

Crossing Channels

Interdisciplinary answers to today's challenging questions

A Podcast series hosted by **Rory Cellan-Jones**

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Season 3 - Episode 3

CAN TECHNOLOGY RESCUE AILING HEALTH SERVICES?

With

Angelique Acquatella (TSE)
Shan Morgan (Bennett Institute)
Jennifer Dixon (Health Foundation)

Can technology rescue ailing health services?

HOST

Rory Cellan-Jones (former BBC correspondent)

SPEAKERS

Angelique Acquatella (TSE), Jennifer Dixon (Health Foundation) and Shan Morgan (Bennett Institute)

Rory Cellan-Jones 00:06

Hello and welcome to Crossing Channels, I'm Rory Cellan-Jones. Can digital technology rescue ailing health services? That's the subject of the latest in our podcast collaboration between Cambridge University's Bennett Institute for Public Policy and the Institute for Advanced Study in Toulouse. As ever, we're going to use the interdisciplinary strength of both institutions to explore a complex challenge. What is the current status of digital technology adoption in health services? Why is the health sector so slow to adopt these technologies? And what are the opportunities for med tech for individuals and the wider economy?

Rory Cellan-Jones 00:58

To explore these issues today we have Angelique Acquatella from the Toulouse School of Economics. Angie start us off, what's your research all about?

Angelique Acquatella 01:06

My research mostly focuses on how insurance and reimbursement incentives drive provider behaviour and innovation incentives.

Rory Cellan-Jones 01:14

So Angie, you've recently arrived from the United States in the very different French health system but we'll mainly focus on your insights into the US healthcare sector. Shan Morgan is on the Advisory Council of the Bennett Institute and chair of the Royal Devon University Hospital NHS Foundation Trust. Shan, what does your work focus on?

Shan Morgan 01:34

Well, Rory, I'm chair of a very large NHS Trust in Devon, Southwest England, we have an annual budget of just under a billion, about 16,000 staff. And we provide services for 615,000 people locally. As a non-executive, my focus is on trust's performance and strategy.

Rory Cellan-Jones 01:55

Excellent. And joining us from the Health Foundation, we have Jennifer Dixon. Jennifer, remind us of your main research interests.

Jennifer Dixon 02:02

Yes. So I'm the chief of the Health Foundation, which is an independent charitable foundation. We do lots of analysis to improve health and care in the UK. And quite a bit of it focuses now on technology. But we also do quite a lot of work about innovation and spread, and also NHS reform and the future of the NHS. So some big issues, we focus on.

Rory Cellan-Jones 02:24

Some big issues, but we're going to focus on the technology issue. So let's start by looking at the current state of adoption of all the exciting digital technologies that we've seen in the last decade or so. I have a feeling from my own experience that certainly in the UK, we've been slow to adopt many of these technologies. So let's start with Jennifer and Shan. Jennifer, you kick us off. What is the record so far in the UK for the NHS being go ahead in adopting everything from smartphone, censoring to AI in healthcare?

Jennifer Dixon 02:58

Yes. Well, it's, it's mixed, I think is the fairest response. But I do think the background here is that the NHS has been undercapitalised in terms of investment. And I think that's one of the biggest issues actually. I mean, if you look across the international sphere, OECD, we spend about 40% per head of the OECD average on capital investment, which is needed for digital infrastructure. So although in the UK, it has been recognised over many years that IT and data and digital are the future, we haven't invested enough in

it. And I think it shows with mixed infrastructure around mixed skills, mixed ability, and amazing dependencies still on paper. We're getting there. But actually, there's still a long way to go, which we can get into.

Rory Cellan-Jones 03:46

Shan, you're at the sharp end, in that you're a non-executive director of a huge NHS Trust. The cliché is, as Jennifer said, it's still awash with paper, the health service, and it's one of the last major users of fax machines. Are those clichés accurate?

Shan Morgan 04:03

I agree with Jennifer, overall. It's clear that digital maturity tends to depend on the priorities and resources available to individual trusts. And as Jennifer said, it requires a very significant investment and a lot of enthusiasm. The current target, for example, for NHS trusts to have electronic patient records, which is a really important underpinning piece of digital technology, isn't till March 2026. Our own trust has committed to that already. And it's committed to maximising the benefits of the electronic patient records.

Rory Cellan-Jones 04:40

That seems extraordinary. 2026 was something which most patients would think was something that was becoming common in the late 20th century.

