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From Gaming to Governance: Restructuring Public Hospital Management under DRG Payment Reform

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Abstract: The Diagnosis-Related Groups (DRG) payment reform serves as a pivotal institutional mechanism, compelling public hospitals to transition from volume-driven expansion to a model centered on quality and efficiency. Drawing upon principal-agent theory, this study dissects the "double-edged sword" effects inherent in DRG implementation. While the system effectively curbs irrational cost escalation through hard budget constraints, it simultaneously induces strategic gaming behaviors, specifically upcoding and risk selection, which raise concerns regarding compromised medical quality. To address these challenges, this paper proposes the construction of a modernized hospital governance framework. Specific strategies include: (1) implementing isomorphic mapping and dynamic calibration mechanisms between clinical pathways and DRG groups; (2) elevating medical record management to the level of data asset governance to establish a closed-loop quality control system; and (3) instituting a quality safety "circuit breaker" mechanism and collaborative early-warning platform that function independently of economic performance metrics. Ultimately, this study aims to drive public hospitals from passive interest-based gaming toward proactive internal governance, achieving a sustainable equilibrium between cost containment and value-based healthcare.

Keywords: Public Hospitals; Healthcare Reform; DRG Payment; Value-based Healthcare; Data Governance.

1. Introduction

The unsustainable escalation of healthcare expenditure constitutes a universal challenge in global health governance. As the world's largest developing economy, China stands at a critical juncture after two decades of healthcare reform, transitioning from a focus on expanding coverage to enhancing internal quality. In this specific historical context, the reform of the payment system via diagnosis-related groups (DRG) represents a systemic and strategic intervention designed to resolve deep-seated contradictions within the healthcare delivery system.

Historically, public hospitals in China primarily operated under a Fee-For-Service (FFS) model. While effective in stimulating supply-side vitality during the early stages of reform, the intrinsic flaws of its incentive mechanism gradually became apparent. Analyzed through the lens of Principal-Agent Theory, the high degree of information asymmetry between physicians and patients creates an environment where the FFS model incentivizes providers to maximize revenue through volume expansion. This retrospective reimbursement model has precipitated severe over-treatment and resource wastage, trapping hospitals in an extensive growth cycle characterized by volume expansion driving revenue growth and subsequent cost escalation[1].

To dismantle this structural dilemma, the national healthcare security administration (NHSA) has vigorously promoted DRG reform, marking the official transition of China’s insurance payment system from retrospective reimbursement to prospective payment. The essence of DRG lies in transforming medical services from heterogeneous interactions into standardized, comparable products. By bundling cases with similar clinical characteristics and resource consumption for pricing, DRG effectively severs the profit link between service volume and revenue. Empirical data have confirmed the preliminary efficacy of this mechanism. Research by Jian et al. (2015) [2]demonstrated that pilot hospitals in Beijing achieved a significant reduction in average hospitalization costs per case without a notable decline in medical quality. This conclusion was further validated in subsequent expansion studies; a recent quasi-experimental study by Wang et al. (2025) on tertiary hospitals in Western China found that DRG reform reduced total hospitalization costs by approximately 6.5% to 9.7% while significantly shortening the average length of stay and improving bed turnover efficiency[3].

However, the transition to DRG is not devoid of risks. As the reform penetrates deeper, its complex implications for medical quality and resource allocation have become increasingly manifest. Existing literature suggests that in the absence of refined supervision, hospitals may engage in strategic gaming behaviors to mitigate the risk of expenditure overruns. For instance, analysis indicates that while overall costs are controlled, hospitals may engage in risk selection by avoiding complex, critical cases or employing upcoding tactics to maximize insurance reimbursement, behaviors that partially offset the reform's dividends. Furthermore, standardized DRG groupings may impose constraints on the development of disciplines with unique diagnostic patterns, such as Traditional Chinese Medicine (TCM), while internal management challenges regarding staff satisfaction and performance incentive imbalances remain significant concerns.

