Cancer Research UK's Early Diagnosis Conference 2024

Questions & answers

Our speakers have kindly provided responses to a selection of questions posed by delegates during the conference. These responses have been shared in this document as provided by the speakers and are not necessarily endorsed by Cancer Research UK.

Please contact the conference team with any questions by emailing EDconference@cancer.org.uk.

Contents

Strategic approaches to early diagnosis

Responses are provided by:

- Nic Barnstaple (NB), Associate National Director – Cancer Performance and Early Diagnosis in Scotland
- Professor Tom Crosby OBE (TC), National Cancer Clinical Director for Wales
- Dr Tomas Adell (TA), Director of Elective Care and Cancer Policy at the Department of Health NI

Cancer strategies, plans, and impactful policies

What is your best example of a cancer aim or policy moving into impactful practice – and why was that successful?

NB: The CRUK TET [Test Evidence Transition programme] breast lump clinic project (which allows self-referral to breast clinic for those with a breast lump) in NHS Forth Valley is yet to be formally evaluated however early indications are that it has been very successful and could have high impact on reducing Primary Care appointments if rolled out across NHS Scotland.

TC: The Single Cancer Pathway and the National Rapid Diagnostic Centres/Clinics Programme. The Lung Health Check Pilots and QuicDNA too.

With an ever-increasing demand and a struggling national health system, how would the panel go about prioritising the great range of solutions for reducing late diagnosis on offer?

NB: During development of the new Cancer Strategy for Scotland, in order to determine where efforts should be focused within the three-year action plans that will underpin the 10 year strategy – recognising that everything can't be a priority at the one time - a framework was developed to ensure

the decision-making process was evidence-based. A wealth of data and evidence were considered with input from PHS, Clinical Leads, Cancer Registry and Cancer Research UK. This has identified areas of focus. However, it has been agreed that this analysis will be repeated upon the development of each three-year action plan to reflect any new or emerging evidence.

TC: This a complex question but access to diagnostic tests (including symptomatic and screened populations) and treatments. This must be underpinned by research, improved data and intelligence, workforce planning and implementing new ways of working (including new technologies) at pace and scale.

If you could get everyone involved in delivering cancer services to understand one thing, what would it be?

NB: The information we receive from patients and carers via Care Opinion can help shape policy, putting the person with cancer at the centre of their own treatment and care.

TC: That it requires a system-based approach rather than focus on narrow elements, specific services and specialties.

TA: The key focus in cancer services is to understand that there is a patient with cancer, or who may have cancer, that is the centre of the pathway. This is almost always identified by individual clinicians at the time of treatment, but often missed in wider discussions around pathways and systems improvements. This means changes are often done because the system wants the change, rather based on the impact on the patients. If this changes, it is possible to make small changes with significant impact to patient outcomes.

How do we make cancer strategies and plans feel relevant to staff working at the frontline?

NB: The strategy and plan take a comprehensive approach to improving patient pathways from prevention and diagnosis through to treatment and post-treatment care. A key initiative is the Oncology Transformation Programme that is underway following the Oncology Workforce review undertaken in 2022. Over 100 clinicians and managers contributed to the mobilisation of the Oncology Transformation Programme in 2023. An Oncology Task and Finish group, comprising cancer clinical, management and planning staff, is developing recommendations for a new sustainable, oncology operating model. The aim is to provide a national approach to policy, planning, design and delivery of oncology, addressing health services, workforce and supporting infrastructure, potentially having an impact on all those working on cancer in Scotland.

One of the 11 ambitions in the Cancer Strategy is to strengthen our workforce by increasing numbers and providing more flexibility and support to staff.

TC: Education and awareness…this is happening.

Data and assessing progress

What action is being taken to reduce the lag between care being delivered and data being available?

NB: The earlier cancer diagnosis vision, part of Scotland's new cancer strategy, which was published Spring 2023, includes a commitment to publish more timely staging data for additional cancer types so we are working on this at the moment, including analysis of QPI data which is timelier.

How do you plan to measure progress in early diagnosis for cancers that aren't generally staged 1-4 (eg haematological malignancies)?

