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REVIEW ARTICLE

Toward an Integrated DDD Framework: Diagnostic, Dialogic, and Didactic Models in Hospital Healthcare Management

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ABSTRACT

Modern hospital management requires integrated frameworks to address the growing complexity of patient care, technological advancements, and the emphasis on patient-centered outcomes. This conceptual paper presents the Diagnostics-Dialogics-Didactics (DDD) framework, which unites three interdependent dimensions of hospital practice: (i) diagnostic reasoning and data integration, (ii) dialogic communication among patients, caregivers, and healthcare teams, and (iii) dialogic-didactic medical education that fosters professional learning. The Diagnostic Management Model illustrates how coordinated diagnostic workflows and interdisciplinary teams improve accuracy and reduce errors. Dialogic communication models demonstrate the value of shared decision-making and collaborative understanding, while the Dialogic-Didactic Education Model enhances reflective practice, clinical reasoning, and systems-based competencies among healthcare professionals. By integrating these approaches, the DDD framework provides both conceptual clarity and practical guidance for operationalizing high-quality, patient-centered, and sustainable hospital management systems.

Keywords: *Healthcare Management, Diagnostics-Dialogics-Didactics, Hospital Management, Triple-D*

1. INTRODUCTION

Today, hospital management systems operate within increasingly complex clinical environments. Their effective healthcare delivery depends not only on accurate diagnostic procedures, but also on collaborative communication and continuous professional learning. The growing complexity of patient conditions, the rapid advancement of medical technologies, and the increasing emphasis on patient-centered care (Epstein & Street, 2011) have prompted healthcare institutions to adopt integrated management frameworks that connect diagnostic decision-making, interdisciplinary collaboration, and

clinical education (Berwick, Nolan, & Whittington, 2008; Donabedian, 2003). In this context, the Diagnostics-Dialogics-Didactics (DDD), adapted from the triple-D model (Wong, Chia, & Lim, 2015), offers a conceptual approach that brings together three critical dimensions of hospital practice: (i) diagnostic reasoning and clinical data integration, (ii) dialogic communication among stakeholders, and (iii) didactic learning processes that support the development of healthcare professionals.

Within hospital management and care delivery systems, diagnostic processes constitute the foundation of clinical decision-making. Accurate interpretation of laboratory tests, imaging results, and clinical observations requires coordinated collaboration among physicians, laboratory specialists, and other healthcare professionals. Models such as the Diagnostic Management Model and the implementation of Diagnostic Management Teams (DMT) demonstrate how interdisciplinary coordination can improve diagnostic accuracy and reduce errors by integrating expertise from multiple clinical domains (Epner, Gans, & Graber, 2013; Lubin et al., 2021). These systems emphasize structured workflows that link diagnostic inputs, clinical reasoning, and treatment planning in order to enhance patient outcomes and healthcare quality.

At the same time, effective healthcare delivery increasingly depends on dialogic communication among patients, their caregivers, and the healthcare professionals working with them. Traditional hierarchical models of communication, which emphasize one-directional transmission of medical instructions, are gradually being replaced by collaborative approaches that promote shared decision-making (Hoque, 2024) and person-centered care (Epstein & Street, 2011). Dialogic models highlight the importance of reciprocal exchange of perspectives, where patients' experiences, values, and preferences are integrated with professional expertise to inform clinical decisions (Elwyn et al., 2012; Epstein & Street, 2011). Through structured practices such as multi- or inter- professional rounds, shared decision-making consultations, and clinical ethics discussions, hospitals create opportunities for multidisciplinary teams and patients to jointly construct understanding and negotiate treatment plans.

A third critical dimension of contemporary hospital systems involves professional learning and knowledge development within clinical environments (Ayanian & Weissman, 2002). Teaching hospitals and healthcare institutions must continuously train medical and allied health professionals to adapt to evolving clinical practices and technologies. Educational frameworks that combine didactic instruction with dialogic learning approaches provide an effective mechanism for strengthening clinical reasoning and professional competence (Liao & Peng, 2023). Didactic learning ensures the systematic transmission of foundational medical knowledge, while dialogic learning encourages reflective engagement, case-based discussion, and collaborative problem-solving among trainees and clinical educators (Irby, Cooke, & O'Brien, 2010; Steinert, 2000). When integrated within hospital settings, these approaches contribute to the development of healthcare professionals who are capable of critical thinking, interdisciplinary collaboration, and adaptive clinical decision-making.