Shan Morgan 04:50

I agree. It's becoming more and more common, but as I said, takes a big investment of time and funding, patient safety and quality of care are always going to be top priorities for trust. And our staff and clinicians in particular need to be properly engaged and confident about the benefits of IT for our trusts. And of course, we are under, as Jennifer acknowledged, enormous operational pressures. And that can really reduce the headspace for the kind of change and energy that's needed to take this forward.

Rory Cellan-Jones 05:21

Angie, you're, as I said, recently arrived in Toulouse, the majority of your research up to now, has been about the very different American health system. What do you observe about how innovation takes place across that system, and what form it takes?

Angelique Acquatella 05:39

I would argue that the main challenges to technology adoption, at least within the US system, involve physician willingness to adopt and how these new digital technologies can integrate into the provider workflow. I'm working on a project with Alice Chen at the University of Southern California, and we're trying to collaborate with the health system to try to get them to adopt new artificial intelligence technology to reduce physician time spent charting and documenting patient information. On the one side, providers seem somewhat reluctant because they think that even with the best machine learning

technology, you need a provider to look at the entire history of care in the process of charting and documenting treatments and diagnosis for the patient. So there's sort of limited faith in to what extent AI can improve the efficiency of physician workflow. Then there's the side of reimbursement. Having uncertainty on whether an insurance company will or will not cover a new innovation absolutely affects the financial incentives of physicians to adopt or not adopt a particular technology. So some of the factors that facilitate new technology adoption, or having a government insurer that guarantees, okay, if you actually find a cure for hepatitis, like Sovaldi, will actually cover that. That provides some sort of insurance from both the providers' perspective and also to the innovator, when thinking about introducing these new technologies in the market, and having some sort of guarantee that these technologies will proliferate through the market, and the patients that actually could benefit the most from it.

Rory Cellan-Jones 07:21

Well, this is interesting. I was at a roundtable recently with the UK health tech providers, and one of them had abandoned the UK because of this very question of payback. Lots of areas of health service keen to experiment with his technology, but not to pay for it. And he had moved on his entire operations to the United States where he said, it was easier to get paid. Jennifer, do you recognise that kind of picture? Technology that the NHS has interest in, likes to trial, but doesn't actually find easy ways to pay for? Whereas technology firms look to the US, the vast US health market, and see the surest sign of payback?

Jennifer Dixon 08:02

Yeah, so I think there's a few things here, I think the first thing is that payment rates in the UK are very low, compared to the US, that's where the margins can be made. But secondly, in a constrained environment, such as the National Health Service, you need to set priorities. And if vendors of innovations come to you in random order, depending on the chronology of the innovation, as opposed to the priorities that the NHS have, then the NHS has to make some decisions about whether the particular innovation in front of you is a high priority or not. Quite often, it may not be, and it may frustrate innovators. So I think in a sense in Britain, we need a kind of double edged thing. We need almost bottom up innovation, for sure and find ways of paying for essential new innovations. But we can't just depend on that and the way that the US does, we have to have a kind of more top down strategic view about what are the big game changing technologies that we need to invest in and go faster on. And they may need to be pushed more quicker than the commercial sector can deliver them. So there needs to be a top down strategy as well as a bottom up sort of innovation bubbling up. And in the US, it's far more a bottom up innovation route because of the lack of constraint of funding even in the Medicare and Medicaid public system in the US. So it's a very different environment, and our model in the UK is far more closer to the European models, where there are value for money considerations because we offer universal service.

Rory Cellan-Jones 09:38

Which all begs the question, what are the big innovations that should be rolling out in healthcare right now? I took a closer look at the impact of the smartphone on various industries and found that healthcare

was way behind just about every other industry and in adoption of smartphone technology. Is that for instance, remote monitoring, remote patient interaction - is that an area?

Jennifer Dixon 10:00

There are basic interactions like that you see in other industries, like the phone and the app, and the NHS app has actually been, you know, been taken up quite considerably.

Rory Cellan-Jones 10:09

If we just explain what the NHS app is for people who are not familiar.