NB: The earlier cancer diagnosis vision, part of Scotland's new cancer strategy, which was published Spring 2023, includes a commitment to routinely publish cancer diagnosis through emergency presentation data via PHS. We are also working with third sector to clarify any additional measurements that could be used for monitoring improvements in blood and neurological cancer pathways, which aren't traditionally staged.

Do differences in cancer data reporting between nations cause challenges in benchmarking, and if so, what can be done to improve benchmarking between the four nations?

NB: The International Cancer Benchmarking Partnership (ICBP) has proven to be a useful tool in data comparison. We are continually working to improve the data we have available and learn lessons from other UK countries to determine what data would be useful to collect and analyse.

TC: Yes, they do. CWTs (Cancer Waiting Times) now report differently based on adjustments (or use of suspensions), what is included in the definition of First Definitive Treatment and who is included in what measure. I think would be a challenge to benchmark accurately without aligning rules for reporting which I suspect won't happen.

TA: The differences in reporting does not create any significant challenges in the planning and delivery of services.

Collaboration, coordination and sharing learning

Is there anything that stands out as a x-nation opportunity for sharing and learning?

NB: Innovation is an emerging area and as more research and pilots are carried out a UK four nations approach could be very useful and provide a good opportunity for sharing and learning.

TC: Yes, standards and pathways. Through these we can decide what we should do against which we can compare with what we are doing, make the case for change, understand the causes of the deficits and quantify changes required through e.g. demand/capacity work.

TA: Learning from others is key in continued development of all health and social care services, including early diagnosis cancer services. We continually strive to improve by understanding what has worked in other jurisdictions and how we can implement good practices into everyday working. For example, the Rapid Diagnosis Centre model in Northern Ireland is largely copied from the successful model in Wales. We in Northern Ireland are also actively looking to learn from Scotland in breast assessment services. There are also many other examples of cross nation cooperation, sharing and learning.

How important is it for the UK nations to coordinate both their research and system innovation strategies, and how well does this happen currently?

NB: We recognise it is important to coordinate research and innovation and that in this emerging area, coordination between the UK countries would be beneficial and Scotland is happy to support efforts in this area.

TC: Very important. We do tend to work fairly closely with all UK nations in terms of research. This could come a greater challenge unless the NCRI is replaced by another UK based coordinating group.

TA: As healthcare is devolved there are different approaches to research and innovation. This creates some challenges, but also opportunities to try different approaches.

Working together is helpful and something we should strive for. In addition to working east/west, we also need to consider working on an all-island basis to ensure cross border cooperation with the Republic of Ireland.

What are the barriers to a joined up 'all nations' approach to innovations such as lung screening?

NB: Different health care and IT systems make an all-nations approach to innovation difficult, however we are always keen to learn from other UK nations and share learnings for example we had representatives from the other nations on our Rapid Cancer Diagnostic Services Oversight Group and have engaged widely with colleagues in NHS England on our development of optimal diagnostic pathways. Colleagues from the other UK nations are also sitting on the Scottish Expert Advisory Group for Lung Screening to share learnings. Innovation is an emerging area, and we are looking to coordinate more in future.

TC: I don't think there should be any now the National Screening Committee has supported. The UK Nation Chief Medical Officers usually endorse the NSC recommendations.

TA: As healthcare is devolved there are different approaches to health and social care funding, political priorities and resource availabilities. The

challenge is hence not a joint up approach, but what relevant pressures and priorities are.

Strengthening the healthcare system

All speakers advocated for a whole systems approach, but all the interventions mentioned were based in either primary or secondary care. What is being done to connect and strengthen the system? How much of each nation's strategy depends on cancer specific actions versus actions in the wider health service and beyond?

NB: Recently, Scottish Government Primary Care, the Royal College of General Practitioners and CfSD have worked collaboratively to engage with primary and secondary Care interface groups to build and sustain strong relationships that will nurture a positive culture across these settings. Work has included identifying opportunities and implementing person centred pathway redesign across primary and secondary care.

