EXECUTIVE SUMMARY

Early diagnosis of cancer is critical to a patient’s chance of survival – for the 8 most common types of cancer combined, survival is more than 3 times higher for those diagnosed at an early stage compared to a late stage. Diagnosing cancer involves a dedicated array of specialist NHS staff to carry out and interpret investigative tests. Like other nations in the UK, these specialist staff in Scotland are currently stretched and struggling to keep up with the increasing volume of these tests. Yet, patient demand for diagnostic tests is set to increase, underpinned by an ageing and growing population and a collective drive towards early diagnosis. By 2035, more than 40,000 people in Scotland are expected to be diagnosed with cancer every year, an increase of over 8,000 from 2015 levels. Scotland needs more staff to carry out and interpret the growing number of diagnostic tests, both now and in the future.

The impacts of staff shortages are clear. Staff shortages may lead to delays in diagnoses. These delays are not only an emotionally difficult time for patients and their families, but in some circumstances could also limit the treatment options available to the patient. And crucially, without enough workforce, we won’t be able to fully realise the benefits of a collective drive towards early diagnosis, which would accelerate progress in cancer survival.

There are short and long-term challenges to cellular pathology, diagnostic radiography, clinical radiology and endoscopy in Scotland:

- **Shortages of staff**: more than 1 in 10 medical diagnostic posts are vacant.
- **Increase in workload**: a 10% rise in demand for imaging each year.
- **Retirement**: almost 1 in 5 radiologists are expected to retire in the next 5 years.
- **Growing backlog of diagnostic tests**: performance against the cancer waiting times standard has steadily deteriorated since 2013 and the number of patients waiting longer than 6 weeks for a key diagnostic test has almost quadrupled since June 2016.
- **Staff retention**: there is currently a net loss of 6% of radiologists who train in Scotland and then leave to be employed in other UK nations.

Scottish Government, NHS Education Scotland, the Scottish Pathology Network, the Radiology Transformation Programme, local Health Boards and other regional and national bodies are trying to address these challenges head on. Welcome initiatives include the review of the endoscopy workforce, international recruitment drives, digital pathology pilots and some workforce modelling.

These initiatives and workstreams need to be built upon so that struggling services keep up with rising demand. Primarily, we need an audit of the diagnostic workforce to accurately gauge the gap between patient demand and service capacity in endoscopy, cellular pathology and imaging. To account for growing patient demand, there should also be projections of the number, and type, of diagnostic staff that will be required in the next 10-15 years.

Skills mix approaches should be widely adopted to use existing staff more effectively. But ultimately, to meet patient demand today and in the future and accelerate progress in cancer survival, there is a need to train and employ more diagnostic staff.

This paper is informed by consultation of senior diagnostic clinicians and the latest data from Royal Colleges and the Information Services Division. The paper sets out Cancer Research UK’s position on the diagnostic workforce in Scotland. It sets out recommendations below, with an in-depth analysis of key professional groups followed by further background in the Appendix.
RECOMMENDATIONS

To address the immediate challenge of shortages in specific workforce groups, the Scottish Government, NHS Education Scotland and Health Boards should:

- **Clinical radiology**: fund more training places for clinical radiology. Local Health Boards should share learnings on international recruitment and work with the Royal College of Radiologists to improve retention.
- **Diagnostic radiography**: employ more general diagnostic radiographers and train more reporting radiographers to conduct safe reporting on images across Scotland.
- **Cellular pathology**: increase training places for histopathology to fill existing vacancies. NHS bodies should further work with the Scottish Pathology Network (SPAN) to explore national programmes for digital pathology and opportunities to upskill more biomedical scientists in tissue dissection and some reporting.
- **Endoscopy**: there needs to be immediate action to address acute shortages of staff. Training and employing more endoscopists and a greater use of skills mix is essential. A review of the endoscopy workforce should consider the impact of Faecal Immunochemical Test (FIT) in bowel screening on capacity and also the staff required for even more sensitive thresholds. Accelerated non-medical training should be introduced and extended to colonoscopies.

In the long-term, the Scottish Government, NHS Education Scotland and Local Health Boards should take a strategic ‘Once for Scotland’ approach to workforce planning:

1. **The Scottish Government should conduct an audit of the diagnostic workforce.** This audit would gauge the gap between patient demand and service capacity in endoscopy, diagnostic radiography, clinical radiology and cellular pathology.
2. **NHS Education Scotland should project the number and type of diagnostic staff that will be required in the next 10-15 years to meet patient demand.**
3. Based on the audit and future projections, **local and national workforce plans should work towards training and employing staff to meet patient demand.** There is also a need to further join up existing workstreams.