Consequently, achieving a sustainable equilibrium between cost containment and quality preservation under the hard budget constraints of DRG has become a core mandate for both academia and hospital administration. This requires public hospitals to leverage the unified national medical insurance information platform and utilize standardized data to reconstruct their internal management systems. Based on the reform practices of Chinese public hospitals, this study aims to explore the multidimensional impact of DRG payment on operational efficiency, medical behavior, and resource allocation. It further proposes strategies including the construction of Multidisciplinary Team collaboration mechanisms, the optimization of clinical pathways, and the

refinement of full-cost accounting systems, thereby providing theoretical grounds and practical pathways for building a value-based modern hospital management system.

2. Analysis of the Current Status of DRG Payment Reform Promotion in China's Public Hospitals

2.1. The Duality of Reform Efficacy: From Macro Cost Containment to Micro-Level Strategic Gaming

Promoting high-quality development within China's public hospitals has emerged as a central imperative of the national health strategy amidst ongoing healthcare reforms. In this context, the Diagnosis-Related Groups (DRG) payment method, serving as a pivotal measure in medical insurance reform, is profoundly reshaping the operational mechanisms of public hospitals. This system marks a transition from traditional Fee-For-Service (FFS) to a "prospective bundled payment" model. Its core logic involves introducing yardstick competition mechanisms by establishing standardized payment ceilings, thereby compelling hospitals to eliminate resource wastage and realign medical behaviors with clinical value. This paradigm shift aims to sever the path dependence wherein medical institutions generate excess profits through the over-provision of services, effectively forcing a transformation from a traditional "volume-driven expansion" model to an "intensive development" model focused on quality and efficiency.

However, as the CHS-DRG pilot program led by the National Healthcare Security Administration deepens, the implementation exhibits significant complexity and dual effects. At the macro level, DRG has undoubtedly exerted a potent "braking effect" on irrational cost growth, effectively reducing the proportion of expenditures on drugs and consumables during hospitalization. Yet, it is crucial to note that in the absence of refined supervision and risk adjustment mechanisms, these hard budget constraints have also induced unintended behavioral responses from medical institutions. Empirical research by Wang et al.(2025)[4] highlights a distinct phenomenon of cost shifting, noting that to avoid the risk of inpatient expenditure overruns and retain surplus, some hospitals have reduced necessary frequencies of inpatient examinations while shifting these costs to outpatient settings or requiring patients to purchase drugs out-of-pocket. Consequently, average outpatient costs have shown a significant upward trend post-reform. This strategic countermeasure, effectively a form of cost displacement, partially offsets the overall performance of insurance cost containment and fails to alleviate the actual economic burden on patients as anticipated.

Furthermore, the potential conflict between efficiency improvement and medical quality has become increasingly prominent. Driven by the pursuit of higher case turnover rates and bed utilization efficiency, some hospitals may succumb to a myopic game of "sacrificing quality for efficiency." Analysis of public hospital operational data by Dong and Wu (2025) further warns that under DRG payment pressure, clinical departments exhibit a tendency to discharge patients before full recovery, known as premature discharge[5]. While this behavior artificially shortens the Average Length of Stay in statistical reports, it directly precipitates a rise in unplanned readmissions. Such aberrations in micro-level clinical behavior, driven by distorted economic incentives, not only plant hidden dangers for medical quality and safety but also pose severe challenges to the sustainable disciplinary development and ethical construction of public hospitals.

2.2. Limitations of DRG's Cost-Containment Efficacy in High-Risk and High-Complexity Disease Categories

From a micro-perspective of cost control, the hard constraint mechanism of "surplus retention and deficit responsibility" inherent in the DRG payment system effectively compels public hospitals to transition from an extensive mode of passive reliance on fiscal appropriations to an intensive mode characterized by proactive, refined full-cost accounting. However, within the complex operational environment, these potent external economic constraints have inevitably catalyzed more covert strategic responses. Since the standardized payment quotas set by DRG are often based on regional historical averages, they struggle to fully cover the actual marginal costs of high-risk, high-complexity surgeries that exhibit significant individual heterogeneity. Consequently, top-tier medical institutions face a financial paradox when treating critical and complex cases, where increased service provision correlates with increased financial loss.

