



The Royal College of Radiologists

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The Royal College of Radiologists Response to: NIHR 'Health Futures' 20 year forward view

The Royal College of Radiologists (RCR) works with its membership to improve the standards of practice in the specialties of clinical oncology and clinical radiology.

In relation to your area of interest (discipline or geography), what differences do you foresee in the state of health and healthcare in England in 20-30 years' time compared to today? In your answer, please consider if/how these changes might affect some populations (within England) differently to others, i.e. socioeconomic, ethnic groups and/or geographic groups. *Your response could include (but is not limited to) issues relating to epidemiology, health services, technology, treatment and prevention.*

One in two people will develop cancer in their lives and the prevalent types of cancer are likely to change due to changes in lifestyle and research advancements. The incidence of cervical cancer and throat cancer in women should decrease with HPV vaccination, and it is expected that the incidence of lung cancer would decrease with decrease in smoking. Newer screening programmes (colon and lung) will change the stage presentation of cancer. Cancer incidence commonly rises with increasing age, meaning more cases diagnosed in an increasing elderly population.

Cancer survivorship creates an increased number of people with short and long-term physical and psychological effects of treatment. This will affect cost and complexity of health and social care delivery. An ageing population will change the spectrum of disease, with more patients having co-morbidities, including a rise in dementia. Outcomes of cancer therapy may change due to increased antibiotic resistance which will affect treatment of cancer related sepsis. There is increased risk of possible pandemics of viruses and bacteria due to overuse of anti-microbials.

The Department of Health invested in 2012 in the 100,000 Genomics Project for sequencing DNA codes of patients, leading to better, earlier diagnosis and personalised care for cancer, rare diseases and infectious diseases. Healthcare is likely to become more personalised with greater emphasis on stratified and genomic medicine, impacting diagnosis, treatments and outcomes of diseases. Genomics will help doctors choose treatments most likely to be effective for each person, reducing unnecessary treatments and side effects. It will increase ability to predict, prevent and diagnose disease in individuals.

Technology is likely to play an increasing role, from self-management tools for patients, to using artificial intelligence to interpret radiology images and plan radiotherapy. There will be increased focus on prevention. Self-management tools, mainly via health apps, will help patients independently to manage conditions while informing patient records. Artificial intelligence is likely to help clinical radiologists by increasing ability to diagnose patients quickly and so improve patient outcomes. Cancer localisation for radiotherapy planning will become increasingly automated.

Over diagnosis will increase, especially as population screening indications widen and with increase in follow-up of incidental findings from screening performed in medical research in

radiology. Follow up of cases will require additional resource and robust guidance on management of incidental findings.

If the NHS ceases to be fully centrally funded, a further expansion in expensive private markets will follow and those of lower socio-economic class would have a high risk of being uninsured. This will lead to a considerable sector of the population having an increase in costly morbidity of conditions which are currently well controlled. Health inequalities are highly likely to widen. With median income at £26,300, health insurance is not affordable for the majority of patients. The recent Rowntree Foundation report states that 13 million people are living "without enough to meet their needs"ⁱⁱ. In our disciplines, if per capita NHS funding does not urgently increase to levels in other industrialised countries, our cancer patients will continue to have worsening access to treatment, shorter lives and more suffering.

**What do you think will be the key drivers of the changes you have described?
Drivers might be (but are not limited to) scientific, environmental, technological, social and economic factors.**

It is estimated that by 2035, the UK population will have reached over 73 million people and 23.6% of the population will be over 65ⁱⁱ. Cancer is primarily a disease of older people, with incidence rates increasing with age for most cancers. In the UK, in 2012-2014, on average each year, half of the cases diagnosed were in people aged 70 and overⁱⁱⁱ. This suggests that there will be an increase in both the incidence and prevalence of cancer. With the continued advancements in cancer treatment, more people will survive cancer for longer^{iv}. The treatment of cancer is often invasive and has significant short- and long-term treatment consequences including physical and psychological effects, which feed through into an increased pressure on health and social care services.

An increased focus on disease (including cancer) prevention is likely to occur in tandem with an increased focus on screening programmes. The population increase will result in more people being eligible for the NHS Cancer Screening Programmes. This will markedly increase pressure and demand on the radiology workforce to perform and interpret the diagnostic scans.

The increase in antibiotic resistance will be a key driver in changing current pathways, interventions and treatments in medicine. Cancer is treated through radiotherapy, chemotherapy and surgery, with many patients having weaker immune systems as a result.

