HEALTHCARE EXECUTIVE'S RESISTANCE TO CLINICIAN DEVELOPED COST AND PRODUCTIVITY INDICATORS: EVIDENCE FROM AN INTERVENTIONIST STUDY

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ABSTRACT

Clinician's resistance to cost management is argued to be a consequence of the inadequacy of accounting practices being designed according to reforms inspired by managerial orientation. The objective of this paper is to report on an interventionist study which involved the development of a novel cost containment method to support productivity enhancement activities at the clinician level of a medium-sized US teaching hospital. Participating in the development process, we supported clinicians to construct cost accounting information in a way that both appeals and is actionable in healthcare settings. This cost containment approach combined cost information with scientifically validated clinical information (severity index) and visually disaggregated the information along with length of stay data with the aim of identifying and reducing unwarranted variation in cost. Despite this novel cost containment method being a result of clinicians' efforts, it confronted resistance by executives, including those having medical background. Our findings demonstrate that the inability of the intervention in achieving wider appeal and minimising unwarranted variation can be explained by factors related to economic considerations, internal power dynamics as well as issues related to professional instilled beliefs. We focus our theoretical analysis on professional beliefs, including the idea that cost savings could be detrimental to quality, as well as the expectations regarding the exactness of accounting information to be useful, as these have received little attention in prior accounting research. In addition to elaborating theoretically on the reasons for executive level resistance, our findings suggest policy implications for those interested in improving the productivity of healthcare provision.

KEYWORDS: cost containment; front line engagement; executive resistance; interventionist research; healthcare management; novel accounting methods

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1. INTRODUCTION

Healthcare provision is rapidly evolving. The aftermath of the covid-19 pandemic, combined with the financial downturn and an acceleration in the adoption of technology and digitisation have dramatically changed the healthcare landscape (Agostino, Arnaboldi, & Lema, 2021). While the changes are manifesting in varied ways one critical challenge is the rising cost of healthcare provision. Widespread inflation and increased healthcare utilisation are contributing to the highest projected increases in global medical costs in 15 years (OECD, 2023). These large increases are unsustainable, resulting in the rising cost of healthcare becoming a pressing concern for most the western world (Macassa & Tomaselli, 2020) and an imminent issue for countries such China and Japan (Winnie et al., 2019).

Health service researchers have documented extensive variation in the delivery of healthcare in many parts of the world (see e.g., Sutherland, & Levesque, 2020; Wennberg, 2011). They argue that much of the variation in use of healthcare is accounted for by the willingness and ability of clinicians to offer treatment rather than differences in illness or patient preference. Some of this variation that is not explained by differences in illness or patient preference is called unwarranted. Reducing unwarranted variation provides a huge opportunity to improve productivity and to deal with the rising cost of healthcare (Berwick, 2017). Assuming the willingness and ability of clinicians to offer treatment is one important cause for variation, the engagement of front-line clinicians in activities to reduce unwarranted variation and to increase the productivity of healthcare provision seems paramount. Providing clinicians with an innovative accounting method is a potential approach to raise awareness and manage unwarranted variation effectively.

The implementation of novel accounting methods has long been a focus of research in management accounting literature (e.g., Liguori & Steccolini 2011; Kasurinen, 2002; Malmi, 1997; Scapens, & Jazayeri, 2003). This emphasis also extends to the healthcare management accounting literature (e.g., deHarlez & Malagueno, 2016; Lehtonen, 2007; Pizzini, 2006; Rautiainen et al., 2022). To date, however, the potential for clinicians to initiate and develop accounting methods remains relatively underexplored, while the possibility that clinician-led accounting methods may also not accumulate to generate long-term effects or have lasting implications has largely been overlooked. Instead, the implementation of accounting practices has been conventionally portrayed as (i) a prompt introduced by healthcare executives to cut costs and enhance accountability or (ii) a process by which healthcare executives facilitate the hybridisation of clinicians. As such, this paper's analytical interest is on broadening our understanding of how clinician-initiated cost and productivity accounting methods are developed in a hospital context. This line of inquiry delves into the intriguing puzzle of how managerial executives respond to accounting approaches originating not from them but rather from front-line initiatives.

To achieve this, we adopt an interventionist research design (Jönsson & Lukka, 2006; 2022; Lukka & Wouters, 2022), which involved pooling our accounting knowledge with that of a front-line clinicians' medical understanding to develop a novel cost containment approach which consisted of an accounting report and an Excel tool. More specifically, the cost containment approach combined cost information with scientifically validated clinical information (severity index) and visually disaggregated the information along with length of stay data with the aim of identifying and reducing unwarranted variation in cost. We also interviewed clinicians and executive managers within the hospital that we felt would offer valuable insights into the process development

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and implementation of the accounting method. In total, we conducted 28 interviews from March 2015 to May 2023 with individuals important to the development and adoption of the cost containment approach. Detailed field notes were also taken during this period, documenting the unfolding development of the accounting method (Jönsson & Lukka, 2006; 2022; Lukka & Wouters, 2022).

Our paper builds on extant management accounting healthcare literature by showing the effects of an intervention study aimed at understanding productivity differences in healthcare by focusing on the variation in patient level costs. Our results show that our field-based intervention was appreciated by front-line clinicians. In particular, our findings suggest that the cost containment approach was perceived to provide an opportunity to standardise processes, redesign care, and to improve medical output. Front-line clinicians actively replicated its implementation within their respective clinical disciplines. Furthermore, they subsequently published their endeavours in research outlets/conferences, showcasing their contributions to the field[1]. However, forebodings about an ability to distinguish between warranted and unwarranted variation and a lack of integration with existing hospital systems, were perceived to be inhibiting front-line clinicians from modifying their patient care decisions. Yet, on balance, the front-line clinicians in our field hospital were supportive of the new accounting information and were of the opinion that healthcare provision could improve if it were to be fully implemented within the hospital.

Our findings, however, suggest that healthcare executives - administrators and especially clinicians in administrative roles - were less willing to fully engage with our cost containment approach. From a theoretical perspective, we aim to explain why this was the case. Although they were supportive in providing resources for the design and implementation of the novel cost containment information, it was evident that these executives were unwilling to take advantage of initiatives driven by front-line clinicians, which could lead to improvements in hospital finances and quality. Antipathy among healthcare executives in our field hospital was related to a need to maximise revenue fees rather than focusing on cost efficiency. Additionally, the perception of potential litigation risks may have also incentivised resources consumption. There were also issues related to internal power dynamics driven by a desire to centralise cost data. From an empirical point of view, the most interesting causes for resistance were related to misconceptions regarding the relationship between quality and cost, as well as the exactness of accounting information to be useful for dealing with productivity enhancement and reduction of unwarranted variation. All these reasons collectively contributed to the intervention's inability to gain broader appeal. We argue that our explanation will be valuable for policymakers, managers, and clinicians contemplating the adoption of front-line-driven accounting methods.

Our study makes two significant contributions to the healthcare accounting literature. First, we offer fresh insights into the construction of cost information that can be used to manage unwarranted variation among individual clinicians, or clinical divisions, in a manner that appeals to front-line clinicians (Conrad & Guven-Uslu, 2011, Northcott & Llewellyn, 2003; Mahlendorf, Kleinschmit, & Perego, 2014; Porter, Kaplan, & Frigo, 2017). The intervention developed by front-line clinicians provided information about variation in patient level costs, controlling for length of stay and severity of illness. Such information was considered valuable for clinicians in

[1] References are not provided to protect the anonymity of the case hospital and its participants. However, they are available from the corresponding author.

