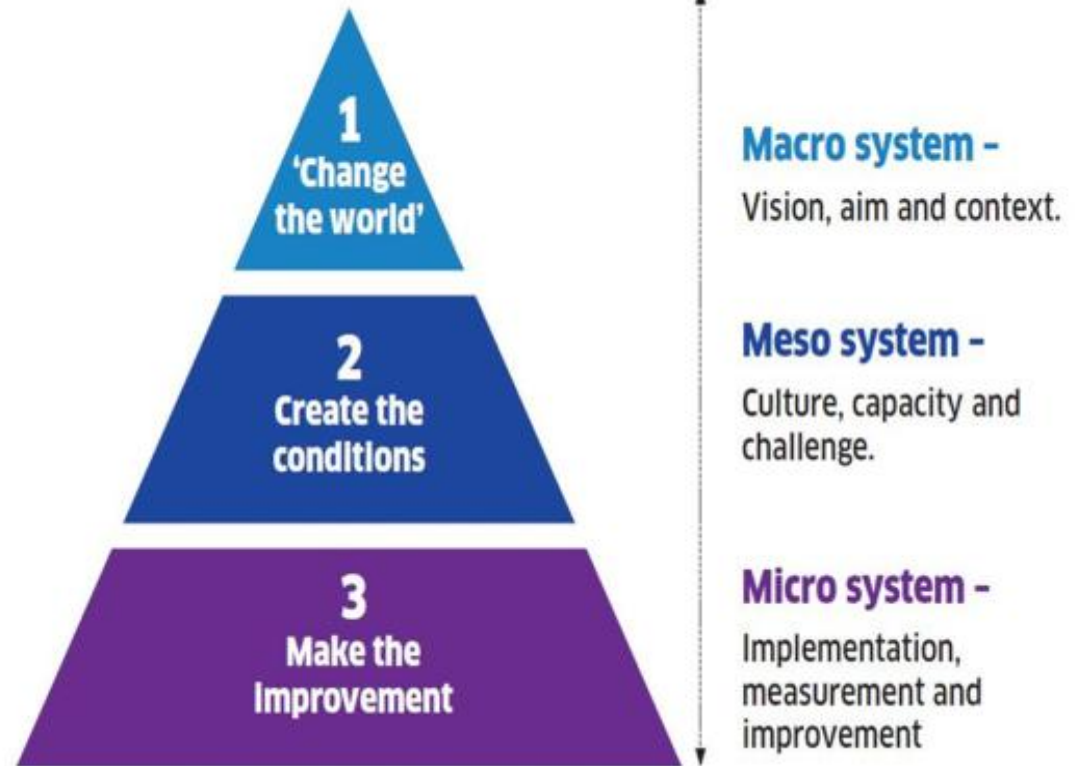


Shaping A Vision

The 3-Step Improvement Framework for Scotland's Public Services

How do we implement the HCS NDP?

Healthcare
Science



The Scottish
Government
Riaghaidh na h-Alba

The six questions to be asked of EVERY change programme...

1

Aim

Is there an agreed aim that is understood by everyone in the system?

2

Correct changes

Are we using our full knowledge to identify the right changes & prioritising those that are likely to have the biggest impact on our aim?

3

Clear change method

Does everyone know and understand the method(s) we will use to improve?

4

Measurement

Can we measure and report progress on our improvement aim?

5

Capacity and capability

Are people and other resources deployed and being developed in the best way to enable improvement?

6

Spread plan

Have we set out our plans for innovating, testing, implementing and sharing new learning to spread the improvement everywhere?

- National Co-ordinating Healthcare Science Group
 - 3 National Leads
 - 5/16 boards have established HCS lead posts,
 - 6/16 boards are represented by the Chair of their HCS forum
 - 5/16 boards have a representative at a national level.
- Community of Practice for Healthcare Science on the Knowledge Network – assessed at <http://www.knowledge.scot.nhs.uk/hcsleadscommunity.aspx>

	Number of Test of Changes
NHS A&A	6
NHS D+G	9
NHS FV	2
NHS Highland	2
NHS Lanarkshire	1
NHS Lothian	8
NHS GJ	1
NHS GG+C	20