Jennifer Dixon 11:15

You can make an appointment with the GP, you can do repeat prescriptions, you can order a vaccination, and so on. So there's a number of applications on the NHS app, but it really does help both providers, particularly GPs, and patients just cut through, you know, not having to find the surgery, for example, and just getting your prescriptions to your door. But in terms of the big game changing minds, I think some of the early wins, that could be more of a top down sort of, or at least strategic approach by the NHS, as opposed to bubble up, are the non-clinical applications actually, which will lean the administration of the NHS, such as the sort of thing that we were just hearing from Angelique, which is natural language processing. So in the doctor-patient interaction, making sure that artificial intelligence or technologies can take the verbal interaction and process it into a note, process it into a discharge letter, process it into requests for tests and so on, can take all of that sweat out of it so that the doctor or the clinician can concentrate on the patient, which is what Eric Topol talked about, who's like sort of guru on innovation and medic in the US, he talked about giving clinicians back the gift of time, so that you can actually deal with patients. So there's some non-clinical big things like that, that I think we could go bigger on, which are more labour saving.

Rory Cellan-Jones 11:33

Shan, when these kinds of innovations come in front of the board of this giant hospital trust, what are the questions you ask? Are they about the technology? Or are they always about, can we afford this? What's the return on it?

Shan Morgan 11:47

They're about the technology, they're about the proof that it's going to work and be effective. Most of all, what we focus on are patient safety and quality of care. So if I can come back to the example of our electronic patient record (EPR), that's enabled us to build a virtual ward initiative, which means we can shorten or actually prevent hospital admissions for some people, and offer at least equal monitoring and proper response from clinicians to compared with what's available in hospital. Before the electronic patient record, we were very much reliant on notes in one physical location. But now, obviously, things have been opened up, the patient uses a patient portal, the benefits that we see are that patients are very much more

satisfied, they're at home, which is where they want to be, but they're in frequent contact with the hospital team with the community nursing team. And there's a wide range of wearable devices that enable us to monitor how they're doing. And just to put it in context, we have bit over 1,100 beds in our trust area. And our virtual wards are currently supporting about 160 to 200 patients each month. At their own choice. We don't force it on anybody. And we're very, very clear that this is patient-centred care, and it's all part of providing the best possible service. So I think we and lots of other trusts are moving in this direction. What convinces us most of all is patient safety and providing the best possible service for patients.

Rory Cellan-Jones 13:30

Angie, let's talk about the relationship between patients and providers in the United States. Is there more consumer pressure to adopt these technologies? Or is there more consumer suspicion of them perhaps in the United States? More of an activist patient population?

Angelique Acquatella 15:23

Well that really depends on the service, it really, really depends. So the services that Shan's just talking about maybe are more closely tied to potentially unnecessary hospital admissions. And on that end, there's some great work by a friend and co-author, Maggie Shi, at the University of Chicago, where she's looking at unnecessary inpatient hospital admissions and how monitoring, from behalf of Medicare, changes provider behaviour. So it's interesting because she exploits this regulatory change, where there's basically increased monitoring in some areas of the US. And in response to this increased monitoring where the regulator basically goes into the hospital and conducts an audit and checks each single patient admission and just verifies was this necessary, or was this medically unnecessary? Turns out, providers change their behaviour in response to these audits. And the way that they change their behaviour is by adopting new digital technology that helps better screen the patients that do actually need a hospital admission versus the patients that do not need a hospital admission. That suggests that the hospital admissions weren't necessarily profit driven. But it was just because the hospital's existing electronic health record system lacked the capacity to determine whether this inpatient admission was actually necessary or not. And these technologies just help hospitals better screen patients that benefit the most from care and tease them apart from the ones that maybe don't benefit so much.

Rory Cellan-Jones 15:14

Jennifer, you wanted to come in there.

Jennifer Dixon 15:17

We have just done some polling at the Health Foundation, we've polled 7,000 people and asked them about their attitudes to technology. This is the public. And it's surprisingly positive, actually. So we hear a lot about patient resistance and so on. But we're not seeing this following through polling. Just a couple of bottlenecks, I think, in terms of adoption of it. I noticed what Shan said about the fantastic use of technology for virtual wards or support. But I was talking to the head of AI at a major London hospital, a

teaching hospital, one of our flagship hospitals. And he said they developed a piece of machine learning to spot pulmonary embolism early in patients that would absolutely reduce deaths. I mean, it was completely fantastic on quality and safety, cost 60,000 pounds a year, the finance officer could not allow it. 60,000 pounds, it was too much. So that shows you a nutty example, about why investment really matters at the moment.

Rory Cellan-Jones 16:14

Is there a problem with regulation, with excessive regulation? I speak as somebody with two long-term conditions, an ocular melanoma and Parkinson's. And I write quite a lot about innovation in these fields, and all sorts of fascinating things going on. And then I look at my own care. And very few of these innovations are very quick to arrive. And there seems to be a lot of caution, particularly in the data field in the privacy field, holding back some of that innovation and an excessive caution, for example, from doctors about allowing data to be shared for research purposes. I'm extremely keen for my data to be shared. But there seems to be a huge amount of caution around it.