Taken together, the diagnostic, dialogic, and didactic dimensions represent interdependent components of a comprehensive healthcare management system: an adapted version of the DDD or triple-D model (Wong, Chia, & Lim, 2015). Diagnostic processes generate the clinical knowledge necessary for medical decisions, dialogic communication ensures that these decisions are collaboratively interpreted and applied within patient-centered contexts, and didactic learning supports the continuous development of professional expertise required to sustain high-quality healthcare delivery (Donabedian, 2003; Irby et al., 2010). By examining major models and frameworks that correspond to these three dimensions, this paper aims to provide a conceptual overview of how the DDD framework can inform hospital management systems and strengthen the integration of clinical decision-making, communication, and medical education within contemporary healthcare institutions.

2. DIAGNOSTIC MANAGEMENT MODEL: COORDINATED DIAGNOSTICS/DIAGNOSTIC MANAGEMENT TEAMS

The diagnostic management model emphasizes the coordinated integration of diagnostic testing, clinical deliberation (reasoning), and communication among healthcare professionals in order to support more accurate and timely clinical decision-making. Within hospital systems, this approach is often operationalized through Diagnostic Management Teams (DMTs), which bring together clinicians, pathologists, laboratory specialists, and other experts to interpret complex diagnostic data collectively and guide patient care. Such teams help to facilitate the systematic integration of diagnostic inputs, including laboratory results, imaging findings, and electronic health record (EHR) information, while promoting multidisciplinary consultation and evidence-based diagnostic pathways. In addition, hospitals increasingly employ clinical decision-support systems embedded within EHR platforms to assist clinicians in interpreting diagnostic data and selecting appropriate tests or treatment strategies (Epner, Gans, & Graber, 2013; Lubin et al., 2021).

According to Brashear et al. (2024), the development of DMT has been shown to strengthen collaboration between laboratory medicine and clinical practice. Moreover, such a team can also help to improve the clinical interpretation of laboratory data with fewer pre- and post- analytical errors, ensuring that diagnostic testing is used more effectively within patient care pathways (Laposata & Dighe, 2007).

In practice, diagnostic management systems are implemented through institutional mechanisms (e.g., laboratory medicine consultation services, multidisciplinary diagnostic conferences, and tumor boards), where specialists collaboratively evaluate patient cases and determine diagnostic and therapeutic plans. These structures allow diagnostic information to move through a coordinated workflow: (i) input involves the systematic collection of diagnostic data, (ii) process entails clinical reasoning and multidisciplinary consultation, and (iii) output consists of an informed diagnosis and treatment plan. Consequently, the intended outcome is the improvement of patient care through enhanced diagnostic accuracy, reduced errors, and more efficient use of diagnostic resources. Hence, by coordinating diagnostic workflows and facilitating communication among multiple actors within the healthcare system, diagnostic management models contribute to advancing diagnostic excellence and strengthening the overall quality and safety of patient care (Epner, Gans, & Graber, 2013; Laposata & Dighe, 2007; Lubin et al., 2021).

The Figure 1 below is an example structure of an input→process→output→outcome model to illustrate how (i) diagnostic data collection (input) informs (ii.a) clinical deliberation (decision making) and (ii.b) multidisciplinary consultation (process), (iii) leading to diagnosis and treatment planning (output), and (iv) finally, leading to (iv.a) improved client/patient outcomes and (iv.b) reduced diagnostic errors (outcome).