- National questionnaire - had 3 annual questionnaires

File Home Insert Page Layout Formulas Data Review View Add-Ins

Normal Page Layout Page Break Preview Custom Views Full Screen

Workbook Views

Ruler Formula Bar Gridlines Headings Show

Zoom 100% Zoom to Selection

New Window Arrange All Freeze Panes

Split Hide Unhide

View Side by Side Synchronous Scrolling Reset Window Position Window

AA19

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z



Lothian



Progress Thermometer

#	Test of Change	Action	NDP Deliverable	Actionee	Progress Update
1	In almost one third of outpatients undergoing contrast enhanced CT and MR scanning within our institution the baseline renal function information is insufficient to permit adequate risk assessment of contrast administration. This may require delaying and rescheduling the scan with great inconvenience to the patient	Improve patient safety, Improve patient satisfaction, compliance with UK guidelines, greater workflow efficiency, ability to measure the reduction in rescheduled appointments and also measure the increase in contrast examinations undertaken compared to examinations without contrast	POCT	Radiology / Jennifer Brown	Interface currently being developed along with costing model for reagents. Formal comparison with the laboratory results required to be carried out
2	Lack of young individuals being attracted into Healthcare Science as a career.	Develop a programme where we can provide a complete career pathway for school leavers and provide a "grow your own" approach within HCS thus sustaining the workforce.	Sustainable Teams	Sarah Smith / Karne McBride / Michele Thorpe	Programme developed and signed off by Cog as another pathway within the Laboratory Associated Technical Activities qualification approved vocational qualifications. In discussion with Fife College in relation to the MA Programme would be delivered. Discussion surrounds potentially having Fife College employ the apprentices thereby undertaking all HR issues. NHS Boards would provide funds to Fife College to do this - Business case to be developed.

Health
Technology
Management

Healthcare
Science

The National Delivery Plan



SAFR 2016

- Annual cost:
£69 million
- Replacement
value:
£1.03 billion

CURRENT SITUATION

The management of health equipment often involves many key players, including technologists, facilities contractors, equipment and others, such as software. Systems and processes across boards and localities, often on quality, procurement procedures and potential risks to patients and staff.

OUR AMBITIONS

We want to:

- reduce the risk of harm to patients and staff
- reduce unnecessary variation
- improve resilience and sustainability
- reduce equipment replacement and repair costs.

DELIVERABLE 1

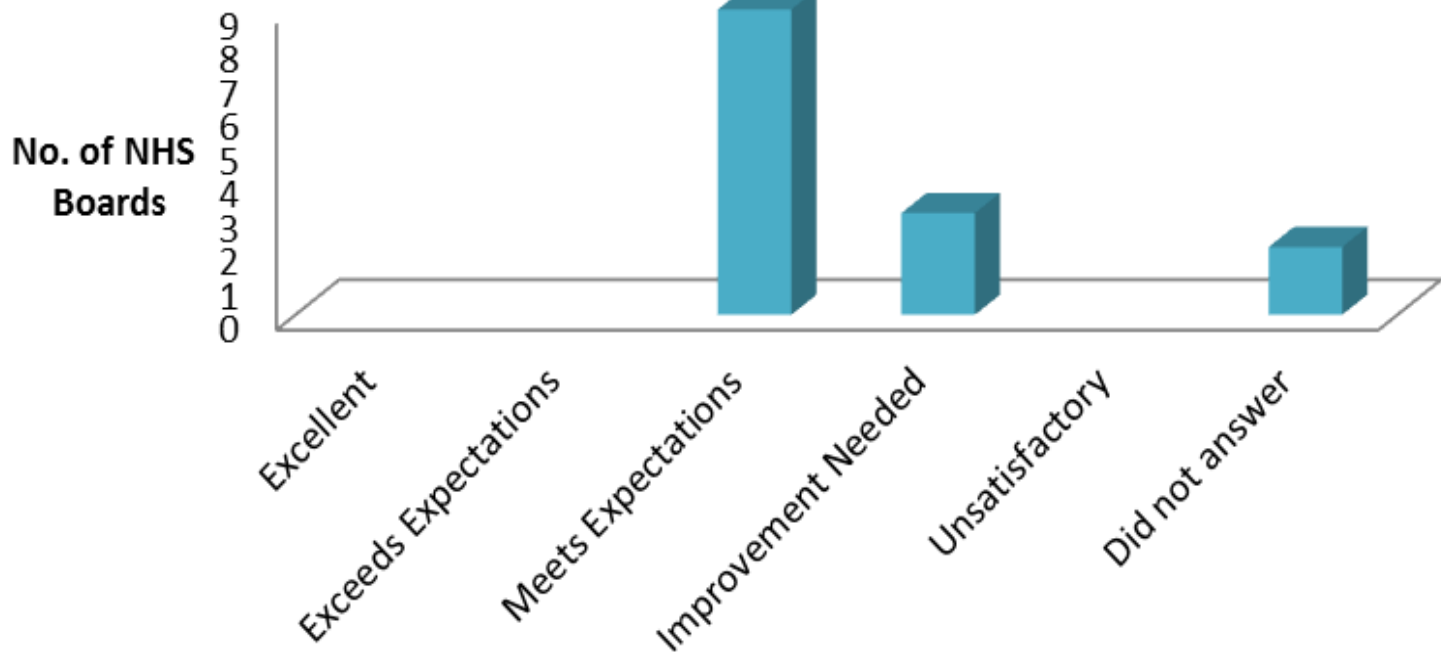
To achieve our ambitions, NHS board healthcare science leads will work with stakeholders to deliver a high-quality, sustainable, coherent and whole-system approach to the management of health technology by the end of 2017, with full implementation by the end of 2020.

