

Study of Inpatient Morbidity and Mortality Patterns Using ICD-10 in a Multispecialty Hospital

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ROLL NO.-1869

Aim

To assess morbidity and mortality trends using ICD-10-coded inpatient data in a multispecialty hospital, and to examine the factors influencing Average Length of Stay (ALOS), including diagnosis type, demographics, admission source, and discharge outcomes."

Objective

To categorise patient diagnoses according to ICD-10 chapters and examine their correlation with morbidity and mortality and mortality.

Secondary Objectives

1. To determine the leading ICD-10 chapters and DRG categories making up total hospital case mix.
2. To note inpatient admissions distribution by age, gender, and clinical departments.
3. To compute the Average Length of Stay (ALOS)
4. To explore patient demographics (age and gender), admission type (emergency or IPD), and departmental trends with respect to morbidity, mortality, and discharge results.

Methodology

RESEARCH DESIGN

The current study utilizes a retrospective, descriptive, cross-sectional research design. The study is based on secondary data obtained from hospital discharge records to evaluate trends in inpatient mortality and morbidity and patterns in Average Length of Stay (ALOS) based on ICD-10 coding.

STUDY INSTRUMENTS AND TOOLS

- ICD-10 Classification System: Utilized to code all diagnoses.
- CMS-DRG Grouping Tool: Utilized to group patient conditions into diagnosis categories.
- Microsoft Excel: Used for data cleaning, tabulation, analysis, and visualization (charts, graphs, frequencies).

Methodology (cont.)

STUDY DURATION

Study duration is 5 months: January 1, 2025 to May 31, 2025.

Mixed Method Approach.

Retrospective Data Collection(Jan'25-Feb'25)

Prospective Data Collection (March'25-May'25)

STUDY POPULATION

All inpatients who were hospitalized in the hospital study period were included as part of the target population.

Inclusion Criteria:

- Inpatients admitted to the IPD for the period January to May 2025.
- Complete cases with documentation that includes ICD-10-coded diagnosis, demographics, and discharge information.

Exclusion Criteria:

- incomplete or missing data.
- patients who were admitted for less than 24 hours or day-care/elective surgery and had no complications

DATA COLLECTION PROCEDURE

The data was received from the MRD of the hospital as well as the electronic hospital information system.

The following variables were retrieved:

- Demographic Data: Age, gender
- Clinical Data: Primary diagnosis (ICD-10 code), department, DRG category
- Admission Details: Admission type (IPD vs. Emergency)
- Discharge Information: Discharge type (routine, LAMA, death, MLC, transfer)
- Operational Data: Length of stay (to compute ALOS), type of payment (cash/insurance)

The ICD-10 and DRG codes were utilized for classifying diagnoses and determining trends.

Overview of ICD-10 Classification System

What is ICD-10?

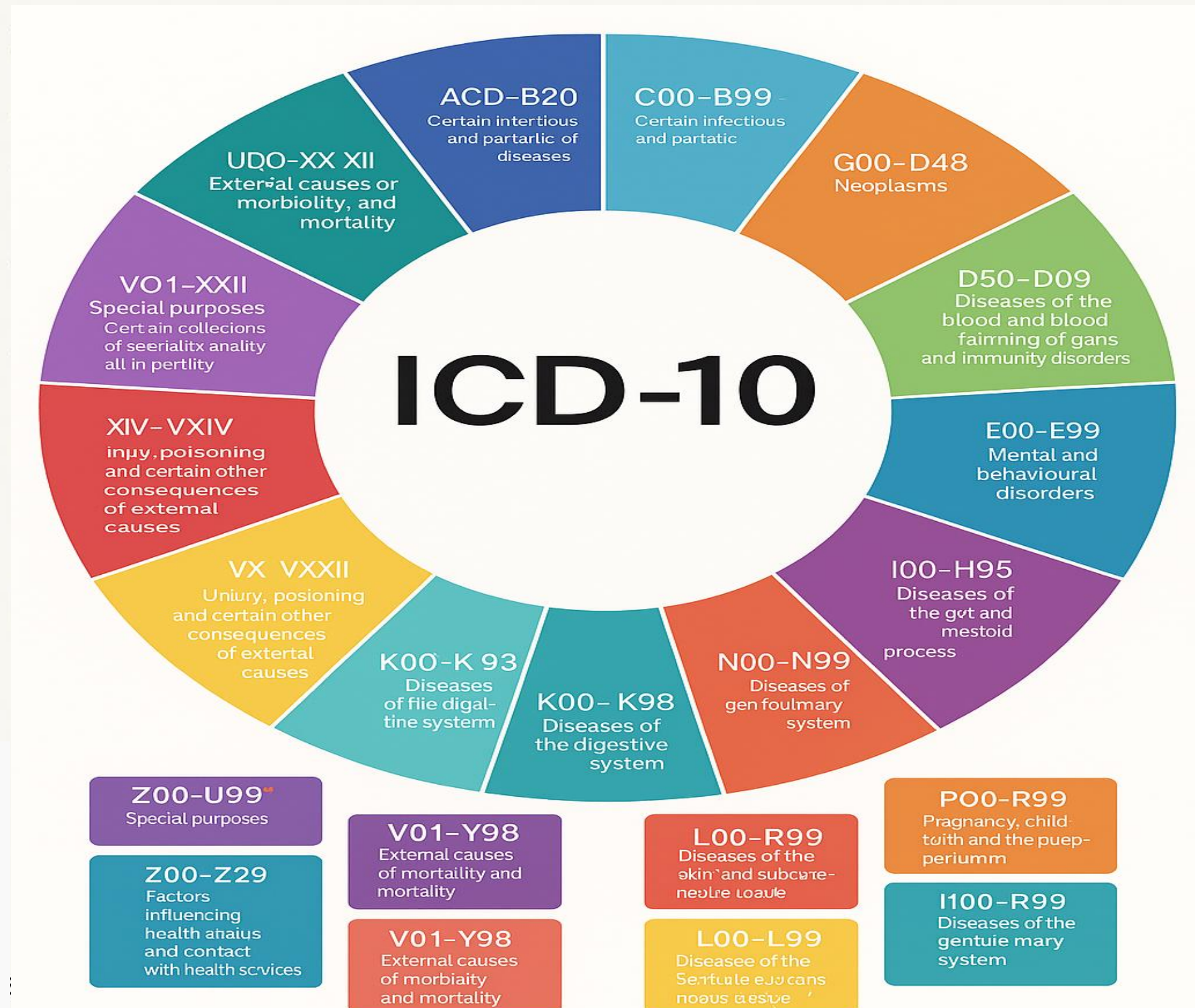
The International Classification of Diseases, 10th Revision (ICD-10) is a globally standardized diagnostic tool developed by the World Health Organization (WHO). It enables consistent coding of diseases, symptoms, and causes of death across healthcare systems.