We would also like to see the following actions taken, broken down by organisation:

**Scottish Government**

- **Provide appropriate resource to Local Health Boards.** Health Boards must have adequate resource to employ the staff they need to meet patient demand, deliver high-quality care and guarantee patient safety.
- **Provide resource so that NHS Education Scotland can open more training places** for key diagnostic professions.
- **Join up existing workstreams.** With a number of different streams of activity relating to the cancer workforce, we would like clear leadership to join up national activity in diagnostic services.
- **Support Health Board collaboration.** More collaboration and support is needed across Health Boards to share capacity and skills. We want to see the Scottish Government using its influence so that best practice examples are implemented across the country.
NHS Education Scotland (NES)

- **Develop accelerated training programmes.** Where possible, accelerated training programmes should be put in place to address the urgent need for more workforce in the short-run. Endoscopy services could benefit from an accelerated training programme for staff with a non-medical background. Biomedical scientists could also benefit from accelerated training schemes for reporting on some samples.

- **Increase training places.** Based on future demand, NHS Education Scotland should increase training places for cellular pathologists, endoscopists and diagnostic radiographers.

- **Address rural shortages.** NES should work with NHS Scotland and continue to explore ways of incentivising trainees to take permanent posts in rural Boards. In this regard, the Scottish Graduate Entry Medicine Programme (ScotGEM) is a welcome programme for GPs, and similar schemes for students specialising in diagnostics could be considered.

NHS Scotland

- **Consider national expansion of digital pathology.** Consider evidence from the Scottish Pathology Network for the case (including key obstacles) for a national roll-out of digital pathology. Digital pathology has the potential to free up pathologists’ time, reduce fees on agency staff, help with backlog and allow flexible working.

- **Mitigate against retirement.** Further plans should be developed to reduce early retirement among consultants and senior Allied Health Professionals. Early retirement is a dynamic issue and decision-makers should work with professional bodies to develop plans to address this.

- **Work with professional bodies and Local Health Boards to encourage skills mix approaches.**

Local Health Boards

- **Cross-board jobs.** Boards should collaborate so that there are more attractive job plans across boundaries. This could be as part of a national approach to workforce capacity planning.

- **Further efforts to recruit internationally.** Continue to attempt international recruitment, encouraging diagnostic staff from across the world to fill vacancies and meet rising demand.

- **Adopt skills mix approaches.** Training should be offered to staff so they can work at the top of their clinical competencies. Utilising existing staff more effectively can help services keep up with demand. For example, increased radiographer reporting may alleviate some reporting pressures in imaging services.

- **Feedback accurately on the staff required.** Health Boards should report on the staff they need to meet patient demand, not on perceived affordability or the staff they think are available.
DIAGNOSTIC SERVICES UNDER PRESSURE: IN-DEPTH ANALYSIS OF THE DIAGNOSTIC WORKFORCE IN SCOTLAND

IMAGING – DIAGNOSTIC RADIOGRAPHY AND CLINICAL RADIOLOGY

Imaging services are vital in diagnosing cancer. Staff conduct and interpret scans for a range of cancer types, including: prostate (emerging use of MRI); brain (MRI); breast (mammography and/or ultrasound) and lung (x-ray and/or ultrasound).

<table>
<thead>
<tr>
<th></th>
<th>RADIOLOGY¹¹</th>
<th>RADIOGRAPHY¹²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers in post</td>
<td>335 (Consultants, WTE¹³ 312)</td>
<td>2,323 (2,018 WTE)</td>
</tr>
<tr>
<td>Vacancy levels</td>
<td>13.4%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Estimates needed</td>
<td>Demand for imaging rising approximately 10% per annum¹⁴</td>
<td></td>
</tr>
<tr>
<td>Growth rate in numbers per year</td>
<td>Decrease of 1.3% in consultants since 2012¹⁵</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

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.¹⁶ In the same period, there has been an increase of 49% in the volume of CT scans and 45% in the volume of MRI scans.¹⁷ The Royal College of Radiology has estimated that demand for imaging in Scotland is increasing by 10% every year.¹⁸ If imaging services are to cope with a yearly increase of 10% in demand, we will require an increase in consultant radiologists and diagnostic - both general and reporting - radiographers.