We work very closely with the Scottish Primary Care Cancer Group, including them as a key stakeholder in our cancer governance groups and involving them in the decision-making process for any interventions.

Delivery of the strategic ambitions are interdependent with a range of other strategic aims in health and beyond. The strategy cannot stand alone, nor can it supersede wider strategies. Rather it complements, links to and will operate within the broader health aims of the Scottish Government. The Strategy is accompanied by a three-year Cancer Action Plan and underpinned by actions in Annual Delivery Plan guidance to Boards alongside medium-term planning with longer-term planning and redesign.

TC: Cancer services are integrated across all health services e.g. public health, primary/community care, diagnostics (endoscopy, pathology, imaging genomics etc) and disease specialties (e.g. breast, lung, bowel etc) and unscheduled care. The issue is whether we try to fix the whole system or use cancer as an exemplar. It obviously requires a combination of the two.

TA: In practice, services are usually funded and delivered in either primary care or secondary care. This means our language in explaining work focusses around primary and secondary care. However, this does not mean that work is siloed or that implementation of work is in one place or another.

There is a significant difference in service delivery though. Most diagnostic services, such as imaging and pathology, is in general delivered in secondary care, and actions around these will naturally therefore focus on secondary care.

Cancer services are not separate from the wider health and social care system. It is therefore not possible to separate out pressures in cancer services from the wider system pressures.

How much do issues with IT - for example fit for purpose patient management software, communication between GP and treatment, up to date data - contribute to patient waits and late diagnosis?

NB: Health Boards in Scotland submit weekly Cancer Waiting Times data through a standardised template to the Scottish Government, detailing weekly referral patterns, and patients at risk or who have breached the cancer waiting times standards and have not yet been treated. This management information is reviewed on fortnightly performance calls with

Boards' Cancer Management Teams to identify challenges, explore solutions and spread best practice.

Patient management software is the responsibility of each individual Health Board. However, national solutions are being explored.

TC: Significantly. Navigating NHS is very complex with very fragmented services.

Don't you think that if this issue is not solved, additional investments may be less effective overall and might widen the inequalities?

NB: The navigator and Single Point of Contact (SPoC) roles are important to help patients navigate the NHS. Navigators have played a key role in the Rapid Cancer Diagnostic Services and have helped support patients through every part of the pathway, this has been reflected in positive patient and professional feedback.

The Single Point of Contact approach aims to:

- improve access to care and timely reporting of results
- ease navigation through cancer care pathways
- improve patient experience, shared decision making and patient-reported outcomes
- positively impact our workforce by releasing capacity to provide more proactive and complex care.

SPoC is key to person-centred care, so that people with cancer are at the heart of all decisions and actions involving them. SPoC is also important in improving communication and optimising collaborative working across health, care and third sectors. A wider evaluation of the programme, including a scalability assessment, is currently underway and will look to

make recommendations as to how the role can be implemented into more cancer pathways across NHS Scotland.

A Monitoring and Evaluation Framework for the cancer strategy and plan was published in August 2023. The planned external evaluation will focus on inequalities, particularly race, ethnicity, social deprivation and geographies. The aim is to support decision-making about where best to focus future policy actions by contributing evidence about what works and does not work, to provide effective support along the cancer care pathway for the target groups affected by health inequalities. Systems mapping will measure interdependencies in the system and key levers for change.

TC: Yes, I do. How is the increased/changing demand for treatment linked to improvements in diagnosis being planned for/managed in Wales?

Focusing on those cancer sites and localities (ie reducing variation in access and outcomes) that are poorly complying with existing proven approaches.

Accessing healthcare and primary care

Given most cancers are diagnosed after visiting GP, what more needs to be done to improve access to primary care? Is it time to rethink the front end of the cancer pathway and open up diagnostics significantly? Could vague symptom pathways provide a route for self-referral?

