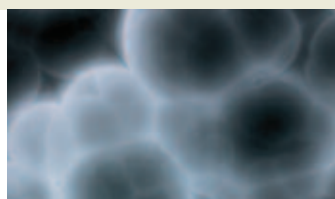


Pathology: towards a competence based workforce

A report of the Pathology Profiling Project

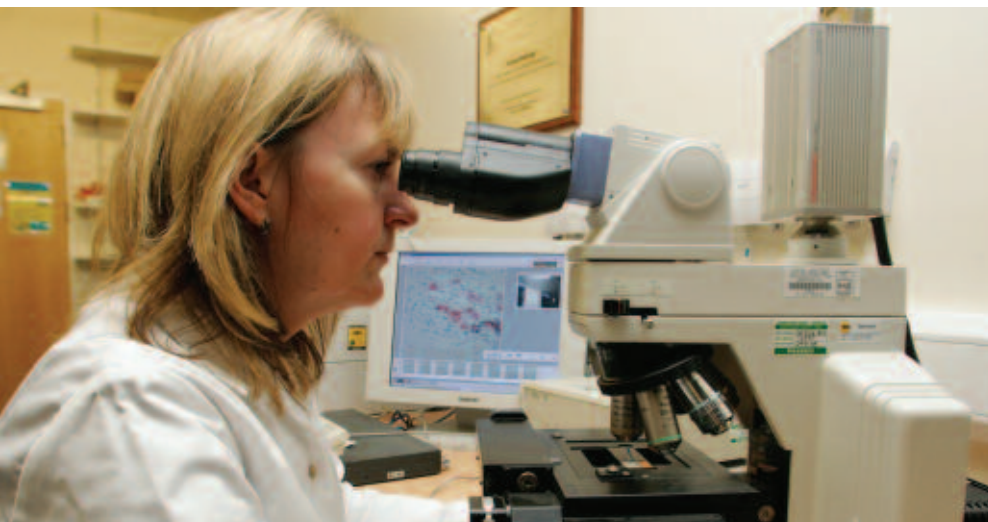
DH INFORMATION READER BOX

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Description:	This report analyses the skills needed to deliver modernised, efficient pathology services and provides examples of the pathology workforce that may be needed in the future based on service functions and competencies. The reprofiled workforce in 3 NHS sites is supported by a benefits realisation plan and offers an illustration of what might be achieved whilst at the same time ensuring better care for patients, better opportunities for staff and better value for money.
Cross Reference:	N/A
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Contact Details:	Professor Sue Hill Chief Scientific Officer Department of Health Room 527 Richmond House 79 Whitehall London SW1A 2NS Tel: 020 7210 5779

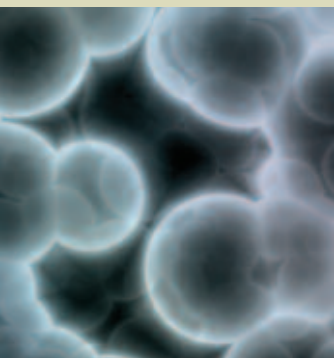
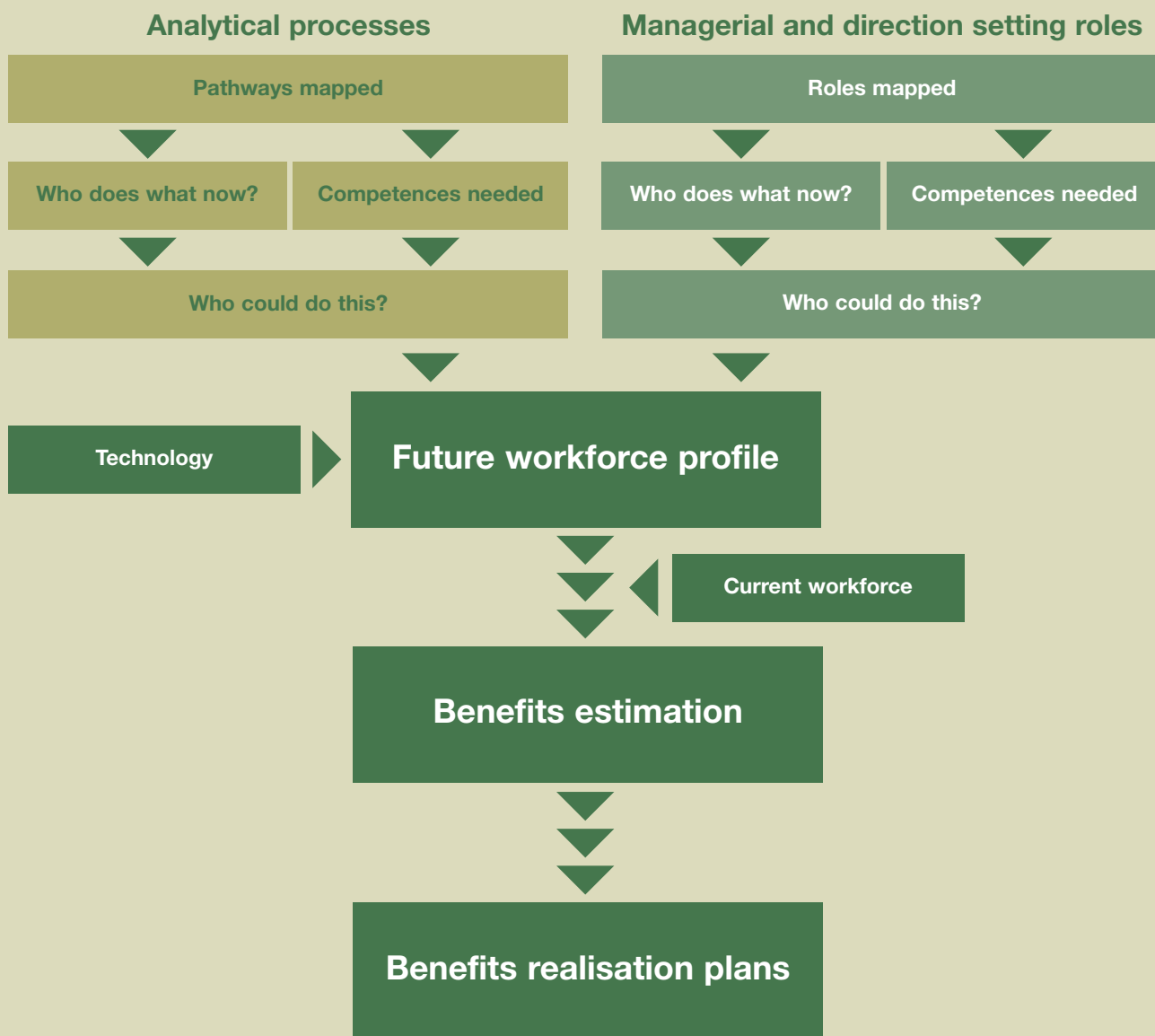


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Pathology profiling at a glance



Introduction



I welcome this report of the Pathology Workforce Profiling Project. The results give valuable insights into the pathology workforce needed for future, modernised pathology services and the workforce development that will be required across the DH Career Framework for Healthcare Scientists working in these disciplines. It will inform the DH Modernising Scientific Careers programme.

Implementing the findings has the potential to provide better care for patients, better opportunities for staff and better value for money from our pathology services. It is one of a number of complementary developments to support NHS pathology services respond to current challenges such as 24/7 working and increasing demands.

It is recognised that there is much work taking place at a local level between NHS trusts and PCTs to implement local solutions and I hope this report will stimulate further discussion and consideration. It does have potential applicability to other diagnostic areas in terms of its approach. A second phase of work is currently underway to provide for example practical tools which will be available soon.