STAFF SHORTAGES
Despite this, the consultant radiology workforce has actually fallen by 1.2% in the same period. Radiology departments are relying on goodwill, outsourcing and overtime. In 2017, Scotland’s radiology departments spent an estimated £4million on outsourcing, overtime and insourcing.¹⁹

The lack of consultant radiologists is reflected in the difficulty Local Health Boards are having with recruitment. More than 1 in 10 consultant posts are currently unfilled, with 87.5% of those unfilled for 6 months or more. There aren’t enough consultants to fill existing vacancies, let alone meet future demand.

SKILLS MIX
While there has been a welcome increase in the role of reporting radiographers, there should be a national drive so that Health Boards across Scotland are utilising this skills mix. However, this will require training and some backfilling.
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).

<table>
<thead>
<tr>
<th>Endoscopy</th>
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</thead>
<tbody>
<tr>
<td>Numbers in post</td>
</tr>
<tr>
<td>Vacancy levels</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Estimates needed</td>
</tr>
</tbody>
</table>

DEMAND

Demand on endoscopy services continues to grow. The number of people waiting for a key endoscopy test rose 54.8% from 2016 to 2018.\(^{22}\)

The introduction of the more sensitive FIT in bowel screening is a welcome drive to diagnosing more cancers early. The FIT in bowel screening doubles the sensitivity of the test it replaces, the FoBT, and therefore will increase the number of people being referred for follow up pathology and endoscopy tests. The UK National Screening Committee noted that there has been an increase in uptake of this test of 10%.\(^{23}\) While the data is not yet available for the impact of FIT on demand for endoscopy, Scottish Government’s review of the endoscopy workforce should account for this. Future projections of patient demand should also consider the workforce required if the most effective (and more sensitive) threshold were to be adopted.

STAFF SHORTAGES

Endoscopy services are currently struggling to keep up with patient demand. The number of people waiting for longer than 6 weeks for a key endoscopy test has risen fivefold in two years— from 2,536 in June 2016, to 12,701 June 2018.\(^{24}\) Only 56.6% of people are now waiting less than the 6 week standard.\(^{25}\)

There is also a lack of consultant endoscopists available to meet patient demand. Currently, 12 of the 15 vacant consultant gastroenterologists posts have been unfilled for 6 or more months.\(^{26}\)

GP\'s in Scotland disproportionally identified secondary/tertiary care as causing avoidable delays for patients receiving diagnoses for colorectal cancers.\(^{27}\) While in general, ‘Test request/performance’ was the most attributed factor affecting delays in cancer diagnoses (25.4% cases), it was approximately 34% for colorectal cancer.\(^{28}\) GPs should be able to refer patients for endoscopies without having to second-guess secondary care\’s capacity to provide swift diagnostic results.

SKILLS MIX

Scottish Government’s programme to train more nurse endoscopists every year is welcome, though reports that only 1 of the most recent cohort completed their training is concerning.\(^{29}\) There is therefore scope for a wider skills-mix approach and Government should consider an accelerated non-medical endoscopy programme.
CELLULAR PATHOLOGY

Cellular pathologists (histopathologists and cytopathologists) 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. Having a ‘tissue diagnosis’ made by a cellular pathologist is usually a prerequisite for starting treatment, and any delays in diagnosis can potentially affect the patient’s outcome.

<table>
<thead>
<tr>
<th>Cellular Pathology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers in post</td>
</tr>
<tr>
<td>111 (WTE histopathology)</td>
</tr>
<tr>
<td>5.37 (WTE) staff practicing cervical cytology</td>
</tr>
<tr>
<td>Vacancy levels</td>
</tr>
<tr>
<td>Unknown, but vacancy rates for all pathologists: 10.44%</td>
</tr>
<tr>
<td>Estimates needed</td>
</tr>
<tr>
<td>Unknown. Need to account for FIT in bowel screening</td>
</tr>
</tbody>
</table>

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. A national audit of the cellular pathology workforce will help to gauge the gap between patient demand and pathology capacity. This should also account for the impact that the introduction of FIT has had on pathology services.

STAFF SHORTAGES

In histopathology, there is a 10.5% vacancy rate in consultants. 9 of the 13 vacant posts in June 2018 had been unfilled for 6 or more months.

An audit would look at the supply of particular cellular pathology groups such as cervical cytologists, where there are currently just over 5 (WTE) staff practicing cervical cytology. The supply of these staff in the context of demand from cervical screening should be considered in workforce planning.

SKILLS-MIX

A greater use of skills mix in pathology could also help to alleviate some pressures on the cellular pathology workforce. There should be widespread opportunities for biomedical scientists to upskill and train in tissue dissection and some histopathology reporting.

