



What Makes a Top Chief Data & Analytical Officer?

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Report

Introduction

Knowledge is the enemy of disease. The last seventy years have seen a transformation of healthcare, thanks to the development of new technology such as Magnetic Resonance Imaging (MRI), chemotherapy, and hip replacement. However, knowledge is needed to ensure this technology is used to best effect, optimising value and reducing waste. There are three types of knowledge: knowledge from research, called evidence; knowledge from experience; and knowledge from data. In the past, knowledge from data has been primarily focused on the present and the past - how well a health service has done and how well it is doing - but increasingly, we need to use all three types of knowledge to help the health service think about the future, in what the military would call intelligence.

This report explores the vital role of the Chief Data and Analytical Officer (CDAO), a position that straddles the evolving space between technology, data, and strategy with ever-increasing importance in our NHS as a means of creating intelligence about opportunities for action. For example, by identifying services which differ markedly in activity from the same services for other similar populations when the relevant population segment and not the number of patients is used as the denominator.

As organisations in all sectors today rely more heavily on data to gain insights, make informed decisions, and innovate, the CDAO's responsibility is to ensure that data is not just collected but transformed into actionable intelligence that drives real, impactful change.

My career in public health, knowledge management, and healthcare innovation has given me a deep appreciation for the power of knowledge from data to accelerate the improvement of health outcomes and the reduction in waste. The role of the CDAO is akin to my own mission in healthcare: to use evidence-based practices and data-driven insights to improve outcomes for individuals and population, increase value and reduce waste and inequity by challenging the status quo.

I have always believed that data, when applied correctly, is one of the most powerful tools available to create positive change. The CDAO's role mirrors the challenges I faced in

public health: To bring order to vast amounts of information, extract valuable insights, and use them in a way to challenge, stimulate and irritate.

To fully unlock the potential of knowledge from data in healthcare, it is essential to establish strong leadership that champions the integration of knowledge into the core decision-making processes. The role of leadership is to change culture and the leadership of CDAO needs to create a culture of curiosity, so that people are stimulated to reflect that more of the same is not the answer and that increasing quality and efficiency is necessary but not sufficient. What is needed is to increase value by the optimal distribution and use of resources - money, time and carbon.

The NHS Atlases of Variation were designed not only to provide knowledge about unwarranted variation but also stimulate people to reflect on where their service stood in comparison with the services for other populations. The drafting was intended not only to inform but to disturb the reader and to make them reflect and think ahead about the distribution and use of their resources.

Over the years, I have witnessed first-hand the revolutionary impact that knowledge from data can have on healthcare delivery. From developing national screening programmes to pioneering evidence based and value-based healthcare my work has consistently demonstrated that data, when applied effectively, leads to better patient outcomes and more efficient systems. However, to fully benefit from its power, it requires dedicated leadership that understands not only how to manage data but also how to inspire and develop the analytical teams responsible for transforming raw data into actionable insights.

In today's NHS, CDAOs are often overshadowed by digital and IT departments, which can hinder the potential of data professionals to truly innovate and drive value. Analytics teams frequently find themselves underrepresented, or misplaced within organisational structures, leading to missed opportunities for insight and action. A CDAO, sitting at the executive level, provides the leadership necessary to champion knowledge from data to look at the battles ahead.



Report

Introduction

The distinction between IT and analytics is particularly important in this regard. IT teams may manage the systems through which data flows, but it is the analysts who interpret, model, and derive insights from this data to inform critical healthcare decisions. Data science holds enormous potential for the NHS, but this potential can only be unlocked through the collaboration of IT, data engineers, and analysts. It is inconceivable for these functions to thrive under a single directorate without clear leadership - hence the growing trend of appointing dedicated CDAOs across the NHS.

One of the key responsibilities of a CDAO is to cultivate a culture of data curiosity across the organisation. This role is about more than just managing data infrastructure or ensuring compliance with data governance standards; it is about making data a genuine asset. A strong CDAO must inspire both analysts and broader healthcare teams to understand the value that analytics can bring. This includes creating environments where analysts are not only supported but actively encouraged to develop their skills and pursue professional accreditation through industry bodies such as The Federation for Informatics Professionals (FEDIP) and the Association of Professional Healthcare Analysts (AphA). By providing professional leadership to analysts, the CDAO ensures that the talent and potential within NHS data teams are fully realised.

A CDAO must also lead efforts to harness population health data to target interventions that prevent illness and address health inequalities and inequity. Data-driven insights can revolutionise how we approach healthcare planning, from identifying at-risk populations to tailoring interventions that mitigate the onset of chronic conditions. By doing so, a CDAO can help NHS organisations to respond to immediate healthcare challenges and take proactive steps to improve the long-term health of the communities they serve. A CDAO is critical to framing the important questions, articulating the vision, and ensuring that data is used to its full potential. By advocating for the integration of analytics into every aspect of healthcare delivery, the CDAO ensures that data insights lead to tangible improvements in care quality and efficiency.

The CDAO plays an integral role in the professional growth of the analyst community within the NHS. As the leader of this community, the CDAO fosters an environment that hones analytical skills, builds confidence, and encourages innovation. They ensure that analysts have access to the training, networking, and development opportunities needed to stay at the forefront of data science and analytics.

In a data-rich NHS, every CDAO is ideally placed to improve, not just patient, but population health outcomes and drive continuous innovation necessary to meet the evolving needs of healthcare. The NHS is at a critical moment, where the effective use of data and analytics has never been more vital to improving outcomes. Now is the time for us to acknowledge, celebrate and support the role of the CDAO. The wake of the Titanic was perfect until it was too late to do anything about it. The dials on the engines were all reassuring right up to the moment of collision. The CDAO needs to lead the search for the iceberg ahead, and give guidance on the direction of travel to avoid it.

