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Title- A Study on Importance of International Classification of Diseases (ICD) in analysis of inpatient morbidity & mortality data within hospital settings in India

Aim

To study the importance of International Classification of Diseases (ICD) for analysis & presentation of inpatient morbidity & mortality data within hospital settings in India

Objectives

- To classify the annual inpatient diagnosis data according to International Classification of Diseases
- To identify the annual case mix of inpatients
- To identify the top diagnosis & Disease related groups (DRG) among the inpatients
- To identify the top causes of mortality among the inpatients
- To perform demographic, seasonal & discharge outcome wise analysis

Problem Statement

Quality mortality & morbidity data is the need of the hour for hospitals & the nation for evidence-based clinical decision making, optimized resource allocation, policy formulation, public health surveillance & epidemiology, reimbursement, medical research, administrative & legal reasons. Uncoded data cannot be relied upon for comprehensive analysis & decision making due to lack of standardization. Variability in disease terminology, abbreviations, often result in poor quality data, using which no significant analysis can be done further. Also, uncoded data cannot be stored, compiled, retrieved, or even used for national/international comparisons. Hence arises the need for a uniform scientific classification system. WHO Systematic coding of medical records & compliance with ICD-10 CM is essential for standardization, retrievability, comparability & generation of real time health statistics which can be utilized for achieving better health outcomes.

Research Question

How can ICD-10 CM coding system be utilized within hospital settings for comprehensive collection & analysis of inpatient morbidity & mortality data for evidence based clinical & administrative decision making?

Introduction

Hospital inpatient morbidity & mortality data is a vital requirement for the functioning of a robust & quality centered Hospital Management Information System. This constitutes the primary source for generation of meaningful real time health statistics. Accurate statistics play a pivotal role in hospital operations, planning for resource allocation & decision making. It is imperative to recognize that the accuracy of these statistics is intrinsically tied to the quality of data in health records. Hence, there is a need for adoption of a standardized scientific classification system.

ICD- 10 CM (International Statistical Classification of Diseases and related Health ProblemsClinical Modification) is a scientific classification system of disease codes devised & mandated by WHO to be followed throughout the world to generate uniform real time healthcare database. It is designed to promote international comparability in the collection, processing, classification, and presentation of mortality & morbidity statistics. Hence, it provides a common language for recording, reporting, and monitoring diseases. allowing the world to compare and share data in a uniform and standardized way – between hospitals, regions, and countries and over periods of time.

Background

ICD coding involves the process of converting a diagnosis/ procedure into an alphanumeric code. The basic ICD is a single coded list of three-character categories, each of which can be further divided into up to 10 four-character subcategories. ICD Code is essentially a 3-character code, with the first part being an alphabet & the second part a number. Alpha part identifies the broad DRGs (Disease Related Group) while the numerical part identifies the specific category. ICD 10 coding Manual consists of 3 volumes-

• Volume 1- Main classification& Tabular list of classified codes. It also contains the special tabulation lists for morbidity & mortality

• Volume 2- Instruction Manual

• Volume 3- Alphabetic Index to the classification

Volume 1 & 3 are essential to the coder while Volume 2 contains the rules & guidelines for ICD coding laid down by WHO.

The ‘core’ classification – the list of three-character categories (Volume 1) – is the mandatory level for reporting to the WHO mortality & morbidity statistics. The classification is divided into 22 chapters. Each chapter contains sufficient three-character categories to cover its content; not all available codes are used, allowing space for future revision and expansion.

• Chapters I to XVII - diseases and other morbid conditions

• Chapter XVIII - symptoms, signs, abnormal clinical or laboratory findings

• Chapter XIX - injuries, poisonings, and certain other consequences of external causes

• Chapter XX - External causes of morbidity and mortality

• Chapter XXI - factors influencing health status and contact with health services

Following a dual axis classification i.e., according to etiology and according to site, three types of chapters have been created: -

• Type I- Special group chapters for

a. epidemic diseases

b. constitutional & general diseases

• Type II- Body system chapters for a local disease by site

• Type III-Special group chapter for

a. developmental diseases

b. injuries

Blocks of Categories & Sub-categories- The chapters are subdivided into homogeneous blocks of three-character categories.

Three-character categories - Within each block, some of the three-character categories are for single conditions, selected because of their frequency, severity, or susceptibility to public health intervention, while others are for groups of diseases with some common characteristic. There is usually provision for 'other' conditions to be classified, allowing many different but rarer conditions, as well as 'unspecified' conditions, to be included. This is the mandatory level of ICD recording as per WHO.

Methodology

Study Design - The study is retrospective review based descriptive cross-sectional in nature.

Study Setting- The study is carried out at a 250 bedded multi-specialty hospital of Jaipur.

Study Population- The study included inpatients admitted in the hospital during 2020 with the following inclusion & exclusion criteria.

Inclusion criteria-

• Inpatients admitted for medical management

• Inpatients admitted for surgical management

• Inpatients with discharge outcome as Discharge, Death & LAMA

Exclusion criteria-

• Transplant & Donor cases

• Review or follow up surgical cases

• Cases with a high proportion of missing, ambiguous ICD-10 codes, or poor documentation of diagnosis

• Cases whose discharge/death summaries could not accessed through HMIS

Data collection, tools & analysis

The discharge/death summary of inpatients were extracted & studied through the Hospital Management Information System (HMIS). Physical medical record files were also taken into consideration for some patients. The study mainly aimed to extract the final diagnosis which was the primary cause for admission into the hospital. ICD-1 was assigned to the primary diagnosis & becomes the primary disease code based on which disease index is sorted. Other significant comorbidities were also captured & were assigned ICD-2, 3 & up to ICD-Study tools used for reference include ICD-10 CM Coding manuals Volume 1 ,2 & 3 & ICD10CM online application for the codification of diseases in the study. Data extracted was captured into a Master Excel sheet. This master data was then used to identify the annual case mix of the hospital & perform various analysis such as morbidity & mortality analysis, seasonal analysis, case fatality rates, geographical analysis, discharge outcome analysis, gender wise analysis, department wise analysis, doctor wise analysis, comorbidity analysis etc.

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