ACHIEVING DELIVERABLE 1

- reduce the risk of harm to patients and staff
- reduce unnecessary variation
- improve resilience and sustainability
- reduce equipment replacement and repair costs

a high-quality, sustainable, coherent and whole-systems approach by the end of 2017, with full implementation by the end of 2020.

Rate the National Teams Performance for HTM



Our Ambitions

- reduce the risk of harm to patients and staff
- reduce unnecessary variation
- improve resilience and sustainability
- reduce equipment replacement and repair costs

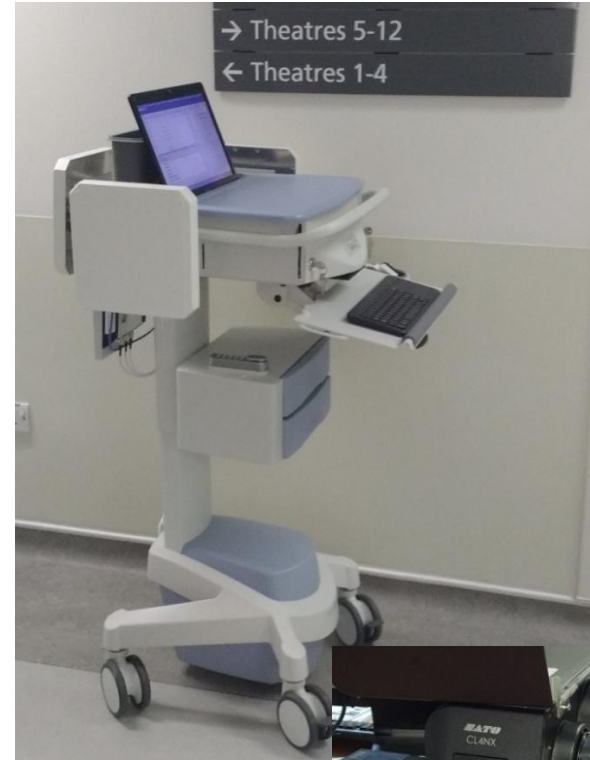
Tests of Change

Physical Sciences:

- 8 TOC with 3 completed so far

Forth Valley:

- Blend of passive RFID tracking of mobile devices with existing active tracking of higher value devices
- Mobile trolley purchased with SG funding
- > 10,000 devices labelled with passive tags; 2000 with active tags
- 26 wards covered by fixed readers



Forth Valley RFID tracking

- £200k invested over two year period (passive & active)
- £360k of expenditure avoided so far
- £200k avoided spend anticipated in next financial year
- PPM performance approx. 99%
- Ease of finding equipment; Ward staff rating 9/10



Passive tag

Active tag

Collaboration & Engagement

- Medical Physics & Clinical Engineering Diagnostic Network – MPnet
 - National Specialist Services Committee stage 1 and stage 2 applications submitted; 12 proposers (from 9 NHS boards, including 3 from Lothian)
 - Beyond and wider than NDP
- Shared Services - Clinical Engineering
 - Visioning workshop held Oct 16; Positioning paper accepted Dec 16; 3 workstreams agreed; Business case being prepared

Healthcare Science in Scotland



Resource Library

Blogs

Discussions

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HCS Leads

National Monthly Meetings

NDP 2015-2020

HCS Activity in your Board

HCS National Event

Health Technology Management

OUR AMBITIONS

We want to:

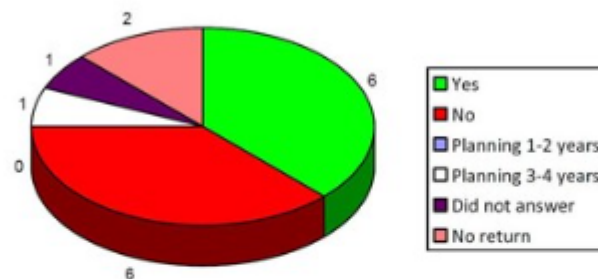
- reduce the risk of harm to patients and staff
- reduce unnecessary variation
- improve resilience and sustainability
- reduce equipment replacement and repair costs

WHY THIS MATTERS

Medical devices and equipment are critical in many areas of healthcare, including intensive care, neonatal and renal units. Examples in acute care settings include renal dialysis machines, while

Images

Health boards using 3D printing or considering using in the future?