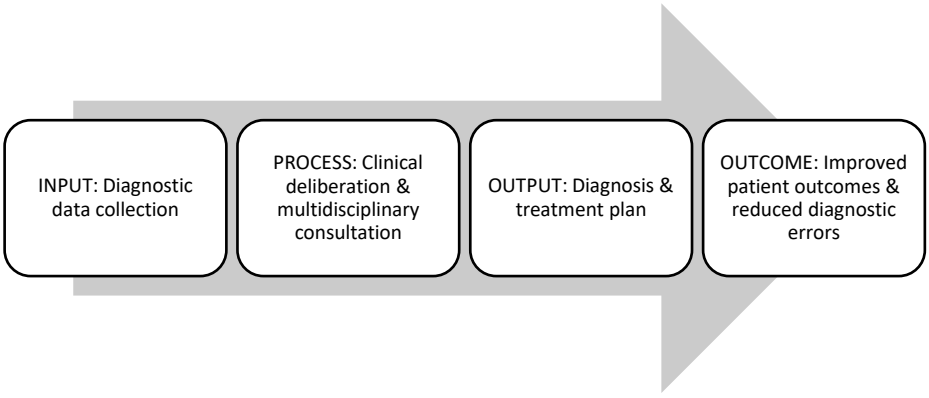

Figure 1. Clinical Diagnostic Decision-Making Pathway

3. DIALOGIC COMMUNICATION MODEL IN HEALTHCARE MANAGEMENT

The emphasis of the dialogic communication model in healthcare management is targeted on collaborative communication among the key stakeholders, i.e., patients, primary caregivers, clinicians and healthcare teams, to support shared decision-making and person-centered care. Unlike traditional models that rely on one-directional transmission of medical instructions, dialogic approaches encourage reciprocal exchange of perspectives in which both patients and healthcare professionals collaboratively construct meaning and understanding about health conditions and treatment options. This perspective recognizes that effective clinical decision-making emerges from dialogue that integrates professional expertise with patients' lived experiences, values, and preferences. Through dialogic engagement, healthcare professionals can foster shared understanding, collaborative clinical reasoning, patient participation, and interprofessional dialogue. In this way, it also strengthens the relational and ethical dimensions of healthcare delivery (Kuper et al., 2019; Jensen & Pals, 2015). In addition, dialogic interaction supports the principles of shared decision-making by enabling patients to actively participate in discussions about treatment options, risks, and benefits, while clinicians contribute medical knowledge and professional judgment to reach mutually informed care decisions (Elwyn et al., 2012; Epstein & Street, 2011).

In hospital settings, dialogic communication is often operationalized through structured practices, e.g., interprofessional clinical rounds, patient-centered consultation models, shared decision-making frameworks, and clinical ethics consultations. These mechanisms help to create opportunities for physicians, nurses, allied health professionals, patients as well as their family members to exchange perspectives and collaboratively negotiate care plans. Within this workflow, a clinical issue is first identified, followed by dialogic interaction among the physician, the patient, and the multidisciplinary healthcare team. Through this exchange, participants develop a co-constructed understanding of the patient's condition and contextual needs. This, in turn, informs a collaboratively developed treatment decision. Therefore, by integrating multiple perspectives and fostering meaningful participation, dialogic approaches contribute to more responsive, ethically grounded, and person-centered healthcare management (Elwyn et al., 2012; Epstein & Street, 2011; Jensen & Pals, 2015; Kuper et al., 2019;).

The Figure 2 below is an example structure of a collaborative pathway in which problem identification initiates dialogic interaction among the physician-in-charge, the patient concerned, and the interdisciplinary team involved, leading to a co-constructed understanding of the clinical condition, and culminating in a collaborative treatment decision that reflects shared knowledge, perspectives, and goals.

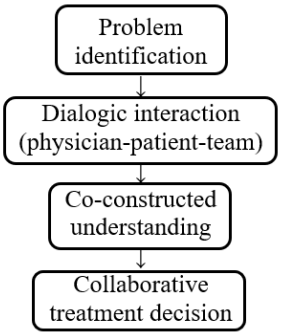

Figure 2. Dialogic Clinical Decision-Making Model

4. DIALOGIC-DIDACTIC MEDICAL EDUCATION MODEL IN HOSPITALS

Within the context of a hospital, the dialogic-didactic medical education model is an industry-based practice framework that integrates traditional instructional approaches with dialogic learning practices,

whose goal is to enhance professional learning in clinical environments (e.g., teaching hospitals) (Liao & Peng, 2024). In this model, the didactic instruction provides structured transmission of foundational knowledge through lectures, clinical protocols, and evidence-based guidelines. This to ensure that trainees in the medical as well as para-medical field acquire essential theoretical and procedural competencies. Complementing this is the dialogic learning approach, which emphasizes reflective engagement, collaborative inquiry, and the co-construction of knowledge through discussion and interaction among trainees, clinical educators, and the supporting clinical teams. When combining these two complementary approaches (i.e., didactic instruction and dialogic learning), the dialogic-didactic model recognizes that effective medical education requires both the systematic delivery of core medical knowledge and the opportunity for learners to critically engage with that knowledge through reflective dialogue and collaborative reasoning (Liao & Peng, 2024; Thornton-Bacon et al., 2018). Such an integration supports the development of higher-order thinking skills, enabling practitioners (e.g., doctors, nurses and allied therapists) and trainees in the medical as well as para-medical field to move beyond memorization toward deeper understanding and clinical reasoning in complex healthcare contexts (Irby et al., 2010; Steinert, 2000).