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assessing warranted and unwarranted variation and generating ideas for productivity enhancements (Mahlendorf, Kleinschmit, & Perego, 2014; Porter, Kaplan, & Frigo, 2017). In so doing, we enhance our understanding of how novel cost information can be constructed to foster greater engagement amongst front-line clinicians (Begkos, & Antonopoulou, 2022; Carr & Beck, 2020; Kurunmäki, 2004; Llewellyn et al., 2022; Pizzini, 2006). In particular, we contend that this can be achieved by educating clinicians about the nature of accounting practices and dispelling the notion that they provide a single source of truth. Instead, we assert that cost / accounting information should be introduced as a catalyst for debate and discussion. Furthermore, we assert that healthcare organisations may find it beneficial to empower their clinical staff by endorsing and supporting their initiatives rather than enforcing centralisation of activities.

Second, we contribute to the literature that seeks to understanding executive resistance, specifically focusing on cost analysis and operating decisions in healthcare settings (Cardinaels & Soderstrom, 2013; Eldenburg, Gunny, Hee, & Soderstrom, 2011; King, & Clarkson, 2015). While much of the existing literature focuses on clinicians' engagement with costing practices (e.g., de Harlez & Malagueno, 2016; Jacobs, 2005; Jacobs, Marcon & Witt, 2004; Kurunmäki, 2004), often assuming reluctance due to a lack of alignment with managerial goals underlying formal costing mechanisms (Abernethy & Stoelwinder, 1990; Comerford & Abernethy, 1999), our findings suggest that healthcare executives, whose professional orientation and ethos should align with public value goals, can also display reluctance towards clinician-driven cost containment practices. In our case hospital, healthcare executive resistance stemmed from a desire to achieve a target level of revenue that meets budget constraints, fear of litigation, preference for centralising cost management data, strong beliefs regarding the value of cost containment activities, and the nature of accounting information needed to support such activities. Therefore, in addition to outlining various reasons for executive level resistance to clinician driven costing developments, our study provides further nuance to the role of professional beliefs in hindering accounting change within healthcare settings (Abernethy & Stoelwinder, 1995; Abernethy & Vagnoni, 2004; Kraus, Kennergren, & Von Unge, 2016; Pizzini, 2006; Rautiainen et al., 2022).

The paper proceeds as follows. The subsequent section presents the literature review related to our study. Section 3 provides a detailed description of the research approach employed. Section 4 presents the data and reports the results. Section 5 discusses the findings. Finally, Section 6 concludes the study and presents our contributions.

2. Theoretical Underpinnings

We begin by addressing the concept of unwarranted variation. We contend that the development of an accounting approach aimed at minimising unwarranted variation presents an opportunity to improve productivity and tackle the escalating costs associated with the healthcare. Subsequently, we explore the issue of resistance to accounting methods within the unique context of healthcare, before concluding the section by outlining the research objective of the paper.

2.1 Unwarranted Variation

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Efforts are being made at all levels of the healthcare system to control costs while maintaining quality (Agostino, et al., 2021). However, significant differences in hospital care costs per treatment still exist between countries and within hospitals. Several factors contribute to these cost differences, including patient preferences, and socioeconomic circumstances. There is also, however, unwarranted variation in clinical practice, which negatively impacts productivity (Wennberg, 2011). Unwarranted clinical variation is defined as 'patient care that differs in ways that are not a direct and proportionate response to available evidence; or to the healthcare needs and informed choices of patients' (Sutherland & Levesque, 2020). Factors contributing to unwarranted variation in clinician practice styles include (1) misinterpretation of available evidence/clinical information, (2) the influence of the professional training, (3) individual clinical knowledge, (4) concerns about malpractice, (5) personal assessment of the potential benefits and risks based on uncertainty (Reyna & Lloyd, 2006). Targeting this unwarranted variation presents an opportunity to improve patient care and reduce costs. Clinicians have a substantial influence on costs, and providing clinicians with innovative accounting information is a potential approach to raise awareness and manage unwarranted variation effectively. However, the development and implementation of novel accounting approaches is known to pose challenges, particularly in hospital contexts.

2.2 Accounting and Resistance in Healthcare

The demand for change to address the escalating costs of healthcare provision is growing among healthcare organisations globally (OECD, 2023). Efforts to change them, however, face strong forms of inertia (Carr & Beck, 2022; Pizzini, 2006; Rautiainen et al., 2022). On the one hand, a stream of literature often drawing upon institutional based approaches, is premised on the view that pressures to cut costs and enhance accountability prompt the implementation of accounting practices to influence clinicians' behavior, who historically held decision-making authority and autonomy (Abernethy and Stoelwinder, 1990; Chua and Degeling, 1993; Jones, 1999; Preston et al., 1992). Hence, organisations try to influence behavior via the imposition of accounting practices which can trigger resistance from clinicians, potentially jeopardising the implementation of accounting practices (Jacobs et al., 2004; Kurunmaki, 1999; Rautiainen et al., 2022). Here resistance to accounting change has been linked to conflicts between managers and clinicians (Abernethy & Vagnoni, 2004; Carr & Beck, 2022; Jones & Dewing, 1997; Kurunmäki, 1999); a desire for professional autonomy (Jones & Dewing, 1997; Lapsley, 2007; Nyland & Pettersen, 2004); a failure to identify with the professional goals and values (Abernethy & Stoelwinder, 1990; Bouillon, et al., 2006; Comerford & Abernethy, 1999; Rautiainen et al., 2022), and a perception that accounting approaches are often poorly designed and require improvement (Carr & Beck, 2020; Pizzini, 2006). This traditional understanding, often, is premised on the view that hospital contexts are driven by a collective ethos that deprioritises efficiency and management considerations.

There is a simultaneously discussion, however, in the healthcare accounting literature that accounting practices, can create a powerful mechanism to lessen resistance to efficiency demands and obtain compliance with managerial demands in clinical settings. This relatively small and growing body of research tends to combine institutional and functionalist approaches, such as contingency, economic or sociology theories to explain clinicians' as being increasingly accepting of the need for accounting change in certain contexts (Abernethy and Vagnoni, 2004, Conrad and Guven-Uslu, 2011; Eldenburg, Soderstrom, Willis, & Wu, 2010, Jacobs et al., 2004,

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Jarvinen, 2006, Kurunmaki, 2004, Lehtonen, 2007). A key argument in this extant literature is clinician collaboration with accounting can and is happening, a phenomenon often referred to as the hybridisation. Kurunmäki (2004), for example, comparing health institutions in Finland and the UK following managerial reforms, demonstrates that in Finland, clinicians readily combined medical knowledge with new financial knowledge, forming new hybrid knowledges including budget setting, cost calculations and setting prices. Amongst clinicians in the UK, the hybridisation of financial and clinical knowledge also ensued, although more gradually. Kurunmäki (2004, p. 328) suggests "that greater attention should be paid to the roles of [accounting] techniques, and their mobility between professional groups, rather than focusing almost exclusively on abstract knowledge".