For further information or to discuss this statement please contact ben.moore@cancer.org.uk
APPENDIX

Contents:

1. Background
   - Early diagnosis
   - Current initiatives to improve diagnostic services
2. Diagnostic services under pressure: patient demand
   - Cancer waiting times
   - General diagnostic waiting times
   - Patient demand
3. Once for Scotland: Key recommendations in focus
4. Key professions data

1. BACKGROUND

Early diagnosis is key to improving survival

Cancer that’s diagnosed at an early stage is more likely to be treated successfully. For the 8 most common cancer types, when diagnosed at the earliest stages (I and II), you have an 81% chance of surviving cancer. This falls to 26% when diagnosed at later stages (III and IV). Later diagnoses may limit the treatment options available to patients. If Scotland diagnosed more people at an earlier stage it would make the best use of resources and therefore be realistic medicine.

International comparisons suggest that cancer survival in the UK lags behind other comparable countries. A potential driver of this survival gap is because the UK as a whole is comparatively poorer when it comes to diagnosing cancer early. Achieving earlier diagnosis is complex, with several ‘intervals of delay’ potentially affecting early diagnosis. Efforts to improve early diagnosis aim to shorten or eliminate these delays through a variety of interventions.

![Intervals of delay diagram]

Figure 1: Intervals of delay, Adapted from Olesen, F., et al. (2009). “Delay in diagnosis: the experience in Denmark.” Br J Cancer

For example, ensuring people take part in relevant screening programmes can contribute to the proportion of bowel, breast and cervical cancers diagnosed early. Symptom awareness campaigns, such as those run by Detect Cancer Early, can curtail the patient interval by encouraging individuals to visit their GP.
Current initiatives to improve diagnostic services

Underpinning the ability to detect cancer early is sufficient workforce. There is a myriad of Government initiatives to improve diagnostic services at a local and national level. These activities need to be further joined up.

In 2016 the Scottish Government published a plan for tackling cancer—Beating Cancer: Ambition and Action. This committed to making early detection of cancer the norm and access to swift diagnosis and results for clinicians and individuals. Government has started to deliver on the actionable steps from this plan, which we welcome. Parts 1, 2 and 3 of the health and social care plan set out some of Government’s general vision for Scotland’s health and social care services, including the workforce.

In May, a Staffing Bill was proposed, which would make it the legal duty of Local Health Boards to ensure the safety and wellbeing of patients. In order for Local Health Boards to fulfil this statutory duty, Cancer Research UK believe they will need sufficient workforce. Decisions made at a national level will affect Local Health Boards’ ability to ensure appropriate levels of staffing. Scottish Government must therefore support Local Health Boards so they have the workforce required to ensure the safety and wellbeing of patients.

In June 2018, Scottish Government announced that ‘urgent action’ would be needed to reduce the number of people across Scotland waiting for diagnostic testing. We welcome the announcement that there will be an Endoscopy Action Plan and the commitment of £14million to cut the number of people waiting for endoscopies by 20% by September 2018. However, while this should help to alleviate pressures in the short-term, this action needs to be supplemented by a comprehensive long-term plan that accounts for increasing patient demand.

The Radiology Transformation Programme have been exploring innovative ways to overcome workforce pressures, for example considering an audit of breast radiology and radiography. The push for Health Boards to recruit consultant radiologists internationally is also a welcome initiative. Nine Health Boards have attempted to fill 32 vacancies through targeted advertising across the globe. This could increase consultants by 10%. The appointment of two independent diagnostic leads is also welcome.

2. SERVICES UNDER PRESSURE: PATIENT DEMAND

Pressures on diagnostic services are growing, with boards relying on staff goodwill, overtime and outsourcing to try and tackle staff shortages. Demand for tests and investigations is growing already and this will increase over time, increasing the workload of diagnostic staff.

Breached cancer waiting times

National performance against the target for 95% of newly diagnosed cancer patients to begin treatment within 62 days of an urgent GP referral for suspected cancer has steadily deteriorated since 2013. In the quarter ending June 2018, 84.6% of patients were waiting for less than 62 days. However, ISD data shows that 95% of patients are beginning treatment within 31 days of this referral. This implies breached cancer waiting times targets are the result of a bottleneck of patients waiting for their diagnostic test results and is further evidence that diagnostic services are under pressure.

Deteriorating diagnostic waiting times

Waiting times for general diagnostic tests are also increasing. The Scottish waiting time standard for diagnostic tests states that patients should be waiting no longer than 6 weeks for one of eight key diagnostic tests. Currently, 78.4% of patients are waiting within the standard.