Sir Muir Gray CBE

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Executive Summary

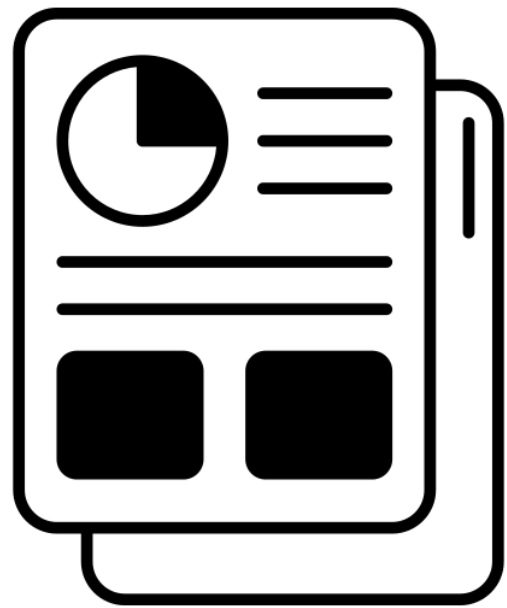
The role of Chief Data and Analytical Officer (CDAO) is gaining increasing importance in the NHS.

This is because we are seeing a greater focus on data-driven approaches to improving outcomes for patients and population health. Across much of the NHS CDAOs are now essential in shaping both operational and clinical decision-making, helping Trusts to not only improve patient outcomes, but also improve operational efficiency, and reduce costs. This report explores the evolution, challenges, and strategic impact of the CDAO role, highlighting its significance in the health service today.

Historically, data and analytics in healthcare has been confined to IT, finance and performance/transformation departments. Its primary purpose has been centred around compliance and reporting functions. However, the rise of digital health technologies, predictive analytics, and personalised care have created an environment where ever larger volumes of data need to be collated and analysed by dedicated data professionals. The CDAO role has emerged in recent times as a response to this demand, transforming data from a reporting tool into a driver of strategic insights and action.

The journey to becoming a CDAO is a varied with professionals coming from diverse backgrounds such as IT, finance and public health. As the role becomes more formalised, there is a growing recognition among NHS leaders of the need to create structured career pathways for data professionals, helping them develop leadership skills alongside their technical expertise.

When we look at what motivates top CDAOs we see a desire to solve complex healthcare problems and influence system-wide changes. They are driven by the opportunity to engage in strategic discussions that go beyond day-to-day NHS operations, focusing on long-term issues such as resource allocation and healthcare inequalities. This ability to influence huge decisions is what sets CDAOs apart from traditional data analysts.



Supporting CDAOs is critical to maximising the value of data and analytics in the NHS. By elevating CDAOs to the executive level, organisations ensure that data-driven insights inform key decisions and drive continuous improvement. Clear governance frameworks, data literacy, and a cultural shift towards valuing data at all levels of the organisation are all key ingredients.

Looking ahead, CDAOs will play a vital role in integrating emerging technologies such as data science, artificial intelligence, the growing use of population health analytics and centrally mandated data platforms such as the Federated Data Platform (FDP) and the Secure Data Environment (SDE). Addressing challenges such as coding backlogs and recruitment of skilled data professionals will be key to ensuring that all NHS trusts can fully benefit from data analytics.

1. The Development of the CDAO Role

The Chief Data and Analytical Officer role has grown in importance in the health sector in recent years as the amount of system-level decision making reliant on accurate data expands at an exponential rate.

Unlike other key leadership roles, the path to becoming a CDAO remains extremely varied, with the role itself subject to near-constant evolution.

Historically, data management in the NHS was handled by IT or financial departments, focused primarily on compliance and reporting. Data analysts existed but their work was often limited to generating reports rather than driving strategic insights. With the rise of digital health technologies, predictive analytics, and personalised care, the need for a dedicated data leadership role has emerged, leading to the rise of the CDAO.

Kavitha Saravanakumar, Director of Business Intelligence at NHS North West London ICB, outlines her view of how the role has evolved. She says: “I have been in this business for a long time and initially there were traditional analysts who needed to understand the data and understand coding, with strong Excel and SQL skills.

“That was how the analyst community was set up, but we are not that any more. There is now an emphasis on a range of new, innovative skill sets: Population health management; advanced analytics with the need to understand statistical concepts; utilising machine learning and AI tools for case finding and logic modelling, for example.

“There has been a shift from a reactive approach to a preventative and a proactive approach. In that shift, how will anybody get the insight to know where to focus their attention? It will all have to come from the data and intelligence teams, and that is why a focus needs to be given to the CDAO role.”

Dr Marc Farr, CDAO at East Kent Hospitals University NHS Foundation Trust and Chair of the Chief Data and Analytical Officers Network, explains that the role is still in its early stages. He says: “This is a varied group of people who’ve

stumbled across a really exciting career that didn’t exist 20 years ago.” Dr Farr emphasises the need to formalise this career path, with aspirations for young people to eventually see the CDAO as a recognised and attractive profession, such as medicine or the law.

The CDAO role is also expanding beyond hospitals to integrated care systems (ICS) and other sectors like education and policing. Dr Farr sees this as a natural progression, highlighting the importance of integrating data across public services to improve outcomes across society.

Many of our interviewees also highlight the growing need for what is known as ‘data liquidity’, the function of health data flowing faster and more freely, and the role of the CDAO in increasing this liquidity. The NHS, like many other health systems across the globe, still faces significant challenges when it comes to the ease of use, access and the ability to share data. However, CDAOs are helping to overcome these challenges particularly when it comes to population health management.

“Following the global pandemic many leaders came to realise how vital analytics is in directing resources effectively, especially when facing unprecedented challenges. It highlighted just how critical analytics is - not just as a tool, but as a strategic asset within the NHS.”

Andi Orłowski
Health Economist
Director of the Health Economics Unit



1. The Development of the CDAO Role

Neela Tirumala, Associate Director of Informatics at Homerton Healthcare NHS Foundation Trust notes this growing demand to receive insights at the touch of a button. She says: “When I started my journey in informatics, we used to have monthly reports, then it moved slowly to weekly and then to daily, and now there is a demand to have reports hourly or even every minute. So, at the top level, there is a want to have real time data to make decisions and to understand situations better. I think that is what has shifted and that’s why you need the CDAO role.”

As data becomes more accessible and more ‘liquid’, we see a substantial increase in the possible use cases of this information. One of Dr Farr’s key areas of focus is addressing healthcare inequalities through data. As Chair of the Inequalities and Unwarranted Variation Committee, he investigates whether services are offered equitably across different demographic groups. He emphasises that tackling these issues requires moving beyond traditional metrics to understand deeper, nuanced problems.

Elsewhere, Andi Orlowski, a health economist and the Director of the Health Economics Unit, has seen the CDAO role develop dramatically following the COVID-19 pandemic. “Following the global pandemic many leaders came to realise how vital analytics is in directing resources effectively, especially when facing unprecedented challenges. It highlighted just how critical analytics is - not just as a tool, but as a strategic asset within the NHS,” he says.