Finally, I would like to express my thanks to everyone who has been involved in the project. In particular, staff at the three pilot sites who have given freely and generously of their time and expertise.

Professor Sue Hill, Chief Scientific Officer, Department of Health

Acknowledgements

Sincere thanks are due to the three highly efficient project facilitators, John Sharman (Hereford), Zoë Smith (UHNS) and Paul Arrowsmith (UHB); all staff at the pilot sites who gave their time so willingly; staff from other organisations who attended various workshops; project board members; Belle Connell and the Career Framework and Healthcare Scientist teams at Skills for Health; Dave Waghorn and the Workforce Review team for use of the workforce modelling tool; Hugo Minney for analytical support; Jennifer Tye (Hereford Hospitals) for HR advice; and Jane Eminson, Project Manager. This project was run by Skills for Health on behalf of the Department of Health.



Executive summary

This report summarises the work undertaken by the Pathology Workforce Profiling Project between November 2006 and September 2007. The project was established to analyse the skills and competences needed to deliver modernised, efficient pathology services, and to produce examples of the pathology workforce that will be needed in the future. This information should help organisations develop their pathology workforce to support the modernisation of pathology services.

The project was run by Skills for Health on behalf of the Department of Health, with the involvement of three pilot sites across the West Midlands:

- University Hospital Birmingham NHS Foundation Trust.
- University Hospital of North Staffordshire NHS Trust.
- Hereford Hospitals NHS Trust.

The pilot sites mapped each step in each pathology analytical process and identified those competences from the Healthcare Science National Occupational Standards (HCS NOS) needed for the delivery of each step. Staff currently delivering each step were also identified. The pilot sites, with staff from Skills for Health and external experts, then considered which level of staff was most appropriate for each of these steps. DH Career Framework for Healthcare Scientists levels were used throughout.

Two future workforce profiles were developed, compared with other similar work and checked for European Working Time Directive (EWTD) compliance. Compared with current staffing, the re-profiled workforce generally has a smaller proportion of CF levels 6 and 7 staff and a higher proportion of roles at lower levels of the Career Framework.

The project highlighted a number of opportunities for staff across the pathway to be used more flexibly and the potential for tasks to be undertaken by staff at lower CF levels:

- Much greater use could be made of CF level 2 and 3 staff, especially in pre-analytical stages.
- Although many individual tasks could be undertaken at CF level 2, in practice CF level 3 staff may offer more flexibility because of their broader and more useful range of competences.

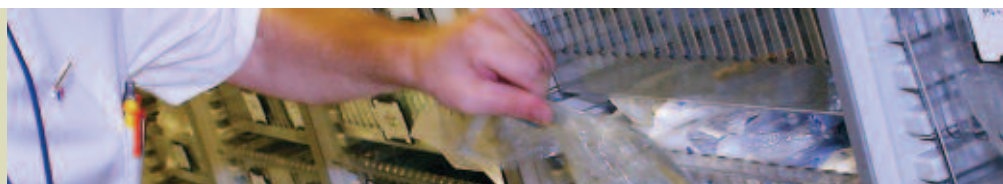
- While there are opportunities for role development at CF levels 3 and 4, there were fewer CF level 4 steps than some participants expected at the start of the project.
- Those at higher levels could spend more of their time doing work that only they are competent to do.
- The scientific expertise of those at CF level 7 could be better used, for example in innovation and scientific development. Roles at this level are also needed for supervision and for clinical interpretation, advice and liaison – but not necessarily for the analytical steps prior to interpretation.
- There is potential for CF level 8 role development.

In terms of managerial and direction-setting roles, it became clear that more work was needed and this will form part of a further piece of work.

The impact of current and future technology on pathology services offers a number of potential opportunities to break down barriers between departments, to speed up and simplify the pathways and to offer improved patient safety.

The examples of re-profiled workforces at the three sites, supported by a benefits realisation plan, illustrate what might be achieved while at the same time ensuring better care for patients, better opportunities for staff and better value for money.

This work offers only a first look at the future pathology workforce profile. It is recognised that further supporting work is required, and some of this is already underway. Nevertheless this report gives pathology departments and workforce planners a vital piece of the jigsaw in considering the future pathology workforce.



Context

- Department of Health (DH) Pathology Modernisation Programme (launched 1999)
- National Occupational Standards for Healthcare Scientists (2005)
- DH Career Framework for Healthcare Scientists (2005)
- Independent Review of NHS Pathology Services in England (Pathology Review; 2006)
- Skills for Health Healthcare Science Careers Programme
- National Pathology Service Improvement Programme
- DH Modernising Scientific Careers

Drivers for change

- Age profile of healthcare scientists particularly in pathology disciplines
- General drive for greater NHS efficiency and responsiveness, including improved turnaround times
- The need to deliver services 24 hours a day and seven days a week
- Changes in the regulation of health care professionals
- Increasing use of technology
- Technological innovation

DH Pathology Modernisation Programme

- Aims to ensure pathology services are able to respond to the challenges of technological advances, changing practice and evolving public perceptions and expectations.
- Has consulted widely, provided guidance and funded a wide range of practical initiatives in the NHS, such as service improvement and action learning.
- The workforce projects are joint initiatives with Professor Sue Hill, the Chief Scientific Officer, to support pathology modernisation and the wider modernisation of scientific careers.

Project aims

- To analyse the skills and competences of the current workforce.
- To analyse the skills and competences needed to deliver modernised, efficient pathology services.
- To identify the skills and competences needed for the workforce of the future.
- To produce examples from each pilot site of the roles needed in the workforce of the future.

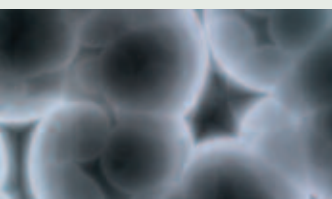
- To estimate the benefits that are expected to result from implementation of the re-profiled workforce and a plan for realising these benefits.
- To produce resources for re-profiling the pathology workforce suitable for use in other services.

Scope of the project – what we did not cover

The project did not cover medical roles nor the interface with medical roles. The project also excluded administrative support for medical staff; infection control; the impact of pathology networks; all the implications of the Independent Review of Pathology Services (Pathology Review); and the full potential of Point of Care Testing. These could be included in further work (see page 24).

So, how does this project link with the Pathology Review?

This project has run in parallel with the pilot-site work of the Pathology Review. There was regular communication between the project team and the Pathology Review team. One of the project pilot sites was also a Pathology Review pilot site. This project supports the Pathology Review through its detailed look at the future workforce.



About the pilot sites



Pathology Workforce Profiling Project pilot sites

- University Hospital Birmingham NHS Foundation Trust (UHB)
- University Hospital of North Staffordshire NHS Trust (UHNS)
- Hereford Hospitals NHS Trust (HH)

Why were these hospitals chosen as pilot sites?

They were interested, different sized hospitals, and close enough together to make a joint project feasible. Each hospital provides a different range of services but all are within the same SHA.

University Hospital Birmingham NHS Foundation Trust (UHB)

- 6,700 staff
- Currently two hospital sites
- New super-hospital due to open in 2010 with 1,213 beds – of which 780 will be in-patient acute beds
- Regional Cancer Centre and Regional Leukaemia Centre
- Major centre for transplantation
- Royal Centre for Defence Medicine
- Regional Burns and Plastic Surgery Centre
- Regional Neurosciences Centre
- Wellcome Research Centre
- District general hospital and a wide range of specialist services
- Pathology services for Royal Orthopaedic Hospital, Community and Elderly Services hospitals, Birmingham Mental Health Trust, private hospitals and the Birmingham Dental Hospital
- 250 whole time equivalent (wte) pathology staff, including medical, phlebotomy and other services
- Regional and supra-regional pathology services
- National External Quality Assurance Scheme and Central Quality Assurance Scheme
- Supra-regional Assay Service (SAS) designated laboratory for endocrinology

“The start of the project work clashed with our CPA assessment visits but since then staff have been prepared to put a lot of time into this work.”

