Using new classification variables: Subdividing Disease Groups for Acute Stroke Patients

Introduction

The Korean Inpatient Classification System (KDRG) categorizes patients into those undergoing Operating Room (OR) procedures, internal medicine procedures, and non-OR procedures. In the case of the latter, the assignment of ADRG codes depends on the type of diagnosis code used.

Patients classified under B684 (Ischemic stroke and other non-hemorrhagic stroke), within the non-OR procedure group, may exhibit varying resource consumption depending on their stage of admission, such as acute, subacute following imaging diagnosis, or chronic phases. Consequently, diagnostic and treatment strategies vary significantly, leading to disparities in resource utilization.

Hence, there was a suggestion to subdivide the disease group by distinguishing between acute stroke patients and others.

Our objective is to differentiate acute stroke patients using new classification variables apart from the existing classification variable, the Korean Standard Classification of Diseases (KCD), within the KDRG medical disease group.

Methodology

After gathering opinions from various internal and external sources, we reviewed four methods to differentiate acute stroke within the KDRG medical disease group:

1. Admission to a specialized stroke unit

2. Administration of intravenous thrombolysis

3. Observation of acute lesions consistent with stroke symptoms during imaging examinations such as CT or MRI scans, concurrent with stroke symptoms

4. Utilization of the criteria outlined in the "Standards for Calculating Co-Payment Reductions for Severe Diseases, Cancer Patients, and Rare Diseases" provided by the National Health Insurance Service (NHIS), which offers relief in personal co-payments for individuals affected by cancer, severe illnesses, or rare diseases.

Methods 1 and 2 included only some acute stroke patients, and Method 3 could not be collected from the claim data. Consequently, it was deemed most reasonable to distinguish acute strokes based on the application of the V275 code given to patients with a NIHSS score of 5 or more during inpatient treatment after arriving at the hospital within 24 hours of diagnosis of cerebral infarction (I63).

Subsequently, we conducted resource consumption analysis (T-test, ANOVA, Duncan) by subdividing

the existing B684 disease group based on the application of the V275 code.

Results

In 2020, the existing B684 disease group recorded 69,611 cases, with 12,256 patients receiving the relieved co-payment code (V275), constituting 17.6% of the B684 disease group. Moreover, the minimum requirement for disease group subdivision, which is 300 cases, was fulfilled.

The analysis revealed that the average medical expenses for patients with the V275 code were 76.4% higher than those without it, and the average hospital stay was also 4 days longer. Statistical analysis showed a p-value of <0.0001 between the two disease groups, indicating a significant difference. Additionally, with a coefficient of variation (CV) of less than 100%, there was homogeneity within each disease group. Consistent differences were observed across subgroup analyses.

The disease group designation is as follows: when accompanied by the relieved co-payment code (V275), it is labeled as "Acute Severe Ischemic Stroke," while in other cases, it is termed "Other Ischemic or Non-hemorrhagic Stroke."

Conclusion

The establishment of a new medical disease group for stroke patients was a pioneering effort, integrating not only the conventional KDRG internal medicine classification variable but also incorporating the special estimate code (V275). Recognizing the need for patient differentiation in resource utilization and clinical context, we encountered limitations in distinguishing certain disease groups solely based on existing classification criteria. By introducing new classification variables for such disease groups, we anticipate enhancing the accuracy of patient classification and improving the reliability of KDRG development and management.