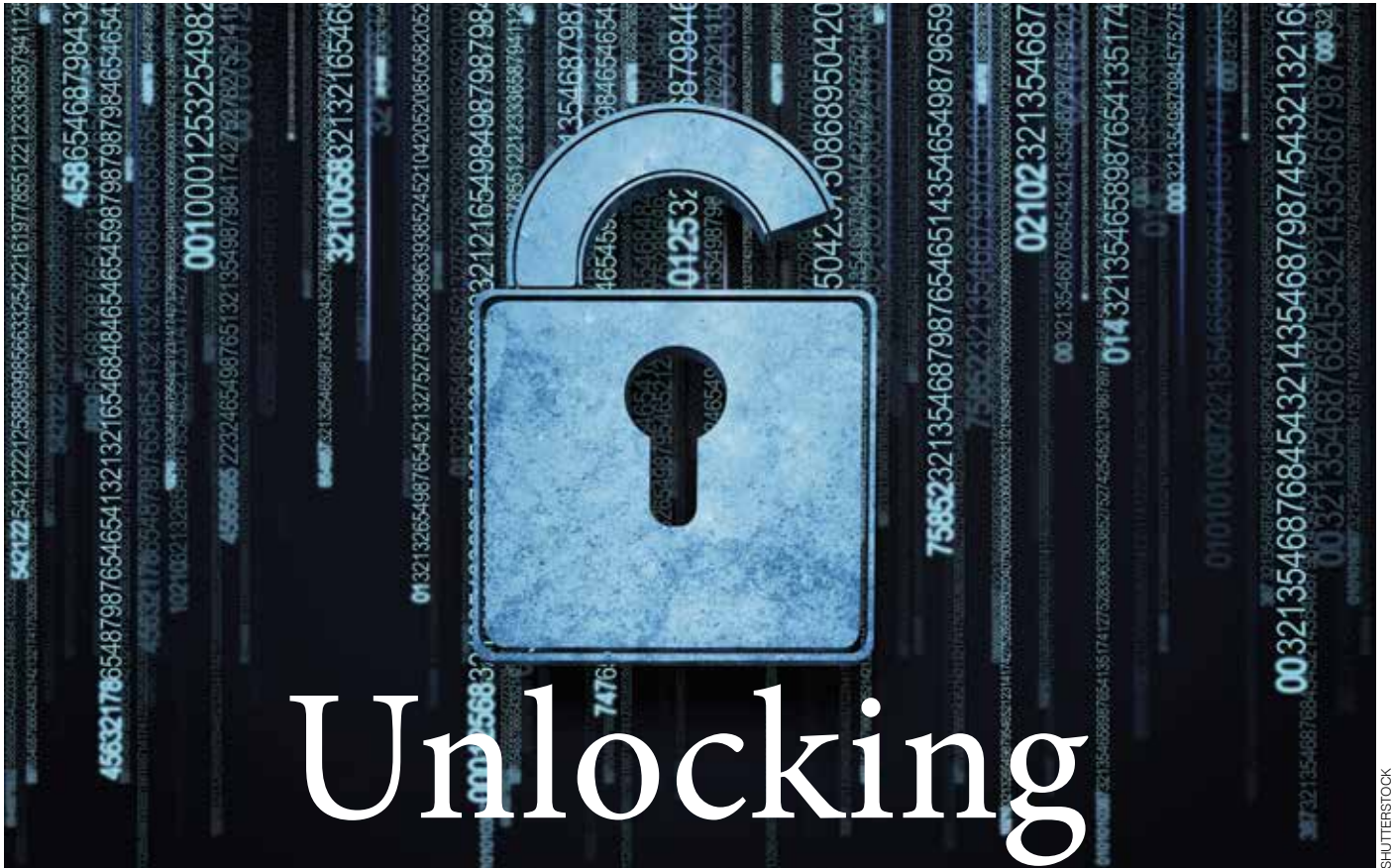


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Unlocking the power of data

The NHS is data rich, but it needs to be analysed, communicated and acted upon if the service is to extract its full value – as delegates at an HFMA roundtable, supported by OpusVL, heard recently. Sarah Day reports

In April 2022, the Goldacre review highlighted that the NHS already has some of the most powerful health data in the world. This is not surprising, given almost every interaction with the health service leaves a digital trace from diagnosis, through treatments and tests and even outcomes. And these exist for almost every citizen in the country. But simply having the data is not enough.