Paul Arrowsmith,
Project Facilitator, UHB

More Information?

For more information about the pilot sites or their staffing, please contact the department managers:

University Hospital Birmingham
NHS Foundation Trust
Stewart.Messer@uhb.nhs.uk

University Hospital of North
Staffordshire NHS Trust (UHNS)
Alan.Tonge@uhns.nhs.uk

Hereford Hospitals NHS Trust
Steve.Jones@hhtr.nhs.uk





University Hospital of North Staffordshire NHS Trust (UHNS)

- Large acute teaching hospital between Stoke-on-Trent and Newcastle-under-Lyme
- Full range of district hospital services for the North Staffordshire population of around 470,000, and some specialised acute services for a population of 3 million in neighbouring counties and Wales
- Specialised services including cancer, cardiothoracic surgery, neurology, neurosurgery, renal, neonatal and paediatric intensive care, plus recognised expertise in other areas
- About 6,800 wte staff
- 240 wte pathology staff
- In-patient services currently at two hospitals half a mile apart, with around 1,130 beds; central outpatient department and central pathology department located between these
- Hospital sites being redeveloped; new hospital to bring all facilities up to date

“I’ve been encouraged by how willing people have been to get involved – considering the significant organisational change that the department is facing at the moment.”

Zoë Smith,
Project Facilitator, UHNS



Hereford Hospitals NHS Trust (HH)

- 1,700 staff
- 317 beds
- New PFI hospital opened in 2002
- Acute hospital care for a large geographical area including Herefordshire and parts of Mid-Wales, with a catchment population of 230,000
- One of the ‘top 40’ performing hospitals in the UK in 2006/7
- 80 wte laboratory staff, excluding medical staff
- National Reference Laboratory for Leptospira

“We’re always looking for better ways of working and were very keen to become involved in this innovative project.”

Dr S Jones,
Director of Pathology,
Hereford Hospitals

Competences, NOS and the Career Framework

Healthcare Science competences/NOS

Healthcare Science National Occupational Standards (NOS) were published in 2005 by SEMTA, the Sector Skills Council for Science, Engineering and Manufacturing Technologies. These standards were developed through a UK-wide project sponsored by the four health departments and led by Professor Sue Hill. They are available on the Skills for Health website at www.skillsforhealth.org.uk/page/competences/completed-competences-projects/list

These standards are being incorporated into the Skills for Health Functional Map and integrated with other healthcare NOS.

The Pathology Workforce Profiling Project ran at the same time as changes were being made to the generic Healthcare Science NOS. These are available on the Skills for Health website, www.skillsforhealth.org.uk. Unbundling the more specific HCS NOS is taking place during 2007 to 2009.

The Workforce Profiling Project mainly used the 2005 NOS. Links with revised and unbundled NOS need to be made during the second stage of the project.

DH Career Framework for Healthcare Scientists

The DH Career Framework for Healthcare Scientists (CF) is a common framework enabling employers to fix a level of practice for particular roles, using the level descriptor tool. This supports modernisation of the healthcare workforce by:

- Assisting the development of competence-based workforce planning
- Enabling skills escalation based on competence
- Enabling individual career planning
- Assisting the development of new roles that meet patient needs
- Acting as a tool for recruitment and retention
- Supporting transferability.

There are nine levels for roles within the Career Framework. Eight domains of practice are used to allocate roles to each level.

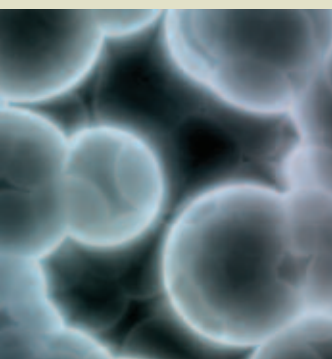
More information about the Career Framework and examples of its use is available on the Skills for Health website, www.skillsforhealth.org.uk



DH Career Framework for Healthcare Scientists levels

Very Senior Scientists & Consultant HCS Directors	9	responsibilities similar to consultant medical staff
Consultant or Principal HCS	8	provides clinical & scientific expertise & leadership
Advanced HCS	7	performs an in depth highly complex role
Senior or Specialist HCS	6	performs a complex scientific/technical role
HCS Practitioners	5	performs scientific & technical procedures
Associate HCS	4	performs procedures under direction
Senior Assistant HCS	3	performs protocol driven tasks under supervision
Assistant HCS Key Support Workers	2	performs protocol limited tasks under supervision
Initial Entry Level Assistant HCS	1	performs protocol limited tasks under supervision

NB: Career Framework (CF) levels are not the same as Agenda for Change bands. This project used CF levels throughout.



Analytical processes

What did we do?

- We mapped, in broad terms, the steps involved in the pathways of the main, high-volume analytical processes.
- We determined the competences required for each step of each pathway.
- We identified, at each pilot site and during core and non-core hours, which level of staff currently performs each step.
- We allocated each step to a 'generic stage' (see below). These generic stages were developed for use in the project only.
- We identified any major barriers to change (for example, professional or CPA guidance).

Pathways mapped

- Automated, semi-automated and manual biochemistry tests
- Osmolality
- Automated, semi-automated and manual haematology tests
- Transfusion
- Semen analysis
- Immunology
- Cytology (gynae and non-gynae)
- Histopathology

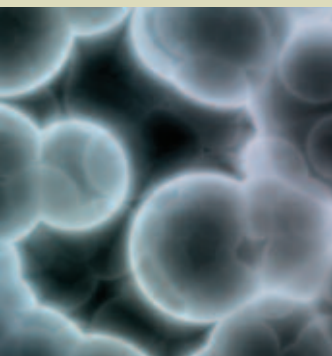
Microbiology

- Routine swabs and some fluids
- Blood cultures
- Urines
- MRSA
- Serology
- High priority
- Gynae
- Enterics
- Cat 3
- Chlamydia
- Disposal
- Send-aways

Generic stages

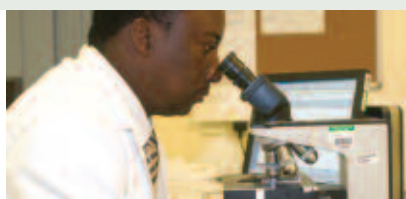
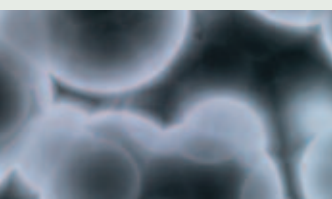
- A Taking the specimen
- B Transporting the specimen
- C Specimen reception
- D Data entry
- E Sample preparation pre-analysis
- F Analysis
- G Validation
- H Authorisation, interpretation and reporting
- I Post-analysis
- J Follow-up

More detail? Our pathway maps are available: see the link on page 28.



Pathway example: analyser maintenance and calibration

Step	Generic	HCS NOS stage	Current UHB staff reference		Current UHNS staff		Current Hereford staff	
			Core	NC	Core	NC	Core	NC
Maintenance								
Cleaning	E	A4	BMS, TBMS	BMS	MLA, BMS	BMS	BMS	BMS
Back-up of data	E	A4	BMS	N/A	BMS	BMS	BMS	BMS
Visual check for defects	E	A4	BMS, TBMS	BMS	BMS	BMS	BMS	BMS
Reagent check	E	A4	BMS, TBMS	BMS	MLA, BMS	BMS	BMS	BMS
Reagent loading and level scan	E	A4	BMS, TBMS	BMS	MLA, BMS	BMS	BMS	BMS
Calibration								
Preparation of material	E	A3	BMS, TBMS	N/A	MLA, BMS	BMS	BMS	BMS
Deciding what needs calibrating	G	A3	BMS, TBMS	BMS	BMS	BMS	BMS	BMS
Loading of calibrants	E	A3	BMS, TBMS	BMS	MLA, BMS	BMS	BMS	BMS
Reviewing results and taking any necessary steps	H	A3	BMS	BMS	BMS	BMS	BMS	BMS
NC = Non-Core TBMS = Trainee BMS								



Pathway analysis: who does what now?