In your view, what will be the major trends in health and healthcare in England over the next 20-30 years? *Responses may include (but are not limited to) technological, epidemiological, behavioural, health services, policy or regulatory trends.*

An increasingly ageing population will put further pressure on the NHS, and with the lack of investment, it is likely that the demand will outstrip the capacity of an NHS based on the current level of investment. The Health Foundation found that the estimated spending on the NHS (using the independent Office of Budget Responsibility's (OBR) analysis of underlying pressures on health care) will rise by over 4% a year above inflation^v. The Nuffield Trust highlighted, before the 2017 General Election, that the manifestos of the three main political parties all fell short of the needed investment in the NHS^{vi}. It is projected that this funding gap will range between £17-22 billion by 2022/23.

The lack of investment in the NHS includes safe levels of staffing. There is likely to be a significant shortfall in staffing numbers across all NHS services impacting upon patient welfare. The RCR 2015 clinical radiology workforce census found that 52% of the current consultant workforce in clinical radiology is due to retire by 2025 with a retirement age of 60^{vii}. As it takes five years of specialty training before becoming a consultant in clinical radiology, this will lengthen the period of time that patients have to wait for a report on their examination for a serious medical condition or cancer. It is expected that 55% of the current consultant workforce in clinical oncology is due to retire by 2025, with a retirement age of

60^{viii}. As it takes seven years of specialty training before becoming a consultant in clinical oncology, this will adversely affect the care of cancer patients; especially as one-in-two people will be diagnosed with cancer in their lifetime, while four out of every 10 cancers cured include radiotherapy as part of their treatment, which can only be administered by clinical oncologists. The 2016 results which will be published later this year show this trend continuing.

Personalised medicine will be a major trend in healthcare with the increased focus on genomics and stratified medicine. There will also be an increased focus on the prevention of diseases as this will ease the monetary strain and workload pressures on the NHS and lead to a healthier nation. Experts agree that tobacco is the single biggest avoidable cause of cancer in the world. Smoking causes over a quarter of cancer deaths in the UK and nearly one in five cancers, which is highly costly for the NHS services and resources. Evidence shows that prescription medication and specialist support, for example accessing free local Stop Smoking Services, gives the best chance of quitting successfully yet budget cuts to public health funding have seen councils across England struggling to fund vital Stop Smoking services^{ix}.

Are there any commonly discussed issues related to the future of health and healthcare in England which you believe to be overstated? If so, why do you believe them to be overstated?

It is widely overstated in debates around health and healthcare in England that the NHS is adequately funded. The National Institute of Economic and Social Research found that the NHS faces a funding shortfall of up to £30 billion by 2021^x. More money is being spent on the NHS in real terms than ever in its history with the UK spending 7.6% of its GDP in 2015 on healthcare. The UK spends significantly less of its GDP on health than many major industrialised nations, with France spending 8.7% and Germany spending 9.4%. Research from the Nuffield Trust identified that none of the main political party promises from the UK General Election would meet the growing costs of health care.

It is also overstated that private healthcare in the UK is inevitably better than the treatment and care received in the NHS. This not evidence based. Furthermore, it is not widely understood that doctors within the NHS must undertake postgraduate exams in specialist training and extensive years and experience of working under supervision before being deemed a specialist. Currently no such requirements exist in the private sector, although most private specialists are NHS employees also.

It is widely over reported in the media around health and healthcare in the UK that health tourism is a major issue which costs the NHS billions every year. According to the report on 'Quantitative Assessment of Visitor and Migrant Use of the NHS in England' by prederi^{xi}, it is estimated that health tourism, people who are not ordinarily residents of the UK, cost the NHS 0.3% of the total NHS budget. It costs the NHS around a similar amount for missed GP appointments.

Imaging plays an essential role in medical research. Unexpected or incidental abnormal findings arising in the course of imaging research are common; up to 30% in body imaging. Such unexpected findings can have profound implications for a patient's future health. The assertion that more investigations are inevitably helpful is overstated and the impact of incidental findings threatens to continue to burden the individual and the NHS; and can have a negative impact on the patient and increase patient anxiety^{xii}. This has an impact on consultants' workloads due to an increased number of referrals of patients with incidental findings identified during imaging.

Are there any issues that are underrepresented in the debates around the future of health and healthcare in England? If so, please describe them and explain why you think they merit greater attention.