NB: Supporting Primary Care is an important workstream in the Detect Cancer Earlier Programme and the earlier cancer diagnosis vision, part of Scotland's new cancer strategy which was published Spring 2023, includes a commitment to explore the role of community pharmacists in supporting earlier diagnosis efforts. Direct access to CT for primary care is in place in a

number Health Boards and Rapid Cancer Diagnostic Services continue to be implemented in NHS Scotland. Population coverage to RCDSs would need to be achieved before self-referral could be considered.

The Scottish Referral Guidelines (SRG) for Suspected Cancer have been developed to support primary care clinicians to identify those with symptoms suspicious of cancer and identify those who require urgent assessment by a specialist. A clinical refresh of the Scottish Referral Guidelines for Suspected Cancer is currently underway to help ensure the right person is on the right pathway at the right time.

TC: It's an important issue, need to pilot self-referral in broad cancer sites but also support primary care through advice, education, pathways that reflect the patients they see, innovative technologies, support from other staffing groups such as pharmacy and of course additional capacity.

For patients diagnosed via emergency presentation, does the data suggest that we've missed opportunities in primary care to refer people earlier? If not, why do people end up as emergency presentation?

NB: The earlier cancer diagnosis vision, part of Scotland's new cancer strategy, which was published Spring 2023, includes a commitment to routinely publish cancer diagnosis through emergency presentation data via PHS (Public Health Scotland). This data, along with a commitment to improve the availability and quality of primary care cancer data will allow us to analyse any reasons for emergency presentation to enable service improvement.

The current clinical refresh of the Scottish Referral Guidelines (SRG) for Suspected Cancer will support Primary Care in ensuring the right person is on the right pathway at the right time.

TC: Combination of reasons (some def present whilst waiting) and some attend A+E if they perceive that to easier than getting primary care appointment (and some of course are genuine emergencies) but it does needs to be loco-regionally. Some of this has been done through the ICBP (International Cancer Benchmarking Partnership).

TA: Broadly speaking, there are three categories of patients who are diagnosed via emergency presentation; patients who have been referred from primary care, but not yet been seen in secondary care, patients who have sudden, unexplained, symptoms who have not sought – and not though about seeking – primary care help, and patients who are in emergency departments for other reasons and cancer is also detected.

It is therefore not usually a missed opportunity in primary care, rather a system wide issue of either secondary care capacity or patients not identifying their symptoms as such that they need to seek primary care help.

As mentioned by speakers, there is a perceived barrier in getting a GP appointment. There are more appointments than ever being offered, how can we improve this relationship/public perception?

NB: Our most recent Detect Cancer Earlier "Be the Early Bird" public awareness campaign updated the campaign call to action from "Unusual, persistent symptoms? Contact your GP practice" to "Unusual, persistent symptoms? Your GP practice wants to know" for the second burst after evaluation from the first phase of activity suggested that a more inviting message was required to encourage people to contact their GP practice. Subsequent evaluation indicated the likelihood for people to contact their GP practice with suspected cancer symptoms had increased, indicating the new endline has been successful.

In November Scottish Government published The General Practice Access Principles. This sets out a clear framework for the core principles of how GP services should be delivered – equitably, sensitively, reasonably and appropriately, making the most effective use of resources and systems currently available.

The main principles are:

- Access to General Practice is inclusive and equitable for people, based on the principles of Realistic Medicine and Value Based Health & Care. Care will be person-centred and based on what matters to the individual.
- People should have a reasonable choice about how they access services.
- Services should be approachable, sensitive, compassionate, and considerate to need.
- General Practices should help people to get the right care from the best and most appropriate person or team to care for them (Right Care, Right Place, Right Time).

We continue to work together with all relevant partners to effectively implement these principles, including through our commitment to the ongoing recruitment of primary care multi-disciplinary teams as well as Phase Two of the GMS Contract. Additionally, Healthcare Improvement Scotland's Primary Care Access Programme has already worked with over 100 general practices to improve access arrangements and continues to run with excellent uptake.

TC: Changing patient behaviours is complex. Education, awareness, changing expectations (reducing fatalism) and acting on symptoms etc.

There are still some people who do not engage with GPs, despite ongoing symptoms. How can we all work together to improve

communication on cancer symptom management to members of the public?