‘This raw information has phenomenal potential,’ the review said. ‘Data can drive research. It can be used to discover which treatments work best, in which patients, and which have side effects. It can be used to help monitor and improve the quality, safety and efficiency of health services. It can be used to drive innovation across the life sciences sector. ‘But raw data is not powerful on its own. It must be shaped, checked, and curated into shape. It must be housed and managed securely. It must be analysed. And then it must be communicated and acted upon.’

The challenge of unlocking the power of this data for the NHS was the question set for a roundtable held by the HFMA in November, supported by open source software and technology company OpusVL.

The first topic up for discussion was the sheer volume of data

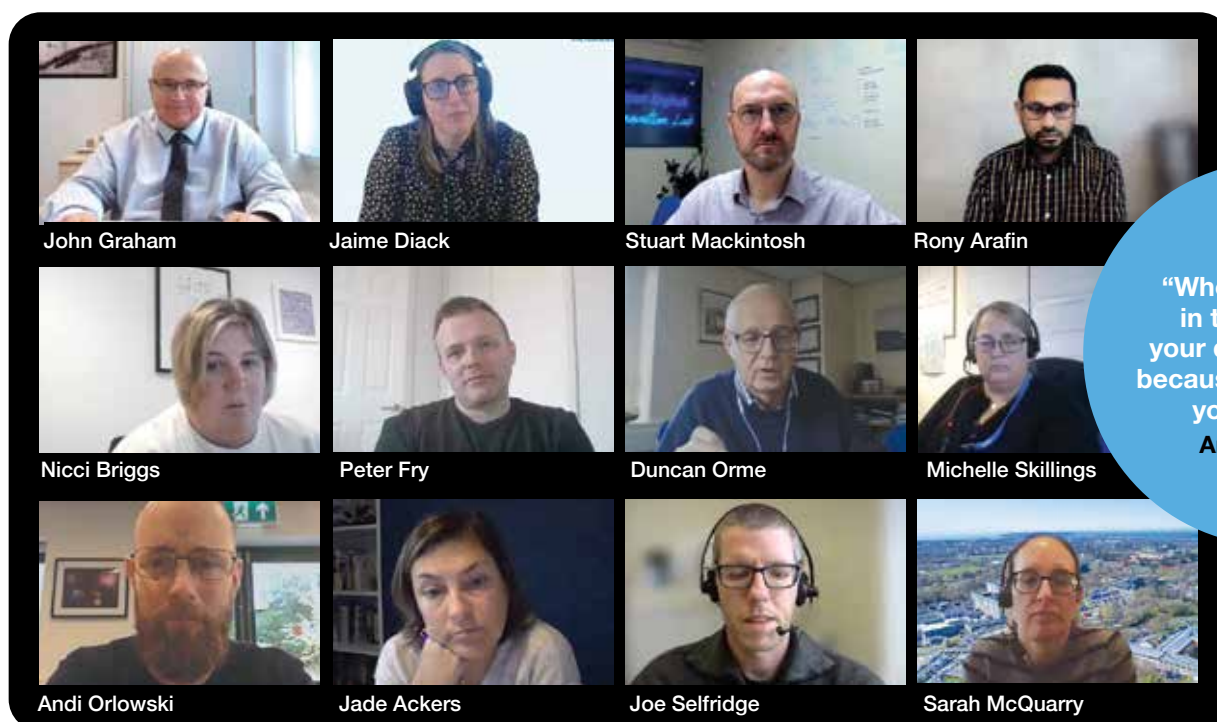


available. Every interaction with the NHS generates information about condition, treatment, age, gender, ethnicity and where somebody lives. There may be data about comorbidities, living arrangements, a person’s occupation and so on. For those wanting to understand their populations, there appear to be infinite possibilities to learn about who seeks care, why, where from, how they access it, where they access it, and on and on.

Jaime Diack, head of finance systems and process redesign at Pennine Care NHS Foundation Trust, described it as being ‘data giddy’. ‘We are all trying to look at data, but we are all looking at it through our own lenses,’ she said. ‘We spend our time reconciling other people’s analyses and wondering why there are differences.’

The level of reconciliation is not surprising when you consider the number of datasets that are created to meet a plethora of local and national needs to understand particular aspects of care.

Rony Arafin, head of analytics at NHS England, said that this process of reconciling different datasets is challenging. If all organisations drew on the same granular data, reconciliation wouldn’t be necessary.



“Wherever you are in the NHS, hug your data engineer – because they can help you with this”
Andi Orłowski

‘If we want to develop real intelligence from data, I think it has to be from completeness of patient level data,’ he said. ‘Then you can slice it in different ways. We don’t fully appreciate the importance of individual data and, in many cases, we try to build datasets at a stage up, without even thinking about where the patient level data is getting collected.’

