CANCER RESEARCH UK POLICY PAPER: THE DIAGNOSTIC WORKFORCE IN NORTHERN IRELAND

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SUMMARY

Cancer Research UK's aim is to see 3 in 4 patients survive cancer for 10 years or more by 2034. Diagnosing cancer at an early stage is critical to achieving this vision, giving people the best chance of survival. When diagnosed at the earliest stages (I and II), a patient's chance of surviving 10 years or more is 81% for the 8 most common cancer types. This falls to 26% when diagnosed at a later stage (III and IV).[1] Diagnosing cancer involves a dedicated array of staff working in Health and Social Care (HSC) Northern Ireland, who carry out and interpret investigative tests.

There are several new early diagnosis initiatives underway in other UK nations. If implemented in Northern Ireland, these could ensure more patients are diagnosed at an earlier stage. For example:

- Lowering the threshold for urgent GP referral[2], in line with NICE recommendations (NG12);
- Introducing the Faecal Immunochemical Test (FIT) into bowel screening, lowering the age threshold to 50, increasing uptake and setting timeframes for optimal sensitivity;
- Enabling GPs to use FIT for patients with low risk symptoms of bowel cancer;
- Having clear pathway and guidelines for those with vague but concerning symptoms.

Northern Ireland will only be able to realise the benefits of initiatives like these if it has adequate numbers of diagnostic staff[3] to cope with more patients coming through the service. But diagnostic staff in Northern Ireland are currently struggling to keep up with increasing workload pressures.[4]

The challenge: growing demand, staff shortages

Even without new early diagnosis initiatives, demand for cancer tests and treatments is rising in Northern Ireland. By 2034, 14,000 patients will be diagnosed with cancer in Northern Ireland every year, up from 9,256 in 2016, an increase of more than 50%.[i] This is driven by an ageing and growing population, which also drives further demand for diagnostic services as levels of co-morbidities rise and make diagnostic cases more complex.

Cancer waiting times evidence that growth in diagnostic capacity is not meeting patient need for diagnostic tests.[ii] The Ministerial target is for 95% of people urgently referred by a GP with suspected cancer to begin treatment within 62 days. In December 2018, only 60.5% of patients referred via this route began treatment within 62 days, a 6% decline from December 2017.[5] However, 93.5% of patients began treatment within 31 days *after* receiving a diagnosis. The cause of delay for patients is therefore highly likely to be at the point of diagnosis.

Illustrated in Figure 1, there are significant diagnostic staff[iii] shortages in the key diagnostic professions of clinical radiology, diagnostic radiography, endoscopy and cellular pathology, as the needs of patients continue to grow at a faster rate than staff numbers.

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[i] And the number of patients requiring a test will rise by more than this, since not everyone who receives a diagnostic test will be diagnosed with cancer

[ii] General diagnostic wait times also imply growth in demand is outstripping growth in staff numbers, kit and infrastructure: in December 2018, 10.7% (12,076) more patients were waiting for a diagnostic test compared to December 2017

[iii] While a range of professions are involved in diagnosing cancer, we have focussed on 4 key disciplines: endoscopy; clinical radiology; diagnostic radiography and cellular pathology.

	RADIOLOGY Staff who interpret scans like MRI/X-Ray	RADIOGRAPHY Staff who carry out scans like MRI/X-ray and in cases can interpret them	CELLULAR PATHOLOGY Staff who analyse tissue samples	ENDOSCOPY Staff trained to investigate symptoms by inserting an endoscope into the body
Numbers in post	**138HC** Demand for imaging rising approximately 10% per annum	**849 HC**	**46 WTE** Estimated zero increase in histopathologists from 2013	**42 WTE** Gastroenterelogists[iv] **20.25 WTE** Advanced practitioner nurses
Vacancy levels	**22%** Outsourcing/insourcing expenditure was £9.2m in 2018, higher than Wales' total spend	**8.2%**	**12.1%** Consultant histopathologists **110.83 WTE** Biomedical scientists	**9.5%** Consultant gastroenterologists **22.7%** Advanced practitioner nurses

Figure 1 - All data provided to CRUK by Trusts[6]

Current efforts to address staff shortages

There is a myriad of welcome efforts being undertaken by clinicians, Trusts and civil servants to improve diagnostic services for patients in Northern Ireland. This includes progress towards creating an Imaging Board; publication of the initial paper of a wider HSC workforce strategy; assessments of diagnostic radiography numbers and ways of working within the Allied Health Professional Review; a review of endoscopy services; and substantive work to modernise HSC Pathology Services[7]. However, further action is needed to plug workforce shortages.