Key Features of ICD-10:

- 22 Chapters based on body systems (e.g. Digestive, Circulatory)
- Alpha-numeric Codes (e.g. K3.2 = Acute appendicitis with peritonitis)
- Hierarchical Structure:
 - Chapter → Block → Category → Subcategory

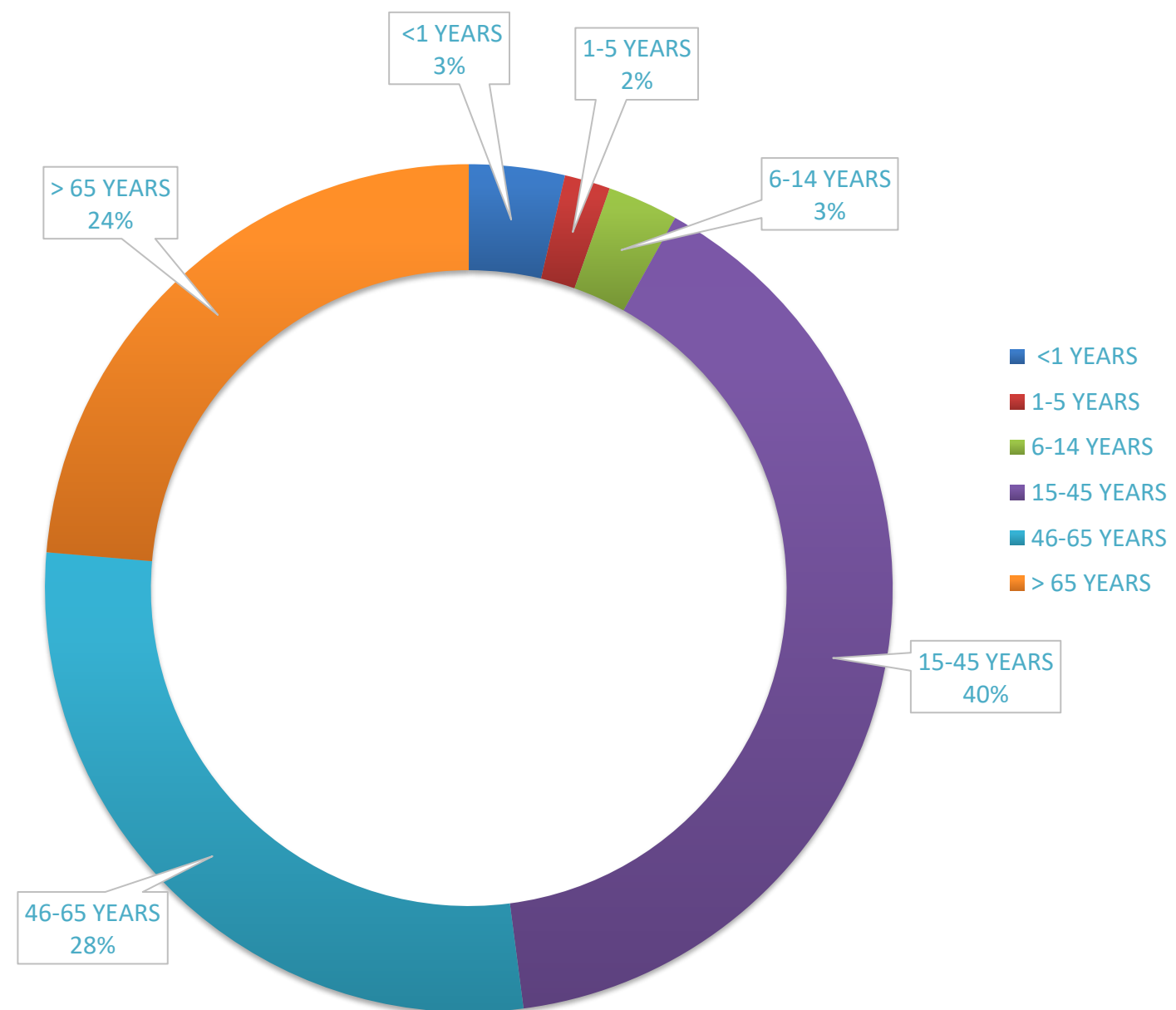
ICD-10

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| Chapter XI - Digestive Diseases
| | Block K30-K39 - Diseases of Stomach
| | | K35 - Acute Appendicitis
| | | | K35.2 - With Peritonitis
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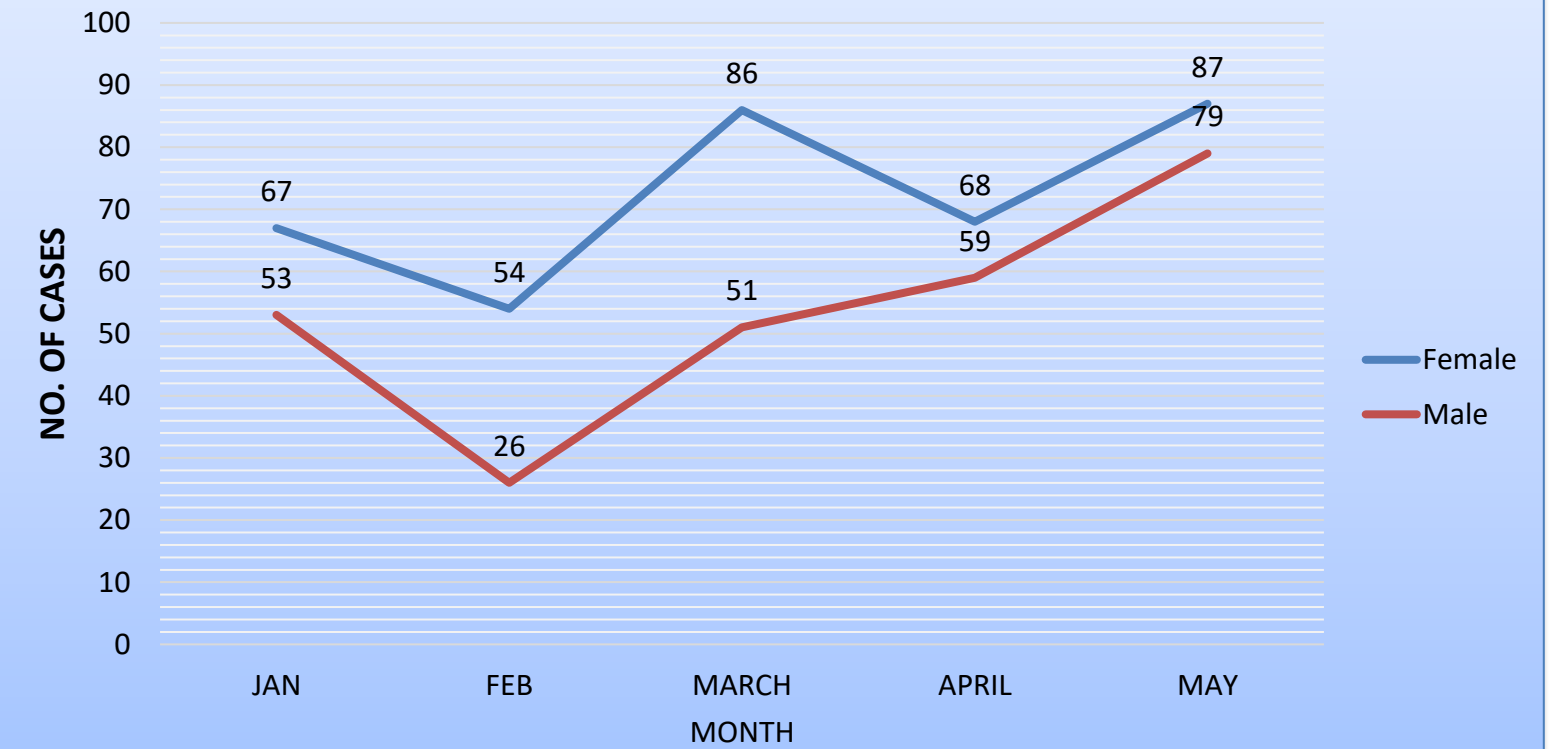


