NHS Cancer Services and Systems – the 10 pressure points a UK cancer control plan needs to address

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Abstract

In this article we discuss ten key pressure points in the NHS in the delivery of cancer care services and which need to be urgently addressed by a comprehensive national cancer control plan. This includes areas such as increasing workforce capacity and its productivity; delivering effective cancer survivorship services; addressing variation in quality; fixing the reimbursement system for cancer care; and balancing of the cancer research agenda. These areas have been selected based on their relative importance, persistence as key issues in the NHS, and their impact on delivering better, more equitable and affordable patient outcomes. Many of these pressure points are not acknowledged explicitly in any current discourse. The evidence we provide points to both their impact on the ability to deliver world class cancer care, but also that they are amenable to affordable solutions if given the relevant prioritisation and investment. It moves from a technocentric approach to improving care, to one focused on understanding the complexity of cancer services and wider health system to drive improvements in survival, quality of life and experience for patients.

Introduction

The NHS is at a tipping point in the delivery of equitable, high quality cancer services. Three years after the COVID pandemic, waiting times continue to rise, and the NHS faces serious shortfall in the necessary infrastructure and workforce to manage rising demand. Slow progress is being made on early diagnosis, with wide regional variation in the faster diagnosis standard [1].

Novel technologies have been hyped as magic bullets for this crisis. Multi-Cancer Early Detection (MCED) tests for screening and early diagnosis, Artificial Intelligence (AI) for revolutionising administrative and treatment processes, and new treatments especially systemic anti-cancer therapies (SACT) are being promoted as key solutions to the complex problems of NHS cancer care. In reality, none address the fundamental issues of cancer as a systems problem, within which robust evaluation and adoption of technologies is one component [2,3].

Recently, an expert group of UK-based cancer care professionals [4], highlighted the need to interrogate changes in cancer care delivery, and state the requirement for a national cancer plan to deliver improved survival and quality of life for patients. England is currently the only high income country without such a plan [5].

This article examines 10 key NHS pressure points for which a national cancer plan is required. A key theme is the importance of ensuring fidelity of cancer care delivery, and the need to create strategic policy direction for commissioning, governance, funding, and accountability including research.

Pressure point 1. Rapid change in the demographic structure of the cancer population and widening inequalities

Cancer survival in the UK is well below that of most comparable high-income countries [6]. Impact is greatest in more deprived populations with almost a 10% difference in five-year cancer survival between the least and most deprived quintiles [7] (**Figure 2**). Given that the socio-demographic profile of cancer patients in the NHS is changing, without profound change to NHS and social care, inequalities will worsen.

The UK population is ageing, 20% of people are now aged 65 or over. The prevalence of multimorbidity is increasing, particularly in lower socioeconomic groups [8]. In 2015, about 45% of over 65s had two or more comorbidities, rising to 66% by 2035 [9]. These demographic and clinical shifts superimpose onto cancer incidence and future planning must consider integrated population health needs, merging the current major conditions strategy into a cross cutting vision for dedicated cancer planning [5]. Greater integration of these patient groups in cancer research trials is also an increasing necessity to avoid a growing gap between outcomes reported in trials and those in actual clinical practice [10].

Cancer incidence is rising in young adults (e.g., colorectal cancer, lymphoma, melanoma) but without a clear understanding whether this is due to changes in risk factor exposures in early life and young adulthood or better awareness/diagnostic intensity [11]. These demographic changes require us to consider re-evaluating awareness programmes, integrate risk stratification in primary care and develop longer term social and psychological survivorship interventions for age-stratified cancer populations.

Finally, England's ethnic diversity continues to increase, with about 10% and 4% of Asian and Black ethnic groups, respectively, in a recent census [12]. Ethnic diversity increases the heterogeneity of the cancer population. For example, some ethnic minorities have an earlier onset of specific cancers, more aggressive forms particularly of breast and prostate cancer, and heterogenous clinical presentations (e.g. higher breast density, which affects the effectiveness of diagnosis and screening) [13,14]. These ethnic groups have also demonstrably lower receipt of evidence-based care [15].