“Understanding of what analytics could do besides performance management change fundamentally changed. Chief Executives and system leaders realised how important analytics was and understood it had a role to play.”

Many of the CDAOs we spoke to believe the role is still evolving but holds immense potential. As healthcare becomes more data-driven, CDAOs will play a crucial role in shaping the future of data-driven decision-making, helping organisations make smarter, more informed decisions for better patient outcomes.

2. Is there a typical journey to becoming a CDAO?

The path to becoming a CDAO is often an unconventional and unusual one and there has been no single, or standard journey leading to this role.

Dr Farr emphasises this diversity and says: “It’s a relatively new role, and we’ve come from a range of backgrounds. There are people who were accountants, or people who have worked in different sectors before they came into this.” The evolving role requires a blend of technical, management, and strategic skills, which can come from a wide variety of career backgrounds.

Given there is no typical journey to becoming a CDAO, the role continues to attract professionals from varied backgrounds, with increasing opportunities for data experts who wish to transition into leadership positions. Many current CDAOs, like Dr Farr, started in data or technical roles but have expanded their responsibilities to include leadership and strategic decision-making. Dr Farr says: “Some analysts might be brilliant at technical data work, but not interested in management.”

The challenge of creating a structured career pathway that helps data professionals transition into leadership roles is a theme highlighted by many of the CDAOs interviewed for this report.

Matt Hennessey, Chief Intelligence and Analytics Officer for NHS Greater Manchester ICB, has had what he describes as “the weirdest career journey in history”. He began his career as a drug worker within the health and probation services. He then worked as a forensic psychologist for the prison service, a diverse role which included responsibilities developing offender behaviour programmes and advising on crises and hostage situations. This was swiftly followed by stints in senior roles within the Home Office before the move into data roles.

Hennessey believes that most leaders today are expected to develop a good understanding of data as they move into leadership positions. However, he says: “What I don’t see happening is data experts becoming leaders.” This is one reason why he advocates for a shift where data

professionals develop leadership qualities as part of their career progression.

“There isn’t a typical journey because I don’t think there’s a pathway to follow at the moment. We talked a bit about this in an emerging leaders workshop recently and discussed whether there should be typical, or structured, pathways for people to jump onto. I am not so sure, as my journey wasn’t typical and most of my colleagues around me had quite a different journey to mine. But we’ve all ended up in roughly the same sort of spaces, bringing diverse views into the mix because of that.”

Lisa Fox

Deputy Director for Data and Insights
The Rotherham NHS Foundation Trust



Jake Abbas, Deputy Director for Population Health Intelligence at NHS Humber and North Yorkshire ICB, has over 30 years of experience in public health analytics and observes that many CDAOs still come from healthcare analytics backgrounds, especially within the NHS. He notes that while some professionals come from the private sector or consultancy, the majority typically arrive from hospital trust-based informatics backgrounds. However, he sees more diversity emerging as technology and AI continue to shape the healthcare data landscape.

Ruth Holland, Director of Data and Analytics at Imperial College Healthcare NHS Trust and the OneLondon programme describes her journey into NHS data and analytics leadership roles: “It wasn’t really a natural path for

2. Is there a typical journey to becoming a CDAO?

me – I do have an analytical mind and a scientific research background. My first healthcare related role was at the British Medical Association working with GPs, then I moved into the NHS working in service transformation. Not on analytics path yet, but it did have a large digital focus.

“Over time I started branching out more into the data analytics roles and worked my way up. I was a CIO in Bromley for around three years covering the whole remit of digital, data and analytics – even having responsibility for the capital programmes, including estates.”

Ruth adds that the more involved she got in the analytics field, the more she enjoyed it and enjoyed working with other data and analytics professionals. She reflects that while she retains an interest in the wider digital capabilities at Imperial her title has recently changed to reflect her specialism in data and analytics, adding that specialisation is particularly important.

Simon Bailey, Director of Business Intelligence at Medway NHS Foundation Trust, describes how he “stumbled” into his career, starting with a part-time job in data input before working his way through various analytics roles in the NHS. Reflecting on his journey, Bailey says: “Most of the people I’ve worked with over my career will admit that this wasn’t their primary calling. They didn’t know that they wanted to do this.” This reflects the diverse and often serendipitous paths professionals take to becoming a CDAO.

3. What motivates a Top CDAO?

Given the vital role that CDAOs play, understanding what motivates them is key to growing their influence and giving them the ability to transform the way the NHS uses analytics.

CDAOs are very aware that they have the potential to drive change through the use of actionable insights.

Our conversations with CDAOs clearly demonstrated that an important motivating factor is a deep curiosity and desire to solve complex problems within the health service. This curiosity is not limited to data analysis but extends to understanding and influencing the intricate relationships between various elements of the healthcare ecosystem.

Matt Hennessey explains that a thirst for knowledge and an inquisitiveness about the world is a major driving force for him and many of his colleagues. “What motivates me is curiosity,” he says. “You can be curious about data in a one-dimensional way - like wondering if hospital admissions will rise next month. But at the leadership level, it’s about curiosity for complex systems.” For Hennessey, the opportunity to explore these systems holistically and then to proffer strategic, system-wide questions, is what fuels his passion for the role.

This curiosity is not just about solving immediate problems but about influencing long-term, system-wide changes. Jake Abbas suggests that many CDAOs are motivated by the opportunity to engage in strategic discussions that go beyond day-to-day NHS pressures. “A lot of what we’re doing is talking to system leaders about demographic challenges and the sustainability of the NHS model,” he says. Abbas sees the CDAO role as uniquely positioned to shape large-scale change, such as helping to craft prevention strategies and improve resource allocation across systems. This ability to influence big-picture decisions is what draws him, and many others, to the role.

For Simon Bailey, continuous improvement and innovation are central motivators. “If you’re doing this role correctly, you have to be constantly looking to improve and be innovative,” he says. Bailey believes that CDAOs must earn the trust of their colleagues to introduce new ideas and approaches, but once that trust is gained, the freedom to

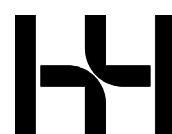
innovate becomes a significant driving force. “There’s no end point to the work we do,” he explains, emphasising the ongoing pursuit of better solutions for both patients and the healthcare system.