Michelle Skillings, head of performance at Somerset Integrated Care Board, agreed. ‘We are now flooded with information across the NHS, but there is a lot of duplication across the various reporting resources. At times, I am unclear as to which is the best resource to be using, given that different reporting criteria may be used in different outputs.’

This proliferation, and confusion, of data can also be created by the multitude of systems that gather it. With more than 300 different systems collecting patient level data at Leeds Teaching Hospitals NHS Trust, Joe Selfridge, information manager for patient level costing, emphasised that automation of data processing can be important to deal with the volume of information.

Sarah McQuarry, finance systems and costing accountant at University Hospitals Plymouth NHS Trust, agreed, with around 130 systems in her organisation. ‘The trouble is we get a lot of contradictions in the data across a patient pathway,’ she said.

However, Mr Arafin said that even a single, patient-level dataset will never be perfect as data is collected about people with real life difficulties and circumstances that may not easily fit a dataset. ‘We have to understand that we will always have data quality issues, we’re never going to be able to solve that,’ he said. ‘But with what we do have, how do we provide better intelligence?’

Regardless of the number of datasets, there is still room for misinterpretation of the information if communication about the data is unclear. Ms Skillings highlighted: ‘It’s really important that we’re all using the same language, because you could be talking about a metric or a piece of data in one way to one analyst within the region or nationally, but there can be different interpretations. Potentially you could be getting two or three different answers.’

Stuart Mackintosh, founder and chief executive officer of OpusVL, said that we need to take a step back and ask

Participants

- Jade Ackers, NHS England
- Rony Arafin, NHS England/Association of Professional Healthcare Analysts
- Nicci Briggs, Cambridgeshire and Peterborough Integrated Care Board
- Jaime Diack, Pennine Care NHS Foundation Trust
- Peter Fry, Somerset NHS Foundation Trust
- John Graham (chair), Tameside and Glossop Integrated Care Foundation Trust and Stockport NHS Foundation Trust
- Stuart Mackintosh, OpusVL
- Sarah McQuarry, University Hospitals Plymouth NHS Trust
- Andi Orłowski, Health Economics Unit
- Duncan Orme, Nottingham University Hospitals NHS Trust
- Joe Selfridge, Leeds Teaching Hospitals NHS Trust
- Michelle Skillings, Somerset Integrated Care Board

ourselves what we are trying to achieve with data. If that cannot be defined, then ‘we’ll end up being busy doing all sorts of fun things with technology,’ he said, ‘but will we actually solve the problem that we are here to achieve?’ ‘It’s about the human intelligence and how we have the computers working for us, to be the tool to do the work,’ he added.

Maximising the data

The clear message from the early discussion at the roundtable was that it is all about maximising the data that you have and making sense of it, for a clear purpose.

Andi Orłowski, director of the Health Economics Unit, highlighted that there are 13,000 analysts, or data engineers, in the NHS to help create the architecture and data structures to help solve problems.

‘There may be a lot of different questions and a lot of different datasets, but this group is dedicated to helping

HFMA
ROUND
TABLE

build, extract and create files that can be interrogated,' he said. 'Wherever you are in the NHS, hug your data engineer because they can help you with this.'

Automation of data analysis

The volume of data generated in some cases means that automation of the analytical process can be essential to generate timely information. Mr Selfridge explained that automating the process had taken the Leeds trust's data processing time down from four months to four days. 'Get the information quickly and the organisation can use it,' he said. 'If it is four months old, it's out of date and nobody is interested anymore.'

Information can only be powerful if it is timely, but the desire to make it perfect can mean that it becomes too old to be useful.

'We can all be guilty of striving for perfection when it comes to data,' said John Graham, chief officer at Tameside and Glossop Integrated Care NHS Foundation Trust and Stockport NHS Foundation Trust and the roundtable's chair.

Jade Ackers, programme director for digital productivity at NHS England, flagged up that there are many good examples of robotic process automation across the NHS, many of which are captured within her team's evidence-based library. She highlighted opportunities across

every integrated care system to look at how the automation of repetitive, rules-based processes can support every level of business across the health and care system.

'The potential benefits are phenomenal. They far outweigh the cost of implementation and offer sustainable benefits going forwards,' she said. 'These benefits include freeing up staff time to focus on higher value activities, improving data quality and decision-making, and improved staff and patient experience. This not

only supports the organisation's development, but can also make the role more appealing for staff, which is important given the competitive digital and data analytics industry.'