Jennifer Dixon 16:58

Yes. So there's a huge issue about data and privacy and how you communicate with the public. And this is going to be a very big issue for artificial intelligence because it can really put the brake on unnecessarily unless the public is absolutely part of this picture. But there's also a separate issue which is probably equally big, which is the ability of our regulators to be able to regulate a very fast moving field with masses of new technologies crowding on the agenda and our pipeline being quite small. So at the same time, all these technologies are coming, we're having to find new ways of rapidly evaluating in ways that we haven't done before, which will allow a lot more regulation, a lot more assessment of these technologies as they come through.

Rory Cellan-Jones 17:42

Shan, I get the sense that there was a sudden flowering of innovation during the pandemic because there needed to be. Certain things that were impossible in 2019 became very possible in 2020. And maybe we've gone back again now. What's your experience of the regulatory hurdles?

Shan Morgan 18:00

I think you're right that covid gave a real stimulus. So for example, in our trust area, the Nightingale Hospital in Exeter came out of covid, it was set up at that point using the electronic patient record. And that has been a huge success. And it's really streamlined workflows, so that we've actually reduced the average length of stay for hip and knee replacements for less than half a day. And as you can imagine this huge patient satisfaction with that. I mean, I don't think we've gone back, but caution has come back in. The covid period, I think, was a period of real innovation. We've benefited from that, we've maintained it. But we could do with a bit more energy on innovation. I think for me, a big thing is involving the clinicians,

because if the clinicians have buy-in and are confident about innovation, then it is so much more likely to happen and take off.

Rory Cellan-Jones 18:58

Angie, I know your research looks quite a lot of how health technologies impact different socioeconomic groups. What does that tell us about the ability of tech either to reduce inequality or perhaps to increase the gap between rich and poor in terms of access to good healthcare?

Angelique Acquatella 19:16

This is a very delicate area because when we think about market driven innovation, and market incentives that then pull innovation could have efficiency consequences, or efficiency goals in mind, but not necessarily equity goals in mind. And let me just start with an example. If we look at the schizophrenia population, schizophrenia tends to be a condition that affects individuals in the bottom of the income distribution with low socioeconomic status. There's also a very limited incentives to innovate, just because this population doesn't have the capacity to pay high prices for schizophrenia pharmaceutical agents, therefore, we have missing markets. Insurance has incentivized a great deal of innovation in the past 50 years. It's fascinating to look from the 1960s to today, even just how we treat heart attacks, and just the development of statins for treating heart attacks that's been incredibly cost effective. So if we look at gains in life expectancy, just over the past 50 years, the top 1% of the income distribution in the US has gained on average 10.5 years more of life expectancy if you measure it at age 40. But if you look at the bottom 1% of the income distribution, they only gained 1.5 years. So technological progress has led to improvements in overall health of the average person in the population. But these gains have not accrued evenly to the top and the bottom of the income distribution. That's where regulation can perhaps step in, and try to introduce incentives to innovate in disease areas that affect really low income population. And if we look more globally, the Gates Foundation does a whole lot of financing to incentivise innovation for malaria, or these low income countries in and of themselves wouldn't have enough monetary capacity to create those market incentives we need to have innovation in these areas. So you need intervention of either charitable foundations or governments to see these new technologies come into existence.

Rory Cellan-Jones 21:20

There's something else going on isn't there in that this area is being conquered as it were by Silicon Valley, small tech startups whose mantra is move fast and break things. That is a bit of a challenge to regulation?

Jennifer Dixon 21:33

Yes, it means a challenge to regulation but it's also a challenge to health systems that have public objectives, which may not match with commercial objectives. Just as Angelica said, some things get left behind. So that's why there needs to be some kind of strategy. It's also important to make sure that the innovation agenda, the life science agenda, isn't totally skewed towards commercial objectives either

towards GDP growth, but it also supports the sustainability of the public model of our health system so we can afford it, afford universal care.

Rory Cellan-Jones 22:06

Shan, I mean, obviously, a lot of the innovation comes from very ambitious technology companies. And yet in the UK, certainly there's a lot of suspicion from a large part of the population, about any private sector involvement in the health service. Is that a sort of difficult balancing act that you have to do? There's a lot of controversy, for instance, in the UK at the moment about the involvement of the US firm Palantir in health data, are these issues which occupy you or not?