In June 2018, there were a total of 87,482 patients waiting for one of 8 key diagnostic tests. The number of patients waiting longer than 6 weeks for a key diagnostic test has almost quadrupled since
There are now 18,644 patients (over 1 in 5) waiting longer than 6 weeks for a key diagnostic test. There is significant regional variation in diagnostic capacity, as reflected by the general diagnostic waiting times. In some boards, almost all patients had access to diagnostic tests within 6 weeks, while in others almost 1 in 3 were waiting longer than 6 weeks. Endoscopy services are under particular pressure—only 55% of Health Boards are meeting the 6 week waiting times target for endoscopy.

**Demand for tests is increasing**

Every year an increasing number of people are referred for tests and investigations. In June 2018, the number of people waiting for a key diagnostic test had increased by 30% since June 2016. And patient demand is set to grow even further. There are a range of factors affecting an increased demand for cancer tests and staff time, including:

- Increasing incidence of cancer: around 43,000 people in Scotland are projected to be diagnosed with cancer in 2035, up from 31,900 in 2015.
- More complex diagnoses associated with an ageing population.
- Welcome efforts to improve earlier diagnosis of cancer: national cancer plans and various workstreams and initiatives have placed greater emphasis on early diagnosis.

### 3. RECOMMENDATIONS IN FOCUS

Workforce planning should look at the workforce required to meet patient demand. We believe a national body would be best placed to oversee and drive the approach described below.

In general, we can tackle workforce pressures in three ways:

- Train and recruit more staff
- Use skills mix approaches
- Retain current staff

**An audit of the current national workforce**

The national diagnostic workforce should be audited in order to accurately gauge the gap between supply and patient demand for diagnostic services. A new approach to gauging patient demand should be adopted and employed in future workforce planning.

**Workforce planning based on patient demand**

Building on audit of the current workforce, NES should project the cancer workforce required in the next 10-15 years to meet changing patient demand.

Workforce modelling of diagnostic staff required should include:

- **Best-practice models** of care, based on extensive consultation with staff, to see how much time they need with patients to deliver high-quality healthcare.
- **Factors affecting patient demand** such as changing referral standards and factors associated with national initiatives to improve early diagnosis.
- **Projections of changing incidence of specific cancer types** and the staff involved in diagnosing these.
- **Projections for the supply of staff**, factoring retirement rates, international recruitment and training pipelines.
- **Consideration of the impact of new technologies** on both staff workload and patient demand. This should be proactive and consider the conclusions of the HEE-facilitated Topol review.
- **A move away from filling existing vacancy rates**. This approach is likely to be problematic for several reasons. Vacancy rates are not a good proxy for patient demand. For example, Local Health Boards may require more staff to meet patient demand, but choose not to bid for new
positions because they have been unable to fill long-standing vacancies. Additionally, workforce planning that looks to fill existing vacancy rates fails to account for changing demand over time.

Training and employing more staff
Following an audit of the current workforce and modelling to estimate the current and future gap in the provision of diagnostic services, Local Health Boards, Scottish Government and NES should set out detailed plans to train and employ more diagnostic staff. This should include the joining up of the range of existing workstreams.

Consultants can take more than 15 years to train. Plans must therefore set out how current shortages will be addressed, which looks beyond increased training places. Long-term ambitions for improving early diagnosis will depend on the appropriate levels of workforce.

Improving existing services: skills mix
Whilst we acknowledge that productivity of some diagnostic services could be improved by increasing efficiency, these productivity gains are unlikely to release the capacity that’s needed. Productivity improvements have been explored in the past and there are ongoing improvements through changes to pathways and processes, as explored through initiatives such as the review of cancer waiting times and the Detect Cancer Early programme.

Different ways should be explored to manage the existing workforce, such as safe adoption of skills mix approaches. Skills mix approaches enable staff to work at the top of their clinical competency. In histopathology, biomedical scientists can train to dissect even report on some samples. However, in the short-run this will require Allied Health Professionals to spend time training, and consultants to give training. Those being upskilled will also have to have part of their role backfilled. Skills-mix approaches therefore will only be enabled by appropriate funding from Government.

It is possible that use of technology, such as digitisation or networking could improve diagnostic services. Demand for some diagnostic tests could be reduced through more targeted approaches, so that tests are given to the most appropriate people at the right time: these potential ‘triage’ tests, such as using FIT for high risk symptomatic patients, need research to explore and ascertain safe and effective usage. Cancer Research UK is contributing to improving efficiency through several initiatives, including providing resources and tools for health professionals and service managers. However, even with these efforts, achieving world-class cancer outcomes will require an increase in diagnostic capacity.