More generally, sociodemographic inequalities require social rather than technical fixes. A common fallacy of decision-makers is, that technology-based tools can reverse inequalities. A reality is that technologies deeply modify interactions between patients and systems generating additional barriers for those with poor digital or health literacy [16]. We caution against technocentric approaches without robust evaluation from an equity perspective [17]. Furthermore when resources are restricted ,access to optimal, timely care depends heavily on patients' negotiating power, which is lower in the socially disadvantaged [18]. This is reflected in lower rates of second opinions or travel to alternative, more distant centres for better or quicker care [19].

Successive national cancer policy initiatives have had little impact on these inequalities [7,20]. Addressing the social determinants of health (employment, transport, housing, crime, social isolation) is critical to solving these downstream pressure points [21]. We propose the urgent set up of a taskforce to tackle social determinants of cancer including its commercial determinants (tobacco, alcohol and food policy) [22,23].

Pressure point 2: Reducing advanced stage diagnoses and managing the cancer treatment backlog

In Jan 2024 less than two-thirds (62.3%) of people in England received their diagnosis and started treatment within two months of urgent referral (target 85%) [24]. Meanwhile increasing referrals and diagnoses are creating unprecedented patient volumes; e.g. a 30% increase in prostate cancer diagnoses in 2022 compared to pre-pandemic levels, likely resulting from patients not seeking clinical advice during the pandemic [25].

In 2018, an ambitious target of attaining 75% diagnoses at stages 1-2 by 2028 was set [26,27]. The UK is well placed to routinely monitor both stage at diagnosis and the care pathways to diagnosis [24]. The English 'Routes to Diagnosis' project chiefly assigns patients to one of four pathways; those diagnosed through suspected cancer (fast-track) routes, routine referrals (cancer not suspected), emergency presentations and screening detected [28,29].

Emergency presentations are associated with advanced stage of cancer and worse prognosis, particularly for gastrointestinal and lung tumours. An international benchmarking study indicated that 3 out of 4 UK nations have much higher percentages of patients diagnosed as emergencies compared with Victoria (Australia) and Ontario (Canada) [30,31]. Reducing emergency presentations would certainly shift the dial on survival outcome.

To address these pressure points we firstly need to optimise participation in cancer screening. For example, implementing colorectal cancer screening leads to reduced emergency diagnoses [32,33]. Social inequalities in screening participation, and delayed help-seeking after symptom onset need to be tackled [31]. Such interventions require 'social marketing' approaches (such as the Be-Clear-on-Cancer / Help-Us-to-Help-You campaigns) to maintain a high level of public awareness, and promote enabling attitude and beliefs about cancer[34,35]. Challenges prevail in effectively deploying lung cancer screening both in identifying the population at risk to be targeted and implementation to optimise participation and reduce the likelihood of inequalities [36].

Increased use of accelerated or elective diagnostic assessment pathways have led to reductions in emergency presentations in England [37]. Further increases through investment in diagnostic services capacity are needed, including boosting specialist workforce for endoscopy/ imaging, and expansion of the rapid diagnostic centres [38]. Doing so will also support quicker diagnosis via routine referral pathways (which account for up to 40% of patient diagnoses) where cancer is not initially suspected but timely diagnosis is equally relevant [39]. Implementation of best practice pathways outlined by Get it Right First Time (GIRFT) for lung, breast, prostate, colorectal and skin cancers can help to achieve the faster diagnosis standard if appropriately funded [40].

Timely treatment is as important as rapid diagnosis. A meta-analysis [41] has shown that a 10% mortality increase for some cancers with a 4-week delay from diagnosis to treatment. NHS England data on waiting time targets shows that the 96% standard for this measure has not been met since December 2020 [42]. There is also concerning evidence of inequalities in timeliness and lower survival among patients from minority ethnic groups and those who live in more deprived areas [43].