To alleviate the resulting operational pressure and sustain funding for disciplinary development, some hospitals have pivoted away from solely relying on clinical pathway optimization to reduce physical costs. Instead, they exploit the ambiguities in grouping rules to engage in upcoding or DRG creep. Specifically, during the medical record coding process, hospitals may deliberately excavate or prioritize complications and comorbidities (CCs) that inflate case weights, thereby logically drifting the case into a higher-paying group.

This gaming behavior, grounded in economic rationality, is supported by empirical data. Zhou et al.(2025)[6] utilizing a mixed-methods approach, revealed that across sample pilot cities, approximately 12.91% of inpatient medical records exhibited signs of such coding manipulation aimed at securing higher reimbursement. The study further estimated that this strategic behavior, driven by differential pricing incentives, resulted in an additional expenditure of approximately 45.27% for the medical insurance fund in relevant disease groups. This not only causes an implicit fiscal leakage of insurance funds but also leads to a structural distortion of medical big data. This implies that the current apparent success in cost control may be diluted by an "illusion of prosperity" derived from coding manipulation, suggesting that the transition of public hospitals toward intensive high-quality development remains entrenched in a tug-of-war between "economic imperatives" and "clinical value."

2.3. Operational Efficiency Gains and Potential Quality Concerns

Regarding the interactive relationship between medical service quality and operational efficiency, DRG reform demonstrates a significant "double-edged" impact. From a positive perspective, the system has substantially enhanced the operational efficiency and standardization levels of public hospitals through compelling mechanisms. The most tangible outcome is the universal shortening of the Average Length of Stay, which marks a substantive leap in bed turnover efficiency. More profoundly, DRG payment transforms

traditional revenue centers into cost centers, forcing hospitals to proactively curb preventable complications to avoid unanticipated costs. Empirical data illustrates this positive externality. An interrupted time series analysis of public hospitals in Zhejiang Province indicates a continuous downward trend in the incidence of hospital-acquired infections ollowing DRG introduction. This improvement directly stems from strengthened infection prevention and control measures adopted by hospitals to avoid prolonged stays and cost overruns caused by infections.

However, beneath the surface of continuously optimizing efficiency indicators, the "latent friction" regarding medical quality and the potential compromise of patient experience cannot be overlooked. Empirical research warns that some hospitals may sacrifice refined perioperative management in a myopic game of extreme cost compression and LOS reduction. Data show that post-reform, the risk of postoperative complications (OR=1.16) and patient complaint rates (OR=1.32) have both exhibited an upward trend. This "efficiency for quality" trade-off highlights the negative externalities that may accompany the reform. A more severe challenge lies in the risk selection propensity of medical institutions. An analysis of tertiary hospital service performance by Liu et al. (2025) [7]found that to avoid the risk of losses associated with high-difficulty, critical cases, hospitals tend to prioritize "high-flow, low-difficulty" disease groups that offer fast turnover, moderate weights, and easy surplus generation. Consequently, this creates a potential crowding-out effect on critically ill patients with complex conditions and high resource consumption, to a certain extent violating the public welfare mandate of public hospitals.

Furthermore, the standardized grouping logic of DRG exerts institutional compression on special diagnosis and treatment models characterized by personalization, a conflict that is particularly evident in Traditional Chinese Medicine (TCM) hospitals. TCM emphasizes "syndrome differentiation and treatment" and "individualized treatment regimens," embodying labor values and implicit technical costs that are difficult to fully reflect through the relatively rigid grouping and weighting systems of current DRG models. This mismatch between payment standards and clinical value compels some hospitals to reduce the use of low-cost, high-efficacy conservative therapies, such as acupuncture and massage, in order to balance their books. Instead, they seek other high-weight alternatives. This supply-side structural distortion of technology triggered by payment methods not only limits the development space of specialized disciplines but also poses severe realistic challenges to the inheritance and innovation of TCM technologies.