Shan Morgan 22:35

You're quite right. I think that there is a lot of nervousness about various different aspects of the technology agenda. And going back to what, I think, Angie was saying, in our trust area, we've got very high levels of health inequality, particularly in North Devon, we're very conscious of that. And access to digital healthcare often favours the better off people with access to smartphones. So through our electronic patient record, we've developed a system of patient proxies, as we call them, who are perhaps members of family or people with power of attorney who can receive information or interact with the hospital on behalf of the patient. They don't even need to be local, because it's digital. So I think you're absolutely right. There's a real risk here of digital exclusion. It's something that we need to be incredibly sensitive to, and do whatever we can to put in place, if you like, human responses that will apply to as many people as possible.

Rory Cellan-Jones 23:32

Angie, I see you nodding there. I mean, are these technologies inherently biased towards the rich as it seems to be sometimes the case?

Angelique Acquatella 23:42

It depends on what incentives a particular government has laid out for innovation. So current incentives rely on the patent system. And the patent system, in a way it's a market driven mechanism. We tell the innovator, we'll guarantee monopoly pricing, which means that we're going to tolerate as a society that technology has a price that is above its cost. And therefore we're already tolerating some sort of what we call 'allocative inefficiency' in economics. Because with the current monopoly pricing system, not everybody for whom the drug is valuable ends up getting it in equilibrium, because the price is too high. It's only those that have the highest willingness to pay that end up getting the drug in equilibrium, at least for the patent life of a driver technology. So that's a choice. That's a regulatory choice. And of course, it means that individuals that have the highest willingness to pay for new technologies and innovation are the ones that end up getting it, absent insurance incentives. But that's where insurance really comes in. Because insurance can provide access to individuals that wouldn't necessarily be willing to pay for the technology, but nonetheless, value it from a health perspective. And insurance incentives unequivocally

interact with innovation incentives. Governments have other regulatory tools at hand to incentivise innovation for individuals who get affected by diseases. There's nothing that impedes the US government from saying, hey, if you develop a pharmaceutical agent for schizophrenia, we're gonna give you a billion dollars. But existing incentives really rely on market mechanisms. And that also means that individuals who have the highest willingness to pay, and therefore are the richest individuals, end up getting access to new technologies.

Rory Cellan-Jones 25:30

Isn't the problem everywhere, and this is for all of you, that the incentives right now are all about very short-term crises. There's probably a rare health system around the world that isn't in some sort of crisis at the moment. Obviously, we in the UK feel that our crisis is particularly severe, record waiting lists. And so an awful lot of focus on the short-term, and not maybe on the long-term benefits of these innovations. Jennifer?

Jennifer Dixon 25:58

Yes, well put, Rory. The short-term trumps the long-term. What's going to be interesting in the next few years is as we see that demographic shifts are against us in many senses in terms of the economy. For example, a lot more older people to support, but also at the same time a shrinking share of the working age population. And at the moment in Britain, as we know, the working age population is not particularly healthy. We have 2.6 million people who are economically inactive who are of working age, we have probably many more who are in work who are economically under-active because of ill health. And in fact, we've just launched a commission on this. And what this means is that if you really want to have prosperity for your country in the longer term, you have to think of health as an asset, a capital asset, like you do with other things. And therefore you can't just think of it from year to year, you have to plan for the long-term. Which means, you know, proper investment in a healthcare system and the social care system, but also in some of the upstream wider determinants of health as well that are making people ill earlier before their time. We have to think of it now as an asset, just as we've had to do with green and sustainability, to now think of this and, and maybe even think of new mechanisms to report on health and care, which in a sense, are bipartisan and are accountable to Parliament rather than a Secretary of State, or any particular government. So I think, you know, we really have to start thinking about this. And now, just last thing, [Andy Haldane, who was the former chief economist at the Bank of England, gave a very nice lecture for us last year](#), on this very question about, you know, long-term prosperity of the country has got to be about long-term health, which means thinking seriously, for the long-term, beyond party political, short-term electoral cycle.

Rory Cellan-Jones 27:45

Shan, what does it feel like as a policymaker confronted with complaints about long waiting lists, complaints about standards of care right now, when you are asked to think longer term and maybe invest longer term in systems that may not pay off for a few years?