Andi Orlowski believes the power of analytics lies in its potential to make a meaningful, positive impact on the lives of individuals and communities. “As a health economist, I aim to use data-driven insights to reduce inequalities, allowing resources to be directed where they’re most needed. I wasn’t drawn to be a doctor, but I believe that through maths and analytics, I can contribute to population health in a profound way. By guiding decision-makers toward the best evidence-based decisions, analytics can bridge gaps and ultimately drive equitable outcomes.”

“The motivation comes from a passion for making a difference, especially with the idea that ‘data saves lives’,” says Rowland Agidee, Chief Analytics Officer at University Hospitals of Derby and Burton NHS Foundation Trust. “We provide critical support to business managers and executives in making decisions that improve patient outcomes. This sense of impact is stronger in the NHS compared to the private sector.”

Rony Arafin, Director of Health Insights at the British Heart Foundation, says: “From my perspective what drives many CDAOs, especially in the NHS, is the potential to use data for good. Our goal is to transform vast amounts of data into actionable insights that benefit the population.”

Our interviews with CDAOs demonstrated a desire to go beyond routine data tasks and to use their insights to shape larger, more strategic outcomes. Whether through curiosity about complex systems, influencing long-term changes, or fostering innovation, these leaders are motivated by the belief that they can make a meaningful difference to the future of the NHS within their local area and at a system-wide level.



4. Strategic importance of supporting Top CDAOs

Given their strategic importance to the future of effective care delivery and a sustainable health system, supporting top CDAOs is vital.

NHS Birmingham and Solihull ICB's Chief Analyst Richard Wilson emphasises the need for CDAOs to become "advocates for data" and play a transformational role in how the NHS uses its analytics.

He highlights that the role goes beyond simply managing a team of analysts: "The CDAO has always been written up as a transformational role rather than just managing a team of Business Intelligence people. It's about how we use new techniques to deliver services differently."

Wilson stresses that strong support for CDAOs is essential in shifting data practices from counting metrics to harnessing the power of analytics for strategic decision-making. He believes that CDAOs must "change the dials" within the healthcare system, moving it towards more predictive, individualised care models. He also points out the need for more representation of data experts at the board level, arguing that "good analytics takes time," but the short-term focus of many healthcare boards limits the full potential of data-driven insights.

Matt Oakes, Head of Intelligence and Analytics at Sherwood Forest Hospitals NHS Foundation Trust, highlights the importance of data literacy and how CDAOs should guide this cultural shift. He envisions a future where NHS leaders are informed by good intelligence rather than relying on surface-level reporting data, which he believes can lead to short-sighted decision-making. He advocates for CDAOs to play a crucial role in helping organisations value their data, train analysts, and foster a deeper understanding of data's strategic importance. Oakes says: "Being that voice for change is essential to ensure the NHS embraces the full potential of data and analytics."

Andi Orlowski stresses that while many leaders in the NHS recognise the importance of analytics, the reality is that they're often pulled in too many directions to fully leverage it. He says: "There are immense competing priorities, and dedicating the time and headspace required for evidence-based decision-making can be incredibly challenging. As

a result, decisions can become reactive, and analytics can fall by the wayside. Ideally, insights should be foundational to our approach, driving proactive, well-considered choices that ultimately benefit patients and the system as a whole."


James Jarvis, Associate Director of Business Intelligence at Maidstone and Tunbridge Wells NHS Trust, stresses the importance of having a supportive executive team. At his Trust, the leadership, particularly the Chief Finance Officer, is highly data-savvy and actively backs investments in analytics. This includes restructuring data teams and adopting new technologies. Jarvis says: "They are very engaged and very supportive," which is crucial for fostering a culture that values data.

However, the situation varies from Trust to Trust and there continues to be a focus on reporting data, line graphs that show increase and decreases in a given metric over time, versus applying strategic thinking to data analytics which is where the true value lies. This theme is picked up by Jo Davis at Royal Cornwall Hospital NHS Trust who says: "The real challenge in analytics is balancing what is technologically interesting to produce with what is useful for people to receive. Resolving this tension in ways that work for both parties is key to driving meaningful outcomes in the NHS."

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Richard Wilson
Chief Analyst
NHS Birmingham and Solihull ICB





“You need to understand the wider context and build trust in your understanding and business knowledge by fostering good relationships with operational and clinical staff as the other board members. You need to make the data relevant with suggestions of actions or changes that would make things better. It’s about giving them the tools to turn data into action.”

Tracy White

**Director of Performance, Information and Business Intelligence
Central and North West London NHS Foundation Trust**

5. What are the qualities, attributes and behaviours of Top CDAOs?

The role itself requires a unique combination of technical competence, leadership, and interpersonal skills.

In addition to understanding data and analytics at a deep level, top CDAOs must be adept at navigating organisational politics, fostering relationships, and communicating complex insights in ways that drive decision-making and action.

One of the standout attributes of a top CDAO is sheer persistence. Data and analytics is ever-evolving, and CDAOs must have the tenacity to stay up-to-date with the latest technologies while also pushing their teams to achieve high performance. Jake Abbas emphasises the need for “technical competency and being up to speed with rapidly changing technology” while balancing the demands of executive-level discussions and leadership credibility.

But perhaps the most vital skill for a top CDAO is the ability to communicate complex, technical concepts to lay audiences. Matt Hennessey highlights this when he says: “It’s the ability to communicate complex ideas to people in a way that allows them to act on it.” CDAOs are often tasked with bridging the gap between data specialists, business stakeholders, and executives. In this way, their role transcends pure data expertise; they must be able to translate data into actionable insights that can be understood and used by leaders across the organisation.

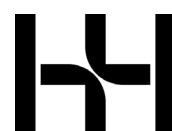
Richard Wilson adds that 80% is persuasion and influence, while 20% is business intelligence. The ability to influence decisions is critical in ensuring that data-driven insights lead to meaningful change. If data presented does not inspire action, the CDAO’s efforts are in vain. As Matt Hennessey says: “If I provide some information or some data to somebody and they don’t make a decision on the back of it, then I’ve failed.”