Local versus national data

There is always a balance to be struck between collecting the data required for national reporting requirements and the data useful for local decision-making. While it can feel preferable to focus on local data analysis, the importance of a national picture should not be overlooked.

As Mrs Diack pointed out: 'What we miss by looking at local data is how to shape the NHS as a whole going forwards. I recognise there are local issues to tackle, but we need to streamline and make our services more efficient. It's by looking at the national picture that we will do that.'

National data shares the common challenges of timeliness and quality, but this is intensified when drawing together multiple returns from across the health sector. As a consequence, national data can often feel clunky, said Peter Fry, head of income and costing at Somerset NHS Foundation Trust. 'Local nuance in data is important. NHS England pre-populates templates with data, but then we spend a lot of time picking it apart and trying to work out how it has been developed. I get nervous when NHS England builds a dashboard as it is often based on old data.'

However, Mr Fry acknowledged that there is a role for national analysis and the sharing of best practice across systems, when it comes to understanding and benchmarking data.

Mrs Ackers wanted to see a centralised, national knowledge hub, where people could share their experience in this area – including

What is data imputation?

Data sets are often incomplete, which can lead to misleading answers when the data is analysed, as the missing data may introduce, or hide, a bias in the information. Data imputation is the process of substituting missing values with an estimated value, based on other data that is available.

For example, data imputation may be undertaken if a provider fails to submit data on one occasion in a regular data collection process. Excluding the provider from subsequent reports could

skew the data to show a drop in activity that has not occurred. Data imputation techniques can be used to create expected values for the missing data, taking into account any known external factors that may have affected the activities of the provider over that time period.

A number of data imputation techniques can be used. In simple terms, these include repeating existing data, comparing with data from a similar organisation or substituting missing data with the mean value of the other data.

successes, key learnings and challenges – to enable the national teams to collate and curate best practice guidance and tools. She recognised that there are so many different networks and communities of practice across the NHS that it can be difficult to know where to look. So her team is working to consolidate and streamline these.

Scope of data

The NHS holds a wealth of data for more than 65 million people, but the data is not evenly distributed. While it can sometimes feel like there is too much information, there are some areas of the NHS that do not have the same richness of data.

'We need to be really careful about what we're not collecting,' said Mrs Diack, referring to an ongoing lack of information about mental health activity. 'There's a real issue about parity of esteem within mental health. We don't have a national currency and we find that it's very difficult to compare and benchmark data with other trusts. Where does that leave mental health patients? With such a gap in data, there is a real risk that we will miss something when we are talking about health inequalities, as we only focus on the data that we are collecting.'

She added: 'We need to be really careful about using the term "data rich", because it can suggest that we have got enough – and we really don't in some areas.'

Mr Orłowski agreed. 'There are groups in our populations that are over-represented in the data that we collect and how we collect it,' he said. 'Our algorithms, and the work we build from it, are therefore biased in favour of those populations.'

He highlighted that this is where the skills of a professional analyst come into play. 'A good professional analyst is aware of these biases and understands that they have to be taken into account, otherwise they will further inequalities.'

Data does not always have to be at a patient level to be useful, said Nicci Briggs, chief financial officer of Cambridgeshire and Peterborough

HFMA
ROUND
TABLE

"The potential benefits are phenomenal. They far outweigh the cost of implementation and offer sustainable benefits"

Jade Ackers



Integrated Care Board. ‘Sometimes it is as simple as a map of where the areas of deprivation are, overlaid with the facilities that we’ve got,’ she said. ‘You can start to map where the problems are, and it can be linked to levels of access. We forget facilities as a dataset.’

Duncan Orme, acting chief financial officer at Nottingham University Hospitals NHS Trust, shared an example of how this approach had highlighted an issue in Nottinghamshire.

‘Prostate cancer was being picked up at an earlier stage in the more affluent zones and was costing less to treat,’ he said. ‘In the less affluent zones, it was often being picked up in the emergency department at a much later stage, and therefore had a far greater cost to the taxpayer and, more importantly, with a more significant treatment (and potentially less favourable outcome) for the patient.’

Mr Orme suggested that it is not just about understanding the physical assets, but also the knowledge assets. ‘It’s the way that we need to work with our communities to help them to understand the health challenges that they face,’ he said.

Analytical workforce

So there is a lot of data available, a need to understand what is missing, and a requirement to identify the biases and omissions. This means it is essential that those analysing the data for future use have the necessary skills to do it well.

‘You need to have confidence in the people who are serving the data,’ acknowledged Mr Arafin, who is also chief executive of the Association of Professional Healthcare Analysts (AphA).