Shan Morgan 28:03

It's difficult because it's not just the financial investment, which can be very significant. It's also the investment of staff time to make change happen. And you know, that really can't be underestimated. My predecessor in this role took a very brave decision, I think, about five years ago to invest in the electronic patient record system. I think that was a brilliant investment. It's taken a huge amount of time to embed it. The benefits are clearly visible now. It's a real building block for our work. But it took vision and commitment and underpinned by a very thorough programme of culture change, and working very closely, in particular with clinicians. So it's a huge investment, not just in financial terms, but also in staff time, and people have to be confident that the benefits will be worth it.

Rory Cellan-Jones 28:58

I'd like to end by getting each of you to think, you know, five, ten years ahead about what would be an ideal situation in terms of adoption of technology? What kind of innovation you'd like to see come through, and hope would be affordable and hope, whatever system of healthcare operates in the country, would be feasible? Angie?

Angelique Acquatella 29:17

Under existing incentives for innovation, we're just going to continue to see the same types of innovation that we're currently seeing. Now, this dynamic issue that you've raised in the sense of thinking about long-term health of the population and long-term sustainability of a particular innovation. I think that's crucial if we're going to think about new types of regulation that then lead to that long-term health of the population or that long-term financial sustainability. Because the example that Shan just gave, investment in the electronic health records technology, wouldn't have given you a positive cost benefit analysis if he had just gone through a three year horizon window. But if you're thinking in a 15 year horizon window, then the calculus changes, and then it's worth it for the government to invest in these types of technologies. And going back to Jennifer's point, investing in health or thinking about health as an asset in the same way that we think about human capital and education as an asset is key. Not just for the equity side of creating a society where individuals have more similar opportunities in terms of their health outcomes, but also on the efficiency side, in that there is empirical work that also shows that healthier individuals work more. So it's not just about investing in that equity target, but it also in the long-run ends up feeding back into the fiscal sustainability of health investment.

Rory Cellan-Jones 30:51

Thank you. Jennifer, what would you hope to see that would make you be more optimistic about technology playing a beneficial role in healthcare in the UK?

Jennifer Dixon 31:02

I mean, I think a few things, I think the first thing is I really, we really have to see better infrastructure and the data piping, if you like around the system, all linked up to an aid, including general practice data and social care data, we need all of that sort of infrastructure physiology, I think working. I think the second thing is I'd like to see across providers, a lot of local units that are digitally savvy and with huge skills to be able to use some of the data to make some of the applications that it's not all coming from the private sector, that can be shared around the NHS in open source ways. The third thing is, I think we will absolutely see in the next five years, certainly, not just dramatic use of machine learning tools that can sort of read scans in seconds and do it better than humans, for example. But the big new thing will be generative AI, where the dyad between the doctor and the patient or the clinician and the patient will become a triad. And the triad will be decision support, based on the best available global evidence to help clinicians and patients make the right decisions in a far safer way. So for the NHS to prepare itself for that with the piping, but also with the strategy, I think is going to be absolutely crucial. I'm sorry, the last thing of course, all of this population, the public, all of us need to be prepared for this, and to be taken through and engaged and co-producing, because otherwise, they will just be blocked. So that's the prize ahead. And if that were possible, I think it would make a huge, huge, unprecedented difference to the sustainability of the system, the quality of the system, and the future.

Rory Cellan-Jones 32:46

Shan, you're arrived at the sharp end in a way here. Are you optimistic that you can have the freedom to make the kind of decisions that would bring forth the benefits of technology into the health service?

Shan Morgan 32:58

I think we have to talk more and more about the benefits, we have to educate, if you like, future healthcare leaders to see the benefits. We have to produce exemplars so that we really are able to point to the benefits. I think technology has to be part of the package that we need for the future. I think it will be evolutionary rather than revolutionary. And I agree very much with what Jennifer said just now about the triad, so decision support, rather than taking over completely. And I think it will be fantastically important to respond effectively to the demographic change that we've been talking about health inequalities. And ultimately, I think the real prize is if we can focus our systems much more on preventive care, so that we are empowering people through digital and other means to improve the quality of their own health because I agree with with what both Angie and Jennifer has been saying about the health of the population as a real asset.

Rory Cellan-Jones 34:02

Well, we've run out of time. Can I just also put in a word for patient access to data, something I'm quite passionate about, if we're going to really involve patients in this technology future for her for healthcare. That is all we've got time for this episode. Thanks to Angelique Acquatella from the Institute for Advanced Study in Toulouse, Jennifer Dixon from the Health Foundation, and Shan Morgan from the Royal Devon Trust. Let us know what you think of this latest episode of season three of Crossing Channels. The Bennett

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