NB: Our public awareness campaigns contribute to our goal to improve public education and empowerment through raising awareness of possible signs / symptoms of cancer and empowering those with possible symptoms to act early. The campaigns run through media including TV and radio, in pharmacy and digital. In parallel to our "Be the Early Bird" campaign, a Detect Cancer Earlier (DCE) roadshow visited communities across Scotland to reinforce key messages, these were targeted in the most deprived areas.

As well as increasing diagnostic capacity do the panel think increasing GP direct access to diagnostic tests is needed to improve early diagnosis?

NB: GP direct access to CT had been rolled out across NHS Scotland and in the areas where it is not available (4 Health Boards), our Rapid Cancer Diagnostic Services are supporting GPs in improving access to diagnostic tests.

TC: Yes, diagnostic services should be more responsive to the needs of primary care, both with direct access, vague symptoms and symptom based diagnostic pathways.

I observed that a higher proportion of people are diagnosed via the urgent suspicion of cancer route than via screening at 10%. How can this be reversed so that we have more being diagnosed thru screening?

NB: Optimising screening programmes is a key workstream of the Detect Cancer Earlier Programme and our public awareness campaigns encourage people to participate in the cancer screening programmes

when invited. The “equity in screening strategy - 2023 to 2026” was also published in July 2023 and looks to tackle inequalities in the screening programmes.

TC: Lung health checks, test & age thresholds of existing tests, new technologies such as liquid biopsies and improving uptake.

I'm interested to hear more on Scotland’s focus on pre point of suspicion project with community pharmacies.

NB: In 2021/22, the Detect Cancer Earlier (DCE) Programme funded the North Cancer Alliance to support community pharmacy in the identification of patients with symptoms suspicious of cancer and, where necessary, prompt patients to make an appointment with the GP practice. The project focused on lung and head and neck cancer symptoms and results of the evaluation are currently being considered by the cancer governance groups.

Inequalities

What single intervention do the panellists believe will have the biggest impact in addressing inequalities in cancer outcomes?

TC: Access to adequate diagnostic capacity and implementing innovations at pace and scale.

We know that there are huge inequalities in cancer diagnosis and treatment, most panellists mentioned having areas of deprivation, what do you think is the most important step to tackle this issue?

NB: The navigator role in the Rapid Cancer Diagnostic Services has proven to be very successful in reducing DNA (do not attend) rates, and data from

one Health Board has suggested the RCDS approach has reduced the traditional health inequality.

Our public awareness campaigns are also targeted towards adults aged 40+ and in C2DE SEGs, in all of Scotland. This reflects the fact that those living in areas of higher deprivation have a higher risk of cancer, are less likely to take part in screening and more likely to present at a later stage.

TC: Its hugely complex and much is outside health (e.g. housing, education, poverty etc) but changing patient behaviours using research proven approaches.

Innovation

It is apparent that innovation is key in early diagnosis, but systems are stretched and struggle to accommodate this. What can be done to create the space in healthcare to implement it?

NB: The Accelerated National Innovation Adoption (ANIA) Pathway is an exciting new initiative in NHS Scotland focused on using technology to fast-track proven innovations into the healthcare frontline on a Once for Scotland basis. It is delivered in collaboration with a range of national organisations to combine the right skills and capabilities across Scotland to reduce the barriers to national innovation adoption.

TC: Main issue is system leadership (including clinical consensus and guidelines) to implement at pace and scale, investment and a workforce plan. Senior clinicians need to implement these technologies and service developments.

What new tools and tests are needed to enable early diagnosis in the geographical areas represented? What should new innovations

do/have to increase the chance of their adoption into the healthcare system?

TC: New screening and symptom-based technologies e.g. lung, liquid biopsies.

How can we become more efficient with the design of research studies and pilots to make the best use of limited funding and ensure maximum utility of findings across the UK?

NB: Evaluation is a key part of the design process in order to support transition to business as usual, as is collaborative working where appropriate and possible. Engagement with CRUK and CSO can support this across the UK.

What are the most promising avenues for AI in terms of early diagnosis?