It is underrepresented in debates on health and healthcare that the NHS is understaffed. There needs to be increased training and recruitment of adequate and appropriately skilled people across the NHS. This needs to be planned according to the future needs of the NHS including an increase in general jobs. Radiology underpins the whole of modern medicine from the diagnosis, treatment and monitoring of disease and as a specialty, it is facing a very serious workforce crisis. Clinical radiology is listed as a shortage specialty yet for specialty training, it is oversubscribed with at least four appointable applicants for every one training place. Therefore the radiology shortage could be addressed by increasing the number of specialty training places. Clinical oncology is at present only able to fill around three quarters of the specialty training places available. Although clinical oncology is not currently classified as a shortage specialty, with the incidence rates of cancer increasing and radiotherapy contributing to the cure of 4 in 10 cancer patients, this is highly likely to present a problem in the future.

Technology within the NHS must have a higher profile. As imaging technology progresses, the volume of data produced will pose significant challenges and there will also be patients moving between trusts to receive specialist care. The RCR conducted a survey in early 2016 of clinical oncologists and radiologists working as NHS consultants across the UK which shows that image and report sharing difficulties are widespread and impact on patients. Half of all respondents had no access to external PACS for imaging studies performed elsewhere and they said that patient care suffered due to these delays^{xiii}. Therefore, adherence to international interoperability standards and easy and safe data sharing and data informatics to support reporting of big datasets will be necessary. The RCR has produced a document, *Who shares wins: efficient, collaborative radiology solutions*^{xiv} on how to enable diagnostic images and their reports to be shared between interconnected networks of trusts.

There needs to be a greater focus on Patient Reported Outcome Measures (PROMs) as they are becoming increasingly important in identifying late toxicity after therapy and to ensure that the treatments patients receive are effective and lead to improvements in their health. Long term detriment to quality of life is important to identify, especially as we move away from standard follow-up protocols.

What impact leaving the European Union will have on access to academic funding and clinical trials is still unknown. It is estimated that more than 600,000 patients a year could be denied access to clinical trials once the UK exits the EU. Researchers in the UK have been working collaboratively with colleagues in EU countries. This is important as cancer research is an international effort which crosses national boundaries. It is crucial that the availability of this funding and collaborative working across national borders continues to ensure medical advancements in cancer diagnosis and treatment remain. It is vital that debates about the future of health and healthcare ensure that patients remain at the centre of Brexit negotiations ensuring that they will have full access to the best treatments and that the UK remains competitive to encourage academic research.

ⁱOffice for National Statistics - Household disposable income and inequality in the UK: financial year ending 2016 [10 January 2017]

<https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/householddisposableincomeandinequality/financialyearending2016>

The Guardian - One in three families are a month's pay from losing homes, says study [9 August 2016]

<https://www.theguardian.com/money/2016/aug/09/england-one-in-three-families-one-months-pay-losing-homes-shelter-study>

Joseph Rowntree Foundation: <https://www.jrf.org.uk/solve-uk-poverty>

ⁱⁱ Office for National Statistics – Overview of the UK population: Article, Cassie Hayter, [3 March 2017]

ⁱⁱⁱ <http://www.cancerresearchuk.org/health-professional/cancer-statistics/incidence/age#heading-Zero>

^{iv} <http://www.cancerresearchuk.org/health-professional/cancer-statistics/survival#heading-Two>

^v <http://www.health.org.uk/blog/general-election-2017-what-manifestos-might-mean-health-care-funding>

^{vi} Nuffield Foundation – Is NHS funding in crisis? NIESR General Election 2017 – Briefing no.5 [May 2017]

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- vii The Royal College of Radiologists - Clinical radiology UK workforce census 2015 report [September 2016]
- viii The Royal College of Radiologists - Clinical oncology UK workforce census 2015 report [November 2016]
- ix <http://www.cruk.cam.ac.uk/news/latest-news/stop-smoking-services-under-threat-budgets-are-cut>
- x Nuffield Foundation – Is NHS funding in crisis? NIESR General Election 2017 – Briefing no.5 [May 2017]
- xi Prederi – Quantitative Assessment of Visitor and Migrant Use of the NHS in England: Exploring the data [3 October 2013]
- xii PLOS Journal – The current impact of incidental findings found during Neuroimaging on Neurologists’ workloads, Thomas C Booth and Jennifer M Boyd-Ellison [27 February 2015]
- xiii https://www.rcr.ac.uk/sites/default/files/who_shares_wins_infographic.pdf
- xiv The Royal College of Radiologists – Who Shares wins: efficient, collaborative radiology solutions [October 2016]