Examples of differences between pilot sites

The proportion of pathway steps carried out by staff at various levels differed between pilot sites. These figures illustrate the proportion of steps carried out by CF level 2 and 3 staff at each site. Figure 1 shows the results for all pathways combined. Figure 2 shows the results for histopathology, illustrating how the proportion varies between pathways.

Figure 1:

All Pathways - Proportion of pathway steps currently undertaken by CF 2 or 3 staff

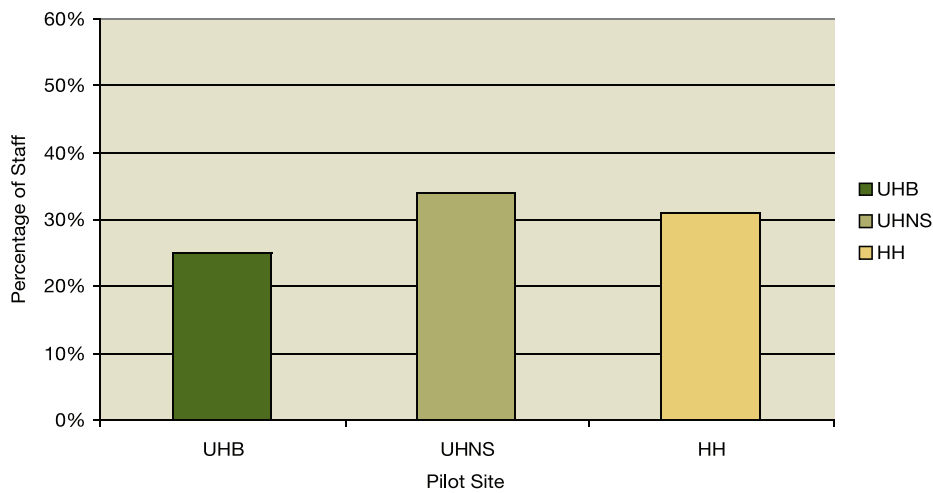
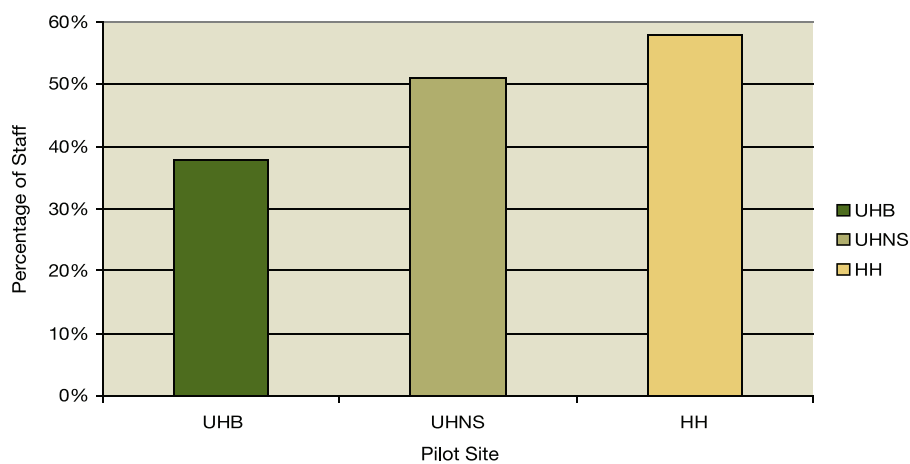


Figure 2:

Histopathology Pathways - Proportion of pathway steps currently undertaken by CF 2 or 3 staff



How do the project's pathways relate to the Pathology Review 'baskets of tests'? eg B1 Routine automated and B6 Manual tests – relatively simple?

We made sure that we mapped at least one example from each Review basket.

Table 1 shows the proportion of steps currently carried out by various levels of staff at each generic stage of the analytical pathway, during core hours.

Generic stage	CF 2/3	CF 4	CF 5/6	CF 7+
A Taking the specimen	51%		21%	28%
B Transporting the specimen	67%		33%	
C Specimen reception	89%	1%	10%	
D Data entry	55%	3%	41%	1%
E Sample preparation	24%	1%	75%	
F Analysis	5%	1%	90%	4%
G Validation	3%	2%	92%	3%
H Authorisation, interpretation and reporting	23%	3%	68%	6%
I Post-analysis	68%		28%	4%
J Follow-up	17%		75%	8%

Table 2 shows that more than one CF level of staff may use the same competences.

HCS NOS ref	HCS NOS title	CF level (existing staff)						
		2	3	4	5	6	7	8
MIC1	Prepare samples of micro-organisms suitable for culture							
MIC2	Prepare samples to detect evidence of microbial or anti-microbial agents by means other than microscopy or culture							
MIC3	Inoculate and incubate samples for isolation of micro-organisms							
MIC4	Examine samples by microscopy to assist with diagnosis or screening							
MIC5	Identify microbial agents that can be grown by culture							
MIC6	Confirm presence or absence of microbial or anti-microbial agents by means other than microscopy or culture							
MIC7	Determine organism susceptibility or resistance to anti-microbial agents							
MIC8	Differentiate micro-organisms at detailed level							

More detail?

There is more information about competences, NOS and the Career Framework on page 10.

For a list of external contributors, see the link on page 28.

Pathway analysis: who could do this?

What did we do?

Groups which included representatives from the pilot sites and external experts:

- Looked at the steps in particular pathways and asked, 'What is the minimum CF level appropriate to this step?'
- Looked at the competences for particular pathways and asked, 'What is the minimum CF level appropriate to this competence in this setting?'

CF levels were used throughout to describe the various types of staff.

Who could do this step in the pathway?

For those pathways examined by our groups, Table 3 shows the proportion of steps which the groups felt could be carried out by various levels of staff. These pathways included some automated, semi-automated and manual biochemistry and haematology tests and some microbiology pathways. None of the pathways involved generic stage B.

Table 3: Proportion of steps which could be carried out by various levels of staff

Generic stage	CF 2/3	CF 4	CF 5+
A Taking the specimen	100%		
B Transporting the specimen			
C Specimen reception	100%		
D Data entry	88%		12%
E Sample preparation	82%	1%	17%
F Analysis	60%	3%	37%
G Validation	21%	2%	77%
H Authorisation, interpretation and reporting	25%		75%
I Post-analysis	65%		35%
J Follow-up	25%		75%

A comparison of Tables 1 and 3 indicates that there is considerable potential for tasks to be undertaken by staff from a lower CF level than those who currently perform them.

- NB:**
- These tables represent all analytical processes or pathways. The picture is different in different pathways.
 - Percentages are of pathway steps.
 - The analysis excluded steps with no allocated competences – mainly 'routing' steps in the pathways – as well as all steps undertaken by technology.

Using competences to look at who could do this

We then analysed the competences allocated to each step. For each step, the lowest CF level of staff currently using the same competence was identified. Where more than one competence was allocated, the highest of the potential CF levels was taken. This revealed an even greater potential for pathway steps to be undertaken by staff of lower CF level (see Table 4). This could be because the groups were not stringent enough in looking at the potential for re-profiling the workforce. The pilot sites were concerned, however, that the analysis underestimated the contribution of more senior staff whose roles require a cluster of competences.