We welcome the recent announcement that Northern Ireland will develop a new cancer strategy. This is a vital opportunity to address current shortages and develop a strong, national cancer workforce plan to ensure cancer services have the staff they need to provide world-class cancer care in the future.

This paper has been informed by an extensive data gathering exercise with HSC Trusts and engagement with clinical networks.[v] Data provided to Cancer Research UK by Trusts shows the extent of staff shortages and challenges facing diagnostic services in Northern Ireland.

RECOMMENDATIONS

The Department of Health (DoH), Health and Social Care Board (HSCB), with help from clinical networks and Trusts, can help to accelerate progress in survival for Northern Ireland by taking decisive action to:

1. Urgently address current shortages in diagnostic staff in the short-term

Staff shortages in key diagnostic professions are impeding the ability to deliver high quality cancer services to patients in Northern Ireland. The DoH, working with stakeholders, should consider short-term actions to alleviate staffing pressures[8], including:

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[iv] 82% of consultant gastroenterologists are over 50

[v] Thanks goes HSC Trusts, professional networks and Health Managers for providing the evidence base for this paper.

- **Analyse and rectify retention trends and attrition from training.** Retention of staff will be critical in helping the service meet the expectations of patients. A better understanding of why staff are leaving the service, as well as what could encourage them to remain in the service. While outside CRUK's remit, when consulting clinicians and clinical networks, the issue of pension taxation changes was frequently cited as a factor affecting consultant retention.
- **A formal clinical management network for endoscopy.** The Pathology Network and Modernising Radiology Clinical Network are hugely beneficial to their specialities, but endoscopy has no such network. An endoscopy network would help to bring a range of staff who perform and manage clinical endoscopy together to share best practice, coordinate regionally, horizon-scan for potential challenges and work collaboratively between Trusts.
- **Centrally driven skills-mix approaches.** Skills-mix approaches are the backbone of modern diagnostic services and there are excellent examples across Northern Ireland of this being embedded. Progress continues to be made in development of skill mix in radiography advanced practice. However, there needs to be a demand-driven central approach to upskilling nurses and AHPs, in particular to increase numbers of Advance Practice Nurses and Biomedical Scientists trained to dissect tissue and report on some samples in order to support the cancer pathway. Consideration should be given to accelerated endoscopy training for nurses.
- **More opportunities in Northern Ireland for advance practice training.** It is expensive and time-consuming to send people to other UK nations to train for the skills required in skills-mix approaches. While existing staff shortages make this difficult, recurrent funding should be made available to establish training programmes in Northern Ireland. This could increase the numbers of nurses and Allied Health Professionals training to practice at the top of their clinical licence.
- **Centrally driven international recruitment**. International recruitment of doctors has proven particularly challenging to date. UK Government's proposals to end freedom of movement will add an additional hurdle to recruiting from outside of the domestic pool. However, while international recruitment has had limited success so far in Northern Ireland, new, Northern Ireland wide approaches should be considered to fill short-term vacancies. For example, Health Education England is currently trialling an earn, learn, return scheme, aiming to recruit unprecedented numbers of international consultant radiologists from India by September 2019.

2. Develop a cancer workforce plan, prioritising the diagnostic workforce

An evidence-based cancer workforce plan should be developed as part of the Cancer Strategy. Within this, diagnostics should be prioritised, as wait times and vacancy data evidences shortages are most acute here.[vi] This plan should be informed by a formal audit of the current workforce[vii] to gauge the gap between diagnostic capacity and patient demand; and understand demand-based projections to determine the staff needed to meet the needs of patients in the future. This work should build on the evidence Cancer Research UK has set out in this paper.

Futureproofing the service and planning the diagnostic staff required to meet the needs of future patients will entail:

[vi] There is also work already being progressed on the treatments workforce via the Oncology Service Transformation Project

[vii] An audit of capital and infrastructure is needed alongside this, looking at the availability of kit to meet patient demand. In developing this paper, we heard stories of capital shortages inhibiting skills mix approaches. IT infrastructure can also enable more networked working in pathology and radiology and we welcome existing work to accelerate digital pathology and have a standard single digital imaging system for all trusts.