Reasons for long waiting times are complex. However, there is an opportunity to learn those ‘positive deviant’ centres with exceptionally good performance. Their experience can provide opportunities to co-design operational solutions an approach underused in cancer but yet successful in other clinical areas [44]

The wider improvement science literature offers additional opportunities. Process mapping and use of structured improvement (lean) methodology has reduced radiotherapy waiting times [45]. Better home monitoring of systemic therapy can reduce hospital visits for simple blood tests [46]. In addition, surgical capacity can be maximised with more efficient allocation based on capacity and technical expertise through regional coordination [19,47].

Pressure point 3: Delivering effective cancer survivorship services

Living well with and beyond cancer is an imperative for patients. There are 3 million people living with cancer in the UK, predicted to rise to 4 million by 2030 [48]. To manage the psychological and physical morbidity of multimodal treatments it is necessary to measure quality of survivorship [49]. However, in England there are limited data from the National Cancer Patient Experience Survey (CPES) (response rate is just over 50%) and NHS Quality of Life program [50,51]. Neither capture the needs of individual patients or the trajectory of survivorship issues.

Integrated, routine use of PROMs (Patient reported outcome measures) facilitates better care by identifying significant treatment toxicities, such as pelvic radiation syndromes, sexual dysfunction, or cardiac toxicity. Such intelligence could also inform national planning for cancer survivorship but, except a few previous National PROMS programmes, there has been little movement on this issue for over a decade [52]. The National Prostate Cancer Audit delivered one of the largest PROMs programme ever performed [53], demonstrating significant variation in the care experienced by patients, hospital outcomes, and unmet morbidity burden following surgery and radiotherapy [54,55]. Despite demonstrable clinical impact funding has not been prioritised to continue this programme with linkage directly across national cancer audits.

New treatments such as immunotherapies or hypofractionated radiotherapy bring novel side effects for which the long-term natural history is currently unknown. These need management, either in secondary care, primary care or in emerging super specialist services such as cardio-oncology or pelvic radiation disease clinics. However, navigating best care is difficult; referral pathways may not exist, and primary care is overwhelmed and may not recognise late cancer treatment effects. This is a substantial inefficiency, as patients navigate across providers, often receiving sub-optimal management, or remaining off work for long periods due to unresolved treatment sequelae. Inequalities persist regionally with resources and expertise varying according to locality. Coordinated management of late effects needs specific priority in any national cancer plan.

Psychological effects including fear of recurrence and anxiety are common in cancer survivors, yet often go unrecognised or are sub-optimally treated [56]. A national plan to effectively manage poor mental health resulting from cancer is therefore critical. This will require upskilling of a cancer workforce and closer integrated working with mental health and primary care services for those with highest need [57].

32% of people living with cancer in the UK report severe financial concerns [58]. Although there are welfare benefits (Personal Independence Payments -PIP) the waiting time to receive them is still over three months and needs to be shortened. People affected by cancer in the UK also report difficulties in obtaining subsidies for travel (42%), as well as health (23%) and life (22%) insurance. Some countries legislate the right for cancer patients 'to be forgotten' 5 years after diagnosis so that their history does not disadvantage them economically [59]. This type of legislation would go a long way to redressing the long-term financial impact on UK cancer survivors.

Pressure point 4: Building sustainable workforce capacity and increasing productivity

There are shortages in every aspect of the UK cancer workforce [1,60,61]. For example, there is a current 15% shortfall in clinical oncologists and a predicted gap of 4000 specialist nurses by 2030 (**Figure 3**). This is a major contributor to delays in diagnosis and treatment [62,63]. The UK's aging and comorbid population makes individual decision-making more complex and time-consuming further reducing productivity of an already overstretched workforce.

Other short to mid-term solutions must also be considered. Increasing capacity requires bottom up and top-down approaches. From increasing cancer training for undergraduates and more training places for post-graduates, to optimising ethical international recruitment. A national cancer workforce plan to maximise complementary multidisciplinary skills, rather than prioritising a single group. Robust models are available which can help estimating workforce needs for surgery and systemic therapy [64,65] and identify specific workforce shortfalls in different parts of the country e.g. rural areas.