Supply issues
Government must consider how it will ensure a consistent supply of staff across Scotland. While NES should open more training places and Local Health Boards should be resourced to employ more staff based on the audit and future modelling, there are still distinct challenges with the supply of diagnostic staff. These challenges need innovative solutions and include:

- **A lack of staff in rural Scotland.** There is significant regional variation in the number of diagnostic staff. The recent ScotGEM scheme aims to incentivise postgraduate medical students to take up permanent GP roles in rural Scotland. The diagnostic workforce could benefit from piloting a similar scheme.

- **Trainees leaving Scotland to take up permanent posts elsewhere.** Medical education in Scotland is heavily subsidised, so it is both a financial and social cost when doctors leave Scotland to take up permanent clinical roles abroad.

4.KEY PROFESSIONS DATA
Unless referenced otherwise, data below is taken from the ISD’s Medical and Dental and Allied Health Professional Dashboards, June 2018.
The following framework (developed by the Health Foundation) can be used to consider the issues for each professional group:

- **Workforce planning**: numbers in post, vacancy levels
- **Education and training**: how many are being trained, the training duration and nature of training
- **Professional regulation**
- **Pay, terms and conditions**: for example, pay caps and contracts
- **Motivation, engagement and leadership**: e.g. NHS as an attractive place to work; Brexit making it uncertain to what extent we will be able to attract, recruit and retain staff from outside the UK in to the NHS in the future.
- **Innovation and changes**: skills mix approaches, technology such as artificial intelligence, networking, telereporting.

We use this framework to explore components of the diagnostic workforce below.

### RADIOLOGY

<table>
<thead>
<tr>
<th>1. Workforce planning:</th>
<th>335 (Consultants, WTE 312)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers in post</td>
<td>20% of consultants are international, compared to the UK average of 31%.&lt;sup&gt;44&lt;/sup&gt;</td>
</tr>
<tr>
<td>Vacancy levels</td>
<td>13.4% for consultants. No other medical or dental professional has a higher number of vacancies in Scotland.</td>
</tr>
<tr>
<td>Estimates needed</td>
<td>Estimates need to account for increasing patient demand. The RCR estimate that demand for imaging is rising 10% year on year.</td>
</tr>
<tr>
<td>Growth rate in numbers per year (previous trend)</td>
<td>Despite growing patient demand, consultant numbers (WTE) <strong>have fallen by 1.3%</strong> since 2012.</td>
</tr>
</tbody>
</table>

| 2. Education and training: | Costs of training and employing more Radiologists should be considered in the context of the cost of outsourcing. In 2016/7, £4 million was spent by radiology departments on outsourcing and insourcing.<sup>45</sup> |
|---------------------------|The training pathway takes at least 5 years specialisation, after medical school and foundation years. |

| 3. Professional regulation | NES should continue work to upskill radiographers to conduct safe reporting. |

| 4. Pay, terms and conditions: | Consultant contracts could be made flexible to minimise people retiring early. |
5. **Motivation, engagement and leadership:**
   NHS Scotland needs to be seen as an attractive place to work. NHS Scotland and NHS Education should continue to explore communication avenues that encourage people to train and work in Scotland.

6. **Innovation and changes:**
   - Streamline, with a view to rolling out nationally, existing IT projects aiming to enable cross boundary image sharing and reporting.
   - Need comprehensive embracing of skills mix approaches so there is widespread and safe use of radiographer reporting.
   - Investigate Artificial Intelligence, networked solutions, telereporting should all be explored.

### DIAGNOSTIC RADIOGRAPHY

<table>
<thead>
<tr>
<th>1. <strong>Workforce planning:</strong></th>
<th>2,323 (2,018 WTE).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers in post</td>
<td></td>
</tr>
<tr>
<td>Vacancy levels</td>
<td>4.8%</td>
</tr>
<tr>
<td>Estimates needed</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. <strong>Education and training:</strong></th>
<th>Training for diagnostic radiographers can take 6 years (including 4 years undergraduate degree and 2 years post-graduate). For the rest of the UK, undergraduate training is 3 years. Potential to increase the amount of radiographers training to report.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. <strong>Professional regulation</strong></td>
<td>Ensure there is a clear path to becoming a reporting radiographer.</td>
</tr>
<tr>
<td>4. <strong>Pay, terms and conditions:</strong></td>
<td>Work with the Royal Colleges to see if innovative ways to incentivise radiographers to pursue training</td>
</tr>
<tr>
<td>5. <strong>Motivation, engagement and leadership:</strong></td>
<td>NHS Scotland needs to be seen as an attractive place to work. NHS Scotland and NHS Education should continue to explore communication avenues that encourage people to train and work in Scotland.</td>
</tr>
</tbody>
</table>
### 6. Innovation and changes:

Need comprehensive embracing of skills mix approaches so there is widespread and safe use of radiographer reporting. Investigate Artificial Intelligence, networked solutions, telereporting.