- **Consideration of new ways of training for endoscopy, imaging and cellular pathology.** New training models can help to embed skills-mix approaches, ensuring the workforce of tomorrow is modern, flexible and lean. Training radiologists and advanced practitioner radiographers together may be one of these ways. Alternative ways to train, for example with academy models for imaging staff seen in Wales and England, should be considered. This can help facilitate multi-professional models.
- **Modelling to gauge the diagnostic workforce required to meet future patient demand.** This should model the various staff groups needed to meet rising incidence and achieve various early diagnosis initiatives.
- **More specialist training places for histopathology, endoscopy and clinical radiology.** An audit of workforce numbers and demand should inform the number of new specialist training places that should be opened. Work has already begun to model future demand for clinical radiology to inform the numbers of trainees needed – and what new system of training will be required.
- **Further consideration of the impact Artificial Intelligence and widening access to genomics services will have on patient demand for staff, e.g. in imaging and pathology.** While recent studies[9] have suggested that AI will supplement, rather than replace, the work of clinicians in the next 10-15 years, more needs to be done to understand where AI can have the most impact.
- **Strategic financial planning for workforce.** Longer-term planning for the future will help to move away from current annual arrangements, which have led to firefighting short-term pressures, and towards a self-sufficient workforce able to meet the needs of cancer patients.

APPENDIX - KEY PROFESSIONS IN FOCUS

Imaging

Imaging services are vital in diagnosing cancer. Staff conduct and interpret[viii] scans for a range of cancer types.

	RADIOLOGY	DIAGNOSTIC RADIOGRAPHY[10]
Numbers in post	**138** HC	**849** HC
Vacancy levels	**22%**[11] This is significantly higher than anywhere else in the UK	**8.2%** Significant regional variation – one Trust has 15% vacancy rate (47 vacant posts)
Estimates of staff needed	**Demand for imaging rising approximately 10% per annum**[12] Mirroring existing work for clinical radiology, an audit of current activity should provide estimates for the number of diagnostic radiography staff needed today, and in the next 10-15 years. This should account for increased volume and complexity of imaging demand—in last 5 years, demand for MRI has doubled and increased by 56% for CT.	
Annual growth rate in staff numbers	**2% per annum growth (WTE) since 2014, equivalent to 3 WTE staff**	***Unknown***

[viii] And interventional radiologists help guide treatments and biopsies

CURRENT WORKSTREAMS

The Allied Health Professional Review is an opportunity to have a co-ordinated plan of action aimed at increasing the number, and scope, of reporting radiographers. The Strategic Framework for Imaging Services was welcome and the 4-step methodological approach[13] can be adapted for modelling and planning the diagnostic workforce required to meet patient need. Decision makers in the HSC should continue to implement the recommendations in the paper.

DEMAND

Demand for imaging services has been growing steadily across the UK for many decades. There has been an estimated increase in the overall diagnostic reporting workload of 30% in the last 5 years in the UK.[14] In the same period, there has been an increase of 56% in the volume of CT scans, and MRI demand has doubled in Northern Ireland.[15] If imaging services are to cope with a yearly increase of 10% in demand, we will require a substantial increase in consultant radiologists and diagnostic - both general and reporting - radiographers and other advanced practitioners.

STAFF SHORTAGES

Over 1 in 5 funded radiology consultant posts are currently vacant. This is over 10% higher than anywhere else in the UK and represents a massive challenge to the imaging service. In the short-run, Trusts have spent on overtime and outsourcing, Radiology department outsourcing/insourcing estimated expenditure was £7.7m in 2017, £3.7m higher than Scotland and £2.8 more than Wales.[16] However, this is not a sustainable solution. There has been annual expansion of the radiology training scheme since 2014/15 and the HSC is on track to achieve 54 places on the scheme by 2020, in line with the recommendation in the Review of Imaging. In the long-run, a new training model should be considered, which facilitates even more training places being opened to meet future demand.

There is also a significant vacancy rate in diagnostic radiography of 8.2%. This presents a real barrier to skills-mix approaches, as it is a challenge to backfill roles. In one trust there is a 15% vacancy rate, with 47 vacant posts. The Trust must work with the Society and College of Radiographers to further promote the discipline of diagnostic radiography and the service as an attractive place to work.

SKILLS MIX

Diagnostic radiographers and sonographers have the potential to safely report on a range of images. More opportunities for advanced practice should be identified, where evidence and regulation show it is safe to do so. The Strategic Framework will be a key tool to drive future workforce developments and the Allied Health Professional Review is a great opportunity to drive forward the skills-mix agenda, by making a strong business case for further advancing the role of advanced practitioners.