Immediate workforce pressures stifles the integration of innovation that could improve productivity. We need to consider the longer-term benefits allowing staff time for service development, even if it reduces front-line care in the short term.

Early retirement trends need reversing with effective use of an experienced older workforce, for example the flexible remote working of the NHS Emeritus scheme [66]. Seasonal variation in workforce availability and its impact on constraining capacity must be considered explicitly and solutions to tackle this, including better planning of staff leave to match demand. At a local level, hospitals need financial stability to plan for an increased workforce to match rising demand using nationally agreed workforce templates [67]. This includes ensuring trainers have sufficient time in their job plans to develop the next generation.

We also need to continuously reappraise who can best provide separate aspects of care and challenge traditional professional boundaries. Senior clinicians will increasingly be asked to develop and mentor clinical teams rather than deliver care, enabling nurses and Allied Health Professionals to review patients and manage the side effects. In turn, newer roles like support workers and care navigators can release specialist time.

Finally, a cancer plan must embrace technology proven to increase productivity. Electronic tools to collect PROMS and triage patient support needs, could streamline input from healthcare workers, individualise the timing and type of interventions people require and deliver programmes of patient-initiated follow up [68]. However, present use of multiple IT systems for different aspects of care or poor implementation of electronic healthcare records slows rather than improves productivity to the frustration of users [69]. Too often scheduling and pathway management, documenting consultations and sharing information between systems falls to clinicians, reducing capacity for patient facing work.

Pressure point 5: Implementation of evidence-based care and addressing variation in quality

Population-based studies and national clinical audits in the NHS highlight two main issues. First, significant numbers of patients do not receive evidence-based care. For example, around 40% of patients with stage III colon cancer and 60% with Stage IV prostate cancer miss out on guideline recommended systemic therapy with variation between institutions [25,70]. A key dimension is the variation in care observed for patients aged over 70 [15] and, a greater focus on geriatric oncology care to address these care gaps is critical [10,71].

Second, treatment outcomes (mortality, complications experience) vary between institutions and sociodemographic groups, even after patient case-mix adjustment [72,73]. For example, across NHS hospitals rates of severe toxicity vary between 2 and 24% after prostate cancer surgery, and between 10 and 50% after adjuvant systemic therapy for colon cancer[25].

Resolving disparities in care and outcomes between institutions and socio-demographic groups therefore has the potential to substantially improve population outcomes. This requires interlocking solutions outlined below, including a cultural shift amongst clinical communities towards quality improvement.

Monitoring of care and outcomes across all NHS patients by bodies such as the National Cancer Audit Collaborating Centre (NATCAN), which delivers ten cancer audits, and the National Disease Registration Service (NDRS) has been shown to improve outcomes and should continue to expand [74,75]. Further research is needed to understand which mechanisms of audit and feedback can best stimulate changes in clinical care [76].

An innovation first approach to managing deficits in cancer care quality, does not address the underlying issues. For example, the National Prostate Cancer Audit identified significant variation in rates of toxicity after radiotherapy, unrelated to technology availability but rather the use and adaptation of specific protocols by centres. Solutions in this scenario include benchmarking best practice and knowledge translation from high performance centres to improve care across other hospitals [53]. Wider usage of collaborative approaches to improvement are required that build on existing large scale data infrastructure across outcome reporting programmes [77,78] [79]. This also needs concomitant provision of training and resources to design and implement quality improvement interventions at scale.

There also remains huge variation in adoption of evidence-based care and proven innovation. Only 50% of evidence-based care is implemented and the timeline for full adoption is 17 years [80,81]. The UK invests huge sums on cancer research into novel technologies, but little on implementation research. Beyond evidence generation, one needs to consider costs, available infrastructure, and stakeholder perceptions [82,83]. Implementation research can help overcome pressure points to utilisation of evidence-based treatment [84] so they become embedded and sustainable.

Pressure point 6: Designing and configuring services to promote equity in access and improve outcomes.

Oncology care is increasingly complex, requiring greater specialisation and centralisation of services. Whilst centralisation has focused on surgical specialities such as upper GI and pelvic surgery [85], the optimum location of specialist services such as CAR-T and cell therapies is increasingly debated.