Health boards using 3D printing May 2017

Related Resources / Quicklinks

HTM Resources

[Baseline Questionnaire - Report on Health Technology Management](#)

[Follow-Up Questionnaire - Report on Health Technology Management](#)

[Follow-Up Questionnaire 2017 - Report on Health Technology Management \(3D printing\)](#)

[Forth Valley Passive RFID TOC - Final Report 24-04-17](#)

[Poster - RFID Tracking of Mobile Medical Devices within Forth Valley Royal Hospital](#)

Work in Progress

- Support Tests of Change managed locally at health boards as part of their Local Implementation Plans.
- Work in partnership with the Shared Services Clinical Engineering Programme on the three Advisory Groups for the National Translational Technology and Informatics Framework Project, the National 3D Imaging Framework Project

Point of Care Testing

CURRENT SITUATION

Roll-out and clinical governance of POCT (specifically in relation to quality control, application of MHRA guidance and overall healthcare science involvement) varies across NHS boards. This has significant implications for patient safety and patient flow.

OUR AMBITIONS

We want to:

- reduce unnecessary variation within and across NHS boards
- improve patient experience by reducing unnecessary secondary referrals
- reduce repeat testing and associated costs
- improve patient flow, access and monitoring.

DELIVERABLE 2

To achieve our ambitions, NHS board healthcare science leads will work with medical directors and clinical teams to develop a local implementation plan that ensures clinical governance and effective roll-out of point-of-care testing. This will be achieved by the end of 2017 in acute services and the end of 2018 in primary care, with full implementation by the end of 2020.

ACHIEVING DELIVERABLE 2

NHS boards will:

- participate in the national POCT programme on the use of POCT in primary and secondary care in Scotland (as described by the Scottish Medical and Scientific Advisory Committee (Scottish Government, 2011)), implementing local plans to ensure cost-effective implementation and governance of POCT systems and sharing knowledge across boards on how POCT technology benefits patient-pathway outcomes.

National healthcare science leads and NHS board healthcare science leads, managers and heads of services will:

- work across disciplines to instigate whole-system improvements in the delivery of POCT in acute and secondary care settings.



Challenge – Moving Diagnostics Closer to the patient

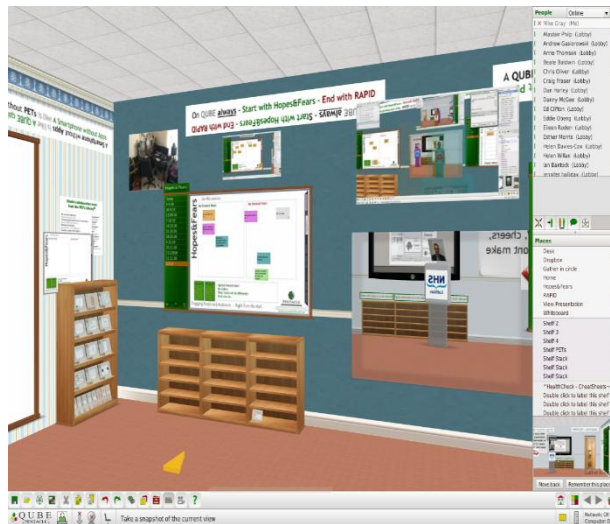


Laboratory Anywhere - Transformation of Diagnostic Delivery

Dr Martin Myers, Lancashire Teaching Hospitals

- Consultant Clinical Biochemist,
- Laboratory Director, Clinical Biochemistry
- Associate Divisional Medical Director of Diagnostics

A year in POCT (Point of care testing)



Worked in the Qube virtual collaborative environment across Board, service and commercial company

- Developed an outline for a POCT “atlas”
- Answering the question – “do we know what's out there and what is the variation in practice?”

<https://www.droibox.com/s/ikqhs0m1qqn5o2g/qube%202017%20diagnostic%20atlas%202.mp4?dl=0>



