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From Data to Decisions: Challenges Experienced by Flemish Hospitals

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Abstract. Healthcare organizations increasingly aspire to use data to improve care quality, patient safety, and efficiency. Yet, translating this ambition into everyday practice remains complex. This paper presents initial findings from a study on data-driven decision making (DDDM) in Flemish hospitals. Through 28 semi-structured interviews with department heads and head nurses from eight types of departments across nine hospitals, we explored how frontline managers experience the move towards more data-informed ways of working in clinical, managerial, and organizational decision contexts at the department level. Using thematic analysis, five recurrent challenge areas were identified: (1) fragmented data infrastructures and systems, (2) data quality and reliability, (3) data literacy and accessibility, (4) organizational and cultural resistance, and (5) regulatory and financial constraints. These challenge areas illustrate how technical, human, and organizational factors jointly shape hospitals' DDDM maturity. The findings show that progress towards DDDM remains uneven across departments, reflecting an ongoing transformation that requires not only technological investment but also cultural readiness and shared responsibility for data use.

Keywords. Data-driven decision making, challenges, Flanders, hospital department

1. Introduction

Healthcare organizations worldwide are increasingly expected to base decisions on reliable data and to leverage analytics and AI tools to improve care quality and efficiency. Data-driven decision making (DDDM) refers to the systematic use of data to inform decisions, rather than relying primarily on professional intuition. In hospital contexts, DDDM can build on existing clinical and organizational data that are reused beyond their original purpose, as well as on newly collected data that are gathered to support specific clinical, managerial, or organizational decisions [1, 2]. DDDM is seen as a crucial step to improve care quality, patient safety, and efficiency, while also enabling new forms of personalized and digital health [3, 4]. Hospitals in particular generate vast amounts of clinical and organizational data, which could guide better decisions at the level of patients and departments. In this study, DDDM is considered across clinical, managerial, and organizational decisions, with a primary focus on how such decisions are supported at the department level.

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Despite this potential, the move from data availability to actual data use in daily hospital practice remains a challenge. Studies consistently show that challenges such as fragmented IT infrastructures, heterogeneous data formats, lack of seamless data exchange, and varying data quality stand in the way of effective use of health data [3]. Other recurring issues include lack of time and competences among healthcare professionals, uncertainty about data ownership, and limited trust in analytic results [3, 5]. These barriers explain why many hospitals still struggle to realize the promised benefits of DDDM, even when technical infrastructures are in place. While previous reviews have mapped these organizational and technical barriers, they primarily synthesize secondary evidence and system-level analyses, offering little insight into how frontline hospital professionals themselves experience and navigate such challenges in daily practice.

This paper presents initial findings from interviews with department heads and head nurses in Flemish hospitals, the northern region of Belgium. By focusing on the challenges they experience when trying to work in a more data-driven way, we shed light on the practical and organizational hurdles that shape digital transformation at the frontline of care. Our aim is to move beyond the promise of DDDM and explore why turning data into better decisions is still so hard in real-life hospital contexts.

2. Methods

Semi-structured interviews were chosen because they combine guiding questions on data use, decision processes, and perceived challenges with flexibility to probe deeper [6], which suited the exploratory aim of the study. For example, participants were asked: "Which challenges do you experience when trying to use data in your department's daily decision making?", or "What are challenges related to the use of dashboards?".

A total of 13 department heads and 15 head nurses were interviewed covering eight types of departments across nine Flemish hospitals. This composition ensured variation in DDDM maturity, hospital size, and organizational structure. Participants were recruited through professional networks and snowball sampling [7]. 25 interviews were conducted face-to-face and 3 took place online. Each interview lasted around one hour.

Interviews were recorded, transcribed, and analyzed using thematic analysis [8]. In line with Braun and Clarke's phases, familiarization with the data was achieved through repeated reading and note-taking. Transcripts were then coded inductively, and related codes were collated into potential themes. These themes were reviewed, refined, and clearly defined before being reported through a structured narrative supported by illustrative quotes. Coding was conducted in ATLAS.ti 25 for Windows [9], ensuring transparency and traceability of analytic procedures. To ensure the trustworthiness of findings, established qualitative research principles were followed, including iterative coding, team discussions, and transparent reporting of analytic steps [6].

3. Results

Analysis of the interviews revealed five overarching challenge areas that capture the main challenges departments experience when working in a more data-driven way: (1) fragmented data infrastructures and systems, (2) data quality and reliability, (3) data literacy and accessibility, (4) organizational and cultural resistance, and (5) regulatory

and financial constraints. Together, they highlight how technical, human, and organizational factors jointly shape the current maturity of DDDM in Flemish hospitals.

3.1. Fragmented data infrastructures and systems

Most respondents mentioned fragmented infrastructures and lack of seamless data exchange as recurring challenges. Departments often use multiple platforms that are not fully compatible, making it difficult to extract or combine data from different sources. As one respondent noted: "*we work on islands that don't speak to each other*". Benchmarking with other hospitals was described by some as "nearly impossible" due to different ecosystems and data definitions. Technical constraints such as outdated servers, connectivity issues, and slow implementation cycles further hindered progress. Even when new tools were introduced, their usability was sometimes questioned: dashboards were seen as "not intuitive" and automation potential remained underused in some settings.