More about the competences used

The pilot sites used the 2005 Healthcare Science NOS for their work. A further project is unbundling and integrating the specific HCS NOS into the Skills for Health suite of competences. We did allocate the new generic NOSs and re-ran our analyses. The pilot sites did not consider that the analysis available at the time adequately captured the specialist nature of many tasks. More information about this work is available at the Skills for Health website, www.skillsforhealth.org.uk

Table 4: Competence-based analysis – proportion of steps which various levels of staff could undertake

Generic stage	CF 2/3	CF 4	CF 5+
A Taking the specimen	100%		
B Transporting the specimen	100%		
C Specimen reception	100%		
D Data entry	95%	1%	4%
E Sample preparation	96%	1%	3%
F Analysis	57%	19%	24%
G Validation	47%	21%	33%
H Authorisation, interpretation and reporting	50%	32%	18%
I Post-analysis	86%	5%	9%
J Follow-up	35%		65%



“Using the competences really made me think about how we use our staff – and the potential for crossing traditional departmental boundaries.”

Dave Frodsham,
Microbiology and Cellular
Pathology Manager, UHNS

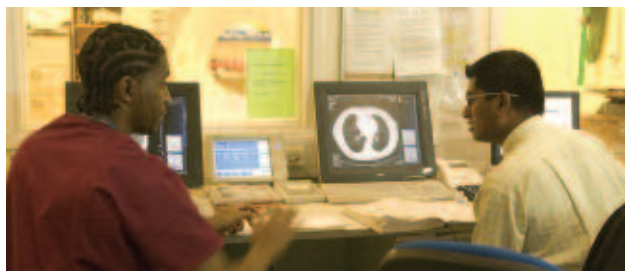
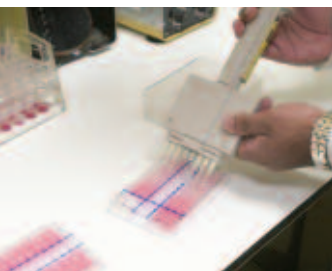
“The workshop I attended really helped me to see the potential for greater use of staff at Career Framework levels 2, 3 and 4.”

Mary Macdonald, Trust Lead/
Head Biomedical Scientist, Microbiology,
Worcestershire Acute Hospitals NHS Trust

What did we learn?

- Although there were many similarities between departments, there is some variation between the pilot sites in the CF levels of staff who carry out particular tasks.
- Much greater use could be made of CF level 2 and 3 staff, especially in pre-analytical stages.
- Operation of analysers could also be done by CF level 3 staff.
- Although many individual tasks could be done at CF level 2, in practice CF level 3 staff may offer more flexibility because of their broader and more useful range of competences.
- There were fewer CF level 4 functions than some participants expected at the start of the project, although there are opportunities for role development.
- CF level 7 and higher roles are needed for supervision and for clinical interpretation, advice and liaison, but not necessarily for the analytical steps prior to interpretation.
- There is likely to be potential for CF level 8 role development at the interface with medical staff. The scope of this project did not include looking at functions carried out by medical staff, so the CF level 8 and 9 potential has not yet been fully explored.
- The non-core hours workforce skews the overall workforce distribution, with registered staff performing tasks which, during core hours, are performed by non-registered staff.

More detail? Our analysis of pathway steps undertaken by various staff is available: see the link on page 28.



Managerial and direction-setting roles

What did we do?

Managerial roles, including training and quality assurance, are vital to the safety and effectiveness of pathology services. We decided to use the Clinical Pathology Accreditation (UK) Ltd (CPA) structure, because pathology department staff are accustomed to working with it. Sections F and G of this structure are covered in the work described above on analytical processes. Groups including pilot-site representatives and external experts therefore worked with sections A–E and H. For each section:

- We mapped the competences needed
- We analysed the proportion of time currently spent on these roles by various groups of staff.

What did we learn?

- The increasing need for quality controls and quality management makes significant demands on all grades within the workforce.
- All levels of staff in managerial and direction-setting roles need clinical advice in order to carry out these roles effectively.
- Managing human resources makes significant demands on time, especially of more senior staff.
- Senior staff could make better use of their time if they had more administrative support.
- Using the CPA structure (sections A–H) gave us some insight into the issues but was not the right approach for re-profiling this workload.
- Further work is needed on the potential for re-profiling managerial and direction-setting roles.

More detail?

The project's analysis of competences needed for managerial and direction-setting roles is available. See the link on page 28 for details.

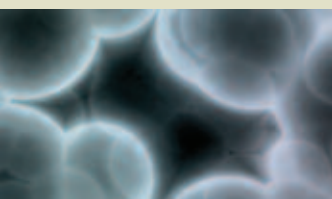
Want more detail on CPA?

Go to the Clinical Pathology Accreditation (UK) Ltd website, www.cpa-uk.co.uk

Example of work done on managerial and direction-setting roles

Approximate time spent on managerial and direction-setting roles across all three pilot sites

CPA section	Proportion of time by level of staff			
	CF 2/3/4	CF 5/6	CF 7	CF 8
A Organisation and quality management system	2%	10%	25%	20%
B Personnel	2%	15%	15%	15%
C Premises and environment	5%	5%	10%	10%
D Equipment, information and materials	5%	5%	5%	10%
EFG Processes	85%	60%	25%	20%
H Evaluation and quality assurance	1%	5%	20%	25%



Technology

What did we do?

A group of pilot-site representatives and external experts, including industry representatives, considered the future impact of technology on pathology services. Some of this technology is already in use in some departments. Some is still in development. We identified technology likely to be introduced over the next five years and its probable impact on the workforce.

Workforce implications

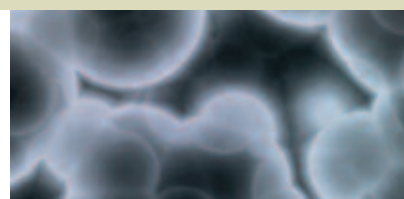
- Staff will be required who are skilled at operating automated platforms.
- Staff will need different qualifications, especially if technology is extensively adopted.
- Staff training may be simpler and more streamlined, especially where there is convergence of technical platforms.
- CF levels of staff required to support extensive implementation of technology are likely to be lower than those of current staff.
- These changes will present the opportunity for role development at CF levels 2, 3 and 4.
- E-learning packages may be more widely used.
- Senior medical and scientific staff will continue to be required for:
 - interpretation of results and clinical advice
 - customer liaison
 - demand management.

Technology – potential opportunities

- There is an opportunity to break down barriers between departments, especially chemistry, haematology, immunology and serology, and to introduce shared platforms.
- Ward and GP order communication systems, including bar-coded wrist bands, will speed up and simplify the pathway, improve patient safety and reduce laboratory errors.
- Pre-analytical stages may be automated:
 - integrated specimen reception processes
 - limited requirement for data entry
 - tracked systems and sample management
 - automated pre-analytics, either integral to the track or as separate modules (e.g. decapping, recapping, centrifugation and aliquotting).
- IT-based protocols will ensure tests are clinically appropriate.
- IT-based expert rules will be used for post-analytical interpretation.
- Many results will automatically be routed to the requester.
- Data collection for audit will be produced routinely.
- Managerial and direction-setting roles will also be affected.
- Quality assurance will be organised differently.
- Supporting Point of Care Testing is already impacting significantly on the workload and workforce of pathology services, and this impact will expand in the future.
- Increased demand for molecular testing may substantially change the pattern of work for some departments, especially histopathology and microbiology, as tests and technology become more widely available. The impact of laboratory genetics on the pathology workforce needs further consideration.
- Financial investment is key to gaining the benefits of new technology.

More detail?

The project report on the impact of technology on pathology services is available. See the link on page 28 for details.



Building the future workforce profile

What did we do?