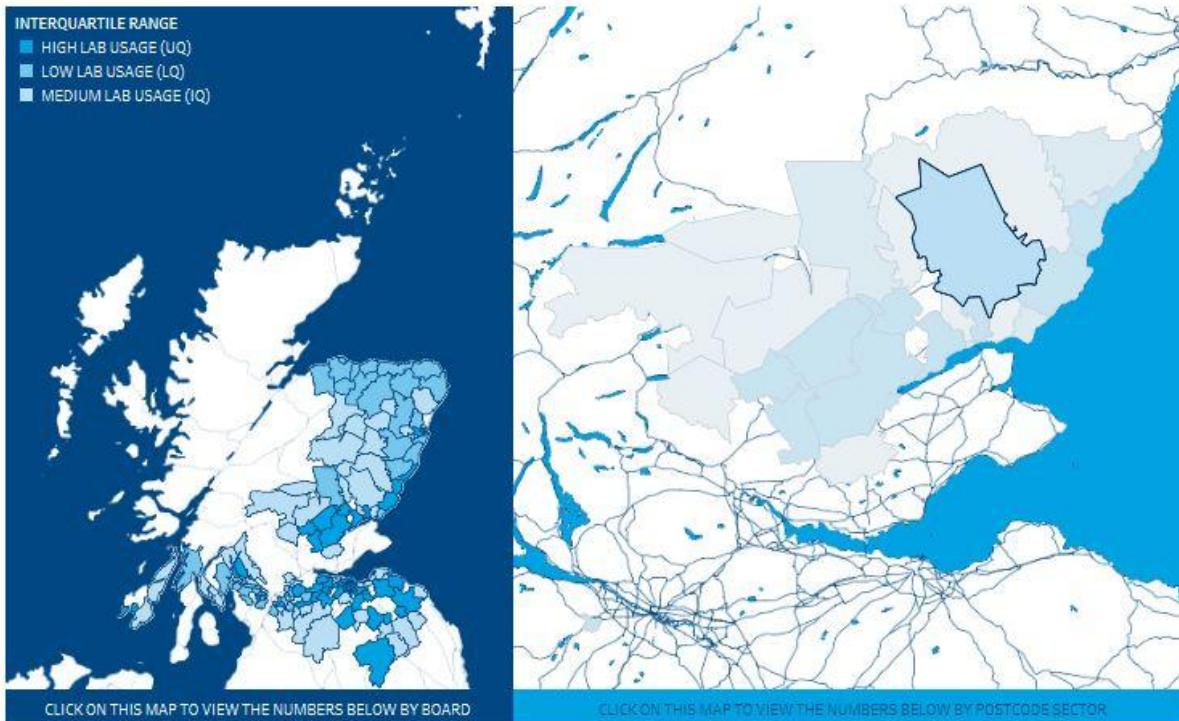
THE INFORMATION WITHIN THESE PAGES HAS BEEN PRODUCED BY NUMBERTELLING TO SUPPORT THE POCT PROJECT IN NHS SCOTLAND.

AS POCT DATA IS NOT CURRENTLY ROUTINELY COLLATED, THE INTERACTIVE MAP BELOW DISPLAYS LAB TESTS BY GP PRACTICES FROM NHS BOARDS THAT SUBMITTED THEIR DATA.

THIS VISUALISATION AIMS TO EXPLORE HOW INFORMATION ON POCT TESTING COULD BE PRESENTED, IF IT WAS AVAILABLE.

THE MAP SHOWS THE PERCENTAGE OF TESTS AS A PROPORTION OF GP LIST SIZE, GROUPED BY HIGH, MEDIUM AND LOW LEVELS OF LAB TESTING. BY SELECTING A BOARD (LHS) OR POSTCODE (RHS), THE FIGURES IN THE YELLOW BOX WILL REFLECT THE SELECTED AREAS.

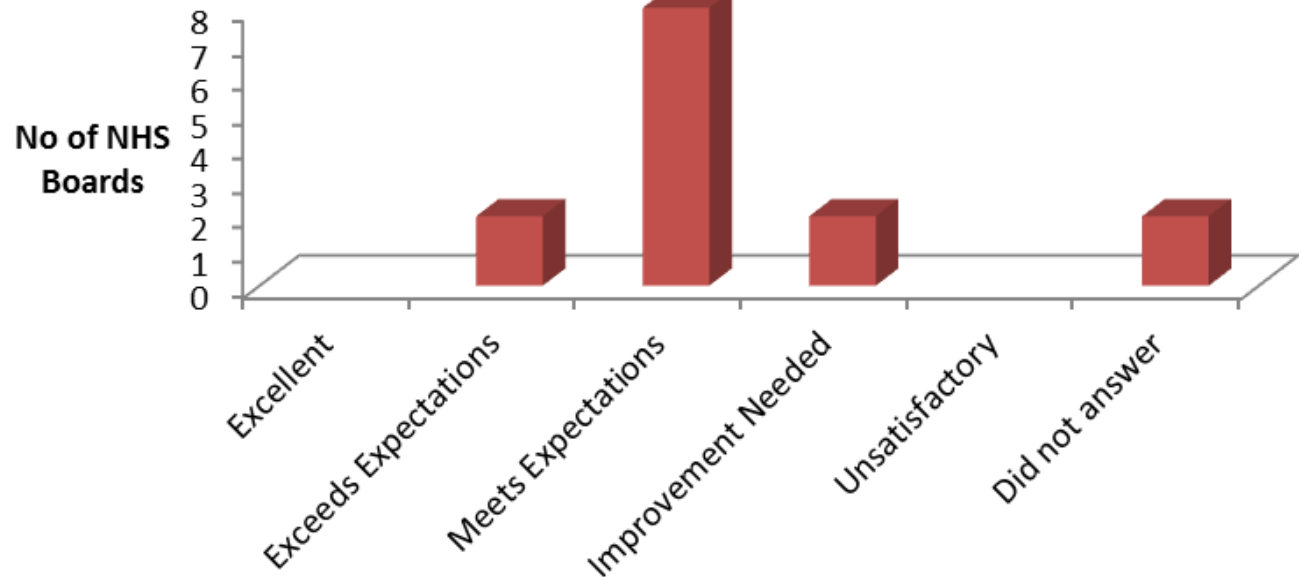
"THE POWER OF INFORMATION CAN HELP US TO UNDERSTAND ISSUES AND TRENDS AND IMPROVE OUR SERVICES."