Begkos and Antonopoulou (2022) also demonstrate to us how clinicians in their case hospital collaborate with and promote accounting techniques by signalling the merits of accounting in improving care outcomes, thus helping to remove the stigma associated to clinical engagement with costing practices. Building on this and similar arguments, Carr and Beck (2020) using notions of organisational and occupational professionalism, purport a nuanced interpretation of clinician behavior where clinician engagement with accounting practices is shown to vary along a continuum from resistance to collaboration. Similar to argument made by Pizzini (2006), Carr and Beck (2020) conclude that clinician willingness to engage with accounting practices is likely to be affected by way accounting information is collated and disseminated, as well as individual clinician group values and beliefs (i.e., clinician specialisms). In this vein, Rautianen et al.'s (2022) longitudinal case study of a healthcare organisation in Finland indicates that introduction of participatory budgeting in response to financial constraints amplified long-standing frustrations and a perceived lack of support toward budgeting techniques, while also preventing clinical hybridisation.

Collectively, this growing body of research, support the notion that the malleability of accounting practices to the needs of clinicians is crucial for their practicality, particularly involving them in the design and implementation process (Chapman, Kern & Laguecir, 2014; Eldenburg et al., 2010; Pizzini, 2006). As pointed out by Rautianen et al. (2022), it is important to produce accounting information that is both appealing and actionable within healthcare settings. For example, it has been shown that when accounting information can encompass both the economic and quality logics it can be utilised by clinicians for benchmarking (e.g., Northcott & Llewellyn, 2003), or as relative performance information at individual clinician level (e.g., Conrad & Guven-Uslu , 2011), and comparative assessment between similar units treating same conditions (e.g., Mahlendorf, Kleinschmit, & Perego, 2014). Additionally, research has shown that incentives play a crucial role in enhancing the overall efficiency and cost-effectiveness of healthcare systems through accounting approaches (Porter, Kaplan, & Frigo, 2017). There is also a recognised imperative to shift away from incentivising volume towards more value-based approaches (Porter & Teisberg, 2006). However, overcoming difficulties in measuring the value created can only be achieved through clinician engagement (Armstrong, 2002; Falivena & Palozzi, 2020).

We argue the constructing accounting information that yield appealing and actionable information within healthcare contexts is crucial, with ongoing research indicating the need for fresh insights (Carr & Beck, 2020; Fischer and Ferlie, 2013; Rautianen et al., 2022). However, the exploration of clinicians' capacity to initiate and shape accounting information remains relatively limited. Instead, the implementation of accounting practices is typically depicted either as an initiative driven by healthcare executives to cut costs and enhance accountability,

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or as a process through which executives facilitate the integration of clinicians into hybrid roles. Consequently, the opportunity for front-line clinicians to introduce innovative accounting approaches remains underexplored.

Furthermore, as discussed, prior studies have predominantly focused on examining the outcomes of accounting approaches developed and implemented by executive healthcare management. Much of this literature emphasises clinicians' engagement with costing information, often assuming clinician resistance due to a lack of professional alignment with managerial goals underlying accounting techniques. As a result, the potential resistance from healthcare executives toward front-line driven initiatives has largely been overlooked (Cardinaels & Soderstrom, 2013; Eldenburg et al., 2011; King & Clarkson, 2015). Instead, it is assumed that healthcare executives' professional orientation and ethos should align with accounting practices, especially clinician-driven cost containment practices. However, our findings suggest that healthcare executives, can also display reluctance. Our findings demonstrating that the healthcare executive resistance can be explained by factors related to economic considerations, internal power dynamics as well as issues related to professional instilled beliefs.

2.3 Research Objective

Prior accounting studies have evidently showed that resistance to accounting is complex and challenging, particularly in a hospital setting. To contribute to this debate, we pooled our accounting knowledge with that of clinicians medical understanding to produce information on cost variation at patient level, which would be both appealing and actionable within healthcare settings. So, our first research objective together with clinicians was to invent a new cost containment approach and to put it into a use in practice. This objective was based on belief that the engagement in activities to minimise unwarranted variation is of paramount importance. In doing so, we offer fresh insights into the construction of cost information in a manner that appeals to front-line clinicians. Our second research objective is to explain why this clinician-initiated cost and productivity accounting practice did not lead to a widespread adoption and use in the case hospital. Our longitudinal interventionist research approach provided us a solid understanding of various factors in play when attempting to implement accounting change in healthcare context. More specifically, we aim to develop a theoretical understanding of why healthcare executives, may exhibit resistance towards cost containment approaches developed by clinicians. This line of inquiry delves into the intriguing puzzle of how managerial executives respond to accounting innovations originating not from them, but rather from front-line initiatives.

Methodology

3.1. Interventionist Research

We adopt an interventionist research (IVR) approach which prior works show is well suited to healthcare accounting research (e.g., Chenhall, Hall & Smith, 2017) including studies on costing practices (e.g., Lowe, 1997; Lowe & Doolin, 1999; Padovani, Orelli, Young, 2014). As Lukka & Wouters, (2022, p. 2) define it IVR is a methodology based on "developing rich, in-depth case studies, which draw on ideas provided by practitioners and make full use of empirical opportunities". As is characteristic of this approach, our study seeks to "develop a new construction, tests its usability, and draws theoretical conclusions based on the process" (Jönsson & Lukka

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2006, p. 377). This means, in our study, that the research team sought to embed themselves within the research context, with the intention being to change work processes through the provision of novel cost information.

The research project started in 2014 at the times of heated political discussions in Finland about the nationwide healthcare reform. A group of researchers, including two of the authors, decided to produce cost and productivity information to inform political decision making. They invited their colleagues from various countries to join the effort to learn how productivity of healthcare could be compared within institutions, and between institutions operating either in same or different nations. The intervention described and analysed in this paper is a spin-off of that project. A senior clinician from a US based hospital, and a member of this international research collaboration, became interested in how the learnings of this project could be further developed and applied in his own institution[2]. He and the authors of this manuscript formed a team to conduct an intervention. The senior clinician was an acting clinician at the case hospital. Previous studies in the healthcare field have predominantly focused on examining the outcomes of accounting interventions developed and implemented by executive healthcare management (e.g., Campanele, Cinquini & Tenucci, 2014; Kaplan & Witkowski, 2014). This paper represents one of the first studies to describe the inception of a cost accounting approach which intriguingly stemmed from the front-line clinicians rather than the administrative body. As a result, our research sought to develop both a practical approach for the case study hospital, as well as a means of eventually producing a theoretically interesting contribution to the healthcare accounting literature. In the following subsections we provide the research context, followed by further detail on the IVR design, including data collection and analysis.

3.2 Case Hospital

HealthX[3] is a medium-sized teaching hospital located in a metropolitan area in the United States with a population of approximately 2.5 million people. About 10% of this population represents HealthX's potential treatment population, with the majority belonging to the lower socio-economic spectrum. The hospital provides treatment for these patients, which is covered by government insurances such as Medicare and Medicaid or is provided free of charge for patients without ability to pay for services (indigent care). Payment for services is prospective based on the United States DRG (Diagnosis-Related Group) system for beneficiaries of Medicare and/or Medicaid. For other patients, covered by private insurance, payment is prospective based on agreements with the insurance carriers. HealthX faces competition from other local healthcare systems for the same patient population. The hospital's budget is determined by DRG pricing and service production and is closely tied to the credible threat of financial distress or closure if costs exceed revenues.

