Zionstar Hospital: Work and Leads Workflow Analysis

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1. Executive Summary

This report examines Zionstar Hospital's operational metrics, with a focus on patient flow, financial trends, diagnostic services, and feedback. The analysis identifies key patterns and provides actionable recommendations for improving hospital efficiency, resource allocation, and patient care.
Key highlights include:

- During the time period under review, **7,157** patients were served.
- Revenue of **$190.4 million**, with a noticeable difference between billing and insurance reimbursements.
- **Blood tests** and **MRIs** are in high demand, while ICU beds are underutilized.
- Consistent positive feedback from doctors, indicating high patient trust and satisfaction.

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2. Introduction

Objective: To identify operational inefficiencies and areas for improvement in patient care, financial performance, and resource utilization.

Background: Healthcare institutions must strike a balance between quality care and financial sustainability. By analyzing workflows, diagnostics, and patient data, hospitals can make data-driven decisions that improve efficiency and resource allocation.

Relevance: Zionstar Hospital's data identifies areas that require immediate attention, such as bed occupancy optimization and insurance claim discrepancies, while also emphasizing its strengths in diagnostic services and patient satisfaction.

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3. Dataset Description

The analysis leverages the following data points from the dashboard:

1. **Operational Metrics**:
    - Total number of **admissions**, **discharges**, and f**ollow-up** appointments.
    - The **length of patient stay** (LOS) is determined by diagnosis.

2. **Diagnostic Services**:
    - Top diagnostic tests (e.g., **blood tests**, **MRIs**, **CT scans**) and their frequencies.

3. **Resource Utilization**:
    - Bed occupancy trends in the **private**, **general**, and **ICU** categories.

4. **Patient Feedback**:
    - The volume of feedback for individual doctors.

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4. Methodology

1. **Data Cleaning**:
    - Eliminated potential discrepancies by ensuring that all numerical values (such as patient counts and billing data) are logically aligned.
    - Data completeness was confirmed for all metrics (admissions, tests, and feedback).

2. **Exploratory Data Analysis (EDA)**:
    - Trends were visualized using bar charts, pie charts, and line graphs.
    - To identify anomalies, key metrics were compared (for example, billing versus insurance).

3. **Tools Used**:
    - The dashboard visualizations were created using **Power BI**.
    - Data aggregation and preprocessing should be done in **Excel** or a similar application.

4. **Analysis Techniques**:
    - Comparative trend analysis (monthly growth trends and LOS variations).
    - Diagnose-based segmentation for resource allocation insights.

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5. Analysis and Findings

5.1 Patient Flow

- **Total Patients**: **7,157** served during the period.
- **Admission and Discharge Timelines**:
    - Patients were admitted on average around 05-12-22 and discharged on 12-01-23, indicating smooth transitions between care stages.

5.2 Diagnostic Services

- **Top Tests**:
    - **Blood tests** and **MRIs** are the most commonly used, accounting for over 2,000 cases each and demonstrating their importance in diagnostics.
    - **CT scans**, **X-rays**, and **ultrasounds** are moderately used but have room to expand.

5.3 Patient Diagnosis Trends

- **Most Common Diagnoses**:
    - Viral infections (**2,000 cases**) lead, followed by flu (**1,720 cases**) and malaria (**1,430 cases**).
    - Pneumonia and fractures have lower counts but longer lengths of stay, indicating a higher resource intensity in these cases.

5.4 Bed Utilization

- **Private beds** are widely used, with approximately 4,000 patients indicating a strong preference for personalized care.
- **ICU beds** are underutilized, with significant capacity left unused, which could indicate a decrease in critical cases or referral inefficiencies.

5.5 Feedback for Doctors

- All doctors received consistent feedback volumes of **4.83K**, demonstrating uniform patient trust and satisfaction. This consistency could be the result of a robust feedback collection process or high-quality service delivery.

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6. Recommendations

6.1 Financial Optimization

- Collaborate with insurance providers to determine the root causes of declining reimbursements. Streamline claim processing to close the gap between billing and insurance coverage.
- Develop patient education programs to raise awareness of insurance policies.

6.2 Bed Utilization Strategy

- Assess ICU underutilization and implement initiatives to balance bed distribution across categories.

6.3 Enhanced Resource Planning for Viral Diagnoses

- Increase staffing and supplies to handle peak cases of viral infections and flu, particularly during seasonal surges.

6.4 Maintain Patient Satisfaction

- Use consistent feedback scores to identify and replicate specific practices that contribute to employee satisfaction across departments.

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7. Conclusion

Zionstar Hospital performs well in patient care and diagnostics, but there are clear areas for improvement in resource optimisation and financial management. By closing gaps in insurance reimbursements and bed utilization, the hospital can improve its operational efficiency and patient outcomes.

The recommendations aim to leverage Zionstar's strengths while addressing current challenges, ensuring long-term success and sustainability.