65	3	559	2.2%
PRACTICES IN PARTICIPATING BOARDS	PRACTICES USING LABS	NO. OF TESTS SENT TO LABS	PROPORTION OF LIST SIZE USING LABS

www.numbertelling.com/nhs

Rate the National Teams Performance for POCT



Our Ambitions

- reduce unnecessary variation within and across NHS boards
- improve patient experience by reducing unnecessary secondary referrals
- reduce repeat testing and associated costs
- improve patient flow, access and monitoring

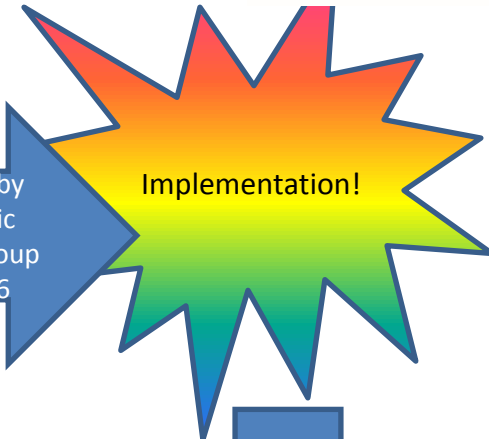
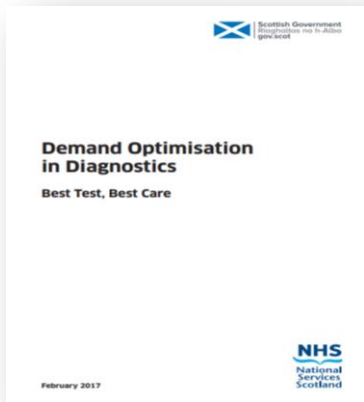
Demand Optimisation

Our Ambitions

- reduce unnecessary testing
- free capacity to address rising demand
- reduce hospital referrals and admissions by developing robust preventive testing that promotes primary care delivery

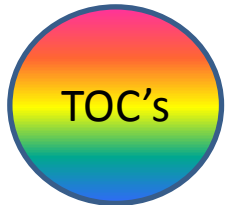
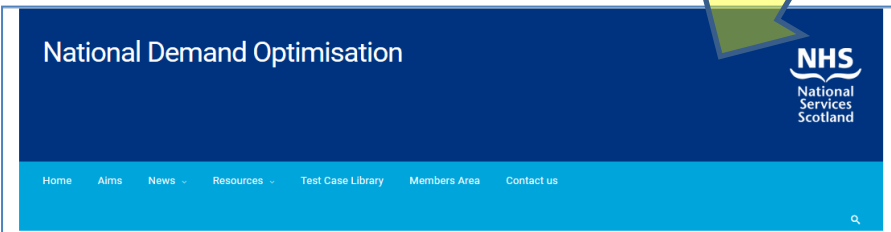
A year in Demand Optimisation