Tracy White, Director of Performance, Information and Business Intelligence at Central and North West London NHS Foundation Trust, agrees on the need for good communication skills. She says: “It’s not always about the

information you are presenting. It’s about understanding who the audience is and how you engage them. Being a CDAO, you can’t go into a board meeting and present some information and think everybody’s going to say, ‘This is wonderful’. You need to understand the wider context and build trust in your understanding and business knowledge by fostering good relationships with operational and clinical staff as the other board members. You need to make the data relevant with suggestions of actions or changes that would make things better. It’s about giving them the tools to turn data into action.”

A top CDAO must also be comfortable with ambiguity and uncertainty. According to Matt Hennessey: “You’ve got to be comfortable with that level of uncertainty.” The ability to inform decisions based on data of mixed quality, while still instilling confidence in others, is a hallmark of strong leadership in this field. CDAOs must often guide their teams and organisations through complex, uncertain scenarios while remaining focused on the bigger picture of NHS organisations that are operating with ever tightening budgets and stretched resources.

Throughout our interviews there was also an emphasis on being able to manage upwards, a skill that Simon Bailey highlights. Bailey notes that his transition to a CDAO role involved learning to manage executive-level relationships and politics. While shaping their teams is critical, equally important is fostering strong relationships with executive leaders to ensure alignment between data strategies and the wider goals.



Person Specification

Quality	Putting This Into Practice
Ability to engage at all levels	Communicates complex ideas clearly and in a way that empowers stakeholders to make informed decisions. Example: Translating complex analytical insights into actionable steps for clinical staff.
Interpersonal skills	Supports analysts and developers by helping them make informed, independent decisions. Builds trust and strong team relationships through consistent, constructive guidance and collaboration.
Leveraging innovation	Stays up to date with the latest trends, continuously exploring and implementing innovative solutions. Example: Adopting machine learning models to improve patient outcomes and operational efficiency.
Leadership	Mentors team members on best practices, ensuring high standards and encouraging professional growth. Leads by example, fostering a culture of continuous improvement and learning within the team.
Influencing / managing upwards	Develops strong relationships with executive leaders to ensure that data strategies align with broader organisational goals. Example: Advising executives on data-driven strategies to support NHS objectives.
Technical competence	Demonstrates high-level technical skills, applying them effectively to solve complex problems. Stays current with advancements in data analytics, technology, and healthcare data trends.
Navigating organisational politics	Understands audience dynamics and tailors communication to effectively engage different stakeholders. Example: Adapts messaging for clinical leaders, administrative staff, and executives to gain support.
Persistence	Perseveres through challenges, adapting to setbacks and continuously working toward the team's goals. Shows resilience in the face of bureaucratic obstacles or resource limitations.
Comfort with uncertainty	Guides the organisation through complex, uncertain scenarios, staying focused on long-term goals. Example: Leading the team in adapting data strategies, often with incomplete data, or data of mixed quality.

6. What does best practice look like?

Best practice for CDAOs centres on balancing innovation, compliance, and leadership development.

To succeed, CDAOs must ensure strong information governance, use technological advancements wisely, and create structured pathways for career growth within their teams.

CDAOs are responsible for ensuring that data is managed securely while fostering innovation. Richard Wilson emphasises the importance of clear governance frameworks, noting that without proper guidance, uncertainty in governance can be crippling. In the NHS, where patient confidentiality is paramount, CDAOs must build and maintain well-defined data governance processes that allow for secure data sharing and uphold compliance. “A well-defined governance framework is essential to alleviate concerns and enable efficient data sharing across organisations,” explains Wilson.

Incorporating new technologies such as AI and electronic patient records (EPR) requires CDAOs to ensure compliance with governance protocols. Wilson points to the need for investment in advanced technologies like simulation and AI but insists they must comply with established regulations. “Strong governance practices unlock data’s potential while maintaining trust and compliance,” Wilson adds, stressing the need for technological innovation to align with ethical standards.

A crucial part of best practice for CDAOs is fostering the next generation of data leaders through structured career development. Dr Marc Farr advocates for formalised career development programmes like FedIP registration, explaining that these certifications help create clearer pathways into CDAO roles. “We need to encourage young people into these roles, and part of that is making it a more formalised profession,” Dr Farr says, emphasising that structured professional programmes allow organisations to develop internal talent for leadership positions.

“There is a need to move forward and look at what the analyst of the future looks like in an AI-enabled environment. Upping apprenticeship standards and having formal pathways set out for career development is really important for a whole raft of reasons.”