NB: The DCE (Detect Cancer Early) programme has funded two innovation test beds in NHS Scotland (NHS Grampian and NHS Greater Glasgow & Clyde) to use an artificial intelligence (AI) product to help prioritise people that have suspected lung cancer for follow-on CT as part of the ANIA collaborative. This will support delivery of Scotland's optimal lung cancer diagnostic pathway.

TC: Analysing routinely collect information e.g. primary care records, and supporting (not replacing) diagnostic tests e.g. analysing pathology and genomic samples, imaging and endoscopies etc.

I'd like to find out more about the use of QFIT for risk stratification in Scotland.

NB: Clinical guidance on the use of faecal immunochemical (qFIT) testing was published in June 2022 in NHS Scotland. This includes guidance for primary care to aid onward referral and for secondary care where GP access to qFIT testing is more limited. This helps ensure that the investigation of patients with colorectal symptoms can be targeted to those with the highest risk of cancer.

Improving understanding of risk associated with clinical features in primary care including symptoms and investigations

Responses are provided by:

- Dr Matt Barclay (MB), University College London
- Dr Pradeep Virdee (PV), University of Oxford

How might we better translate the concept of 'risk stratification' and thresholds into practice? Does the success of risk stratification rely on the public's understanding of risk?

MB: I think we always have to rely on professionals unless we want to build in major inequities for groups that are less health literate. Public education is of course valuable but will never reach everyone. I think the current thresholds are well-used in practice, but it relies on us producing useful evidence to support their use and to support the identification of patients who meet these thresholds. I hope risk prediction approaches such as QCancer will continue to help support risk stratification of symptomatic patients.

PV: Our patient and public advisory groups have highlighted that the term "risk" is difficult to understand and often comes with negative

connotations. There needs to be a better understanding of the concept and communication of "risk" by healthcare providers. The wider primary care research community is conducting important research to explore how best to do this to better support patients in primary care.

Are differential risk thresholds based on patient characteristics/ presentation the future of referral guidelines?

MB: I do not think there is an increasing feeling that work to examine the consequences of current risk thresholds, and of possible alternative approaches to setting thresholds, would be valuable. But such work might lead to the conclusion that a fixed risk threshold is actually the best approach. However, I would not be surprised to see a move toward lower risk thresholds in young patients.

PV: Every patient is different so we need thresholds to consider important factors like age, sex, ethnicity, and perhaps more, to optimally identify patients who should and should not be referred. For example, in our 'blood test trend for cancer detection (BLOTTED)' project at Oxford, we are exploring the role of repeat blood tests and found that incorporating more individualised information (i.e. repeat tests) may offer improved cancer risk stratification than current standard approaches, which include blood test abnormality. So, it may be acceptable to still rely on risk thresholds in referral guidelines, but the choice of those thresholds needs careful consideration and validation.

Do we need to balance increasingly risk stratified, complex referral guidelines vs keeping guidelines simpler to encourage use?

MB: Yes, and the correct place for this balance is in the guidelines – the underlying evidence can and should have more nuance.

PV: Yes. We can derive guidelines that have the potential to find 100% of cancer cases but that would only be possible in practice if the guidelines are used. In part, this means that guidelines need to be accessible.

Can you also translate this so that secondary care understands the difference between threshold for referral vs risk? We need to challenge the rhetoric that GPs are referring inappropriately.

MB: I agree but I think it is difficult for secondary care to understand that if 95% of the patients they see are cancer-free, then this is evidence that the GP is referring correctly. I also think we do need to be aware that secondary care is also under pressure and consider how best to design pathways for cancer diagnosis – this is all beyond my understanding, but I know for example in France there is much more access to imaging from primary care (which causes a different set of problems).

What sort of system of care do the panel envisage that would enable trend recognition and personalised risk scoring to become a reality without burdening GPs and recognising challenge in providing continuity of care? Could AI play a role?

MB: I think there is a safety-netting role for AI, perhaps. Once an encounter is coded up, then it is probably simple for a risk model to highlight if cancer risk might be too high. But I am worried about how these kinds of systems would work in practice, as I understand clinical IT systems still leave quite a lot to be desired.