3.2. Data quality and reliability

Concerns about data accuracy and reliability appeared in many interviews. Participants acknowledged the "human factor" in data entry, ranging from honest mistakes to intentional manipulation of workload indicators. Missing, inconsistent, or non-coded data fields were common for some departments, leading to "garbage in, garbage out". This lack of reliability made several professionals hesitant to rely on dashboards, as they feared that metrics did not always reflect operational reality. Financial and benchmark data were also criticized at times for being late or incomplete, while others noted that reporting quality is gradually improving.

3.3. Data literacy and accessibility

Respondents often acknowledged limited analytical skills or confidence when interpreting figures and dashboards. Some emphasized that data work did not align with their professional training or priorities, stating: "*We are not trained to work with data, we are trained to work with patients.*" At the organizational level, access to relevant data was often restricted, requiring formal requests to central teams or data analysts. This dependency limited departments' autonomy and engagement with relevant data. Together, these findings illustrate how limited data literacy and constrained access can reinforce each other, resulting in reduced ownership and slower translation of data into actions.

3.4. Organizational and cultural resistance

Beyond technical factors, cultural and resource-related barriers influenced data use to varying degrees. High workload, staff shortages, and limited IT support often meant that data tasks were perceived as an "extra administrative burden". Several respondents described experiencing "clicking fatigue," referring to the repetitive digital registrations required in electronic systems. The perceived distance between care staff and IT departments, each with different priorities, further complicated collaboration. Still, some departments reported gradual improvement through closer contact or dedicated support

roles. In these cases, having a clearly identified person responsible for data interpretation helped bridge the gap between clinical teams and IT staff and increased local confidence in using data. Digitalization efforts were not always embraced; a few felt that "technology lacks gut feeling," or that new data-registration and reporting systems made work more cumbersome rather than efficient.

3.5. Regulatory and financial constraints

Finally, respondents mentioned the complexity of legislation and uncertainty around GDPR and AI regulation as innovation barriers. Financial limitations added to this, as data projects often required investments that smaller departments/hospitals cannot afford.

4. Discussion

Our initial findings indicate that technical barriers remain central to hospitals' data-driven transformation, but highlight that organizational and human factors also play a key role. Fragmented infrastructures and lack of seamless data exchange have long been identified as obstacles in healthcare digitalization [3]. Yet, the present study shows that even when systems technically allow data exchange, local users still face issues related to data trustworthiness, time constraints, and ownership. This suggests that DDDM maturity cannot be achieved solely through IT upgrades but also requires an organizational culture that values and supports data use at every level.

Departments with clearly designated data-responsible staff reported more confidence in interpreting data and applying insights, echoing previous work on data stewardship as a critical success factor for DDDM [4]. At the same time, concerns about data reliability and workload reveal that DDDM competes with the daily pressures of clinical care. Similar tensions are reported internationally, where data initiatives often struggle to demonstrate short-term value to frontline staff [3]. Our study adds that these tensions also appear in hospitals that already have data systems in place, suggesting that progress depends on how well DDDM goals are connected to everyday priorities. This implies that hospitals should not only invest in technology, but also in capacity building and interdisciplinary communication. Having structured moments where key stakeholders jointly discuss, interpret, and act upon data can help bridge the persistent gap between data collection and operational use.

While similar challenges emerged across hospitals, their impact differed between departments, consistent with studies on uneven adoption of data-driven practices [10]. Our findings show that progress in DDDM develops primarily at the departmental level rather than hospital-wide. Local factors such as available resources, leadership attention, and perceived clinical relevance shape whether data initiatives become integrated into daily routines or remain peripheral. This extends previous work on organizational readiness [11] by illustrating how local engagement and ownership influence the practical uptake of data use. In this way, our study highlights the importance of local context and everyday leadership in making DDDM actually work on the floor.

Professionals lacking analytical confidence tend to rely more on central experts, which further reduces their sense of autonomy and ownership over data use. This cycle mirrors findings from broader research on data democratization in healthcare, showing that empowerment and interpretive competence are preconditions for sustainable DDDM

practices [4]. Our findings show how this dynamic plays out in hospital departments, where limited data skills and restricted access often reinforce each other.

5. Conclusion

This study sheds light on how Flemish hospital departments experience the transition toward more data-driven ways of working. While progress is visible, challenges remain diverse and interdependent, spanning technical, organizational, personal and cultural dimensions. The findings underline that DDDM is not merely about providing data but about ensuring that staff have the skills, time, and support structures needed to meaningfully engage with data in daily decision making. Moreover, the study highlights the importance of shared responsibility for data quality, as effective data-driven work depends on collaboration between clinical teams, IT staff, and management rather than being owned by one group alone.

Future research could further explore how different hospital departments or types of hospitals experience distinct sets of challenges, and to what extent the Flemish findings are transferable to other regions and countries.

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