Centralisation and service design more broadly creates major pressure points. First, service location can result in a disproportionate travel burden for rural dwellers and the most vulnerable groups, particularly those reliant on public transport, in keeping with the inverse care law [86]. Second, the distribution of specialist services is highly variable when it comes to treatment units (surgery, radiotherapy) for specific tumour types, often located across integrated care boards (ICBs) and cancer alliance boundaries, making regional coordination and commissioning of services challenging.

Third, for some cancer specific treatments, there is a relative excess of centres. For instance, 166 hospitals offer breast cancer surgery and 163 bowel cancer surgery. However, whilst this may improve access to care, variation in volumes and outcomes of care are evident and recent evidence suggests not all capacity is being effectively utilised due to GP/patient preferences for care at specific hospitals, because of perceived better quality [47,87].

Fourth, the lack of comprehensive cancer centres (for example, of the 78 NHS hospitals that provide radiotherapy or surgery for prostate cancer only 41% provide both) means that patients are more likely to receive the treatment option available at their local centre [88]. For example, patients are 600 times less likely to receive high dose rate brachytherapy in high-risk prostate cancer if they do not live in a region offering this treatment [89]. Some patients may not receive the treatment they require for instance patients with colorectal cancer are less likely to be referred for liver resection for metastases if this service is not onsite [90].

Issues remain with optimum service design, pathway navigation, and referral mechanisms for cancer services despite models having been developed to inform service planning [91,92]. Proposed centralisation of services (e.g., cell therapies) must take a transparent evidence-based approach which considers the specialist services available at a centre, capacity, quality, and the impact on travel burden across sociodemographic groups. Decentralisation, challenges also exist. For example, defining where increased radiotherapy capacity is geo-located to address lower than expected utilisation rates in the UK, particularly in rural areas [93] and increasing accessibility of palliative treatments. Other models may include offering treatments at home such as SACT [94] and opportunities for promoting access through telehealth and digital applications, although further evidence is required [95].

Politically it is essential to consider to what extent centralisation as a means of consolidating expertise impacts not just access but also choice and competition policies as a driver of quality. Whilst competition is no longer explicitly a policy incentive for improving quality, the NHS needs to consider whether it is worth pursuing as there is evidence of a potential positive impact on care quality in the NHS by supporting patient mobility and high levels of specialist accessibility [96] . At the same time, not acknowledging that competition exists has resulted in perverse incentives within cancer care, not least adoption of high cost technology [97].

Pressure 7: Budgeting for the cost consequences of technology adoption

Innovation in cancer comes at a price significantly greater than the acquisition cost of the technology be this drug, device or diagnostic, creating serious economic and capacity pressures. For example, rates of treatment delivery for SACT (systemic anti-cancer therapy) are increasing at around 6-8% per year, and in breast cancer alone routine SACT attendances have doubled in the last decade [98,99].

In addition to workforce and space costs, new therapies have brought other costs, for example in molecular diagnostics, radiology and the formation of dedicated multi-speciality acute care services to manage novel toxicities e.g. from immunotherapies. These system-wide cost pressures are also seen with developments in technologies in radiotherapy (e.g., protons, stereotactic radiosurgery) and surgery (e.g., robotics). However, SACT approvals illustrate the volume of innovation; the average annual number of cancer drug appraisals by NICE was 4.6 in the five years from 2000 rising to 40.4 in the last five, 78% of all those appraised. Crucially a budget impact analysis (BIA) is not a pre-requisite for these NICE approvals. A greater recognition of the opportunity costs to support this innovation is required[100]. Whilst drug costs dwarf the costs of, for example, chair or healthcare professional time, without understanding these latter costs (both in monetary and clinical terms) we consider only opportunity cost pressures within the narrow constraints of finance without recognising the opportunity costs that flow from inadequate capacity.

Going forward, research is critically needed to define the information required by providers to maximise the value of local impact tools. In addition, healthcare technology assessments need to analyse the immediate workforce and wider capital expenditure (companion diagnostics, toxicity management) requirements.