3.3 Data Collection & Analysis

Our analysis relies on field notes and interviews conducted from March 2015 to May 2023. Initially, we reviewed organisational documentation and met with HealthX staff to understand the issue of unwarranted variation. These pre-intervention meetings occurred online and via email from March 2015 to February 2016. This early phase

[2] This senior clinician did not wish to be a named co-authored on this paper, in order to protect the anonymity of the case organisation.

[3] HealthX is a pseudonym to maintain confidentiality.

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involved four key individuals: the CEO, Chief of General Medicine, General Medicine Hospitalist, and Director of Short Stay. The second stage of the process involved one of the authors spending three weeks visiting the hospital. Each day, the author attended the hospital, observing and participating in the development and testing of the cost containment approach. Additionally, the authors conducted twenty-two interviews with individuals involved in the design and implementation of the cost containment information. Detailed field notes were taken during this period, documenting the unfolding development of the accounting practice, and ensuring the traceability of the research process (Jönsson & Lukka, 2006; 2022). The diary, along with relevant archival documents, academic journal articles, and a database of clinical, cost, and resource information, facilitated continuous discussions and planning of the intervention. In the third stage of data collection, follow-up interviews were conducted between February and May 2023 to explore the evolution of the cost containment method at HealthX. Five interviews were conducted with the specific aimed at understanding how and to what extent the cost containment approach had been integrated within HealthX. Table 2 provides an overview of the field data.

Regarding data analysis, we employed a process of reverse engineering the intervention and re-contextualising the findings within the management accounting change and healthcare literatures (Jönsson & Lukka, 2006; 2022). In the reverse engineering phase, we organised the different types of data (field notes, interview transcripts, documents) chronologically and identified common themes and unique insights. We then refined our understanding of significant issues derived from field notes, meetings, and interview discussions. Subsequently, we re-structured the original transcripts around these issues and compared emerging findings from our study with prior research.

3.4 The Intervention

Although iterative in nature, the intervention can be loosely categorised into two phases: i) verification of unwarranted variation and (ii) attempts to build credibility within the hospital.

i) Verification of unwarranted variation: In August 2016, the senior clinician and field author presented evidence of excessive cost variation to the Chief Medical Officer and CFO, emphasising the need for additional resources. At this stage, using one DRG 194 (Simple Pneumonia with comorbidities) as a case, the evidence showed that within each length of stay, HealthX had huge variation in costs. The CFO, already suspecting unwarranted costs, endorsed and sponsored the project, assigning two financial analysts to provide support. Approval was obtained from the Institutional Review Board, allowing analysis of patient-level data using de-identified information. To build on the preliminary work done by the senior clinician, DRG 194 was chosen as the focus for demonstrating cost variation and testing the intervention. Length of stay (LOS) was identified as a key factor contributing to variation. To eliminate variation in costs that is warranted, the sample was narrowed to discharged patients without additional services. Discussions with other clinicians led to the introduction of a third dimension, representing severity levels, as variation in treatments and costs due to severity of illness is warranted. The pneumonia severity index (PSI) was used to incorporate patient factors. Controlling for severity level further suggested unwarranted variation exists and indicated inconsistent medical treatment or laboratory testing and imaging across cases. Figure 1 illustrates the final accounting report that provides evidence of unwarranted

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variation. The accounting report was accompanied by an Excel tool that allowed for selected details to be accessed from the accounting and clinical source data, offering a means of reference and validation.

Based on these findings, cost containment methods for other Diagnosis Related Groups (DRG's) were planned, with clinicians-in-training supporting the data analysis. The analysis and reporting process commenced in late 2016 and concluded by the end of 2018. The cost containment method facilitated an extensive examination of specific Diagnosis-Related Groups (DRGs), namely Congestive Heart Failure, Acute Pancreatitis, and Syncope and Collapse, providing detailed insights and analysis. These reports were represented visually with Length of Stay (LOS) plotted on the X-axis against costs on the Y-axis. Each data point on the graph corresponded to an individual patient discharge, thereby giving a unique visual insight into a patient's research consumption. Notably, patients were differentiated based on their severity of illness, which further added depth to the data analysis.

Insert Figure 1 about here. [COLOUR PRINT]

(ii) Attempts to build credibility within the hospital: In early 2017, the intervention team presented their cost containment approach to the CEO, highlighting unwarranted variation in care using their developed and clinically validated reports on DRG 194 (Simple Pneumonia with comorbidities). The CEO acknowledged their awareness of the variation but admitted that the reports provided strong evidence towards some variation being unwarranted. However, he expressed the need for a clearer understanding of the implications for HealthX as an institution. The CEO assigned a group of senior managers, including the Chief Clinical Officer (CCO), the Chief Population Officer (CPO), and the Chairman of the Medicine department, to examine the managerial relevance.

The group determined that demonstrating the impact of unwarranted variation on the institution's margin would be crucial for moving forward. However, this perspective diverged from that of the senior clinician involved in the interventionist team, as he and certain clinical colleagues believed that equipping front-line clinicians with information on cost variation, adjusted for length of stay and severity of illness, would enable them to independently address the issue. Nevertheless, the interventionist team with the help of a hospital financial analysts compiled a report illustrating the impact of variation on institution's margins as requested (i.e., using gross profit as the Y-Axis dimension - see Figure 2). While this analysis clearly demonstrated a significant negative impact of more than a third of patient discharges on the hospitals margin and hence convinced the CEO, the gross margin reports were deemed difficult to translate to the operational level. The implications of this issue are discussed when our empirical findings are presented.

Insert Figure 2 about here. [COLOUR PRINT]

In late 2017, the CEO expressed the hospital's goals of reducing cost variation, improving margin, and prioritising cost efficiency related efforts. The CEO emphasised the need for improved data visualisation and automatic extraction of clinical data from the electronic medical record to streamline processes and reduce costs. In response, the CFO hired a Chief Data Analytics Executive in 2018 and allocated resources to establish a data analytics division. This division's main responsibility was to provide management reporting and extend reporting

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to the clinician level, supporting the intervention team and institutionalising the intervention's main idea through cost containment method. The new approach showed not only the gross margin impact and total costs on the Y-Axis, but these were also broken down to specific resources used (e.g., lab tests, CTs) to relate the figures to clinical decisions and hence make them actionable. The cost accounting system was further improved, and an automated reporting infrastructure was developed. While these developments cannot be solely attributed to the research project, the reports issued by the cost containment method played a role in providing data and supporting decision-making. Figure 3 summaries the main actions and events around the research project.

Insert Figure 3 about here.

4. Empirical Findings

The objective of this paper is to report on an interventionist study which involved the development of a novel cost containment approach to support productivity enhancement activities at the clinician level of a medium-sized US teaching hospital. Participating in the development process, we supported clinicians to construct cost accounting information in a way that both appeals and is actionable in healthcare settings. The intervention was the attempt to present this information to front-line clinicians and hospital executives for them to make use of it and to further test and develop it at the case hospital. Initial findings based on observations from the developers and interviews conducted with front-line clinicians and healthcare management indicated that the novel information was perceived as a valuable resource for the hospital. Clinicians actively engaged with the accounting information by implementing it across various medical disciplines and disseminating the method's outputs through research conferences and publications. Healthcare management also provided support by allocating time and resources for data collection and analysis during the cost containment approach's development. Follow-up interviews conducted in 2023 have indicated that clinicians remain actively engaged with the approach, with notable instances of its replication in practice. Notably, in the field of orthopaedics, the chief of the department has taken the lead in driving further developments and utilisation of the approach. However, our findings also suggested that the cost information did not appear to have fundamentally shaped clinician or healthcare management decision-making. The aim of the following analysis is to explain why this is the case. Our findings demonstrate that the inability of the intervention in achieving wider appeal can be explained by number of factors. We group these factors under economic reasons, internal power dynamics and professional beliefs and elaborate on each of these below.