- We captured the significant points from our work on:
 - analytical processes
 - managerial and direction-setting roles
 - technology.
- We held two workshops involving pilot-site representatives and external experts to consider the workforce needed to deliver modernised pathology services.
- We checked that our proposals achieved EWTD-compliant rotas.
- We challenged our proposals by looking back at the detail of our work on analytical processes, managerial and direction-setting roles and technology.
- We considered whether our proposals achieved:
 - better care for patients
 - better opportunities for staff
 - better value for money.

We recognise, however, that this consideration was subjective and that a more robust evaluation is needed.

Examples of the workforce

We produced re-profiled workforce examples for two different types of hospital:

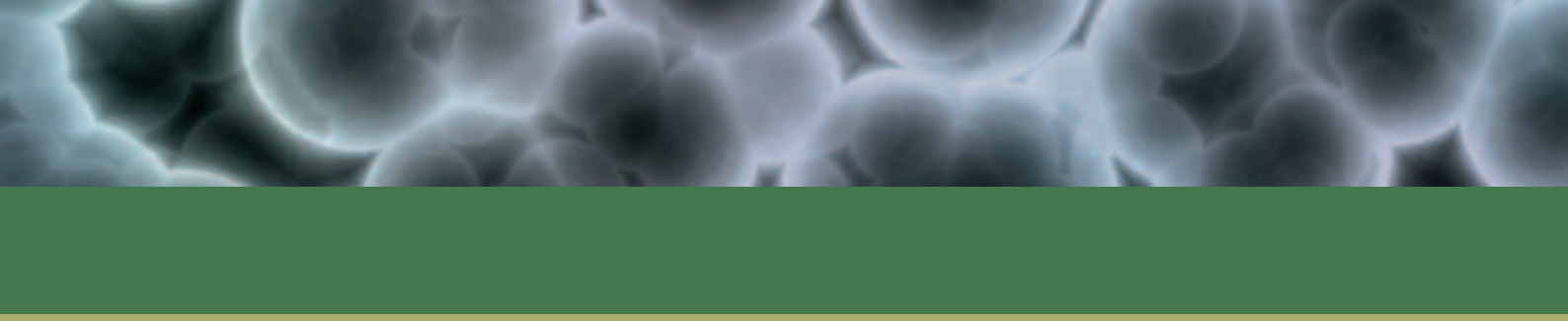
Specialist hospital

- Tertiary centre
- Range of specialised services including specialist cancer teams, neurosurgery, ITU, NICU and transplant programmes
- DGH services, including 24-hour A&E, for a population of about 500,000

Smaller hospital

- Maternity and paediatric services, local cancer teams and renal dialysis unit
- DGH services, including 24-hour A&E, for a population of about 300,000

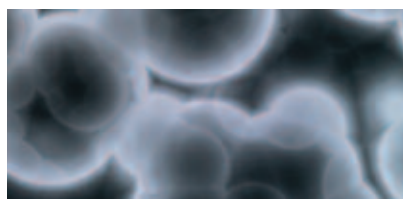




Assumptions

- GP and ward order communications and paper-free bar-coded requesting are available.
- The pathology department has a single, centralised multi-disciplinary reception.
- There is a combined blood sciences service covering chemistry, haematology and microbiology serology.
- All departments are on one site and cross-disciplinary working exists.
- Staff work flexibly to smooth the work flow (e.g. in microbiology, plate reading and identification are organised throughout the day to maximise use of skills at CF levels 5 and 6).
- Laboratories are laid out efficiently to optimise work flow.
- Well-organised transport services support efficient work flow and use of staff.
- Staff regularly undertake the range of tasks required in order to maintain competence.

Assumptions		
<p>Blood sciences</p> <ul style="list-style-type: none"> • 24-hour service • Core hours 8am–8pm, seven days a week • Twilight shift 2pm–10pm • Night shift 10pm–8am • Secondary/primary care split: <ul style="list-style-type: none"> - Specialist hospital 70:30 - Smaller DGH 50:50 • Requests per day: <ul style="list-style-type: none"> - Specialist hospital 5,200 - Smaller DGH 2,000 	<p>Histology and cytology</p> <ul style="list-style-type: none"> • No non-core hours worked • Order communications and bar-coded wrist bands will not have a significant effect on staffing requirements • Specialist hospital: <ul style="list-style-type: none"> - 30,000 specimens per year - Cancer centre - Transplant centre - Neurosurgery centre - Mortuary • Smaller DGH <ul style="list-style-type: none"> - 15,000 specimens per year - Mortuary 	<p>Microbiology</p> <ul style="list-style-type: none"> • 300,000 bacteriology samples per year • Core hours <ul style="list-style-type: none"> - 8am–8pm Mon–Fri, covered by two shifts - 8am–4pm Sat and Sun • Core hours covered using seven-day “rolling” shift pattern • One CF level 6 on call overnight – equivalent to two additional CF level 6 overall • Samples per year <ul style="list-style-type: none"> - Specialist hospital 300,000 - Smaller DGH 200,000



Re-profiled workforce (wte), specialist hospital:

Department	CF2	CF3	CF4	CF5	CF6	CF7	CF8	Total
Blood sciences	6.0	15.5	8.0	12.0	18.5	9.0	5.0	74.0
Histology and cytology	4.5	6.5	5.0	16.5	4.0	4.0	1.0	41.5
Gynae cytology (no scanning)	0.5	0.5	4.0	4.0	2.0		1.0	12.0
Microbiology	4.5	12.5	4.0	7.0	12.0	6.0	1.0	47.0
Overall management	1.0	3.0	1.0			1.0	1.0	7.0
Total with order comms	16.5	38.0	22.0	39.5	36.5	20.0	9.0	181.5
If no order comms	7.5	7.5	1.0					16.0
Total no order comms	24.0	45.5	23.0	39.5	36.5	20.0	9.0	197.5

Re-profiled workforce (wte), smaller hospital:

Department	CF2	CF3	CF4	CF5	CF6	CF7	CF8	Total
Blood sciences	4.5	10.8	1.0	7.5	12.1	2.5	3.0	41.4
Histology and cytology	2.0	5.0	1.0	3.0	2.0	1.5	1.0	15.5
Gynae cytology (no scanning)	0.5	0.5	4.0	4.0	2.0		1.0	12.0
Microbiology	3.0	4.0	2.0	3.0	7.0	3.5	1.0	23.5
Overall management		3.0	1.0				1.0	5.0
Total with order comms	10.0	23.3	9.0	17.5	23.1	7.5	7.0	97.4
If no order comms	3.0	3.0	1.0					7.0
Total no order comms	13.0	26.3	10.0	17.5	23.1	7.5	7.0	104.4

NB:

- Roles are shown as whole-time equivalents. In practice, some roles will be shared part-time – to suit individuals or to ensure cover in the department.
- The following roles are NOT included:
 - Consultant medical staff and associated secretarial staff
 - Phlebotomy staff
 - Immunology staff
 - Control of infection staff
 - Specialist practitioner of transfusion
 - Transport staff



More detail?

The project report, Examples of the Re-profiled Workforce, is available. See the link on page 28 for details.

Quality, IT, training, health and safety

A post at CF level 7 has been included in each of the three departments and in the overall management for quality, IT, training and health and safety. These posts represent a resource to support these functions. The model by which they are delivered will vary depending on the size of the hospital. For example, IT support may be provided by the Trust's IT department rather than by staff employed within pathology.

Doesn't a single blood sciences department contravene CPA requirements that staff should only work in the department for which they are trained?

No. Any regulated professional can authorise results in any work area so long as they have been appropriately trained and assessed as competent.

Rotas

We checked that our re-profiled workforce achieved EWTD-compliant rotas. An example of a rota for CF level 2 and 3 staff in blood sciences is given below. All rotas were EWTD-compliant – although we did not take any account of flexible working or staff opt-out of unsociable hours.