### ENDOSCOPISTS

#### 7. Workforce planning:

<table>
<thead>
<tr>
<th>Numbers in post</th>
<th>508[^1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endoscopies can be performed by: gastroenterologists, surgeons, specialist nurses and other doctors.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vacancy levels</th>
<th>Unknown.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant Gastroenterologists: 11.9% vacancy rate.</td>
<td></td>
</tr>
<tr>
<td>Of 15 vacant positions for Consultant Gastroenterologists, 12 have been unfilled for 6 or more months (June 2018).</td>
<td></td>
</tr>
</tbody>
</table>

| Estimates needed | This will largely depend on analysis of the impact of FIT for screening and symptomatic and how many non-medical endoscopists are retained and trained in colonoscopy. |

#### 8. Education and training:

Scottish Government committed to increasing the number of nurse endoscopists by 4 a year. However, last year only 1 additional nurse completed training.[^2] There should be a concerted effort to boost recruitment to this training scheme and reduce attrition.

#### 9. Professional regulation

#### 10. Pay, terms and conditions:

Pay increases may contribute to recruitment and retention. Exploring ‘bonding’ and grant schemes may also help with regional recruitment and retention.

#### 11. Motivation, engagement and leadership:

NHS Scotland needs to be seen as an attractive place to work. NHS Scotland and NHS Education should continue to explore communication avenues that encourage people to train and work in Scotland.

[^1]: Endoscopies can be performed by: gastroenterologists, surgeons, specialist nurses and other doctors.
[^2]: There should be a concerted effort to boost recruitment to this training scheme and reduce attrition.
12. Innovation and changes:

skills mix approaches, technology such as artificial intelligence, networking, telereporting

Making full use of skills-mix approaches by allowing non-medical endoscopists to undertake endoscopies where appropriate. Potential for FIT in symptomatic to be used to reduce demand – subject to evidence.

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### CELLULAR (HISTO and CYTO) PATHOLOGISTS

<table>
<thead>
<tr>
<th>1. Workforce planning: numbers in post</th>
<th>111 consultants (WTE histopathology). 21.7% consultants aged 55 or over. 2.87 (WTE) cytologists and 2.5 (WTE) biomedical scientists/advanced practitioners practicing cervical cytology. 48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacancy levels</td>
<td>Histopathology: 10.5%. 9 of 13 posts vacant for 6 or more months (June 2018)</td>
</tr>
<tr>
<td>Estimates needed</td>
<td>Unknown, but need to account for 4.5% rising demand and the introduction of FIT in bowel screening</td>
</tr>
<tr>
<td>2. Education and training:</td>
<td>53 (WTE) currently in histopathology training. The training pathway takes at least 5 years specialisation, after medical school and foundation years.</td>
</tr>
<tr>
<td>3. Professional regulation</td>
<td>Remove barriers to international recruitment where they exist</td>
</tr>
<tr>
<td>4. Pay, terms and conditions:</td>
<td>Consultant contracts and awards could be made flexible to minimise people retiring early – as there is a significant problem with age profile in the histopathology workforce.</td>
</tr>
<tr>
<td>5. Motivation, engagement and leadership:</td>
<td>NHS Scotland needs to be seen as an attractive place to work. NHS Scotland and NHS Education Scotland should continue to explore communication avenues that encourage people to train and work in Scotland.</td>
</tr>
<tr>
<td>6. Innovation and changes:</td>
<td></td>
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<tr>
<td>---------------------------</td>
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</tr>
<tr>
<td>skills mix approaches, technology such as artificial intelligence, networking, telereporting.</td>
<td></td>
</tr>
</tbody>
</table>

Making full use of skills-mix approaches through:
- Ensuring biomedical scientists are being utilised to cut up specimens where possible and even trained to report on some samples.
- Clinical scientist input should be recognised in their job plans with backfill provided for existing duties.
- Ensuring widespread use of biomedical scientist reporting following their completion of the Biomedical Scientist Reporting Programme. SPAN to continue drive to have network of pathologists who are trained to report digitally.49
References

1 In the absence of available survival by staging data for Scotland, this figure is based on data calculated by Public Health England. PHE 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)


3 Based on consultancy vacancy rates for Gastroenterologists, Histopathologists and Clinical Radiologists. Data taken from the Information Services Division, 5 September 2018.