4.1 Economic reasons

Our informants provided a number of reasons related to economic factors, both at organisational and individual level, leading to a limited interest towards the developed accounting approach. Most of case hospital's revenues are based on a prospective insurance payment system. However, many informants were referring to the problems caused by fee-for-service reimbursement. In the words of Chief Operating Officer:

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> "Fee for service is an inherent conflict of interest. The more you do, the more you get paid. The surgeons take those kinds of decisions and (the case institution) is run by surgeons." ID 18

The Chair of community health explained:

> "I think we can start to develop the tools, but the external environment needs to change to the point where you know it is in everybody's interest to be cost effective. Like right now, in a fee for service environment frankly the cost is somebody else's problem, right? This system affects costs, because everything in the outpatient world is built with fee for service basis. So, when we worry about cost of care? We worry more about utilisation, right?" ID 7

This argument is interesting as what the hospital is allowed to charge from insurance companies is determined externally. Should hospital be able to reduce unwarranted variation of costs in any of the DRG based services it provides and hence, produce services at lower cost, its reimbursement would stay same. This would lead to a higher profit. As our case institution is not for profit organisation, there are no financial incentives to increase profits. However, one could think that cost savings in one part of the operation could be invested in e.g., quality improvements in other part of the operations. We did not encounter this type of reasoning in our interviews. Instead, focus is on increasing revenues, as explained by Chief Operating Officer:

> "We have a lot of reports, most of which are revenue oriented. They show how we are performing, how we are tracking. There are cost reports in our budgeting system that track how are we doing versus the budget and where the costs are. But the revenue reports get far more attention. Far more – I call airtime – amongst the executive team discussing because we are still in that growth mode. And not as much as we should be in a cost of awareness type mode." ID 18

The incentive systems for executives are based on budgetary goals and savings which are indirectly related to cost of care. However, perception is that revenues, not costs, drive for incentives:

> "You know, there is no bonus for being cost efficient and cost effective. In fact, it is just the opposite. We get rewarded for generating our revenues. So yes, demand driven. And that is the heart of the fee for service system." ID 7

Revenues are maximised by increasing throughput and as a consequence, reducing LOS (Length of Stay). When faced with throughput maximisation, a viable and observed strategy is to perform all tests (potentially over-test) during admission to avoid treatment delays and prolong length of stay.

The extensive use of testing, and the limited interest to reduce the number of tests, and hence costs, was also explained by the litigation risk. As interviewed clinicians explained:

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> "In the United States, I mean, whether you like it or not, we are constrained by the legal system. The medical legal system that is, you know, watching you for any mistake you make. So that makes your practice a little different than what you would if you were free to do what is right" ID 14

> "Hospitalists are scared of discharging unless everything is done, and even then, they are like OK, am I missing something? That fear of malpractice is, I think, is driving costs a lot." ID 28

Leaders at the executive level shared this view:

> "This incredible fear, including our people here in the executive suite……." ID 18

> "Yeah, people over respond to a push back. In other words, if you or one of your colleagues almost got sued because they did not do a CAT scan for a headache, that doctor and all their peers order more CAT scans for quite a while now." ID 12

It seems that both at the individual clinician level as well as at the organisational level the risk of litigation creates incentives to be on the safe side, and to evaluate too much than too little. Our discussions with senior clinicians suggest that long tenure and experience reduce extensive testing. Hence the variation in testing practices between clinicians, despite all facing same risk of litigation.

There were also concerns regarding the cost of producing the information needed for the invented cost containment approach. The cost containment approach combined clinical data from the medical record system and from financial records. These systems were not capable of providing needed information without some manual data abstraction. Many informants argued that current systems were not useful managing costs at front-line clinician level:

> "I'd say most providers really don't have good cost information on the patients they're carrying as it doesn't really appear in our electronic medical record. I mean, you can make assumptions, you know, if someone is hospitalised […] But for an individual provider, whether it is primary care or specialty care hospital position, that information really is not accessible to them in my view." ID 7

> "You know we have so little idea how much anything costs in the way the system is structured, that it is difficult to practice cost conscious care…. It is hard to know the two costs of the tests, and it is not really part of our education. And the Epic system, for example, does not provide this information to you."
>
> ID 17

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The biggest problem from the developed accounting approach point of view was a severity index, as that could not be obtained from the electronic medical record. To be able to somehow control for severity of illness, this information needed to be manually constructed from patient records. It was laborious and costly. Should the hospital start to use the developed cost containment approach, they should have started to record severity index, or configure the medical record system to produce that information from the patient data recorded.

4.2 Internal power dynamics

Apart from the economic factors discussed in the previous section, the internal power dynamics of the case organisation contributed to the limited use of new cost containment approach. At the time we launched the intervention, the case hospital was undergoing a centralisation drive to improve its data analytics capabilities and provide more effective and timely reports to their staff. Previously, effective reporting was inhibited by a lack of data centralisation and an inability to combine different data sources into meaningful information. Top management – especially the CEO and CFO – adopted the metaphor of a central sources of truth in the context of this development and framed it as bringing science to the people:

> "Everybody's got different data and they believe what they wanted to believe, and this is our attempt at bringing all the disparate systems together and making a central source of truth." ID 11

> "We started with bringing science to the discussion." ID 19

A new data analytics division was created and placed under the CFO, who in turn hired a VP Data Analytics to oversee the efforts and a team of data analysts in his support. As one of his landmark policies, the CFO took a bullish approach in enforcing data and analytics centralisation. He noted:

> "We saw that there was an opportunity to centralise the function, OK. And as I always say, you're going to be consistently right or consistently wrong. We'll be consistently right. Where is the source of truth coming from? It would be coming from one area. […] [The data analytics division] was basically to help us move faster along the journey from moving from just data, but going from data to information, information to knowledge, knowledge to wisdom." ID 19

At the same time, some clinicians expressed their concern that top executive were out of touch with what is needed at the operational level. A clinician in training always referred to the executive leadership as "high ups" and generally had a negative image about how top-down different policy were.

> "You know, I feel like we only really get exposures in what comes around in group emails and stuff like that from the higher up administrators." ID 25

> "I mean, essentially, I think I don't know, but I think that there is a lot of distance between us and the higher ups. What they want, what they think." ID 13

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This also resonates with the Chief of Medicine's reflection that analytics around managerial topics such as cost stays at the executive level and does not diffuse to the operational level.

> "We already know in terms of the culture of cost consciousness that you use the term lip service and reserve to understand this on the executive level. And yet then we come down to the operational level and so far, everybody sort of looks at one another and raises their eyebrows a little bit." ID 17

This whole notion was corroborated by a business analyst from the data analytics team who declared:

> "We don't get to know what happens to the reports we churn out." ID 16

When prompted about direct contact with users of the report, the business analyst expressed her disappointment noted:

> "I don't have direct contact with clinicians. It is usually routed through different channels" ID 16

When suggesting to the CFO the notion of top-down data management and leadership, he became defensive and kept insisting that he is a bottom-up leader. In fact, when leaving his office after an interview he in a serious joking manner called "BOTTOM UP".