Clinical scientists

Clinical interpretation roles, authorisation of results and clinical liaison are integral components of pathology services. The clinical scientist staffing included within these re-profiled workforce examples represents the time considered necessary for supporting integral laboratory roles and providing clinical advice and advice to management.

“As a result of the re-profiling work I am appointing band 3 support workers onto my night shift in pathology with key roles around running analysers, carrying out routine maintenance overnight and calibrating within guidelines – in order to support the work of BMSs in delivering the out-of-hours service.”

Carl Holland, Pathology Services Manager, University Hospitals of Coventry and Warwickshire NHS Trust; Pathology Project Workshop participant



More detail? Rotas for all re-profiled staff are available. See the link on page 28 for details.

Comparison of existing and re-profiled workforces

Comparison of existing and re-profiled workforces

- The re-profiled workforce includes provision for out-of-hours working. Currently, this service is usually provided by existing staff working overtime.
- The assumptions about service specification and configuration of the laboratories in the re-profiled hospital are different from how the three existing services are provided.
- Although the picture is different in each of the three hospitals, the comparisons generally show:
 - a smaller proportion of CF level 6, 7 and 8 roles
 - a higher proportion of CF level 4 and 5 roles.

“I’ve already been using the early results of the project when considering the options for staff recruitment.”

John Sharman, Manager
Blood Sciences, Hereford
Hospitals NHS Trust

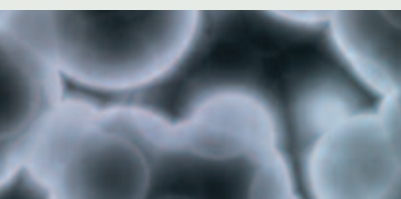
What did we learn?

CF levels 2 to 4:

- There is a requirement for some CF level 2 posts – particularly for new starters while they gain competences and experience.
- There is an opportunity for role development at CF level 3 (for example, operating analysers).
- More CF level 4 posts are needed – in particular:
 - specific clinical skills previously undertaken by registered staff; these roles will only develop where these skills are required in large volumes (for example, cytoscreening and interpretation of chromogenic media)
 - first-line management of groups of CF level 2 3 posts (for example, specimen reception).

CF levels 5 to 8:

- CF level 5 posts will be for newly qualified staff gaining competences and experience, with CF level 6 posts for more experienced staff with a broader range of competences.
- CF level 5 and 6 posts will have specific roles in supervision or more specialist techniques.
- Based on the work of the pilot sites, fewer CF level 7 posts will be needed, and will fall into three groups:
 - specific skills in an area of advanced clinical practice
 - responsibilities outside of the laboratory which involve active interaction with clinical services:
 - Teaching about tests and interpretation
 - Infection control
 - Transplant coordinator
 - Anticoagulant services
 - management and quality responsibility.



Figures 3, 4 and 5 compare the staffing profiles for existing staff at each pilot site with the relevant re-profiled workforce example. Departmental titles and groups of staff included have been made consistent to allow comparison. Specimen reception staff have been excluded from both existing and future workforce profiles.

Figure 3: Proportion of staff by CF level, UHB and re-profiled specialist hospital (excluding gynae cytology)

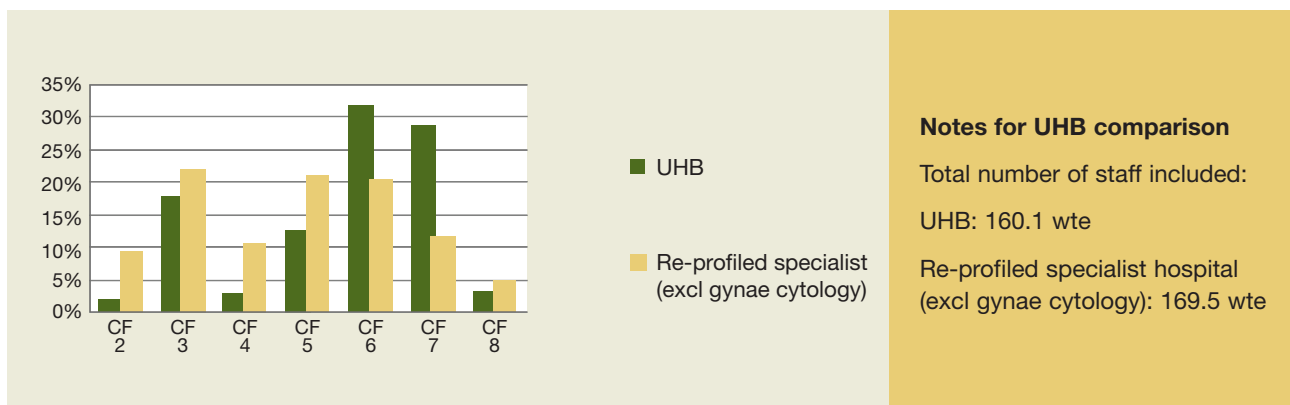


Figure 4: Proportion of staff by CF level, UHNS and re-profiled specialist hospital (including gynae cytology)

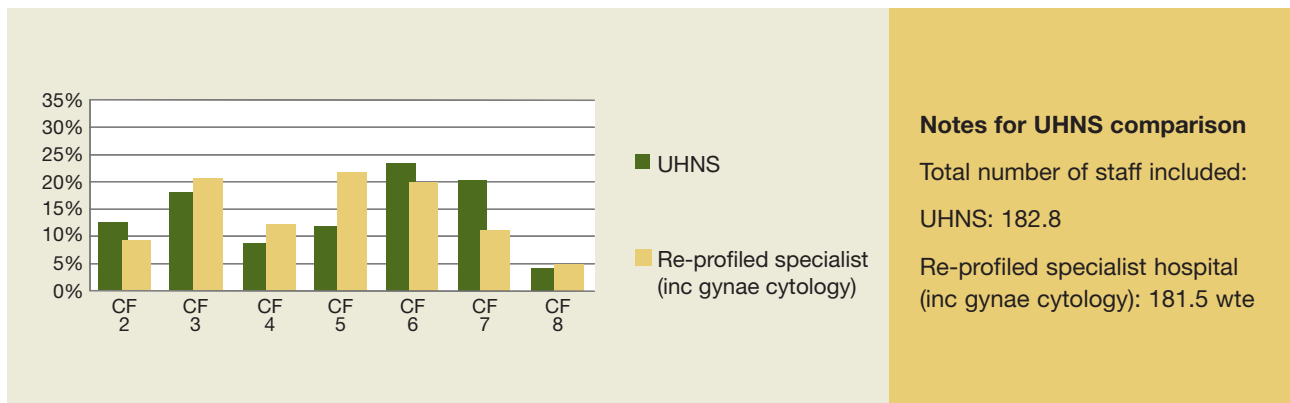
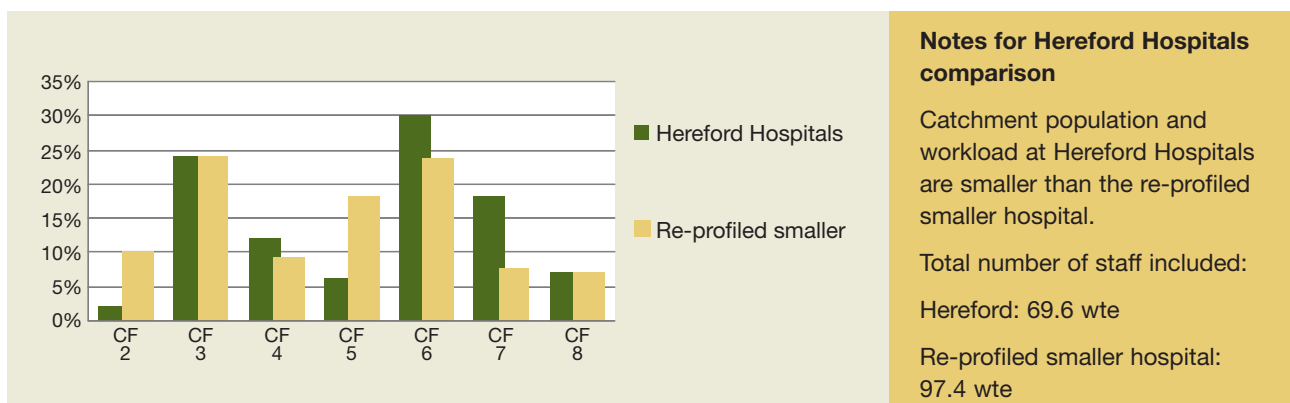


Figure 5: Proportion of staff by CF level, Hereford Hospitals and re-profiled smaller hospital



How do our findings compare with other re-profiling work?