ANALYSIS

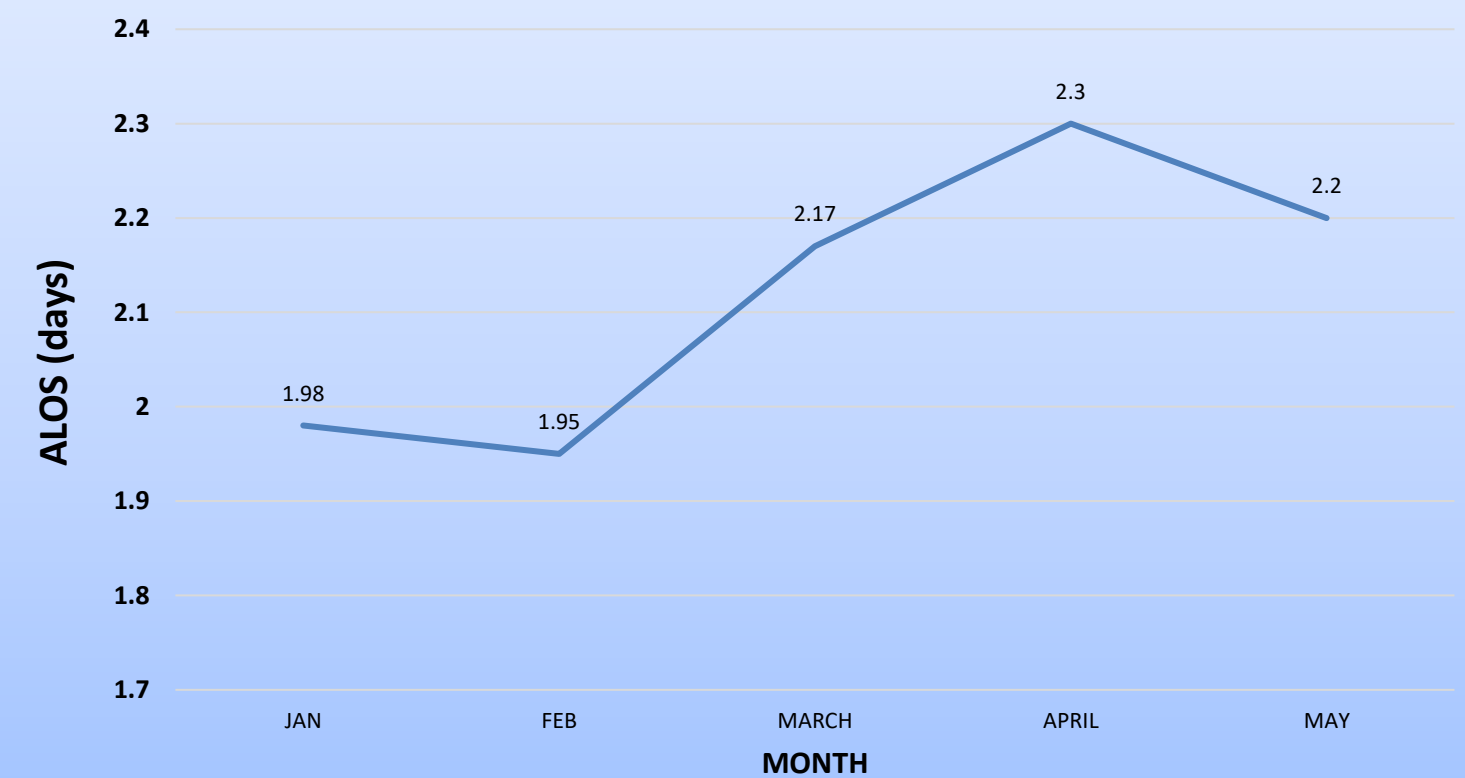
Age wise patients categorisation



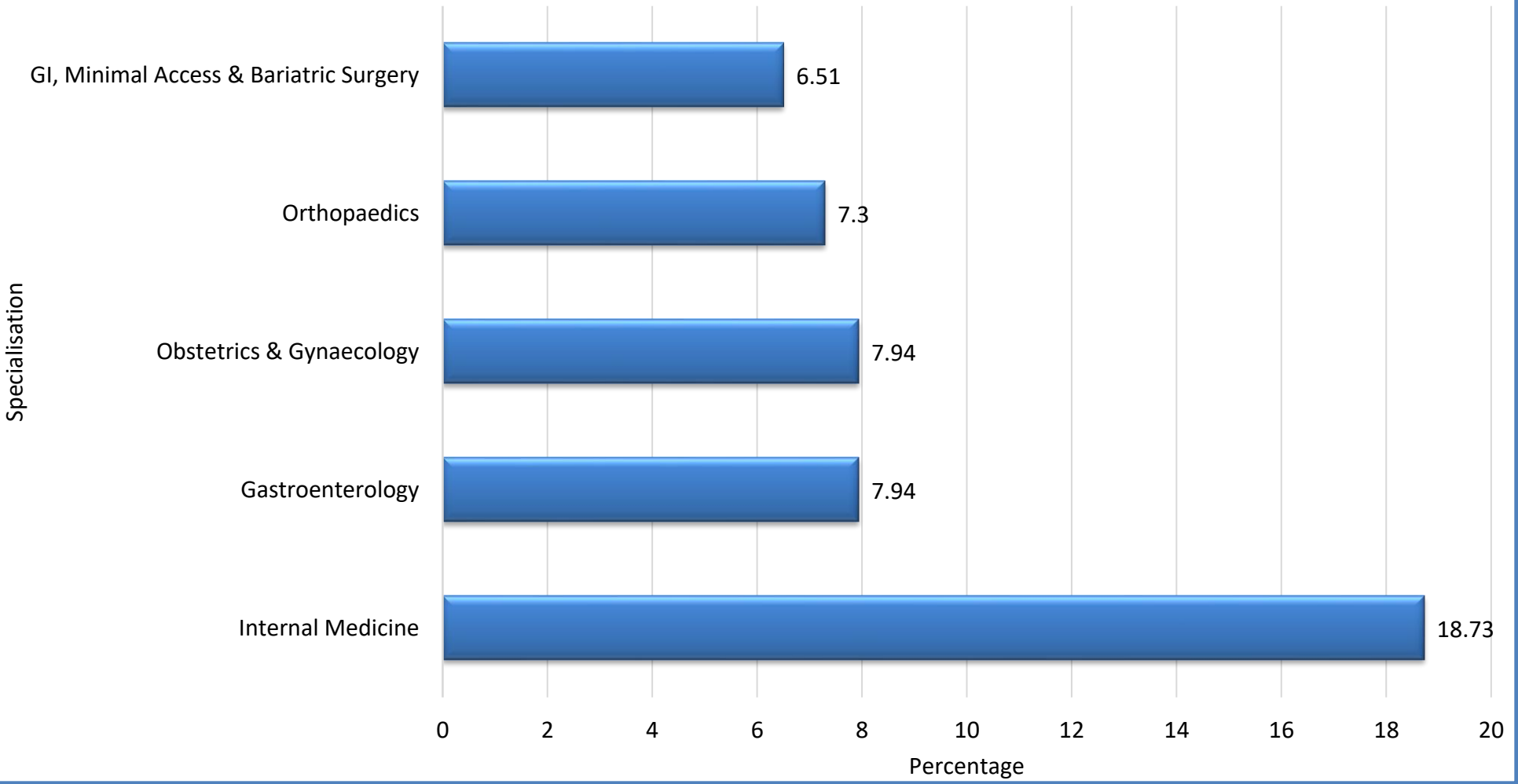
GENDER-WISE MONTHLY CASE DISTRIBUTION



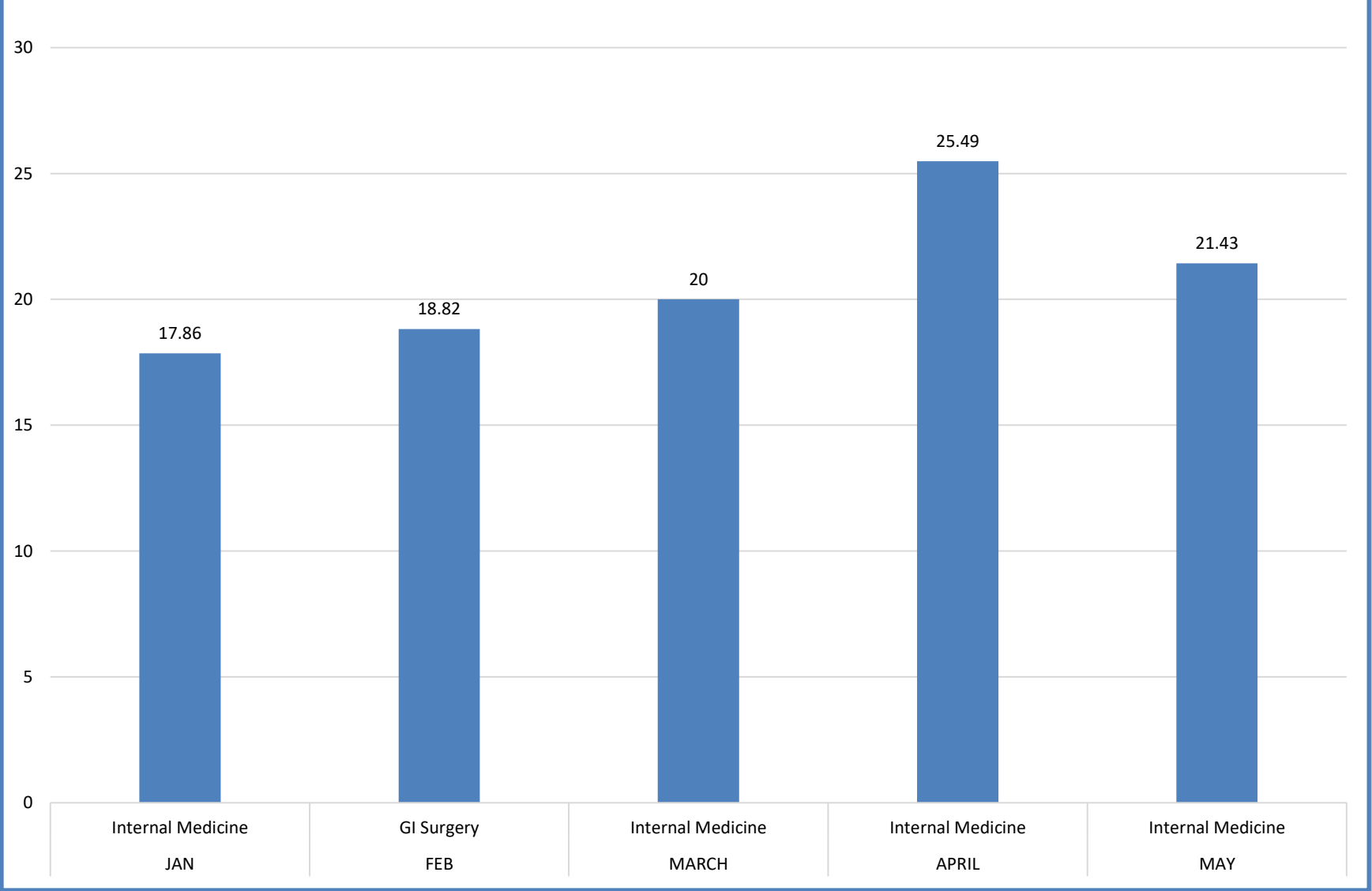
ALOS



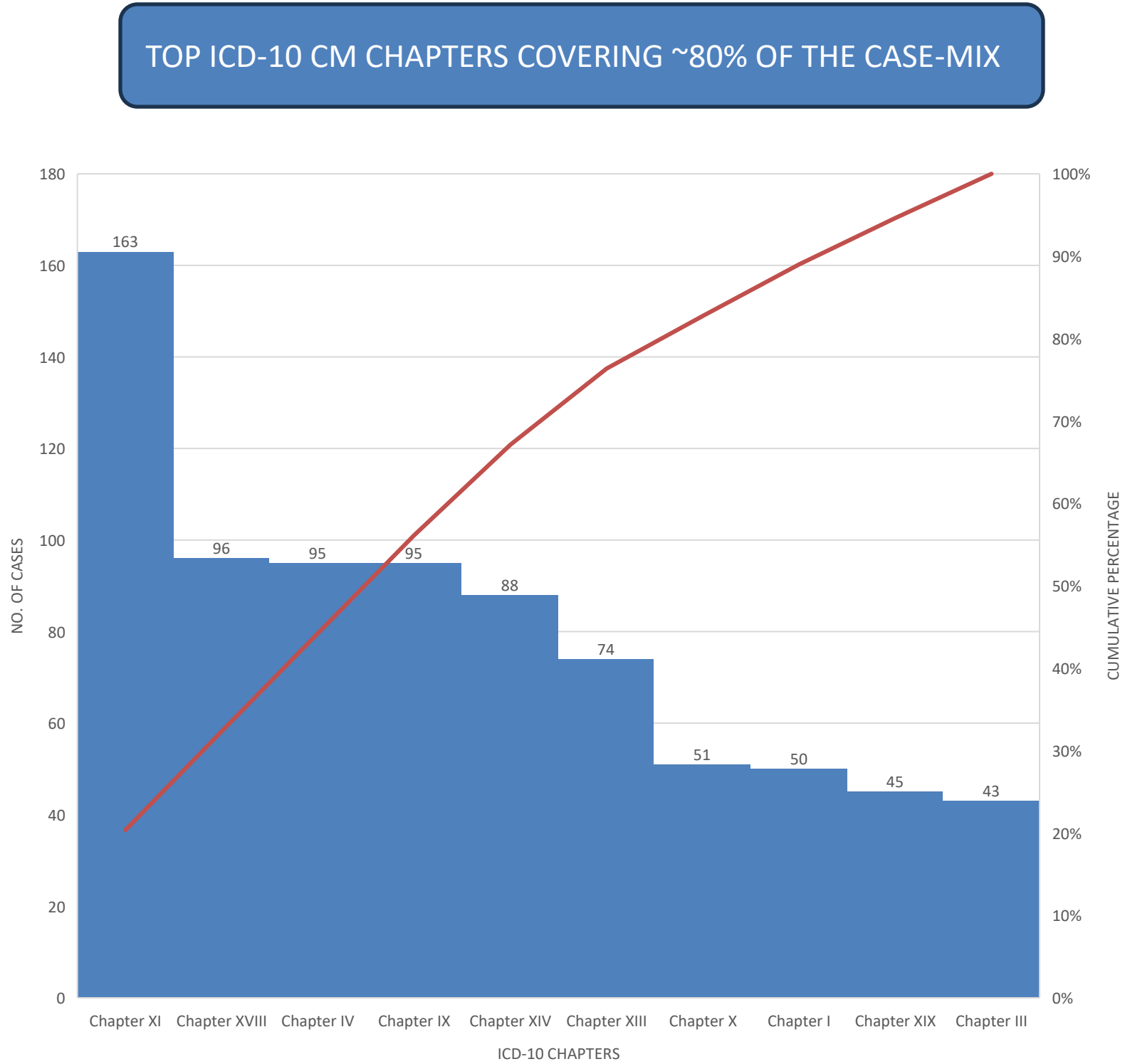
Top 5 Specialisations by Total Cases



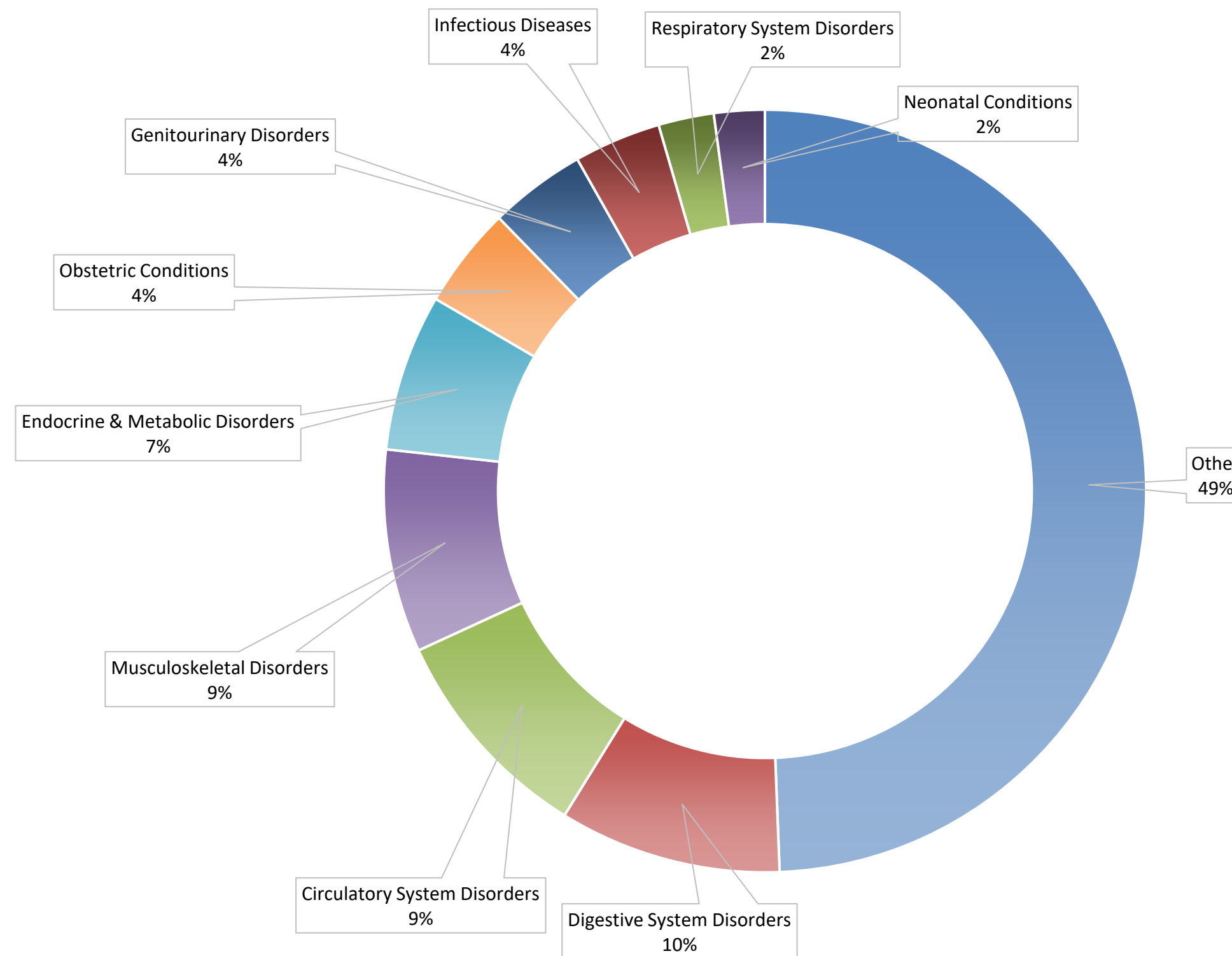
MONTHWISE TOP SPECIALISATIONS



CHAPTER_NAME	CHAPTER_NUMBER	COUNT	CUMULATIVE_PERCENT