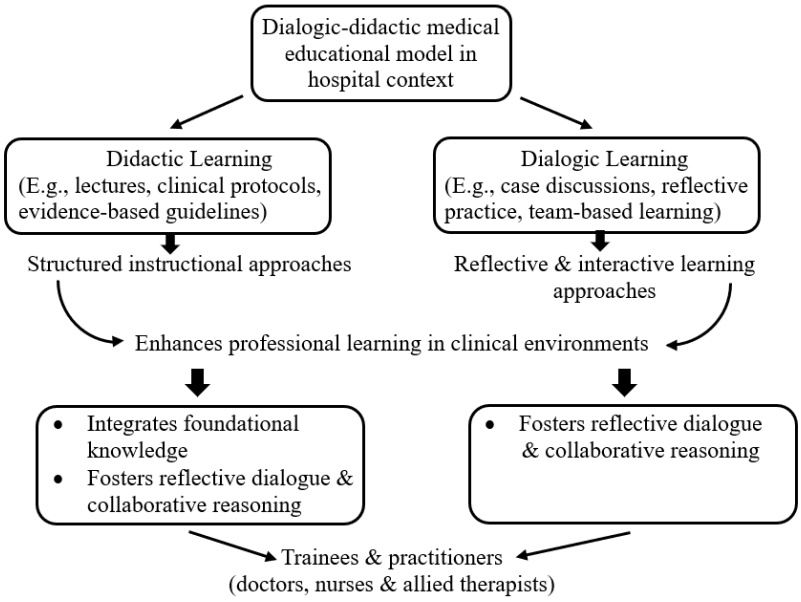

Figure 3. The Dialogic-Didactic Medical Education Model

Structurally speaking, the dialogic-didactic model (see Figure 3) comprises two interrelated learning dimensions (Liao & Peng, 2024). The main learning dimension is the Didactic Learning. This typically involves lectures, protocol-based training, and the study of clinical guidelines that provide both practitioners and trainees with standardized knowledge and procedural frameworks. The other learning dimension, Dialogic Learning, in contrast, places its emphasis on activities (e.g., case discussions, reflective practice, and team-based learning), which trainees collectively interpret clinical situations and explore multiple perspectives in decision-making. The transition from purely didactic teaching toward dialogic engagement (or vice versa) has been shown to enhance professional learning by fostering critical reflection, collaborative problem-solving, and systems thinking among healthcare trainees (Liao & Peng, 2024; Thornton-Bacon et al., 2018; Irby et al., 2010; Steinert, 2000). In the hospital settings, this model is commonly implemented through residency training programs, clinical case conferences, simulation-based medical education, and interprofessional training initiatives. These educational structures enable medical and para-medical trainees to apply theoretical knowledge within authentic clinical contexts. At the same time, they are also engaging in dialogic reflection with their peers,

supervisors, and multidisciplinary healthcare teams, and, thereby, strengthening their clinical competence and professional judgment.

5. CONCLUSION

The integration of diagnostic, dialogic, and didactic dimensions within hospital systems provides a comprehensive framework for improving healthcare quality, safety, and professional development. Diagnostic Management Teams (DMTs) enhance the accuracy and efficiency of clinical decision-making by facilitating interdisciplinary collaboration, systematic data integration, and evidence-based pathways (Epner, Gans, & Graber, 2013; Laposata & Dighe, 2007; Lubin et al., 2021). Concurrently, dialogic communication frameworks strengthen person-centered care by fostering reciprocal interactions among patients, caregivers, and healthcare professionals, enabling shared understanding and collaborative decision-making (Elwyn et al., 2012; Epstein & Street, 2011; Jensen & Pals, 2015; Kuper et al., 2019). The incorporation of dialogic-didactic medical education models ensures that healthcare practitioners and trainees acquire foundational knowledge while simultaneously developing reflective, collaborative, and systems-based competencies in clinical reasoning (Irby et al., 2010; Liao & Peng, 2024; Steinert, 2000; Thornton-Bacon et al., 2018). Together, these three dimensions form an interdependent and mutually reinforcing framework, i.e., the Diagnostics-Dialogics-Didactics (DDD) model, that can optimize patient outcomes, improve diagnostic accuracy, and strengthen professional expertise within hospital environments.

In this paper, the DDD framework, adapted from the triple-D model (Wong, Chia, & Lim, 2015), does not only provide conceptual clarity for integrating clinical, communicative, and educational processes. Additionally, it also offers practical guidance for operationalizing these components within real-world hospital settings. By aligning structured diagnostic workflows, dialogic interactions, and reflective didactic learning, healthcare organizations can achieve more effective collaboration across multidisciplinary teams, enhance ethical and patient-centered care, and support continuous professional development. Furthermore, adopting this DDD-based integrative approach encourages hospitals to implement systematic strategies for quality improvement, clinical education, and team-based problem-solving, ultimately fostering resilient and adaptive healthcare systems. Future research and practice should focus on evaluating the implementation of the DDD model in diverse hospital contexts, assessing its impact on clinical outcomes, patient satisfaction, and staff competence, and identifying strategies for scaling its adoption across healthcare systems.

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7. COMPETING INTERESTS

Author has declared that no competing interests exist.

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