PV: Our current GP systems already have the capability of detecting trends. For example, GP software includes a feature to visually show a patient's trend in blood tests over time – but there are no recommendations for GPs to refer based on the trend, as there is a limited evidence based for whether trend is useful, but we are building this evidence based in our

BLOTTED study at Oxford. The ultimate goal is to offer repeat blood testing in primary care to optimise the precision of trend and cancer risk. We are actively discussing the acceptability of repeat blood testing with our patient advisory groups and how to appropriately ensure continuity of care.

How can we ensure that interventions based on risk don't exacerbate existing socioeconomic and ethnicity-based inequalities?

MB: We can't ensure this. In my experience, almost every possible health intervention exacerbates inequalities. What we can do, is see what happens, try to understand why, and then put mitigations in place – some of this we may be able to anticipate and do at the design stage. I think we can ensure that interventions do make things better for all groups.

PV: We need to work with our diverse patient advisory groups to develop approaches that are tailored to the needs of individual under-represented groups to reduce inequity. Among our research studies, we value the perspectives among our PPI Advisory Groups and often these include discussions on the strengths and weaknesses of current and potentially new approaches. These discussions include the potential for interventions to maximise the number of people who engage with their GPs, get repeat blood tests, and go for cancer investigation.

Pradeep showed that weight loss was seen in older patients, but there was a large proportion of patients aged 18-39. How can we work to improve earlier diagnosis of cancer in younger patients?

MB: It must be noted that a very small proportion of people aged 18-39 develop cancer, but of course this is a large absolute number of cancers.

This is one reason why I think we might want slightly lower risk thresholds for symptomatic cancer referral for younger patients.

PV: Our research has shown that trend can be better than abnormality (the current approach) to identify high risk young patients, as well as older patients. In practice, younger people are less likely to have repeat blood tests to identify trend, but this would change if we offer repeat testing as standard of care and work with our patient advisory groups to deliver approaches to maximise uptake of repeat testing and improve detection of early onset cancer.

To your point about the inference for 3% referral threshold, would you advise any specific alterations to the current NG12 guidelines based on your findings and falling conversion rates?

MB: Every time I have looked at conversion rates, I have felt that GPs are probably not yet referring at 3% risk. A conversion rate of 4-6% is probably what we should be expecting nationally once GPs are referring at the 'right' rate. It is unfashionable to say it, but I think GPs are usually doing a good job – suspecting and diagnosing cancer in a primary care population is extremely hard.

The changes I would take would likely be ones of refinement, particularly adding some 'joint' lower GI / upper GI routes – and building on the role of RDCs and similar to help with non-specific symptoms.

What I would not do is make radical changes. I think we can tweak some of the age cut-offs, think about smokers differently perhaps, and have different criteria for men and women.

What other features/ diseases could the blood trends be associated with?

PV: We are currently investigating this. We have seen that some medication and co-morbidity may affect blood test results and influence the trend. Our risk stratification tools that incorporate trend may also consider relevant medications and co-morbidity so that we can rule out other things influencing trend and narrow down the cause for the trend to be underlying cancer.

Is it possible to combine different blood test trends and if so, does that add predictive value?

PV: Yes, it is possible to combine different test trends. We are currently exploring what combinations offer the best predictive value. For example, in recent work, we found that the combination of haemoglobin, mean cell volume, and platelet trends gave the highest predictive value for colorectal cancer in particular.

Innovation in cancer

Responses are provided by Dr Margherita Carucci (MC), Cardiff University.

Are we making enough use of the third sector to drive innovation in cancer?

QuicDNA is an excellent example of the use of third sector through collaborative working across academia, NHS, industry, and charity. The drive linking all these sectors is ultimately the improvement of the patient outcomes.

What can we do to ensure innovation is spread more widely and not just in specialised centres, as this is often where variation in care arises, and disparities created?

It is important that innovative treatments or health services tested in clinical trials are adaptable and deliverable in a variety of healthcare settings. The use of innovation beyond the specific cancer type or hospital setting should be considered in the design and research questions of clinical trials.