3. Implementation Pathways and Governance Strategies for Public Hospitals Responding to DRG Reform

3.1. Constructing a DRG-Based Lean Management System for Clinical Pathways

Under the DRG payment regime, clinical pathways are no longer merely medical documentation for regulating diagnostic and treatment behaviors but have evolved into core operational tools for hospitals to achieve cost containment and quality standardization. Public hospitals must reconstruct their existing clinical pathway management systems to achieve deep isomorphic mapping with DRG grouping logic. This necessitates breaking the inertia of traditional department-based pathway divisions and pivoting to the DRG group as the fundamental unit. By leveraging big data to analyze the historical resource consumption characteristics of cases, hospitals must redefine the standard length of stay, drug consumption limits, and critical checkpoints for each pathway-enrolled disease. This "pathway-as-budget" management paradigm effectively transforms abstract DRG payment standards into executable and predictable operational workflows for clinicians, thereby resolving the structural contradiction between clinical practice and insurance payment at the source.

However, the inherent complexity of clinical medicine dictates that standardized pathways cannot cover all individual heterogeneity. Therefore, establishing a dynamic monitoring mechanism is critical for pathway management. Hospitals should leverage the Hospital Information System (HIS) to build real-time early warning models that track all enrolled cases throughout the entire process. The system should immediately trigger intervention procedures when a case deviates from the standard pathway. At this juncture, managers must possess refined discriminatory capabilities. For deviations caused by complex patient conditions or severe complications, the management focus should shift to optimizing the medical record face sheet. This ensures that complications and comorbidities (CCs) are accurately recorded to secure outlier payments or facilitate negotiation mechanisms for special cases, thus preventing financial losses due to treating critically ill patients. Conversely, for unjustified behaviors caused by personal physician habits, excessive testing, or off-label drug use without indications, such actions must be included in the negative list for departmental performance appraisal to enforce strict correction. Through this dual-track mechanism of "standardization plus exception management," hospitals can not only enhance pathway enrollment rates but also mine variance data to feed back into the continuous iteration and optimization of clinical pathways, forming an effective closed loop of "practice, assessment, and improvement."

3.2. Constructing a Closed-Loop System for Whole-Chain Quality Control of Medical Record Face Sheets

In the DRG payment ecosystem, data from the Medical Record Face Sheet has acquired the attributes of a financial contract, serving as the sole legal basis for medical insurance institutions to determine grouped fixed-quota payments. The accuracy and completeness of this data directly dictate the hospital's Case Mix Index (CMI) and the final reimbursement amount. Consequently, public hospitals must elevate the management of Medical Record Face Sheets to the strategic height of data governance. This necessitates a radical transformation from the lagging model of retrospective coding by the medical record department to a four-tier full-process quality control system. This system comprises source entry by clinical physicians, initial review by departmental quality controllers, secondary verification by professional coders, and final adjudication by medical insurance and information experts.

At the level of specific implementation, hospitals should establish a special governance task force composed of members from the Medical Affairs Department, Medical

Record Department, Medical Insurance Office, and clinical experts to construct a normalized mechanism for training and supervision. On one hand, it is essential to strengthen training for clinicians regarding the logic of disease diagnosis and surgical operation coding to clarify the principles for selecting the principal diagnosis, thereby avoiding DRG downgrading caused by selection errors. On the other hand, hospitals should utilize AI-driven semantic analysis technology to logically verify medical documents. This allows for the automatic identification of inconsistencies between progress notes and the face sheet, such as a case where diabetes is mentioned in the progress notes but omitted in the face sheet, thus preventing the under-reporting of critical complications. More importantly, strict accountability mechanisms must be established. While myopic gaming might yield short-term excess insurance payouts, it exposes the hospital to long-term risks of severe regulatory penalties and credit rating downgrades. Only by constructing this rigorous closed loop of data quality control can public hospitals ensure that every medical record truthfully and objectively reflects the technical difficulty and resource consumption of medical services, laying a solid data foundation for refined operations under DRG payment.