2016 -Work of the National Demand optimisation group – led by Dr Bernie Croal



<http://www.mcns.scot.nhs.uk/dog/>

<http://www.gov.scot/Publications/2017/02/5322>



Home / Resources / Test Case Library / Test Cases

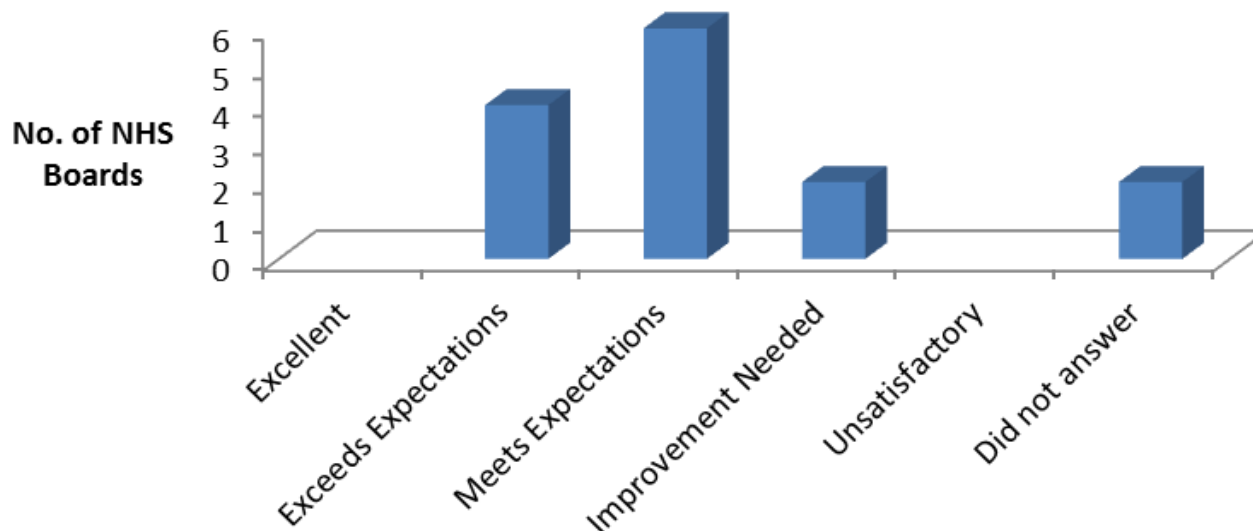
Test Cases

- NHS Fife – Transforming Liver Function Testing
[nhs-fife-transforming-liver-function-testing](#)
- NHS Highland – Assessment of markers CA19-9 and CA153 to laboratories outside local lab
[nhs-highland-assessment-of-markers-ca19-9-and-ca153-to-laboratories-outside-local-lab](#)
- NHS Forth Valley – Primary Care Whole System Working
[nhs-forth-valley-primary-care-whole-system-working](#)
- NHS Tayside – Evidence-based alteration to the protocol for serological testing for rheumatoid arthritis
[nhs-tayside-evidence-based-alteration-to-the-protocol-for-serological-testing-for-rheumatoid-arthritis](#)
- NHS Tayside – Optimisation of the use of urinary culture
[nhs-tayside-optimisation-of-the-use-of-urinary-culture](#)
- NHS Forth Valley – Optimise the diagnosis of female genital infection
[nhs-forth-valley-optimise-the-diagnosis-of-female-genital-infection](#)

Background – Scottish Survey on DO

- **Data Collection – Atlas of Variation**
- **DO Guidance**
 - **DO Top Ten**
 - **Educational Feedback Pilots**
- **Effective Diagnostic (Care) Pathways**
- **IT Guidance**
- **Demand Optimisation Cascade Structure**
 - **Board Based Committees and implementation teams**

Rate the National Teams Performance for Demand Optimisation



Our Ambitions

- reduce unnecessary testing
- free capacity to address rising demand
- reduce hospital referrals and admissions by developing robust preventive testing that promotes primary care delivery

Sustainable Teams

Our Ambitions

- create sustainable teams
- improve patient pathways and experiences
- free-up medical capacity
- reduce diagnostic turnaround times



A year in delivering Sustainable Services

Progression
of the SPAN
case for
Biomedical
Scientist
Dissection in
Scotland



The Royal College of Pathologists
Pathology: the science behind the cure



The Role of Biomedical Scientists in Histopathology Reporting
A Joint Statement from the Royal College of Pathologists and Institute of
Biomedical Science



Scottish Pathology Network



Potential for
enhanced
roles in
Microbiology
in work-plans
for SMVMN



Scottish Microbiology
and Virology Network

Digital Pathology pilot NHS
Lothian and GG&C in
Scotland – approved and
currently in procurement
scoring - implementation of
pilot Autumn 2017

Rate the National Teams Performance in developing Sustainable Teams



Our Ambitions

- create sustainable teams
- improve patient pathways and experiences
- free-up medical capacity
- reduce diagnostic turnaround times

Clinical Physiology

IMPROVEMENT PROGRAMME FOR A NEW INTEGRATED MODEL FOR CLINICAL PHYSIOLOGY SERVICES

WHY THIS MATTERS

There is significant variation in the infrastructure of clinical physiology specialties and services across NHS boards, often due to differences in the size and structures of departments and availability of appropriately trained staff. Variation impacts on service delivery and, ultimately, the patient pathway. Strengthening integrated local leadership infrastructure to underpin service change and improvement will contribute to developing patient pathways and substantially improve the long-term sustainability of service delivery.

Our Ambitions

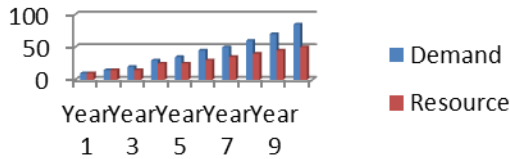
- strengthen integrated local leadership
- expand the interpretative role in clinical services
- support direct referrals, releasing medical capacity
- explore the development of a clinical physiology network
- develop a community of practice



NEW

PHYSIOLOGY
ACCOUNTABILITY

Demand Vs Resource



Clinical Physiology



A year in Integrated Clinical Physiology

- No single “one size fits all” model for an integrated Service.
- Workforce still features as the main concern, Workforce picture is *still* unclear.
- Extended scope to practice
 - E.g. Tayside model for Audiology led balance services
 - Greater Glasgow & Clyde + Grampian implantable loop recorders

A year in Physiological Sciences

- Take-up for Glasgow Caledonian Clinical Physiology intake for 2017 at capacity. GCU programme review, programme highly commended.
- Significant number of test of changes in the system from Clinical Physiology, >10
- Manifesto commitment for Audiology being scoped, allowing potential opportunities for improved 3rd sector working relationships and additional support for service delivery.