However, until recently there was no competency framework to describe how to start a career in data and analytics, and the skills that would be needed to become a chief data analytics officer. Such a framework has now been developed by the association working with NHS England.

Yet there remains a concern that there is no consistent level of expertise between data analytics teams, with a recent AphA survey showing that more than half of analysts do not receive continuous professional development within their organisations.

The ability to network and share knowledge is important in developing skills and competencies. Mrs Diack suggested that integrated care boards could have a role to play here in recognising data professionals and creating forums where they can bounce ideas around and get peer support. While accreditation can be useful, having a space for discussion can allow people to learn from one another and maximises the benefits of diversity.

This theme was picked up by Mr Orme, who described the importance of involving clinical staff in the use of data and their role in advocating for the benefits of robust data analysis.

He pointed to the possibilities of predictive analytics for managing patient flow and understanding how long people may need to stay in hospital. ‘If you can predict how many patients you will have coming in, then you can schedule patients with greater confidence,’ he said.

The role of the data analyst can be powerful, said Mr Orlowski. ‘You allow people like me to guide hundreds of millions of pounds worth of decisions,’ he said. ‘What assurance do you have that the data and analytics that you’re using to make decisions is appropriate for you?’

Opus’s Mr Mackintosh questioned how easily that credibility could be achieved. ‘It’s difficult,’ he said. ‘It’s a relatively new industry in the grand scheme of things and it’s changing a lot, so it is hard to work out the

ongoing relevance of a set of skills to a set of problems.’

Ms Briggs highlighted that a certain level of expertise is expected in finance roles and that credibility should be brought to the data analytics role, supporting Mr Orlowski’s view that

professional registration needs to be in place for analysts.

However, she also wondered if there comes a point at which the NHS needs to recognise that it does not have the necessary expertise to undertake some of these data functions. ‘Do we need to build our own or do we need to have really strong relationships with organisations that are much better than us at it?’ she asked.

Working together

Throughout the roundtable discussion, delegates raised the issue of working in silos. The power of working together to share information was widely acknowledged, and the benefits were clearly demonstrated in a number of cases.

‘We built up such strong links through the costing team being sat with informatics colleagues,’ said Ms McQuarry, relating her experiences at the Plymouth trust prior to the pandemic. ‘We could learn about their tools and what they had to offer, and they could learn what we were using the data for.’

This view was shared by Somerset NHS Foundation Trust’s Mr Fry. ‘Costing teams are typically the ones that straddle finance and information, and there are definitely opportunities to cross-pollinate and learn from the respective teams in both technical and strategic senses,’ he said.

‘Even in an integrated organisation like Somerset, the corporate teams are also often siloed into sectors such as acute and mental health. Costing data can bring together an integrated pathway perspective that isn’t readily available elsewhere.’


This is the approach taken in Leeds. ‘We are one big team,’ said Mr Selfridge. ‘It’s not just about having everyone in the same room for a meeting once a week; we do it every single day. That’s how you untap the power of data and get people engaged.’

Engagement on the role of data analysts is essential across the whole organisation, not just with the finance team. Mr Graham challenged delegates to think about their own roles in supporting their organisations to engage more fully with the analytical profession.

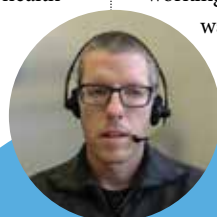
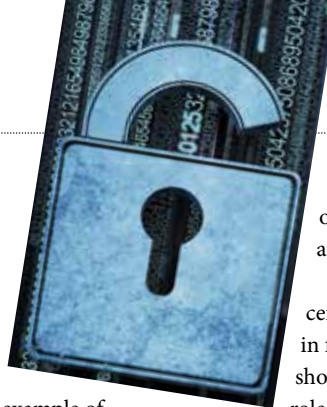
‘We have to build those relationships and put some effort in,’ he said. ‘None of us works in isolation and we need that support to understand the data.’ He added that it would also be important to develop career paths for data analysts.

Throughout the discussion, it became clear that the power of data is not realised by developing newer and fancier IT systems – the systems are already in place.

Nor is it about collecting more data, although there are obviously some sectors where that would help, such as mental health. It is much more about the analytical workforce – fully utilising their skills, working with them to understand what the data shows, and supporting them as a profession to develop and be recognised.

As Mr Arafin put it: ‘It is untapping the power of analytical professionals that will really serve the purpose of how the use of data is maximised in the NHS.’ 

• Sarah Day is a senior policy manager at the HFMA



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