Endoscopy

Endoscopies can be performed by gastroenterologists, specialist nurses, surgeons and other trained physicians. Endoscopy services conduct scopes for several cancers, including: oesophageal and stomach (gastroscopy) and colorectal (colonoscopy and/or flexible sigmoidoscopy).

	Gastroenterologist	Advanced practitioner nurses
Numbers in post	**42** WTE **82.2% aged 50 or more** 26 WTE qualified to perform screening endoscopies	**20.25** WTE 9 in training
Vacancy levels	**9.5%**	**22.7%**
Estimates of staff needed	An audit of current demand should provide estimates for the number of endoscopy staff needed today.	
Annual growth rate in staff numbers	**6% per annum** *2013-2018*	**Unknown**

WORKSTREAMS

The increased training numbers of advanced practitioner nurses is welcome and can help to meet a portion of patient need. However, it is not clear how many more in training are required to meet demand in the short-run. A new review of endoscopy services would be welcome and could provide the bases for action to address shortages in the endoscopy workforce, for example more advanced practitioner nurses.

DEMAND

The number of endoscopy procedures performed in NI has increased by 9% in the last 5 years.[17] However, increasing activity does not entirely reflect the total level of increasing demand, as the activity[18] is limited by supply. Deteriorating waiting times performances suggests that demand has increased by more than 9% in the last 5 years – there just hasn't been the right number of staff to perform endoscopic procedures for the additional patients.

For example, the number of patients waiting more than the general 9-week standard at the end of March 2019 for their first scope has more than doubled since the end of March 2015.[19] Similarly, the number of planned patients waiting more than 13 weeks past their clinically indicated date is double the number waiting at end of year 2015.

STAFF SHORTAGES

Several indicators suggest that endoscopy is under significant pressure. Vacancy rates are high among advanced practitioner nurses (22.7%) and over 82.2% of gastroenterologists are aged 50 or over.

Urgent action is needed to address the challenges posed by an ageing consultant gastroenterology workforce. In the short-term, staff should be consulted about how job plans can be configured to keep staff nearing retirement, including consultants and advanced practitioner nurses, in the service. International recruitment drives could help to plug gaps in the workforce and an accelerated training scheme for nurses, associate specialist and staff grade should be established.

For the medium-long term, more specialist training places must be opened for gastroenterologists. If all trainees were to complete training and move into the service, this would cover only 41% of those expected to retire in the next 10 years. This is well below what is required. An expansion of current

numbers is necessary to meet rising patient need and early diagnosis initiatives aimed at accelerating progress in cancers that typically require an endoscopic test, like bowel cancer.

SKILLS MIX

The 9 advanced practitioner nurses in training can help to address gaps in demand. However, there is still a recognized shortage to meet endoscopy demand, which is increasing annually. A formal endoscopy network could help to embed skills-mix approaches across HSC, allowing the easy sharing of best-practice and identify opportunities to provide backfill for those leading on training.

Cellular Pathology

Cellular pathologists are scientists and doctors who look at changes in cells and tissues, using a microscope to make diagnoses and guide treatments. They account for roughly 45% of all pathologists.[20] Having a 'tissue diagnosis' made by a cellular pathologist is usually a prerequisite for starting treatment.

	Histopathologists and Cytopathologists[21]	Biomedical scientists (BMS)
Numbers in post	**46.2 WTE** 17% filled by locums	**110.83 WTE** 8.86 Advanced/Expert Practitioners or Consultants. 0 are reporting on samples, 4.4 involved in advanced tissue dissection
Vacancy levels	**12.1%**	**Unknown**
Estimates needed	**Demand estimated to be rising by at least 4.5% per annum[34]** Advancements in molecular diagnostics are likely to increase workload pressures An audit of current activity should provide estimates for the number of pathology staff needed today	
Annual growth rate in staff numbers	**0%** Estimated net decrease 2013-present of 3.63 WTE	**Unknown**

WORKSTREAMS

Exciting work is set to begin in Northern Ireland which could transform the pathology service. This includes replacing the current IT and Laboratory Information Management Systems (LIMS), potentially moving towards a single, integrated management structure, developing a pathology workforce plan, a regional quality and performance framework and embedding new technologies. These have the potential to improve pathology services in Northern Ireland.

DEMAND

Demand for cellular pathology services is increasing. Cancer Research UK analysis estimates that this demand is set to increase by at least 4.5% year on year.[34] A national audit of cellular pathology staff numbers will help to gauge the gap between patient demand and pathology capacity. This should also account for the impact that advancements in molecular diagnostics and the introduction of FIT would have on pathology services.

