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Improvement of Surgical Hierarchy Criteria in KDRG V4.6

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Introduction

In the Korean Diagnosis-Related Groups(KDRG) system, when a patient undergoes multiple surgeries during the same hospitalization period, the final disease group is determined based on a priority ranking. This ranking, referred to as Surgical Hierarchy, is primarily applied to surgical disease groups and is determined within each Major Diagnostic Category(MDC) based on factors such as resource consumption and the clinical characteristics of the procedures. The current Surgical Hierarchy Criteria were last revised in KDRG V4.0(2017) as part of a comprehensive update. However, there has been a growing demand to reflect recent changes in the healthcare environment since 2021, beginning with a request from the Korean Association of Oral and Maxillofacial Surgeons to adjust certain disease group priorities. Therefore, this study aims to conduct a comprehensive review of the criteria used to determine Surgical Hierarchy Criteria, including standards for data analysis, and reset them accordingly.

Methods

To identify areas for improvement, this study compared the Surgical Hierarchy Criteria used in international patient classification systems such as Australia's AR-DRG V11.0 and the U.S. MS-DRG V40.0 with those in KDRG.

1) Criteria for Data Analysis: International systems use mean and median costs before and after excluding outlier cases, or mean costs and length of stay after outlier exclusion. In contrast, KDRG currently uses mean cost and length of stay data without excluding outlier.

2) Clinical Characteristics of Procedures: KDRG generally follows international standards but prioritizes laparoscopic surgeries over open surgeries.

This research analyzed changes in Surgical Hierarchy Criteria before and after modifying this criterion and sought expert consultation from clinical specialists and the Patient Classification System Review Committee, composed of experts from relevant medical societies within each MDC.

Results

This analysis found that in 88% of disease groups, the difference in mean treatment costs before and after excluding outlier was within 20%. As a result, it was decided to exclude outlier cases in the analysis to prevent errors in cost evaluation. If the difference exceeded 20%, additional factors such as length of stay were included in further analyses. Laparoscopic surgeries were found to have lower average costs than open surgeries, despite being assigned a higher priority. Therefore, this criterion was removed. Additionally, disease groups with the same surgical procedures but differing based on surgical sites (e.g.,Open paranasal sinus procedures [one sinus, unilateral] / D052 Open paranasal sinus procedures [one sinus, bilateral]) were grouped together, and their priority was determined based on weighted average treatment costs. Based on the revised criteria, 551 out of 710 reviewed disease groups (including surgical and medical procedures disease groups) had their Surgical Hierarchy adjusted. These changes were incorporated into KDRG V4.6, which was updated in January 2024.

Conclusions

By incorporating recent changes in the healthcare environment into KDRG's Surgical Hierarchy Criteria, this study has enhanced the accuracy of patient classification. Additionally, by actively considering both internal and external opinions, this research has improved the reliability of the system. These improvements are expected to enhance the discriminatory power of indicators based on patient classification and ultimately contribute to advancing the quality of healthcare in South Korea.

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