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Structured management of health data

Data governance in the healthcare sector

The healthcare sector generates an increasing volume of data, yet much of it remains underutilised or inadequately secured. Implementing robust data governance - a structured framework for collecting, managing and protecting data - could unlock this untapped potential and lay the foundation for improved patient care.



Researcher Dr. Anh Mattick works at the Fraunhofer IRB Transformation Innovation Center.
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Laboratory results, X-ray images, digital patient records - healthcare is becoming increasingly digitalised, generating vast volumes of data with no end in sight. This growing data stream places higher demands on administration and data security. At the same time, an estimated 97% of this data remains unused - a missed opportunity that has enormous potential to benefit both patients and healthcare institutions.

Data governance plays a key role in ensuring that organisations do not drown in the flood of information, but instead manage and use it in a structured, secure and legally compliant way. It establishes an organisational framework for handling data efficiently and responsibly. Dr. Anh Mattick and Katherine Lewis from the Transformation Innovation Center at the Fraunhofer Information Centre for Planning and Building IRB explain how data governance works in practice - and what makes it particularly important in the healthcare sector.

More and more data in the healthcare sector

By 2026, global data production is expected to reach 221 zettabytes[1)] - the equivalent of 221 billion 1-terabyte hard drives. A significant share of this - around 10 zettabytes - is projected to come from the healthcare sector alone.[2)] "The relevance of data governance is growing rapidly - not only due to the rise of AI, but also because of advances in big data and the increasing demand for fast, remote diagnostics," says Dr. Anh Mattick, who advises healthcare companies on this topic.

The increasing use of software in medicine, along with widespread adoption of wearables and health apps, is causing the volume of data to grow at an ever-faster pace. This raises the question of how and where such data can be processed securely, as well as highlighting the critical need for quality assurance. "High-quality data is essential, especially when it is used by AI," says Mattick. This is why it is so important not to let data accumulate unchecked, but to manage it in a structured way with clear rules through data governance. Lewis paints the picture thus: "It's a bit like trying to organise a messy house while new deliveries keep arriving, making things worse. Effective data governance, by contrast, turns the system into a well-organised warehouse - new data comes in regularly, but it is systematically recorded, sorted and readily accessible."

Special features of data governance in the healthcare sector



Researcher Katherine Lewis works at the Fraunhofer IRB Transformation Innovation Center.
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Data governance ensures that data has a clear structure and unambiguous rules. It defines what data is used for, where it is stored, who is responsible for what and which control mechanisms apply. It also includes how often audits are carried out to check compliance with these rules. This makes it easier for companies and organisations to find all the information and also enables them to use it in a targeted manner. At the same time, data governance increases security, protects privacy and improves data quality. "High data quality is only possible with data governance," Mattick stresses. "An effective data governance structure can make a significant contribution to ensuring high data quality."

This is particularly crucial in the healthcare sector, which generates sensitive data of many different, often incompatible data types. "In the healthcare sector, different types of data are generated from different sources. These include, for example, handwritten files, machine-to-machine, human-to-machine or insurance data and lab results. The data comes in different formats, structures and quality and is often incompatible," explains Lewis. "Patient records often span several decades. This can include data that was recorded 30 years ago or more in formats that differ significantly from today's standards." Data governance helps to organise this data and make it compatible.

The potential of data governance

More effective data management has enormous potential. Estimates suggest that around 97 percent of healthcare data remains unused, yet valuable insights are hidden within this vast resource.[3)] Better data analysis could not only benefit companies - by driving product development and increasing efficiency - but also significantly improve patient care. Institutions such as hospitals could achieve substantial cost savings. Analysing health data could lead to the discovery of new drugs, safer medical devices and more effective therapies. Additionally, tracking disease patterns could enable earlier detection and more targeted responses to pandemics. Well-connected global databases could even save lives in emergencies - for example, by quickly locating a compatible stem cell donor anywhere in the world.

How organisations implement data governance correctly

For the researchers, there is no doubt that healthcare institutions and companies need structured data governance. Both patients and organisations benefit from it. "Organisations that systematically collect and analyse their data can make informed decisions about where – and where not – to invest resources," explains Mattick.

How does this work in practice? Mattick and her team recommend a three-tiered approach: organisational, personnel and technological. "Successful implementation of data governance depends on achieving integration across all three," she explains. "And it must begin at the organisational level - otherwise the subsequent steps will flounder." The goal is to establish a comprehensive process and framework that defines the data infrastructure, including its purpose, storage, responsibilities and control mechanisms. All departments should be involved early on. Clear roles and responsibilities must be assigned and staff should receive appropriate training. Technology - such as the selection of suitable software - comes last. "Most companies

we work with start at the wrong end," says Mattick. "They focus first on choosing tools and technologies, but overlook the people and structures that are essential for success."



A competency-based framework for data governance.[4)]
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However, as Mattick emphasises, the most important point is recognising that data governance is not a one-off task: "It requires ongoing review: are there new regulations? Is our cybersecurity still up to date? Data governance is a long-term corporate strategy, not a box you tick and forget."

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