How accurate does a test need to be at identifying risk for it to be accepted?

The QuicDNA study is giving us the opportunity to explore the benefits and limitations of the ctDNA test with the view to improve it in terms of accuracy and fast turnaround. The ctDNA test may be not 100% accurate but it can drive toward further investigations to confirm or not its results and help doctors plan the most effective treatment for the individual patient.

What role might charities and local community groups have in helping to communicate risk?

The QuicDNA is partly funded by the Maxwell Family Genomics Funds, a charity funded by Craig Maxwell after he was diagnosed with incurable and inoperable lung cancer. Craig and his family have organised a number of fundraising events with the aim to contribute to the improvement of cancer pathway. The response of the local community has been extraordinarily positive. Though these initiatives are set up to encourage people to donations for supporting cancer research that can improve the journey of cancer patients, they also highlight how the chance to get cancer is very high for everyone and prevention is crucial.

Are diagnostic centres in Wales ready to adopt innovation like ctDNA more broadly? In a 24hr society, we do have the resources and capacity for a 24hr service including turnaround for diagnostic tests?

The QuicDNA study will pave the way for the use of ctDNA across all the Welsh Health Boards and beyond. From the possible constraints in the logistics of the ctDNA test (e.g. when blood samples are collected on a Friday afternoon), we're learning how to adapt the test to all the diagnostic centres in Wales and improve the turnaround.

You mentioned the advantages of conducting the QuicDNA study in Wales. Is there anything that you can say with regard to how NHSE might prepare for implementing something similar?

The ctDNA test service will be own by NHS and hospitals will adapt it to their specific requirements for its delivery. At the moment, the All Wales Medical Genomics Service is the only NHS UK lab that has implement this test. The QuicDNA study will certainly help the other nations to implement this test.

Identifying opportunities for timelier diagnosis

Responses are provided by Professor Georgios Lyratzopoulos (GL), University College London.

Do any panel members have a view as to the 'best possible' distribution of %s for the different routes to diagnosis in one, five- and 10-years' time?

It is a great question, for which the exact answer is not full known. In general, the aim should be to reduce emergency presentations to the minimum dictated by tumour factors, having removed the influence of patient and health system factors; and then to aim to remove the influence of tumour factors through asymptomatic detection where/if there are diagnostic technologies that can enable population-based screening (noting that currently we only have them for few cancers only,

such as colorectal cancer). However, comparisons with historical data in England (from 2006 onwards) indicate that reduction are possible – though the absolute 'ceiling' (or rather the 'floor') of further reductions is unclear. International comparisons are helpful in that respect, because they indicate that there is space for further reduction, though methodological issues around different definitions used in various studies and contextual factors such as diagnostic care / diagnostic services organising may affect reported proportions, so any such comparisons should be nuanced. We need more research in trying to decompose the percentage of emergency presentations that are potentially avoidable.

We have heard about mental health if patients affecting cancer diagnoses. Has the impact of mental health of clinicians on referral behaviours been studied? Particularly in those diagnostic windows?

This is an area (physician burnout) where important research is yet to happen – I have no direct expertise on the subject, but this group have published research in this general area: https://pubmed.ncbi.nlm.nih.gov/36104064/ and https://pubmed.ncbi.nlm.nih.gov/35958644/.

Any reflections of whether primary care attitudes are generally that current conversion rates are too low?

In general, it is very difficult to know what is the right risk level at which a patient should be investigated for suspected cancer, and it is that risk level that drives the % of positive cases yielded by urgent referrals for suspected cancer. NICE guidelines published in 2015 recommend a risk threshold of 3%, but the percentage of urgently referred patients who are diagnosed with cancer is higher than 3%. The problem with 'very low' referral risk thresholds is that they are costly to the system and can also be disruptive to patients who are not found to have cancer. The problem with 'very high'

referral risk thresholds is that they mean that patients with cancer who could have benefited from referral are likely not referred because their risk is not deemed that high. This is an area in need of further research.