4 The Royal College of Radiologists 2018, cited in https://www.bbc.co.uk/news/uk-scotland-45170707

5 Based on Cancer Research UK’s analysis of age profile data provided by the Royal College of Radiologists.

6 Cancer Waiting Times, Information Services Division 2018 http://www.isdscotland.org/Health-Topics/Waiting-Times/Cancer/

7 Diagnostic Waiting Times, Quarter ending June 2016, Information Services Division https://www.isdscotland.org/Health-Topics/Waiting-Times/Publications/2016-08-30/2016-08-30-WT-Diagnostic-Report.pdf

8 Royal College of Radiologists 2017 Clinical Radiologists Census https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfc185_cr_census_2017.pdf

9 There is a wide literature on the positive impact reporting radiographers may have. For example, Wotnitz et al: reporting radiography (2014) teamwork optimizing patient care

10 Going forward, a similar approach should be adopted for the Treatments workforce. Our paper ‘Full Team Ahead: an analysis of the non-surgical treatments workforce in the UK’ details this framework in more detail in the context of cancer treatments. https://www.cancerresearchuk.org/sites/default/files/full_team_ahead_full_report.pdf

11 Unless referenced otherwise, data taken from the Medical and Dental Dashboard, Information Services Division, June 2018 http://www.isdscotland.org/Health-Topics/Workforce/Publications/2018-09-04/Medical-and-Dental.asp
https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfc185_cr_census_2017.pdf

12 Unless referenced otherwise, data taken from the Allied Health Professionals Dashboard, Information Services Division, August 2018 http://www.isdscotland.org/Health-Topics/Workforce/Publications/2018-09-04/AHP.asp

13 Whole Time Equivalent

14 The Royal College of Radiologists 2018, cited in http://www.bbc.co.uk/news/uk-scotland-45170707


16 Ibid.

17 Ibid.

18 The Royal College of Radiologists 2018, cited in http://www.bbc.co.uk/news/uk-scotland-45170707


20 The Joint Advisory Group 2017 http://www.thejag.org.uk\Downloads\Downloads\National PoliciesandReports\170817_April2017GRS

21 https://www.opendata.nhs.scot/dataset/consultant-vacancies/resource/415c2f86-db7c-4c12-9a64-0cd9cf0d9118


23 National Screening Committee minutes available at: https://drive.google.com/drive/folders/0B8eopFA9myQefk9EaIvQLWs5RIFBSm\UdzNvaUxuS2FhdWV2VWJaST22YXlTdV2DYXdyNDA


26 Medical and Dental Dashboard, Information Services Division, June 2018 [http://www.isdscotland.org/Health-Topics/Workforce/Publications/2018-09-04/Medical-and-Dental.asp](http://www.isdscotland.org/Health-Topics/Workforce/Publications/2018-09-04/Medical-and-Dental.asp)


30 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](https://www.cancerresearchuk.org/sites/default/files/testing_times_to_come_nov_16_cruk.pdf)

31 Medical and Dental Dashboard, Information Services Division, June 2018 [http://www.isdscotland.org/Health-Topics/Workforce/Publications/2018-09-04/Medical-and-Dental.asp](http://www.isdscotland.org/Health-Topics/Workforce/Publications/2018-09-04/Medical-and-Dental.asp)

32 Based on data provide by SPAN, 2018


39 RCR supports international recruitment drive, Royal College of Radiologists 2018 [https://www.rcr.ac.uk/posts/rcr-supports-international-recruitment-drive-boost-scottish-radiologist-numbers](https://www.rcr.ac.uk/posts/rcr-supports-international-recruitment-drive-boost-scottish-radiologist-numbers)


43 NES’s workforce plan for 2017-18 included ‘a key role in analysis, information and modelling for the NHS Scotland workforce to strengthen workforce planning’.

[https://www.nes.scot.nhs.uk/media/4002765/NES%20Workforce%20Plan%202017-18%20FINAL.PDF](https://www.nes.scot.nhs.uk/media/4002765/NES%20Workforce%20Plan%202017-18%20FINAL.PDF)

44 Royal College of Radiologists Clinical Radiology Census 2017 [https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfcr185_cr_census_2017.pdf](https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfcr185_cr_census_2017.pdf)

45 Ibid.

46 The Joint Advisory Group 2017 [http://www.thejag.org.uk\Downloads\Downloads\NationalPoliciesandReports\170817_April2017GRS](http://www.thejag.org.uk\Downloads\Downloads\NationalPoliciesandReports\170817_April2017GRS)


48 Based on data provided by SPAN, 2018