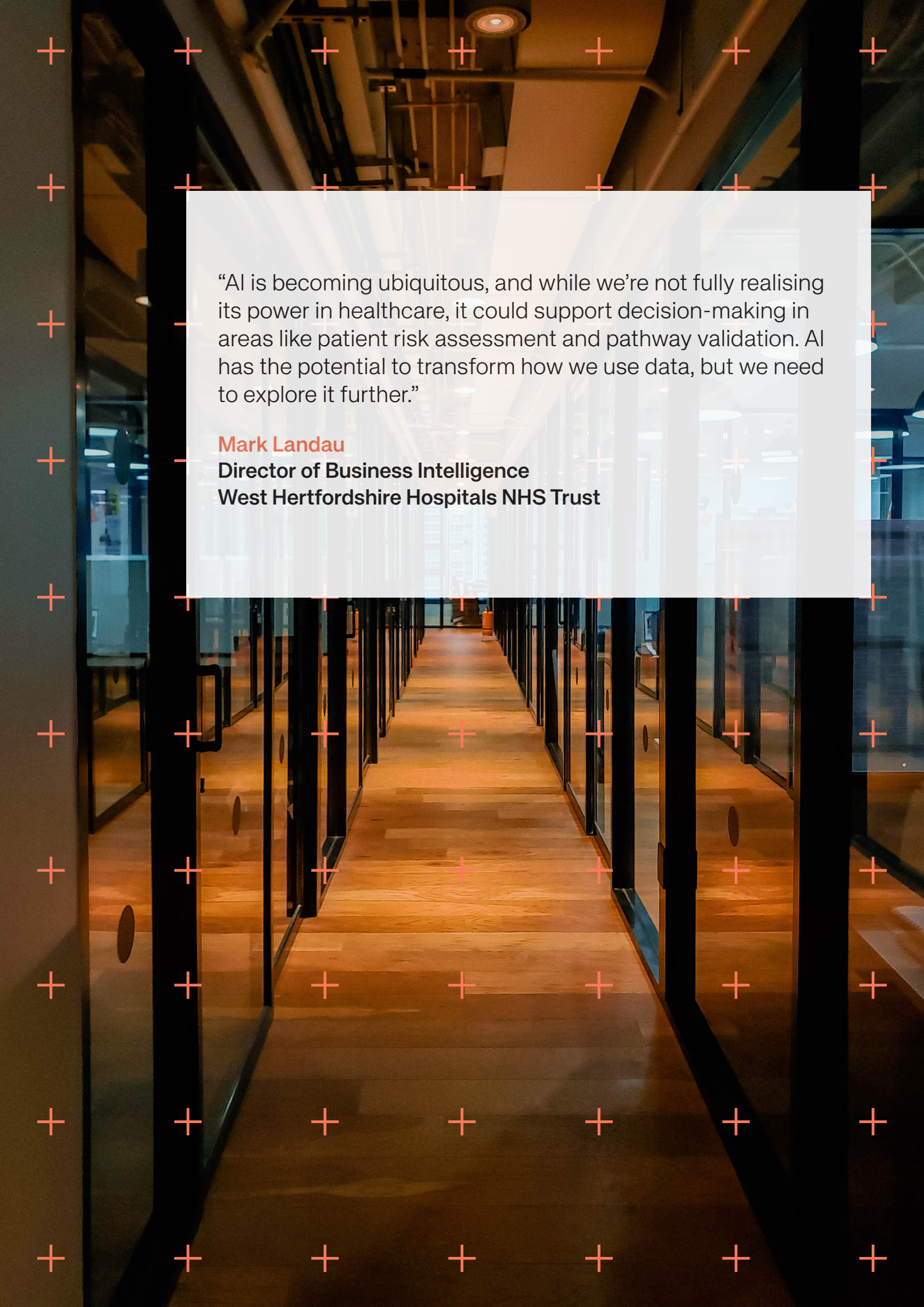
Jake Abbas

Deputy Director for Population Health
Intelligence
NHS Humber and North Yorkshire ICB



Jake Abbas echoes this sentiment, stressing the need to build professional standards for analysts and create formal career advancement routes. “There is a need to move forward and look at what the analyst of the future looks like in an AI-enabled environment,” he says. As technology continues to evolve rapidly, upskilling analysts to meet the demands of advanced data environments is essential for building a resilient workforce. Abbas adds: “Upping apprenticeship standards, having those formal pathways set out for career development, is really important for a whole raft of reasons.”

For analysts to transition into leadership roles, they must develop a broader skill set beyond technical expertise. Abbas makes the point that CDAOs need to foster leadership and management competencies to advance to executive levels. “It’s essential for analysts to see individuals from analytical backgrounds progressing to executive positions without encountering a glass ceiling,” he says. CDAOs must provide exposure to executive-level decision-making and leadership challenges, helping analysts prepare for broader roles within their organisations.



“AI is becoming ubiquitous, and while we’re not fully realising its power in healthcare, it could support decision-making in areas like patient risk assessment and pathway validation. AI has the potential to transform how we use data, but we need to explore it further.”

Mark Landau

Director of Business Intelligence

West Hertfordshire Hospitals NHS Trust

7. The role of the CDAO in shaping strategic priorities

There are many strategic priorities that are likely to impact the day-to-day work of a CDAO.

It is likely that the majority will be shorter-term and require an immediate focus. However, we decided to focus on three that are likely to impact CDAOs in the medium and long term. These are the Federated Data Platform, the use of artificial intelligence and the coding crisis.

Federated Data Platform

The UK Federated Data Platform (FDP) has been a controversial initiative which has divided opinion in the NHS. Although the CDAO community is by and large supportive, there are detractors who believe that some ICSs have already set up their own equivalents which meet the objective it has set out to achieve.

The FDP aims to integrate data from multiple sources to improve patient care and operational efficiency. Each NHS organisation will manage its own data, but the platform allows for secure sharing across the system when needed. It hopes to streamline services such as elective care, supply chain management, and population health. The system prioritises data security through privacy-enhancing technologies. Palantir has been contracted to build the platform, with full implementation expected by 2027.

CDAOs are also responsible for assessing the value and practicality of platforms like the Federated Data Platform (FDP) in their respective organisations. For some, like Matt Hennessey, existing local solutions outperform the FDP. Hennessey says: "In Greater Manchester, we've got an FDP equivalent currently being used at the system level that has wider application than anything the FDP offers at the moment."

Hennessey recognises the FDP's potential but is keen to stress that it must fulfil its promise of federating national datasets to streamline access and improve care across regions.

Jane Johnston, AphA Executive Director for Member Services and an independent health and care data and analytics consultant, highlights key concerns about the FDP's current implementation, particularly its lack of integration with vital datasets like community, mental health, and primary care. Johnston also underscores the importance of ensuring interoperability to make the FDP work for predictive analytics and population health management. Her overall view is that the FDP may benefit smaller systems lacking robust infrastructure. "However, more advanced systems have already built their own data warehouses and may not find significant value," she says.

Kavitha Saravanakumar, Director of Business Intelligence at NHS North West London ICB, echoes these concerns, citing frustration over the lack of clarity and expertise from suppliers. "The NHS, at a regional level, needed more involvement in the procurement process to help make it successful," she explains. This frustration reflects the challenge of aligning national initiatives with local priorities, a critical task for CDAOs guiding their teams through evolving data landscapes.

Using artificial intelligence

CDAOs play a crucial role in guiding and leveraging the use of artificial intelligence (AI) in healthcare, ensuring that its implementation supports strategic objectives and improves efficiency. As Matt Hennessey says: "As a CDAO, the role here is in translating AI capabilities to senior leadership. One of the key tasks is helping leaders understand why you would choose one AI technology over another."

Mark Landau, Director of Business Intelligence at West Hertfordshire Hospitals NHS Trust says: "AI is becoming ubiquitous, and while we're not fully realising its power in healthcare, it could support decision-making in areas like patient risk assessment and pathway validation. AI has the potential to transform how we use data, but we need to

7. The role of the CDAO in shaping strategic priorities

explore it further.”

Christine Thompson, Head of Business Intelligence at Norfolk and Norwich Hospital University Hospitals NHS Foundation Trust, identifies the need to look at how we can use automation and AI to manage workloads. “The NHS may not be able to support the current staffing levels. Strategic decisions around automation, AI integration, and workforce planning will be essential,” she says.