Pressure Point 8: Fixing the reimbursement system for cancer care

The issues identified in Point 7 have been further exacerbated since March 2020 when payment by results (PbR) a prospective variable system of tariff payments was replaced with a block contract, fixed payment system [101,102]. Formerly NHS England (the payer) prospectively defined the reimbursement provided for a given activity and reimbursed NHS Trusts (the providers) according to activity levels. Block contracting fixes reimbursement to a provider irrespective of increasing innovation, complexity of patients (multiple comorbidities and use of multimodal treatments), and activity. This creates a scenario where increased activity results in increased waiting lists as the services become more stretched [103].

Further challenges arise through failure to recognise the extensive fixed costs seen in healthcare delivery (see **Appendix Table 1** for definitions [104]) which require capital investment [105]. For, example it is estimated that 62% of the costs of radiotherapy delivery relate to equipment [105,106]. The previous reimbursement tariff failed to adequately cover total costs of radiotherapy leading to long term cumulative cost pressures [107], which has been compounded by the dramatic reduction in capital investment in health and social care in 2009 which remained low for the subsequent decade [108].

In addition, our understanding of the costs and productivity pressure points of treatment modalities such as surgery is limited. A new tariff system requires robust costing of activity recognising both fixed and variable costs to ensure that reimbursement is delivered that can deliver the necessary investment and systems change to maximise patient benefit and avoid perverse incentives (e.g. increasing the use of prolonged fractionation courses through per fraction reimbursement tariffs) [109]. Parallel understanding of capital requirements can help to ensure that large equipment and space investments are as cost-efficient as possible.

Around half of novel SACT treatment in oncology receiving European Medicines Agency approval offer negative or marginal benefits [110]. Despite this the cancer drugs fund budget for the ’22-’23 tax year was £340 million and chemotherapy services across the UK are struggling with capacity [103]. Cost pressures can also be alleviated with better prioritisation of technology reimbursement and where necessary disinvest from treatments that offer the least benefit to patients by building on previous frameworks in SACT and radiotherapy [111,112].

Finally, to support equity in access to care, combined routine clinical data and health economic expertise are required to understand the varying cost of delivering cancer care, enabling targeted investment and tariff adjustment to address unwarranted variation in cancer care [113].

Pressure point 9: Technology adoption and value

The scale of innovation across cancer from pharmacology, surgical robotics/minimally invasive surgery, new forms of radiotherapy, imaging, pathology including MCEDs through to AI, has been exponential [114].

The pressure points around technological innovation are framed by several key domains. 1. Finance (how and what is funded in a public system) 2. Governance (how does a system make decisions of what MedTech offers clinically meaningful benefit for patients and what is 'our' willingness to pay i.e. health technology assessments). 3. Human resources and infrastructure (where should MedTech adoption be assessed and how? This is especially important for large, fixed capital technologies such as radiotherapy). 4. Quality assurance and health service delivery (equitable rolled out across the NHS). 5. Research (how to build the capacity and capability in implementation science, health services, and operational research at major centres to assess the breadth of non-pharmaceutical technologies?) [115].

One of the most significant pressure points to technology adoption rests with the inability to properly evaluate them. There are numerous examples of unmanaged adoption and/or poor research. For example, robotic technologies for cancer surgery have created inequalities [116], and HTA processes for cancer drugs have been circumvented through special access programs (e.g. Cancer Drugs Fund) [117]. All these challenges speak to the need for a whole-system approach to adoption with research linked to health economic evaluations [118] which includes articulating the benefits/investment case for technology adoption [119].

There are opportunities to adapt the coverage with evidence development models [120], already in use in across Europe [121], to prospectively evaluate these types of innovation in a real-world, limited setting (e.g. comprehensive cancer centres), using implementation science methodologies before widespread NHS adoption [122]. At present, health technologies such as radiotherapy equipment, are more likely to evolve in research centres or at pioneer sites with unrepresentative workforce and funding structures, propagating the inverse care law.