We compared our findings with:

- Department of Health, 'Workforce development and re-profiling: Kent and Medway Learning Set', in 'Modernising from within: Action learning solutions for pathology'. May 2007, Gateway ref: 8125

Our findings are broadly similar, especially on the potential for expansion of roles at CF levels 2 and 3. We did not find the same potential for roles at CF level 4. Therefore the full potential of roles at CF level 4 may not have been realised.

- NHS Workforce Review Team, Outputs from workgroups at the WRT Workforce Implications of Pathology Modernisation workshop. March 2007

Although the general findings were similar, we identified a higher proportion of staff at CF levels 5 and 6. The Workforce Review Team workshop proposed the following:

CF level	1-2	3	4	5	6	7	8-9
Percent of workforce	10	30	25	5	5	15	10

- These findings may be because different groups of staff were included in the analyses. For example, our re-profiled workforce assumes order communications have been implemented and so has a smaller proportion of CF level 2 and 3 staff, and phlebotomy staff have not been included in our staffing numbers.

Workforce Review Team pathology workforce tool

- The Workforce Review Team (WRT) pathology workforce tool has the functionality to map:
 - the financial implications of introducing the re-profiled workforce
 - the speed with which this could be achieved
 - the number of staff of various grades who would need to be recruited and trained
 - the career progression opportunities for existing staff.
- We input data on existing staff at each of the pilot sites: the CF level of their role and their age. We also input our re-profiled workforce.
- This tool is now available to the pilot sites for use in planning their future workforce.
- Based on the WRT tool's assumptions as applied to the pilot sites, implementing the re-profiled workforce would achieve financial savings at larger hospitals – plus savings on overtime for out-of-ours working. It is recognised, however, that savings may not be achievable at all sites immediately as, for example, the layout of the laboratories may not facilitate working in the way expected of our re-profiled workforce.

Want to use the WRT pathology workforce tool?

Contact the Workforce Review Team at wrt.enquiries@wrtnhs.org

POINTS TO NOTE

- Our re-profiled workforce examples are very much a 'first look'. These ideas need to be tested more fully.
- We concentrated on the pre-analytical stages because these seemed to offer the major re-profiling opportunities. There may be opportunities in other areas.
- There may be other efficiencies to be gained – especially from consolidation on a regional basis.
- Further consolidation of pathology services could also give benefits of greater efficiency and quality.

Benefits realisation

More detail?

The pilot sites' Benefits Realisation Plans are available. See the link on page 28 for details.

What did we do?

Each pilot site prepared a benefits realisation plan showing how it will use the results of the project.

Summary of benefits expected from workforce re-profiling

Better care for patients:

- Faster turnaround leading to faster diagnosis, treatment and, for acute settings, discharge
- Improved access to specialised tests
- Reinvestment of financial savings in direct patient care
- More time for senior laboratory staff for quality improvement, epidemiological studies, research, innovation, development of methods and service development.

Better opportunities for staff:

- Role development at CF levels 3 and 4
- Transferable skills which can be used across traditional laboratory boundaries
- Better use by regulated staff of their training and expertise, leading to more job satisfaction, and the opportunity to develop new roles within and outside the laboratory.

Better value for money:

Financial savings through:

- Skill mix changes and reduction of duplication at CF levels 7 and 8
- New models of non-core hours working
- Greater productivity and increased automation.

NB: These benefits are:

- Intrinsically linked with service redesign initiatives – for example, Lean initiatives promoted by the DH Pathology Modernisation Team through the National Pathology Service Improvement Programme
- Closely linked with those expected by the Independent Review of NHS Pathology Services.

“This project has given me an insight into the potential for introducing new roles and new ways of working in pathology departments.”

Jennifer Tye, Human Resources Advisor,
Hereford Hospitals



Further work needed

Possible future areas of work include:

- Further checking and testing of the work undertaken to date, including further work on supervision
- Looking in more detail at managerial and direction-setting roles using a different approach
- Looking in more detail at the potential for re-profiling, including:
 - some aspects of medical roles and roles at the interface with medical staff; this work will need to include greater consideration of clinical interpretation, authorisation, advice and liaison than was possible within this project
 - the interface of pathology services with Trusts' clinical services
 - administrative roles
 - staff involvement with Point of Care Testing.
- Further assessment of the potential impact of technology on the workforce
- Development of sample competence-based job descriptions, training programmes and competence assessments for the new roles we have identified
- Development of a modelling tool to allow other departments to use the lessons from the project
- Alignment of the work with proposals coming out of the Pathology Review
- Alignment of re-profiling with the changes needed to achieve the 18 week waiting times target
- More robust evaluation and measurements of whether the re-profiled workforce improves care for patients, opportunities for staff and value for money
- Challenging the assumptions on order communications and pre-analytics, including looking more closely at sites that have already implemented these
- Consideration of options for improving transport arrangements
- Further work on the potential for CF level 4 roles in specific clinical areas.

“I’ve already been using the early results from the project when considering options for staff recruitment. We have just replaced a Band 5 BMS in Haematology with a Band 2 MLA in Specimen Reception.”

John Sharman, Manager, Blood Sciences, Hereford Hospitals

“UHB have been working hard considering the workforce required to deliver services in our new hospital, due to open in 2010/11. This workforce re-profiling project has been an opportunity to share our learning and to learn from others.”

Stewart Messer, Pathology Services Manager, University Hospital Birmingham



Additional information available

Project-specific material

The following information is available on the Skills for Health website at www.skillsforhealth.org.uk (follow the links to Career Frameworks):

- External contributors to the project
- Analytical pathway maps
- Analysis of pathway steps undertaken by various staff
- Analysis of competences needed for managerial and direction-setting roles
- Project Report: Impact of Technology on Pathology Services
- Project Report: Examples of the Re-profiled Workforce
- Examples of rotas
- University Hospital Birmingham NHS Foundation Trust: Benefits Realisation Plan
- University Hospital of North Staffordshire NHS Trust: Benefits Realisation Plan
- Hereford Hospitals NHS Trust: Benefits Realisation Plan

Healthcare Science National Occupational Standards

This project used the Healthcare Science National Occupational Standards: www.skillsforhealth.org.uk/tools/view_framework.php?id=73

NB: these NOS were developed in 2004/05 under another sector skills council and are being adapted for the Skills for Health suite of competences. An 18 month project to do this started in 2007.

Useful websites

- DH Pathology Modernisation Programme: www.dh.gov.uk/en/policyandguidance/organisationpolicy/secondarycare/pathology
- Skills for Health: www.skillsforhealth.org.uk
- Clinical Pathology Accreditation (UK) Ltd: www.cpa-uk.co.uk
- NHS Workforce Review Team: www.healthcareworkforce.nhs.uk