AI presents enormous potential in automating back-office functions and enhancing analytics. Jake Abbas supports this view and says: “There is a growing proportion of the work that NHS analysts currently undertake that could potentially be automated through AI.” He believes this shift will enable analytics teams to focus on decision support, insights, and improving linked data environments. Abbas emphasises the importance of moving away from routine reporting toward more impactful analytics. “We need a real focus on decision support insights. What we don’t need is three-quarters of the workforce churning out routine reports,” he says.

Andi Orlowski believes that with generative AI and advanced analytics becoming more embedded in daily operations, leaders are beginning to understand the strategic value of these tools. He says: “As generative AI becomes increasingly indispensable - used by everyone daily, from senior executives to entry-level staff - it’s clear that having someone at the leadership table who can guide the appropriate use of these technologies is more important than ever. I believe we’ll see a shift, where analytics and data insights gain a more formal place in senior decision-making, although it will take time and possibly mandate to see this change fully realised.”

However, the integration of AI technologies comes with challenges, both in terms of infrastructure and ethics. A CDAO’s responsibility includes not only identifying the right technology but also addressing potential biases in AI models. As Hennessey points out, “The CDAO has to be on top of things like model drift and ensure that AI is being monitored both ethically and technically.” This is essential to prevent unintended consequences and maintain trust in AI’s use across healthcare.

The financial implications of AI are also significant. By automating routine tasks, AI can reduce operational costs and improve efficiency. However, as Simon Bailey notes, there are still gaps in current AI implementations. “AI is being used to predict estimated discharge dates, but the process is still manual in parts, requiring standalone systems and manual entry,” he says. “For AI to be fully effective, these systems need to be integrated seamlessly into clinical workflows and systems to avoid duplication and inefficiency.”

The looming ‘coding crisis’

The NHS is facing a growing crisis with coding backlogs and residual codes (R codes), which are increasingly impacting the financial stability of NHS Trusts. R codes are used as placeholders when a precise diagnosis is unavailable, such as “breathing difficulties” rather than a specific condition like pneumonia. This lack of robust, primary diagnostic coding, often delayed or inaccurately captured, creates significant issues as the NHS shifts from block contracts to Payment by Results (PbR), where funding is directly tied to the accuracy of clinical coding.

The financial repercussions of coding delays are severe. This is where the role of the CDAO is crucial. Trusts that rely on precise coding to secure appropriate funding under the PbR model are losing millions due to inaccuracies. Dr Farr highlights that “coding backlogs are leading to significant financial losses across the NHS, limiting resources for patient care and further straining already stretched budgets.”

In addition to financial losses, geographic disparities exacerbate the problem. NHS Trusts outside London face additional challenges in hiring qualified coders, as financial constraints and regional accessibility issues create staffing shortages. As Dr Farr says: “We must address the geographic disparities in coding resources to prevent an uneven strain on trusts, particularly in less accessible areas.”



8. Where will the next generation of CDAOs come from?

The next generation will require a mix of technical skills, domain knowledge, and leadership development to succeed in the complex healthcare environment.

Transitioning from the private sector into the NHS presents significant challenges. The majority of our interviewees stressed the importance of knowing the NHS inside out especially when it comes to adapting to its bureaucratic processes and understanding the nuances of healthcare operations.

Matt Hennessey explains that he has seen many instances where people come into the health service from [the private sector], and struggle with the decision-making and pace of the bureaucracy, and are quick to leave. He emphasises that healthcare data demands more than just technical proficiency. “The real currency for the NHS is its understanding of how the system actually works,” he says. This operational knowledge, which varies from hospital to hospital, is crucial in making informed decisions from complex data sets.

For those already within the NHS, personal and professional development plays a vital role. Ruth Holland from Imperial College Healthcare NHS Trust and the OneLondon programme says: “I take my personal CPD very seriously. I’ve had the privilege of doing both formal and informal CPD - but there’s never been anything specifically targeted at data and analytics professionals.”

She notes that efforts are underway to change this, with NHS England developing a Data Analytics Academy aimed at scaling up the NHS workforce’s data capabilities. Additionally, the CDAO network is focused on developing a pipeline for the next generation of analytics leaders.

For Andi Orłowski, the next generation of Chief Data Analytical Officers will not only need to be skilled analysts but also influential communicators and strategic thinkers. He talks about the need to bridge the gap between complex data insights and actionable decisions, making analytics indispensable at the board level. “This new wave

of leaders will bring both technical expertise and a deep understanding of organisational dynamics, allowing them to drive true data-driven transformations. Their role will be about more than just numbers - it will be about shaping the future of healthcare through informed, impactful decision-making.”

Jake Abbas adds that the NHS has a unique advantage in attracting and retaining talent due to its altruistic mission. “One of the things that the NHS has in its favour is that there is a significant altruistic component to it. People want to work in the NHS,” says Abbas. Offering structured career development can help retain top talent, even in a competitive market with higher-paying private sector opportunities.

However, recruiting skilled analysts remains a challenge. Simon Bailey shares his struggles in hiring experienced analysts and says that his own Trust has failed to appoint twice purely because the standard wasn’t there. He highlights the need for more flexible recruitment processes and the importance of developing talent early, often hiring straight from university or even school.

“I take my personal CPD very seriously. I’ve had the privilege of doing both formal and informal CPD - but there’s never been anything specifically targeted at data and analytics professionals.”

Ruth Holland

Director of Data and Analytics
Imperial College Healthcare NHS
Trust and the OneLondon record
sharing programme



Report

Conclusion

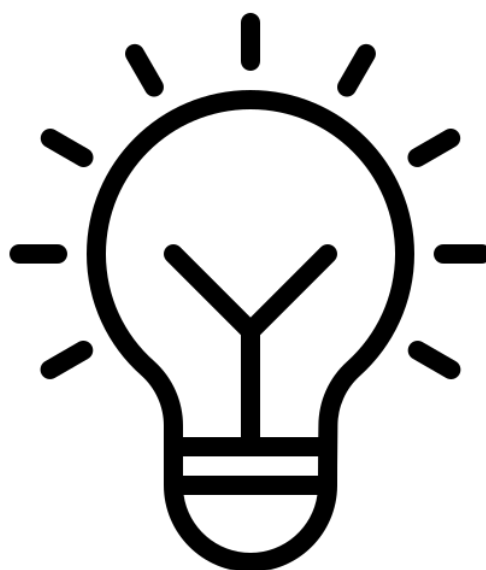
The role of the Chief Data and Analytical Officer (CDAO) has emerged as one of the most important in the NHS as the healthcare system transitions toward a more data-driven future.