Pressure point 10: Balancing the cancer research agenda

The UK's cancer research funding ecosystem is one of the strongest in the world. Multiple funding streams through government bodies are complimented with significant philanthropic and charitable funders.

However, the last decade has seen a huge (over) focus on discovery science and biopharmaceutical and technology research, which now accounts for nearly three-quarters of all funding [123]. This has led to many domains not receiving proportionate funding, despite repeated strategic attempts by these communities. For example, childhood cancer, surgery and palliative care still have a relatively low level of investment from major funders, [124]. In addition, research areas of implementation science, health services research and operational science receive paltry investment [125,126]. With a more considered strategy, which includes international collaboration with similar publicly funded systems, the NHS is uniquely placed to have a vibrant implementation and real-world data-driven research ecosystem to provide evidence to alleviate many of the pressure points.

At present, less than 1.5% of national cancer funding goes to support global oncology [127]. The opportunity exists for the UK to re-pivot into a far more effective global research agenda building on substantial pre-existing platforms and partnerships and generic cross-cutting global health initiatives, for example, surgery [128]. Despite the re-entry of the UK to European research funding following Brexit UK cancer is not at the table for any of the significant European Cancer Mission research meetings [126].

Finally, the loss of the NCRI as a strategic research convenor [129] has added to research policy incoherence and a broad needs led cancer research agenda which is increasingly dominated by pharma funding [130]. A future, new collective strategic leadership needs to be created, probably led through UKRI and NIHR. A UK version of the US National Cancer Institute which strategically considers the management of cancer including health services research, implementation research and global health is an option. Given the policy issues highlighted, consideration should be given to a dedicated policy research unit that considers cancer beyond diagnosis and prevention with a specific focus on cancer services, technology adoption and survivorship.

Looking forward

In this article we highlight ten time critical and complex pressure points (summarised in **Table 1**) at play for cancer services across the UK that require strategic planning, investment and leadership articulated transparently in a cancer plan. This includes a long-term investment strategy allowing for increased productivity, improving resource allocation and quality of care.

NHS England's Cancer Update May 9th 2024 [131], highlighted progress with respect to the early diagnosis pathway with the plan for increasing diagnostic capacity and workforce. However, one must caution the expected step wise change in outcomes postulated by robotic surgery, MCEDs, vaccines and AI, when evidence is currently lacking. It is for this reason we highlight here the fundamental cancer systems and services pressure points[2,3] that if addressed would bring substantial benefits (**Table 1**).

A key facet to achieve radical progress and policy are leadership and intelligence gathering. Leadership is a key tenet identified in countries with better outcomes in the International Cancer Benchmarking Initiative [132,133]. To this end, recommendations would include: 1. Creation of a cancer services and policy research unit that leverages the excellent academic structures across the UK. Rather than working competitively for limited grant funding, research units could be commissioned to address specific areas of unmet need and test and implement new strategies for innovative care delivery. 2. Better information is required to understand how Cancer alliances and ICBs directly interact with individual Trusts and patient level care. For example, how we deal with issues of centralisation of care, quality improvement and referral pathways recognising the current disconnect between front line care and the operational architecture of cancer services.

3. The visibility of senior clinical groups providing advice and guidance on cancer policy and practice in health departments is currently limited. Without transparency around policy development, the rationale for a particular strategic direction is unclear. 4. Finally, a comprehensive and long-term cancer control plan is required which addresses the whole spectrum of cancer care [4], that is regularly updated, and which uses the latest evidence. Ultimately, if we lose focus and priority for cancer care, we will pay a high price in terms of additional strain on the NHS, widening social inequality and weakening economic recovery.

Search Strategy and Selection Criteria

We searched World of Science, PubMed, and EMBASE for publications in English from 1990 to May 31, 2024, relevant to UK cancer policy using a series of bibliometric macros. The search terms used were: ‘’UK’’; ‘’Policy’’; and ‘’Cancer’’. The grey literature was hand searched for relevant publications by NHS departments, ‘arm’s length bodies’ e.g. NICE, and professional bodies.

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