3.3. Establishing a Synergistic Early Warning Mechanism for Cost Control and Quality Safety

The ultimate goal of DRG payment reform is to achieve Value-based Healthcare, which implies obtaining better health outcomes at optimized costs rather than mere cost reduction. Addressing the potential risks identified in empirical studies, specifically rising postoperative complications, increased unplanned readmissions, and the avoidance of critical cases, public hospitals must maintain strategic steadfastness. It must be explicitly clear that the bedrockof cost control is medical safety and patient satisfaction. Hospital administrators need to establish a quality safety "circuit breaker" mechanism that functions independently of economic indicators. This requires hospitals to break down information silos to achieve interoperability between financial cost data and clinical quality data, thereby establishing a collaborative monitoring platform for full-cost control and quality safety.

regarding the construction of the indicator system, hospitals should prioritize monitoring quality metrics that are sensitive to DRG cost-containment behaviors. Specifically, close attention must be paid to mortality rates in low-risk groups to prevent severe consequences resulting from undertreatment; 31-day unplanned readmission rates should be strictly scrutinized to curb speculative behaviors; simultaneously, the incidence of postoperative complications and hospital-acquired infections must be dynamically tracked. Furthermore, for clinical teams that maintain a high CMI and excellent quality indicators, even if they incur losses on specific single disease entities, the hospital should provide full compensation through institutional budget adjustments. This eliminates the financial anxiety of physicians regarding the treatment of critically ill patients at the institutional level. Ultimately, under the hard budget constraints of DRG, public hospitals can secure the baseline of medical safety and realize a multi-win paradigm benefiting patients, ensuring the safety of the medical insurance fund, and promoting the sustainable development of the hospital.

4. Conclusion

The DRG payment reform transcends a mere technical adjustment of medical insurance settlement methods. It represents a profound institutional transformation compelling public hospitals to shift from a "volume-driven expansion" model to an "intensive quality-focused" paradigm. Based on Principal-Agent Theory and analysis of the latest empirical data, this paper finds that during the painful transition from "retrospective reimbursement" to "prospective payment," DRG reform exhibits significant double-edged characteristics. On one hand, it has effectively curbed irrational growth in medical costs and enhanced bed turnover efficiency through hard budget constraints. On the other hand, due to the relative lag in refined supervision and risk adjustment mechanisms, this external pressure has induced internal strategic responses within medical institutions. These responses have led to gaming behaviors, specifically upcoding, risk selection, and cost shifting, which potentially erode the equity and safety of medical services.

Research indicates that the key to breaking this gaming gridlock lies in the necessity for public hospitals to transcend the purely financial accounting perspective and leap toward modernized value governance. This requires hospitals to dismantle traditional bureaucratic barriers and construct a new internal governance architecture. Strategies include reconstructing cost cognition through Time-Driven Activity-Based Costing (TDABC), utilizing Multidisciplinary Team (MDT) mechanisms to achieve isomorphic mapping between clinical pathways and payment standards, and elevating medical record data to the status of a core strategic asset for whole-chain quality control. More importantly, a quality safety "circuit breaker" mechanism that functions independently of economic indicators must be established to ensure incentive compatibility.

Looking to the future, as DRG reform enters its critical "deep-water zone," the high-quality development of public hospitals will no longer depend on simple cost-containment capabilities but on the ability to continuously generate optimal health outcomes under cost constraints. Future policy optimization and management practices should focus on the scientific calibration of localized weights and the exploration of human-centric differential payments. Only by achieving goal synergy among the government, hospitals, and patients through institutional innovation can we truly drive Chinese public hospitals to return to their public welfare mandate and the fundamentals of value-based healthcare.

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