Diseases Of The Digestive System	Chapter XI	163	16.873706
Symptoms, Signs And Abnormal Clinical And Laboratory Findings, Not Elsewhere Classified	Chapter XVIII	96	26.8115942
Endocrine, Nutritional And Metabolic Diseases	Chapter IV	95	36.64596273
Diseases Of The Circulatory System	Chapter IX	95	46.48033126
Diseases Of The Genitourinary System	Chapter XIV	88	55.59006211
Diseases Of The Musculoskeletal System And Connective Tissue	Chapter XIII	74	63.2505176
Diseases Of The Respiratory System	Chapter X	51	68.5300207
Certain Infectious And Parasitic Diseases	Chapter I	50	73.70600414
Injury, Poisoning And Certain Other Consequences Of External Causes	Chapter XIX	45	78.36438923
Diseases Of The Blood And Blood-forming Organs And Certain Disorders Involving The Immune Mechanism	Chapter III	43	82.81573499



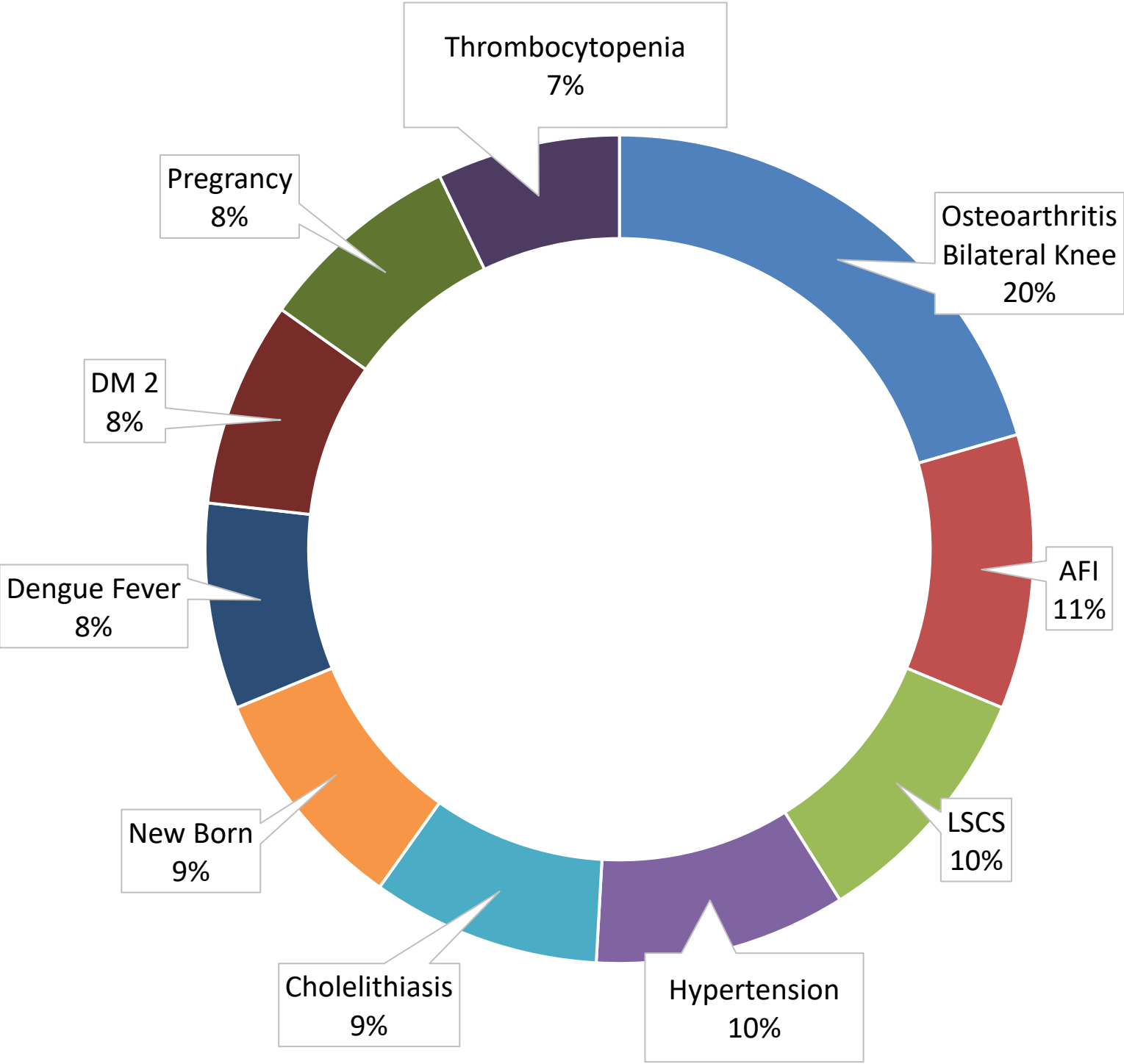
PERCENTAGE OF TOP DRG CATEGORIES OF INPATIENT