Thought should also be given to workload pressures that do not relate to demand. For example, clinicians in Northern Ireland expressed frustrations to CRUK about the annual accreditation process. This could be streamlined so that quality assurance is focussed on core competencies rather than administrative tasks.

STAFF SHORTAGES

There has been a marginal net decrease in consultant histopathology numbers since 2013. Vacancy rates are relatively high at 12.1% and 17% of consultant posts are filled by locums. As reflected in the Health and Social Care Workforce Strategy consultation, work needs to be done to make working for the service more attractive. New models of training must be considered too – in consultation with the modernizing pathology network, a lack of current capacity to train trainees was cited as an obstacle to increasing staff numbers.

There are not enough staff in the service to meet demand. Recent analysis by the Royal College of Pathologists found that 67% of histopathology work in Northern Ireland was outsourced to meet demand.[22]

SKILLS-MIX

Upskilling BMS can not only help to alleviate pressures on consultants, but also provide the highly skilled, flexible workforce pathology requires, given tech change is so rapid.

Skills-mix approaches are embedded to varying degrees. Biomedical Scientists are dissecting advanced tissues and there are almost 9 Advanced/Expert Practitioners or Consultants. This is positive and should be expanded, helping Consultant Pathologists work at the top of their clinical licences and providing clear career progression for Biomedical Scientists.

However, there are currently no Biomedical Scientists training to report on some histopathology samples. The scope for Biomedical Scientists to undertake this training should be further explored. There should be opportunities for Biomedical Scientists to report on and dissect tissue. To enable this, HSC should work with the NI Pathology Network and IBMS to determine whether trainees should continue their existing roles while in training.

References

[1]Based on data calculated in England. Public Health England demonstrated that, for the 8 most common cancers combined, when diagnosed at an early stage (I and II) survival was 81%, falling to 26% when diagnosed at later stages (III and IV)

[2] Other pathways, for example within endoscopy, need to have equity in access across all trusts if national forward planning is to be undertaken and resources optimised

[3] This paper focusses on cellular pathology, endoscopy, clinical radiology and diagnostic radiography. We have chosen to focus on these groups as they are involved with a broad range of cancers and there is robust data available to analyse the challenges faced by these professions. We acknowledge the work done by other professions in the diagnostic pathway, such as haematologists and clinical scientists, where shortages must also be considered in any holistic diagnostic workforce planning.

[4] As evidenced by increasing expenditure on locum staff, vacancy rates and waiting times performances. Northern Ireland Audit Office's General Report on the Health and Social Care Sector (2018) showed waiting times standards are being routinely missed and concluded that services will struggle to meet performance targets in the future, given increasing demand

[5] https://www.health-ni.gov.uk/sites/default/files/publications/health/hs-niwts-cancer-waiting-times-q2-18-19.pdf

[6] We will need to confirm with trusts if they are willing to provide individual level data to the DOH

[7] http://www.hscboard.hscni.net/download/Consultations/modernising_hsc_pathology_services/Proposals-for-Change-Modernising-HSC-Pathology-Services.pdf
[8] With additional staff there will be infrastructure and kit requirements. This is beyond the scope of this paper, but must be considered with any policy measure seeking to increase numbers of staff in the service
[9] Dr Eric Topol, Health Education England (2019): The Topol Review
[10] Data provided by Trusts
[11] Data provided by Trusts
[12] Based on increased volume in CT and MRI scans in the UK, 2012-2017. Cited in Royal College of Radiologists, 2017 workforce census https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfcr185_cr_census_2017.pdf
[13] https://www.health-ni.gov.uk/sites/default/files/publications/health/IR-framework.pdf
[14] Ibid.
[15] Data provided to CRUK by the imaging network, February 2019
[16] The Royal College of Radiologists 2017 workforce census
[17] Based on data provided by Trusts
[18] While outside the remit of this paper, there is a need to consider consistency and equity of access across the region, for example straight to scope pathways
[19] Ibid.
[20] Testing times to come? An evaluation of pathology capacity across the UK, Cancer Research UK 2016 https://www.cancerresearchuk.org/sites/default/files/testing_times_to_come_nov_16_cruk.pdf
[21] All data provided to Cancer Research UK by Pathology Departments. 100% of departments returned information
[22] Based on background data provided by the Royal College of Pathologists to their report: Histopathology workforce census Meeting Pathology Demand (2018)