Taken together, the centralisation drive and the distance between the administration and the clinician constituency created significant frictions when trying to institutionalise a bottom-up intervention. While executives endorsed the idea of cost management, the intervention appeared to be in conflict with the goals and ambitions with the recently founded data analytics division.

4.3 Professional beliefs

A final set of antecedents to the limited success of the intervention could be called as professional beliefs. These professional beliefs appeared to inhibit the adoption of the novel cost information at a wider scale. A dominant belief among clinicians, especially those at the executive level at the case hospital is that quality is a function of spending and that high quality outcomes are synonymous with cost efficiency. The Chief Operating Officer noted (while doubting the relationship) when prompted about strategies for cost efficient treatments:

> "On the quality level, the strategy is not important in terms of cost consciousness, because if the outcomes are good, it is assumed that the care is efficient and effective." ID 18

And the Chair of Community Health further argued:

> "Some other people also have to take that quality, or at least following clinical guidelines, and stuff, that this itself is cost management. I don't. Yeah, I think a lot of clinicians believe that I personally don't. I

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think quality and costs can be quite different. I think practicing quality care may save you money in the long run, but in the short run sometimes practicing quality medicine is more costly." ID 7

Along the same lines the CEO mentioned that based on his experience of pushing cost reduction initiatives in the organisation:

> "People question whether you can deliver good or excellent quality at lower cost. So, we have these discussions. We provide data, we provide evidence over and over again to providers and nurses and the teams to do that. It is a very slow and cumbersome process, and it is individualised. There aren't enough people who believe it today for it to seep into the general psyche of that institution." ID 11

The Chief Quality Officer, having a special role in the organisational setup representing the clinician constituency towards the administration, argued also that quality and cost-effective treatment are synonymous. However, the argument was further strengthened with the perception that any cost management initiative was a risk to quality outcomes and should be implemented under no circumstances. The conflicts between the senior clinician, who was involved in the development of the accounting approach and the chief quality officer regularly heightened. During one of the interviews, arguments got so heated that the meeting was terminated in due course. Since the chief quality officer enjoyed an important and respected position among clinicians, the healthcare executive especially those with a medical background opposition was one of the main issues we experienced while promoting the intervention to the executive level.

The idea of cost efficiency equating with quality outcomes is further supported by revenue incentives from government programs like Medicare. The Chair of Community Health for example argued:

> "If we achieve shared savings, we get a percentage of it back based on our quality score. So, in other words, if we achieve a perfect quality score, we get all the shared savings. If we earned less than a perfect score, we get a correspondingly decreased percentage of that in Medicaid. The quality measures essentially work as a gate we have to achieve. We have to achieve a certain benchmark performance on a certain number." ID 7

In fact, the argument of quality and cost consciousness being the same was one of the main reasons why the clinician representative – the Chief Medical Officer – discounted the intervention as irrelevant. We believe that the lack of endorsement by the CMO and the Chief Quality officer were one of the main reasons why the administration did not act more favourably to the undertaking.

Another belief we observed was related to the nature of information needed to reduce unwarranted variation. This gets back to the problem of clearly identifying what variation is unwarranted. Clinicians, including our senior clinician interventionist team member, argued our cost containment practice can demonstrate that there exists considerable variation in cost of care within any length of stay, and that variation cannot be explained by the severity of illness. In the big picture, results from using the novel practice suggest there is unwarranted variation.

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But as the severity of illness is neither an exact measure of all potential patient co-morbidities nor accounting for all other individual factors that might provide a justified cause for variation in testing or care, the method cannot provide undisputable evidence of patient episodes where spending has been unwarranted. It seems that some clinicians questioned the value of the approach based on these grounds. The Chief of Population Heath for example remembered one such occasion:

> "One problem were the cases [senior clinician] picked to try to sell to the physician leaders who were working with the hospitalists. When those people opened those cases, they were not good examples and then they dismissed everything. He said: see, this was a simple pneumonia. It should have never been admitted. It should have been done by other things. And when the physician leaders looked at it, they concluded that pneumonia was their littlest problem." ID 12

The Chief Quality Officer also spoke to this issue:

> "I met with the team; but I could not relate the way they had broken down the information. It did not match with anything that made sense to me from a clinical perspective. You cannot say you spent too much money on GI cases etc. It is not holistic, and it is difficult to translate down to a particular patient level. My main issue was how the information was formulated". ID 32

These informants are clearly right in their opinion that by showing the variation in costs does not allow one to go back to individual patient episodes and to conclude spending in any specific patient case has been unwarranted. The senior clinician did not think that information should allow labelling individual patient cases as warranted or unwarranted it to be useful. The idea of the cost containment approach was not to pinpoint warranted and unwarranted variation at the individual patient level. It was thought that making variation in the use of resources, and hence costs, known to clinicians would lead them to think and come up with means to reduce that variation.

It also appeared that some clinicians believed that advances in administration and productivity development happen in a similar fashion as advancements happen in medicine. Clinicians enhance their practice through conducting and accessing research, and publications play a vital role in career advancement, particularly in a teaching hospital like the case institution. Consequently, we initially introduced the intervention as a research project, which proved effective in garnering clinician support. We were able to quickly engage clinicians, both senior and in training, across various DRGs as part of the undertaking. A challenge is, however, to translate the research findings into action points to change clinical practice. The VP Data Analytics, who is responsible for getting performance data to clinicians described the problem as follows:

> "It's been our challenge. And the thing is, how to lift basically this scientific curiosity and transform it into action. In science you write, you write the paper and then it's off your desk. (…) so how do you go beyond this scientific curiosity and incorporate it into the clinical routine?" ID 9

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We experienced the same challenge when trying to take our intervention further. There was high interest in the methodology to identify costs and analyse which costs were unwarranted. However, taking those insights further once the findings were published remained the main challenge.

Another belief which was reiterated at different points in the organisation relates to the non-profit and safety net status of the hospital. The Chief of Population Health stressed this point by:

> "So again, there's a little bit better Baseline culture to start because they're generally more efficient because we take care of poor patients. But their general perception of how efficient they are is off, and their general openness to engage that in their daily decision making is not there either." ID 12

Finally, yet importantly, clinicians value autonomy and believe in their own ways of conducting medical practice – based on their experiences. One clinician in training put it like:

> "Physicians for the most part, are more kind of independent and type A personalities and really value autonomy. For a lot of physicians, it's hard for them and in my experience thus far in my career, it's hard for a lot of physicians to take constructive feedback, especially if they view that feedback is not coming from the appropriate channels." ID 25

This notion was supported by the Chair of Community Health, who, when prompted about the difficulty to obtain acceptance for cost of care focused initiatives, argued that older clinicians show reluctance to change, but:

> "But I think there might be a generational shift in some of that I think younger physicians really are a little more open to needing to be more cost conscious. I think younger physicians are a little more open to that message than older physicians." ID 7

While we leveraged this understanding in our intervention by addressing clinicians in training, who also reacted favourably to the intervention, the nature of a teaching hospital creates barriers in executing change driven by junior clinicians. A junior clinician for example expressed her concern that it might not be culturally acceptable to suggest new approaches to higher ranking clinicians, due to strict hierarchies and fears for reprimands or reputation loss.