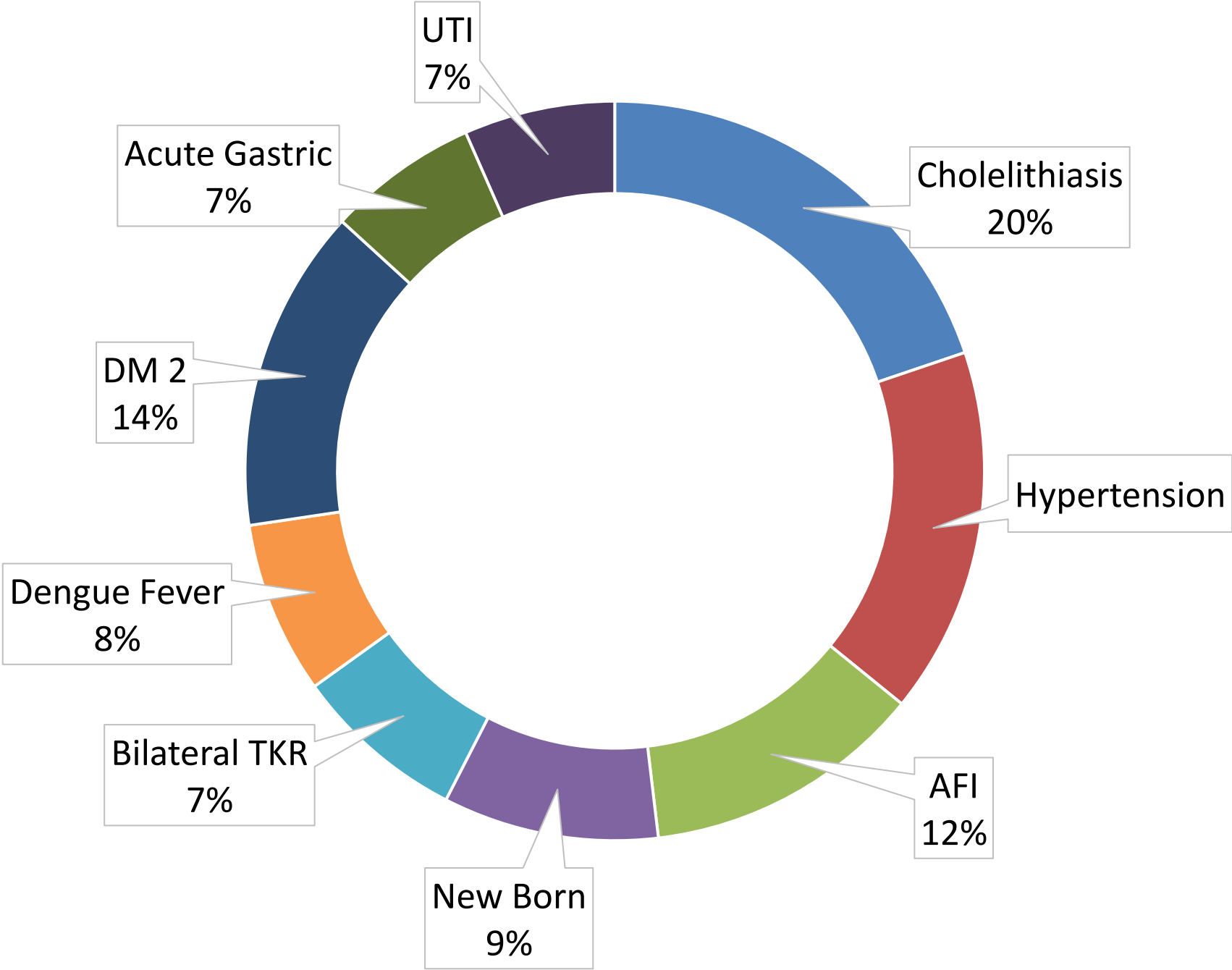
ABOUT DRG

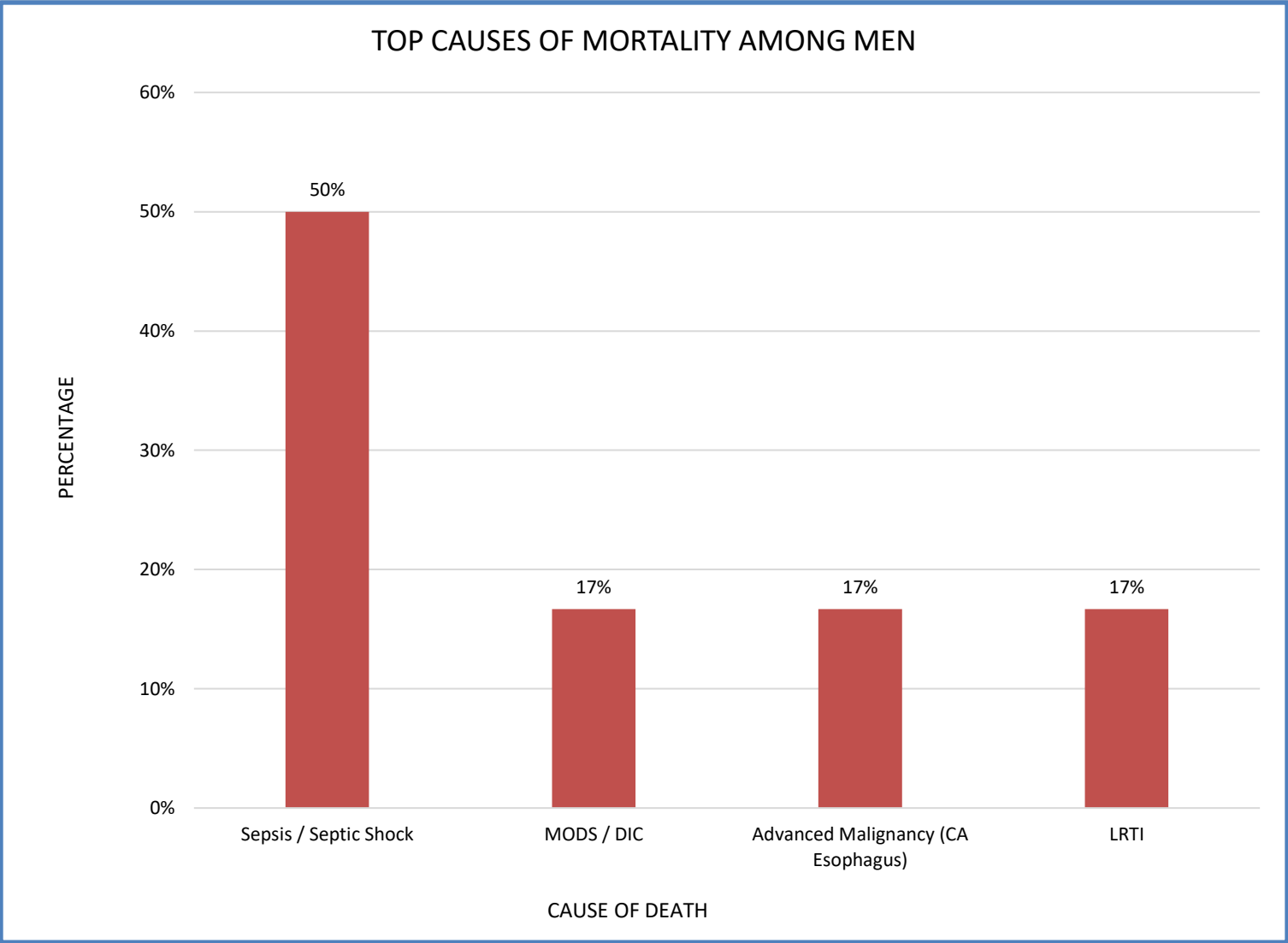
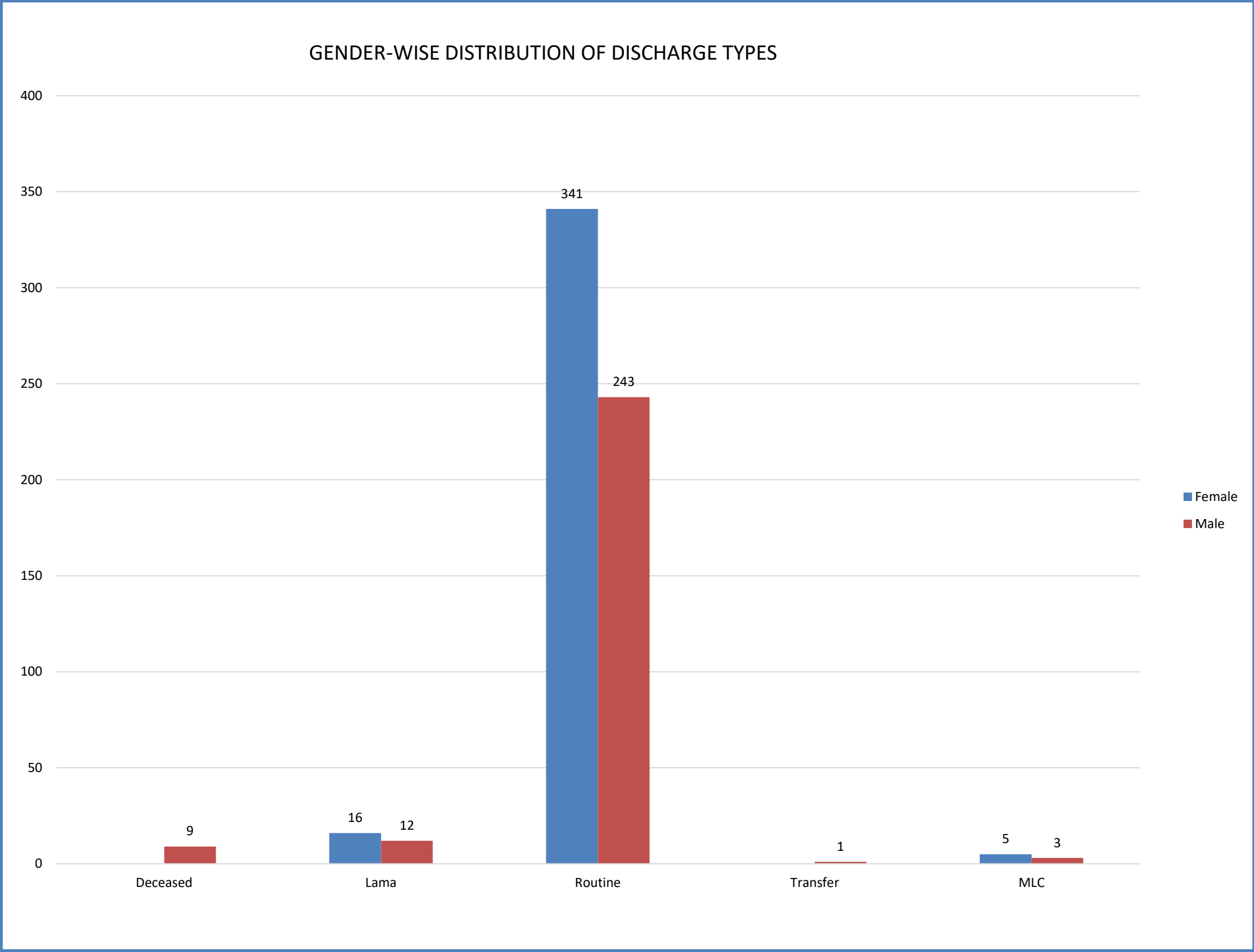
- Definition:** DRGs classify hospital cases into groups with similar clinical conditions and resource usage.
- Purpose:** Used for hospital reimbursement, performance measurement, and cost control.
- Basis:** Classification is based on diagnoses, procedures, age, sex, discharge status, and comorbidities.
- Payment System:** In DRG-based systems, hospitals receive a fixed payment per case, not per service.
- Encourages Efficiency:** Incentivizes hospitals to manage resources and reduce unnecessary services.
- Widely Used:** Common in the U.S. Medicare system and increasingly adopted worldwide.
- Types:** Includes Medical DRGs (non-surgical) and Surgical DRGs (procedure-based).
- ICD Link:** Relies heavily on accurate ICD-10 coding for classification and reimbursement.