The evolution of this role reflects the increasing need for dedicated leadership to harness data's potential to drive strategic decisions, optimise patient care, and improve operational efficiency. Historically, data management was confined to IT or finance, focusing on compliance and reporting. However, with advances in digital health technologies and the integration of predictive analytics, the CDAO is now central to shaping how the NHS uses data to improve outcomes.

The development of the CDAO role is still evolving, with many professionals coming from diverse backgrounds as highlighted by Dr Farr. This diversity underscores the multidisciplinary nature of the role, which requires a blend of technical expertise, leadership skills, and strategic vision. However, as the CDAO role becomes more formalised, there is a growing recognition of the need to develop clear career pathways for data professionals, fostering leadership skills within this community.

Motivation for top CDAOs often stems from a deep-rooted curiosity and a desire to influence long-term systemic change. CDAOs are driven by the opportunity to engage in big-picture strategic decisions, such as improving resource allocation and addressing healthcare inequalities. The ability to use data to not only solve immediate problems but to shape long-term changes within the NHS is a key motivator for leaders in this field.

The strategic importance of supporting CDAOs cannot be overstated. CDAOs are advocates for data who must work closely with senior leadership to ensure that data insights inform decision-making processes. By elevating the CDAO role to the executive level, organisations can maximise the value of data and analytics, ensuring they play a transformative role in healthcare delivery.



The future of the CDAO role will be shaped by the integration of emerging technologies like AI and the ongoing efforts to address healthcare challenges such as coding crises and health inequalities. The ability to harness the power of AI and advanced data platforms like the Federated Data Platform (FDP) will be critical to unlocking the full potential of healthcare data. Additionally, addressing geographic disparities in coding resources and recruitment challenges will be vital to ensuring that all NHS trusts can benefit from robust data analytics.

The success of the CDAO role lies in the ability to create a culture of data-driven decision-making, inspire innovation, and lead teams in transforming raw data into actionable insights. The next generation of CDAOs will need to continue to build on these foundations, ensuring that the NHS is equipped to meet the challenges of the future with data at its core.

Report

Recommendations

1. Help CDAOs maximise the value of data and analytics in the NHS by elevating them to executive level, or at the very least ensure they have a voice at executive level.
2. Get CDAOs more involved in big-picture strategic decisions and more predictive and strategic priorities by shifting them away from routine performance reporting.
3. Develop a Data Analytics Academy aimed at scaling up the NHS workforce's data capabilities.
4. Ensure a formalised career development programme which includes creating environments where data specialists are not only supported but actively encouraged to develop their skills and pursue professional accreditation through industry bodies.
5. Help CDAOs transition into leadership roles by developing a broader skill set beyond technical expertise by giving CDAOs the opportunity to foster leadership and management competencies.
6. Develop the next generation of CDAOs by bringing flexibility into the recruitment processes that develops talent early and hires straight from university, or even school.



List of interviewees for this report

We would like to express our gratitude to the following for taking the time to talk to us about the role of the CDAO, the challenges they face and the path ahead. Although we haven't been able to include everyone we spoke to in the final report, their input and ideas helped frame the main themes and their views support the insights we gained.

Name	Role	Organisation
Jake Abbas	Deputy Director - Population Health Intelligence	NHS Humber and North Yorkshire ICB
Rony Arafin	CEO Director of Health Insights	Association of Professional Healthcare Analysts (AphA) British Heart Foundation
Rowland Agidee	Chief Analytics Officer	University Hospitals of Derby and Burton NHS Foundation Trust
Simon Bailey	Director of Business Intelligence	Medway NHS Foundation Trust
Caroline Beardall	ICF PCC FCIPD, CEO / Founder	The HEAD Gardener
Jason Bradley	Chief Digital and Data Officer	Countess of Chester Hospital NHS Foundation Trust
Huw Davies	Independent Health and Care Consultant	Davies Furlong Consulting
Jo Davis	Director Associate Director of Commissioning, Performance and Intelligence	NIHR South West Peninsula Regional Research Delivery Network Royal Cornwall Hospitals NHS Trust
Dr Marc Farr	Chief Analytical Officer Chair	East Kent Hospitals University NHS Foundation Trust Chief Data and Analytical Officers Network
Lisa Fox	Deputy Director for Data and Insights Yorkshire and Humber Lead	The Rotherham NHS Foundation Trust Association of Professional Healthcare Analysts (AphA)
Jeanette Fraser	Analytics Manager South East Branch Lead Deputy Chair	NHS Kent & Medway Integrated Care Board The Association of Professional Healthcare Analysts South East Digital Skills Development Network
Daniel Hayes	Director of BI	University Hospitals Coventry and Warwickshire

List of interviewees for this report

Name	Role	Organisation
Ruth Holland	Director of Data and Analytics Director of Regions Deputy Chair	Imperial College Healthcare NHS Trust & OneLondon Association of Professional Healthcare Analysts Chief Data and Analytical Officers Network
Matt Hennessey	Chief Intelligence and Analytics Officer	NHS Greater Manchester ICB
James Jarvis	Associate Director of Business Intelligence	Maidstone and Tunbridge Wells NHS Trust
Jane Johnston	Executive Director for Member Services Independent Health and Care Data & Analytics Consultant	Association of Professional Healthcare Analysts (AphA)
Mark Landau	Director of Business Intelligence	West Hertfordshire Hospitals NHS Trust
Shevon Licorish	Data Architect	NHS Business Services Authority
Matt Oakes	Head of Intelligence and Analytics	Sherwood Forest Hospitals NHS Foundation Trust
Andi Orlowski	Director	Health Economics Unit
Kavitha Saravanakumar	Director of Business Intelligence	NHS North West London ICB
Christine Thompson	Head of Business Intelligence	Norfolk and Norwich Hospital University Hospitals NHS Foundation Trust
Neela Tirumala	Associate Director of Informatics	Homerton Healthcare NHS Foundation Trust
Tracy White	Director of Performance, Information and Business Intelligence	Central and North West London NHS Foundation Trust
Richard Wilson	Chief Analyst	NHS Birmingham and Solihull ICB
Jack Rodber	Chief Analyst and Deputy Director	NHS Nottingham and Nottinghamshire ICB

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