> "I think it would be great to talk to them. My concern would be that culturally that they wouldn't be open to it. I think that a lot of attendings might get defensive about it." ID 13

Such hierarchical structures inhibit the integration of innovations into clinical practice, which requires acceptance by more senior clinicians. The case institution is also special in the sense that it's permanent staff base is very senior and more at the end of their career. In fact, some clinicians expressed that after working the private sector for decades they wanted to finish their career at the safety net Hospital as the case organisation. A clinician highlighted this aspect and put it in relation to the resistance to change:

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> "So, the resistance to innovation is always a problem. […] I've noticed that you know people who work here until they retire. There is a big bunch of old schoolers who have been here for many, many years and still here, which is an asset for the system but not all of them are." ID 14

As long as senior clinicians do not believe in the provision of cost data and amending one's practice based on this data, it is a struggle to change clinician practice, even for more willing junior clinicians who are in a training relationship with the more senior ones.

Taken together, the misconception of the relationship between quality and cost, the belief that the cost containment approach should be able to specify exactly what spending is unwarranted to be useful, the belief that advances in administration and productivity happens by conducting and publishing research on it, the belief that hospital is already operating efficiently as it serves for poor patients and the beliefs related to the superiority of one's own experiences and ways of working leading to a resistance to change of senior clinicians in the context of a teaching hospital, presented significant barriers for the adoption of our intervention.

5. Discussion

In the preceding section, we delineated the most important factors that have contributed to the constrained adoption of the novel cost containment approach within the case hospital. These factors have been systematically categorised into three fundamental domains: economic considerations, internal power dynamics and professional belief systems. A review of existing accounting change and healthcare accounting literatures indicates that the majority of these factors are well-documented. What distinguishes our case study is the inception of initiatives related to the analysis of productivity, cost variance, and unwarranted variations, which intriguingly stemmed from the clinicians rather than the administrative body. This peculiarity in the source of initiative provides an impetus to re-evaluate our conventional theoretical understanding. Consequently, the ensuing discussion is dedicated to elaborating the plausible reasons why healthcare executives may not capitalise on clinician-led initiatives, despite their potential for catalysing enhancements in financial management and overall quality within hospital settings.

The economic factors we identified align with the concept of value-based healthcare (Porter & Teisberg, 2006), a model proposed as an antidote to the challenges imposed by the traditional fee-for-service paradigm. The fee-for-service models have long been criticised for their inefficacy in containing healthcare costs. Fundamentally, these models incentivise the volume of services provided rather than the quality or outcomes of care (Berwick, Nolan & Whittington, 2008). This leads to a payment structure where healthcare providers are compensated for each procedure, test, or visit, fostering an environment that may inadvertently encourage overutilisation of services. This fee-for-service[4] paradigm works in both individual clinician level (when they are not salaried employees; in our case hospital clinicians were salaried) and the hospital level when income is dependent on DRG's, and other services provided. The propensity for excess can exacerbate healthcare costs

[4] The fee-for-service refers to a payment model where services are unbundled and paid for separately. Although DRGs bundle services, from the hospital point of view each DRG it produces is compensated for.

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without necessarily improving patient outcomes, thereby diminishing the overall efficiency and cost-effectiveness of the healthcare system. As of today, value-based healthcare has not widely replaced fee-for-service models, partly due to difficulties in measuring value created (Porter, Kaplan, & Frigo, 2017). Nevertheless, it is obvious based on this study, and countless number of previous studies, that incentives matter and should policy makers want to deal with escalating healthcare costs, governance and remuneration models should incentivise for productivity and cost efficiency, as well as for quality, not extensive production of services (Falivena & Palozzi, 2020).

The discussion of various remuneration alternatives, however, is beyond the scope of this study. Instead, we turn our attention to factors that can be dealt with by healthcare organisations themselves. Our results suggest that the CEO and CFO wanted to centralise data analytics within their hospital and may have perceived the clinician developed cost containment approach as a threat to these attempts. Although aiming for 'one source of truth' is understandable, accounting literature suggest most large organisations have both centralised systems such as ERP's and various local applications to allow local managers and teams to conduct their duties properly (Scapens, & Jazayeri, 2003). Hence, healthcare administrators might want to empower their clinical staff by supporting their initiatives instead of coercing those by centralising activities. This suggestion aligns with Guven-Usla's (2005) contention that for performance benchmarking to be advantageous in the future, it would be necessary to establish local implementation programs.

Our findings also support the argument that professional beliefs heavily shape the methodologies adopted within the medical field (Abernethy & Stoelwinder, 1995; Carr & Beck, 2020; Pizzini, 2006). Specifically, our field evidence suggests senior clinicians, including those in leadership positions, are more likely to resist novel cost containment practices compared to younger generation of clinicians. One reason to emerge from our study relates to the belief that cost savings pose a threat on quality of care. This is intriguing, as decades of research and arguments have been provided to negate this belief (Berwick, Nolan, & Whittington, 2008). This research broadly argues that it is possible to achieve cost savings while simultaneously improving the quality of care (Porter & Teisberg, 2006). However, cost accounting, productivity, and financial matters in general have not been an important part of medical training in the past, nor are they today. As a result, many senior clinicians may not be aware of these debates. However, it is difficult to believe that senior clinicians, especially those in administrative roles, would be unaware of the escalating healthcare costs and the imperative to address them. But perhaps this idea of more spending equals better quality is firmly rooted in their professional orientation. It is often the case that new drugs and medications are more effective but also more expensive. Similarly, newer generations of robots and CT scanners offer improved capabilities but come at a higher cost. Consequently, it is understandable to associate higher spending with better outcomes. Conversely, there may be a concern that cost-saving measures could potentially result in lower quality outcomes. How to change this kind of strongly held beliefs is a potentially interesting avenue for future research, which also points to a need to better understand the role of medical education in resolving rising cost of healthcare provision. An issue that has been deserving of attention for a significant amount of time yet remains unanswered in both the broad accounting (e.g., Argyris & Kaplan, 1994) and healthcare accounting literature (e.g., Jacobs, 2004; Kurunmäki, 2004).

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Another interesting set of beliefs pertains to the validity of the data to be useful. The CEO and CFO sought a single set of numbers, or a "central source of truth," as they described it. They emphasised the incorporation of scientific principles into discussions, which may align with the ethos of the medical profession and hospital management at large. Scientific research is often regarded as a trustworthy source of factual evidence. In medical research, evidence is typically generated through Randomised Control Trials (RCTs). However, our data on cost variation did not meet the quality standards of RCTs. Additionally, since severity index is only a proxy for severity, and there could be other valid reasons for resource utilisation in patient care, this information may not have been considered compelling evidence of unwarranted variation. As we utilised the concept of unwarranted variation as a rhetorical strategy to highlight the issue of cost, it may have unintentionally encountered challenges due to the rigorous evidentiary requirements in the medical field. Nevertheless, even if we set aside the pursuit of scientific facts, the belief that information must be "true" to be useful for managerial purposes presents challenges. While more accurate cost estimates are undoubtedly preferable for decision-making, influencing frontline clinicians' behavior and cost control may be achieved simply by highlighting the presence of an issue through numbers. Problem-solving can then be left to clinicians, who can further refine cost information if necessary. Therefore, even though the developed cost containment approach may not offer indisputable "truth" regarding unwarranted costs, it can prompt clinicians to seek ways to reduce variation. However, achieving this requires an understanding that the purpose of producing cost information is not to obtain the "right" answer. Unfortunately, our findings suggest this viewpoint is currently lacking in the healthcare setting. Perhaps, healthcare organisation should redirect their efforts towards changing the perception of accounting practices as precise and well-defined practices that generate robust and rigorous information. Instead, accounting practices, such as the novel accounting method developed in this research study, should be seen as "attention direction devices" and catalysts for discussion and debate. This issue is particularly pertinent in the healthcare setting, where the professional orientation of clinicians emphasises a strong desire for scientific validity (Chapman, et al., 2014; Llewellyn et al., 2022).

