Tackling the Elective Surgery Backlog
Does Data Science Hold the Answers?
Foreword

With 2020 seeing a dramatic fall in the number of patients completing elective surgeries, the COVID-19 pandemic is the biggest challenge the NHS has ever faced. But it’s also a promising time for healthcare, as we enter an age of digital transformation. Oracle Cloud is enabling a more connected approach to patient experiences, providing a single patient view and better access to self-service functionalities. New digital capabilities are helping to reduce waste and costs, automate processes, and eliminate bottlenecks. And what about the all-important protection of data? Oracle offers the first and only true sovereign cloud dedicated to UK healthcare and emergency services providers—the Oracle Dual-Region Government Cloud is aligned to the cloud security principles outlined by the National Cyber Security Centre. Together, we can deliver a connected future for healthcare, where digital initiatives transform patient experiences.
Introduction

On 15th July 2021 Together for Health in partnership with Oracle brought together IT, Data and Operational leaders from across the NHS to discuss the potential for data analytics and data science in supporting NHS leaders and clinical decision-makers to tackle the elective surgery backlog.

While the NHS delivered a remarkable amount of elective treatment during the second wave of the pandemic, the pressure of caring for large numbers of patients seriously unwell with COVID-19 has led to long delays for the growing number of patients on the waiting list. Particularly for those whose diagnosis and treatment cannot be treated remotely, where a hospital setting is essential.

With ongoing uncertainty and the effects of the pandemic still playing out operationally in the day-to-day, restoring elective care to pre-pandemic levels and addressing the growing backlog of patients is likely to take years. It will require a multi-faceted approach to increasing capacity, optimising collaboration, managing demand and prioritising patients.

We asked our panel of experts about the role data science can play in addressing the elective surgery backlog:

- How will approaches to waiting list management change over the coming months and years and what new systems are required to help manage this challenge?
- What role do predictive analytics and scenario planning play in identifying operational and financial efficiencies?
- How can managers have access to real-time information to manage fluctuating demand and capacity?
- In what new ways can patients be systematically prioritised, for best outcomes?
- What role can algorithms play in identifying health inequalities and helping to ensure we take forwards the lessons of the pandemic?
Expert Panel

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The Health Economics Unit
Senior Advisor
Population Health Management
NHS England

Michael Connaughton
Head of Analytics & Big Data EMEA, Oracle

Ellen Coughlan
Programme Manager
Analytical Capability
The Health Foundation

Dr Marc Farr
Chief Analytical Officer
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Tabby Boydell
Elective Care Recovery and Transformation Specialist
The Royal Orthopaedic Hospital
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Key Themes

The size of the challenge

Four million fewer people completed elective treatment pathways in England in 2020 compared with 2019 (down from 16 million to 12 million), while six million fewer people were referred for elective care, presenting a serious additional risk for post-pandemic planning. There are now 4.7 million people waiting for treatment, including 387,000 who have been waiting more than a year. It is feared that there could be as many as 3,000 additional deaths over the coming years as a result of delays in treating cancer during the pandemic.

Many aspects of the pandemic have exacerbated health inequalities, including the impact on elective care. The number of completed treatment pathways in the most deprived areas of England fell by 31% compared with 26% in the least deprived areas.

There were also differences between specialties, with trauma and orthopaedics – one of the higher volume specialties – experiencing a drop of about 75% in May 2020, while neurology and thoracic medicine had much smaller percentage falls.

The delays in providing treatment are leaving many people in chronic pain, and are creating additional care needs, including greater costs for social care.

All this demonstrates the range of factors that could be considered when analysing data around elective care and prioritising patients for treatment – individual need, health inequalities and disparities between different disciplines all have their merits, and all have their own ethical implications.

Understanding the problem

In exploiting the potential of data science, it is vital to understand who and what is represented in the data, and where there are biases, uncertainty and gaps. For example, there are big differences between patient data and population data, which may drive different conclusions on issues such as the wider determinants of health.

Few trusts have a detailed understanding of the elective backlog they face, underlining the need for far greater collaboration between the business intelligence and operational teams. There are around 14,000 data analysts in the NHS, but a lot of their time is consumed in low value, routine reporting which could be automated, enabling them to focus on bigger questions.

Linking data

Much of the power in data analytics comes from linking datasets, such as patient information with housing and education to understand what is driving health inequalities. This might show, for example, that a woman with breast cancer from a deprived community is more likely to have a mastectomy instead of a less invasive procedure compared with a woman from a more affluent area, or a man from a deprived area is more likely to end up with a colostomy bag than have their bowel repaired.

The need for board-level leadership

If data is going to play a central role in driving operations, leadership must come from the board. Data analysts need to build relationships and know who to lobby internally to build a coalition of support. Don’t be shy of building the profile of the business intelligence team.

Analytics needs to be a separate function from IT. The institution needs to be brave rather than risk-averse in its attitude to information governance.
Transparency is key

With data driving important operational decisions, openness and transparency about what is being done and what is essential for maintaining confidence and trust with both the public and NHS staff. What algorithms do, and the impact they have, need to be explained clearly.

Transparency also encourages organisations to keep it simple, rather than introducing layers of unnecessary complexity which are impenetrable to the public, and be clear on success criteria.

Transparency ensures algorithms are open to scrutiny and challenge, helping root out biases.

Opportunities

Ways in which data science can help the NHS better understand populations, to direct and prioritise care:

- Risk stratification
- Case finding people based on specific needs
- Tackle unwanted variation
- Uncover health inequalities
- Performance and operation monitoring
- Assessment of large data sets, quickly
- Probabilistic forecasting
- Evaluate new interventions and care pathways
- Help patients interact with their care, book surgery

Challenges

Considerations when applying data science to the elective surgery backlog:

- Data rarely represents the whole population equally
- Bias in the data may drive (or exacerbate) inequalities
- Know the art of the possible, data science is evolving fast
- Be clear on the objectives, success criteria and keep it simple
- Be aware of the potential for analyst bias
- Provide analysts with access to the right data, robust data, linked data
- Free up time for analysts to grapple with more complex problems
- Take a cross-disciplinary approach
- How to involve and engage patients in developing models
Conclusion

The panel demonstrated that we have the tools and the capability – and now is the time to seize this as an opportunity.

“Data scientists have a valuable role to play in the elective surgery backlog”

Andi Orlowski

“Find your curious people and get them asking the questions to whether analytics or machine learning or data science could actually be part of the solution for a particular business challenge.”

Michael Connaughton
To access the full webinar recording, please click here

To find out further information about how Oracle can support your organisation to optimise the power of analytics for your decision-making, get in touch at oracle.com/uk/industries/healthcare/