TOP CAUSES OF MORBIDITY AMONG FEMALES

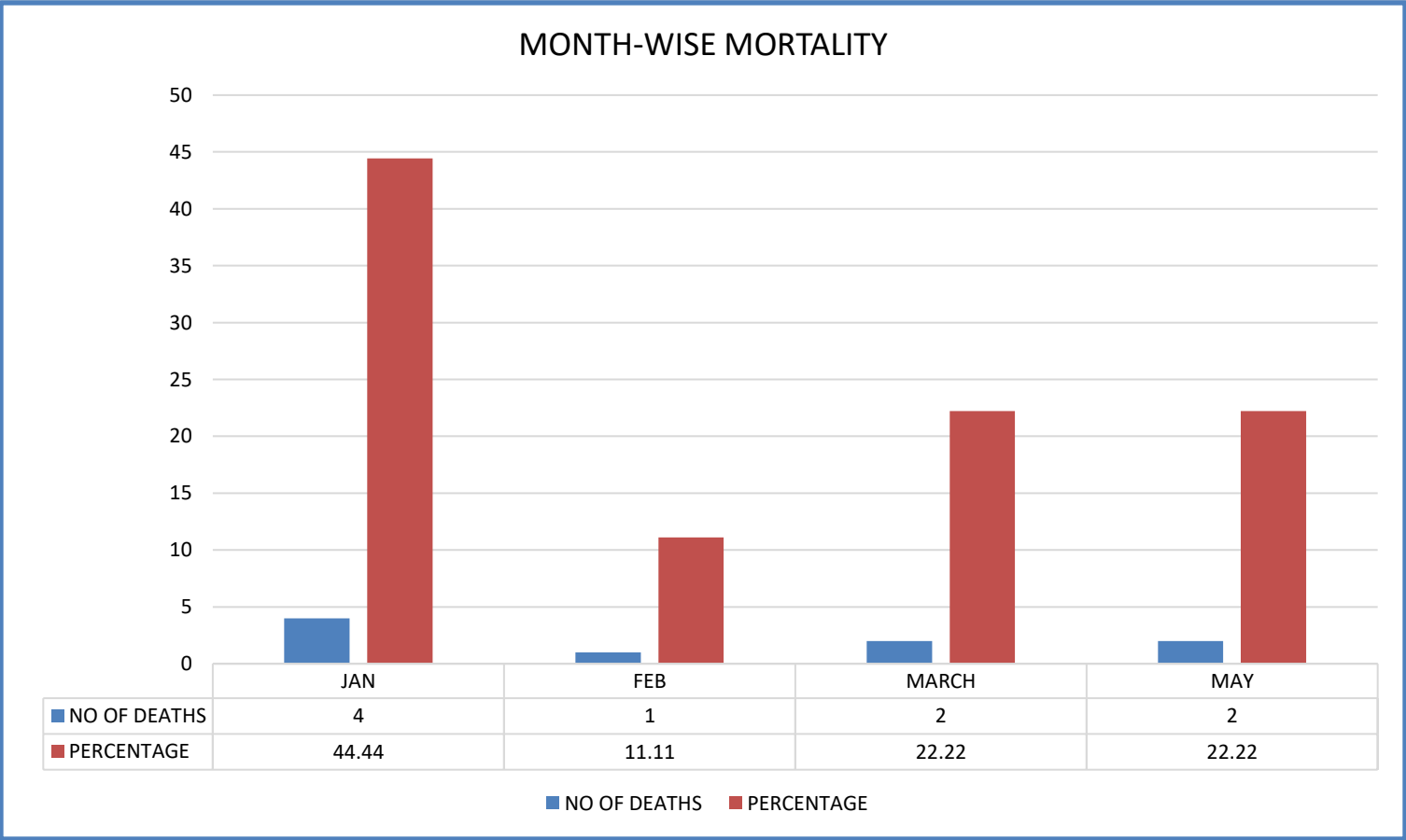


TOP CAUSES OF MORBIDITY AMONG MALES

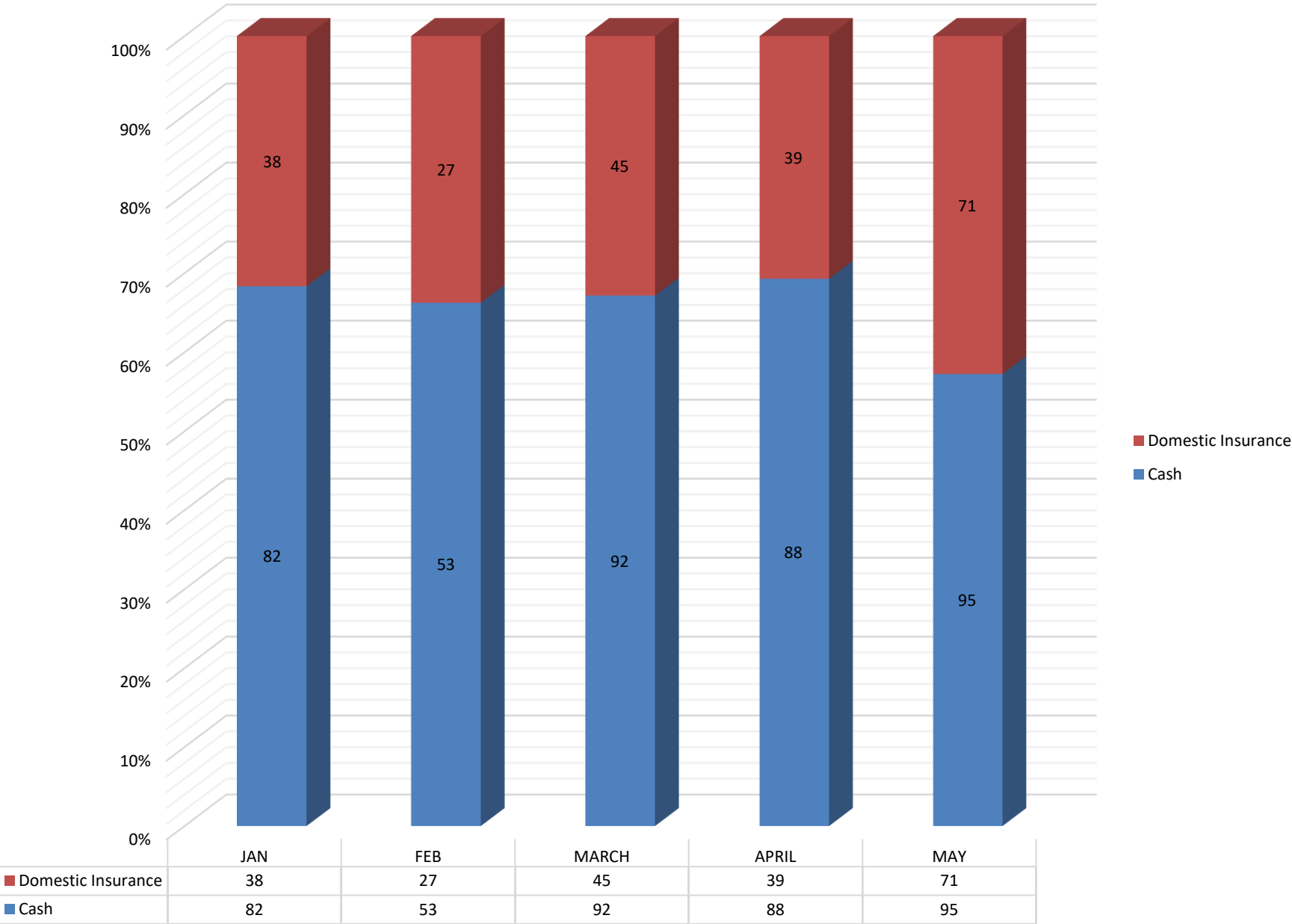




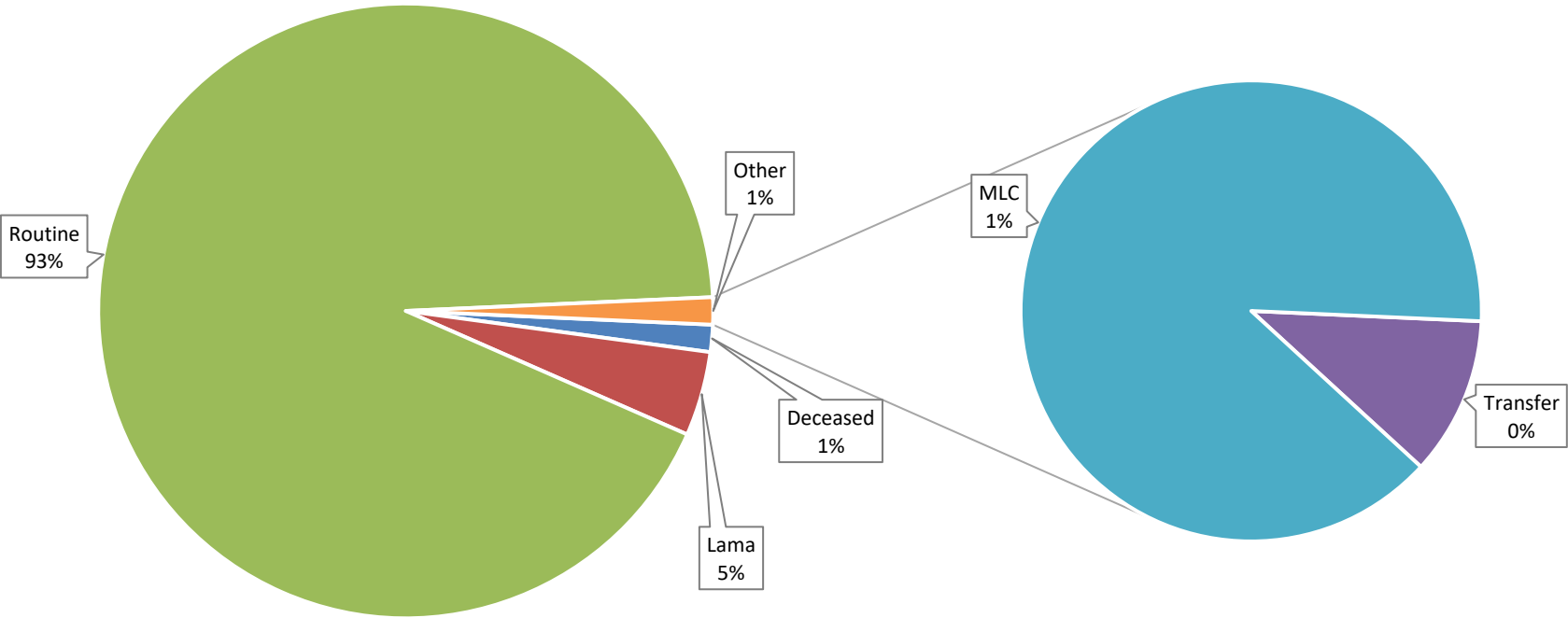
MODS (Multiple Organ Dysfunction Syndrome) / DIC (Disseminated IntravascularCoagulation)



TYPE OF PAYMENT METHOD



COUNT OF DISCHARGE TYPE



Strengths of the Study

- ICD-10 coding enabled standardized, comparable data.
- Broad variable inclusion ensured holistic analysis.
- Five-month period captured seasonal trends.
- Structured data supported subgroup insights.

Limitations of the Study

- Single-centre data limits generalizability.
- Short duration may miss long-term trends.
- No qualitative insights included.
- Comorbidity and severity data not considered.

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THANKYOU