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Title

**Analyzing the Payment Methods for Neonatal Inpatient Care in Iran and
Presenting Policy Options**

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Abstract

Introduction :Improving newborn health is a primary priority for the health system, and interventions before, during, and after birth are essential for enhancing health and developing human capital. The type and rate of payment for care provided during these periods can significantly impact newborn health. In Iran, the fee-for-service (FFS) payment method is controversial due to increasing costs and decreasing quality, imposing a substantial financial burden on patients in the neonatal intensive care unit (NICU). Reforming payment methods can help improve newborn health.

Methodology :This study is a prospective policy analysis conducted based on the Collins framework in three main phases. In the first phase, the nature of the payment issue for neonatal inpatient care providers globally and in Iran was examined through a systematic review and a qualitative study. To evaluate the impact of different payment methods on pregnancy, childbirth, and NICU care outcomes, databases were searched up to May 2023 in accordance with PRISMA guidelines. In the qualitative step, interviews with key informants (KII) were conducted, and data were analyzed using an inductive thematic approach. In the second phase, based on the first phase results, payment methods were proposed and prioritized using the TOPSIS multi-criteria decision-making method, and sensitivity analysis was conducted for validation. In the final phase, stakeholder analysis and social network analysis were conducted using Gephi software, and power-interest, power-position, and centrality matrices were calculated and plotted for this phase.

Results : A systematic review of 53 studies showed that different payment methods have varied impacts on utilization, quality, access, costs, clinical outcomes, and provider and patient satisfaction. Performance-based payments improved care quality but affected provider satisfaction and workload. Capitation payments reduced service utilization, while episode-based payments reduced costs and cesarean rates but increased out-of-pocket payments. Diagnosis-related groups (DRG) and fixed salary payments had mixed results. Interviews with 23 health system experts identified four main themes and fifteen sub-themes related to payment methods for NICU care in Iran, including service access, costs, quality, and neonatologist income. Four payment models were proposed and prioritized based on 13 criteria : 1) bundled payment for the pregnancy period, 2) bundled payment for NICU care, 3) diagnosis-related groups, and 4) a mixed payment model (FFS + P4P and per diem with procedure). Sensitivity analysis showed that adjusting weights for criteria had different impacts on the prioritization of payment methods. In the policy-making structure of Iran's payment system, 26 stakeholders were identified, with the Social Security Organization and Health Insurance playing key roles. The Neonatal Health Department, Planning and Budget Organization, Health Insurance, Supreme Insurance Council, and Parliamentary Research Center were also identified as high-power and high-interest stakeholders. National Health Insurance, the Medical Council, the Supreme Health Insurance Council, and the Parliamentary Research Center played important bridging roles in financial and legislative social networks.

Conclusion :The effects of different payment methods in healthcare depend on the design, implementation of programs, context, and specific service characteristics, which can indirectly or

long-term impact care outcomes. Fundamental and efficient reforms are needed for the neonatal inpatient care payment system in Iran. Despite differing opinions among stakeholders, these reforms should be based on scientific evidence and conducted collaboratively among all stakeholders. As an effective method, bundled payments for pregnancy care have been identified. Government institutions have a strong role, while service providers have relatively limited influence.

Keywords : Payment systems for providers, challenges of Iran's payment system, neonatal inpatient care, pregnancy care, stakeholder analysis, social network analysis