6. Conclusion

Our study provides two primary contributions to the healthcare accounting literature. Our first contribution lies in providing fresh insights into how cost information can be constructed that appeals to front-line clinicians (Begkos, & Antonopoulou, 2022; Carr & Beck, 2020; Kurunmäki, 2004; Llewellyn et al., 2022; Pizzini, 2006). Specifically, we developed together with front-line clinicians and hospital financial analysts a novel cost containment approach that combined cost information with scientifically validated clinical information (severity index) and visually disaggregated the information along with length of stay data with the aim of identifying and reducing unwarranted variation in cost. Front-line clinicians at the case hospital believed this novel cost containment approach should have provided an opportunity to standardise processes, redesign care, and to improve medical output. Doing so, our research further supports the notion that the usefulness of cost data for operational staff, such as front-line clinicians, relies on adapting cost systems to meet the specific needs of local users (Eldenburg, et al., 2010; Pizzini, 2006). Comparable to prior studies (e.g., Abernethy & Vagnoni, 2004;

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Fiondella et al., 2016) we suggest that front-line clinician involvement reduces their natural tendency to resist and increases commitment to novel cost containment practices.

Second, we contribute to the management accounting healthcare literature which has become increasingly interested in understanding the motivations that drive cost analysis and operating decisions in healthcare (Cardinaels & Soderstrom, 2013; King, & Clarkson, 2015; Eldenburg et al., 2011). As a result, a lot is known about front-line clinician resistance when implementing new and evolving accounting practices within the healthcare context (e.g., Abernethy & Stoelwinder, 1995; Carr & Beck, 2020; Pizzini, 2006). A lot is also known about how front-line clinicians can be encouraged to engage with cost efficiency imperatives (e.g., Abernethy & Stoelwinder, 1995; Kraus et al., 2017; Lowe, 2001). However, each of these literatures, tend to focus on providing accounts of how a lack of engagement among front-line clinicians can jeopardise cost containment efforts. This paper represents one of few studies to describe the inception of a cost containment practice related to the analysis of productivity, cost variance, and unwarranted variations, which intriguingly stemmed from the clinicians rather than the administrative body. Notable exceptions being Eldenburg et al. (2010) and Kurunmäki (2004).

Doing so our findings focus on healthcare executives – administrators and especially clinicians in administrative roles – who were reluctant to fully engage with new cost containment methods. Centering our theoretical analysis on professional beliefs, we uncover various key factors that hindered the adoption of our intervention. These include misconceptions concerning the correlation between quality and cost, the notion that the cost containment approach must accurately pinpoint unwarranted spending to be considered useful and the assumption that the hospital's service to impoverished patients already signifies operational efficiency. These observations allow us to make a novel contribution to the management accounting literature by providing insights into how healthcare executives respond to and engage with accounting practices developed by front-line clinicians. Our findings, demonstrate that the inability of the intervention in attaining broader impact among healthcare executives, can be attributed to their expectations regarding the precision of accounting information.

We argue that for an accounting practice to become accepted, it is crucial to secure its alignment with professional beliefs. This can be achieved by educating individuals about the nature of accounting practices and dispelling the notion that they provide a single source of truth. Instead, accounting practices should be seen as catalysts for debate and dialogue among, encouraging diverse perspectives and fostering productive discussions. In doing so, our paper suggests that the content, dissemination, and incentivising effects of relative performance information in the healthcare setting is a fundamental issue to be examined further in order to address the escalating cost of healthcare (Northcott & Llewellyn, 2003; Mahlendorf et al., 2014). Furthermore, we argue that exploring ways to change such deeply entrenched beliefs represents a potentially intriguing avenue for future research and also emphasise the importance of gaining a deeper understanding of the role of medical education in addressing the escalating costs of healthcare provision. Doing so, our findings augment with those of Llewellyn (2001) and de Harlez & Malagueno (2016) as they highlight the challenges faced by clinical executives in effectively bridging the "two-way space" between clinical practice and management. This finding emphasises the significance of considering personal traits and an individual's capacity to navigate both clinical and managerial domains, beyond solely focusing on their professional background. As a result, this study contributes to the ongoing debate

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on how to foster cost and productivity processes within healthcare organisations, and consequently calls for a reassessment of roles and responsibilities allocation within these organisations (Begkos & Antonopoulou, 2022).

Overall, our approach and insights demonstrate that despite the impetus being driven by front-line clinicians, widespread diffusion is not guaranteed. Our findings demonstrate that the inability of the intervention in achieving wider appeal and minimising unwarranted variation can be explained by factors which we categorise as economic considerations, power dynamics intrinsic to the organisation and professional beliefs. Furthermore, we show that when aspiring to embed concepts of value-based healthcare (Porter & Teisberg, 2006) and sustainable healthcare (Macassa & Tomaselli, 2020), the provision of incentives matters. However, our study demonstrates that while national governance and remuneration will play an important role in addressing the issue, at the individual hospital level, providing relative performance information among front-line clinicians could also be influential. However, for it to be effective, education and messaging about the role of relative performance information as an impetus for debate and discussion, rather than a "single source of truth," is a critical prerequisite.

From a practical perspective, it is also valuable to examine our findings in relation to the widespread adoption of lean practices in medicine observed in recent years (D'Andreamatteo et al., 2015). This extensive implementation demonstrates that calls for efficiency and productivity in healthcare have not gone unnoticed. One might wonder why lean practices have been embraced and encountered less resistance compared to many cost accounting practices. We suggest that the explanation lies in the objectives of these different methods for improving productivity. Lean focuses on reducing waste in organisational processes, without questioning the clinical decisions made by healthcare professionals. It primarily concerns how things are done and often involves collaboration among a group of professionals. Its aim is typically to decrease the unit cost of specific procedures, such as laboratory tests or CT scans. On the other hand, our cost containment approach aimed to highlight variations in clinical resource consumption between patients, questioning whether certain procedures, like laboratory tests or CT scans, should be conducted for specific patients at all. Depending on how the analysis is utilised, this approach may be seen as encroaching upon clinician autonomy. Senior administrators and clinicians may be hesitant to support and promote practices that they know could threaten autonomy and, as a result, have a low likelihood of being accepted among the clinical staff (e.g., Abernethy & Stoelwinder 1995, Armstrong 2002). Our recommendations for addressing these issues involve the provision of relative performance information. However, it is important to limit directly attaching extrinsic incentives or punishments to this information. Instead, it is advisable to encourage front-line clinicians to engage in local debates and discussions to collaboratively identify and implement solutions.

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