NHS Highland Test of Care

Ambulatory Home EEG Video-telemetry

	2016	2017		
	Total (Hospital)	Hospital	Home	Total
Number of patients seen	17	10	8	18
Total number of bed days	37	15	19	34
Average bed days	2.2	1.5	2.4	1.9
Equivalent cost of Hospital Bed days (£400)	£14,800	£6,000	0	£6,000
Cost per patient (bed days)	£870	£600	0	£333
Postponements due to bed shortages	7 41%	2 20%	0	2 11%
Waiting time for appointments (total days)	517	638	352	990
Waiting time for appointments (average)	30	64	44	55
Patients recorded for more than 2 days	7 41%	2 20%	4 50%	6 33%

Reduce the number of bed days used for the investigation

Yes – 19 / 34 bed days saved (56% reduction) –
Equivalent to £7600 of bed time. Saving £537 per patient.

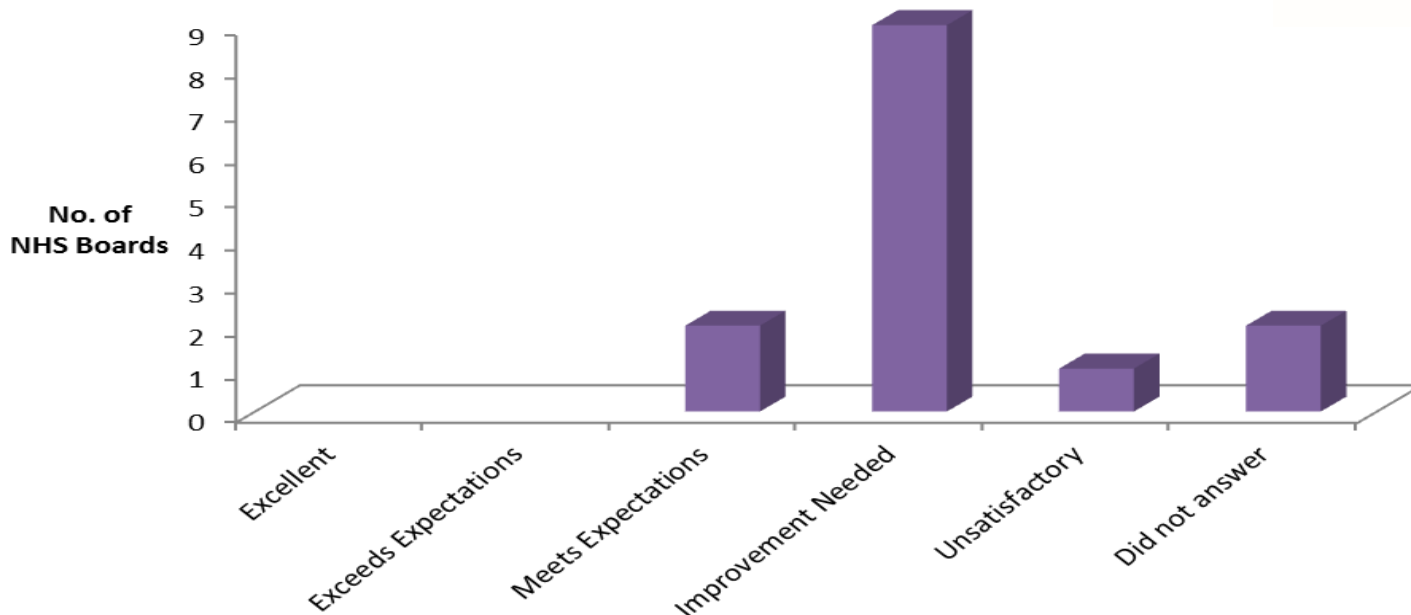
Reduce waiting time for the investigation to go ahead

Yes, when compared over the same period with those booked to be seen in hospital

Improve earlier identification of recordable events

Not proven – patients on home VT tended to be monitored for longer than those in hospital (for this sample size)

Rate the National Teams Performance in developing Integrated Clinical Physiology



Our Ambitions

- strengthen integrated local leadership
- expand the interpretative role in clinical services
- support direct referrals, releasing medical capacity
- explore the development of a clinical physiology network
- develop a community of practice

Communication and Engagement

Q16 (3) Do you feel that the National Delivery Plan has impacted positively, negatively or no impact, in your area

