

FROM CONSULTATION TO DIAGNOSIS

A Data-Driven Analysis of **Laboratory & USG Conversion Rates** and Trends in an OPD
Setting at Cocoon Hospital, Jaipur

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INTRODUCTION

Diagnostic investigations are essential to effective patient care, yet not all patients complete the tests recommended during OPD consultations. **This study analyses OPD-to-Lab and OPD-to-USG conversion rates to identify diagnostic leakage and understand utilization patterns.**



CONTEXT

- Growing adoption of healthcare analytics
- Lab & USG investigations support diagnosis
- OPD is the entry point of the care journey
- Specialized maternity care setting
- Availability of in-house diagnostics
- Need to assess diagnostic utilization



THE PROBLEM

Diagnostic Leakage Recommended tests left uncompleted

Care Gap A break between consultation and diagnosis

Service Underutilization In-house diagnostics not fully used

Unclear Conversion Patterns The patient journey goes unmeasured

Need for Analytics Data-driven evaluation is required

AIM & OBJECTIVES

AIM

To analyse OPD-to-Laboratory and OPD-to-USG conversion rates and evaluate diagnostic utilization patterns at Cocoon Hospital.

OBJECTIVES



Conversion Rates

Measure OPD-to-Lab and OPD-to-USG conversion across the patient journey.



Diagnostic Leakage

Quantify the share of recommended investigations that go uncompleted.



Diagnostic Utilization

Evaluate how fully in-house diagnostics are used across consultants.

RESEARCH QUESTIONS

- What are the OPD-to-Lab and OPD-to-USG conversion rates at Cocoon Hospital?
- What is the extent of diagnostic leakage among patients advised Lab and USG investigations?
- What variations exist in diagnostic conversion rates across consultants?

METHODOLOGY

Study Design	Quantitative Study
Study Setting	Cocoon Hospital, Jaipur
Study Period	March - April 2026
Study Population	OPD patients advised Lab and/or USG investigations
Sample Size	338 Patients (Full Enumeration)
Data Source	HIS, prescriptions, lab reports, USG reports
Tools Used	Microsoft Excel, Pivot Tables, Power BI
Statistical Test	Chi-Square Test of Independence

WHY THE CHI-SQUARE TEST?

Used to determine whether a significant association exists between consultant category and diagnostic investigation completion (Completed vs Not Completed).

LAB INVESTIGATION

H₀ Conversion rates do not vary across consultant categories.

H₁ Conversion rates vary across consultant categories.

USG INVESTIGATION

H₀ Conversion rates do not vary across consultant categories.

H₁ Conversion rates vary across consultant categories.

338

Patients Analysed

57.1%

Advised Lab

75.7%

Advised USG

2

Months Studied

PATIENT PROFILE & RECOMMENDATIONS

338

Patients Analysed

170

March OPD

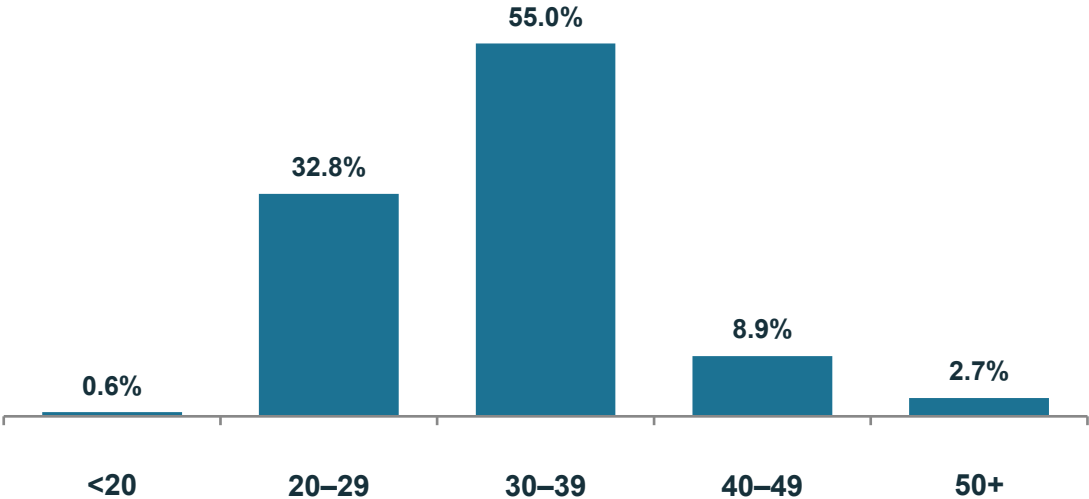
168

April OPD

55%

Aged 30–39 yrs

AGE-WISE DISTRIBUTION OF PATIENTS



Majority of OPD patients were aged 30–39 years, and USG investigations were recommended more frequently than laboratory tests.

DIAGNOSTIC RECOMMENDATIONS

USG
LAB

256 recommended

75.7% of OPD

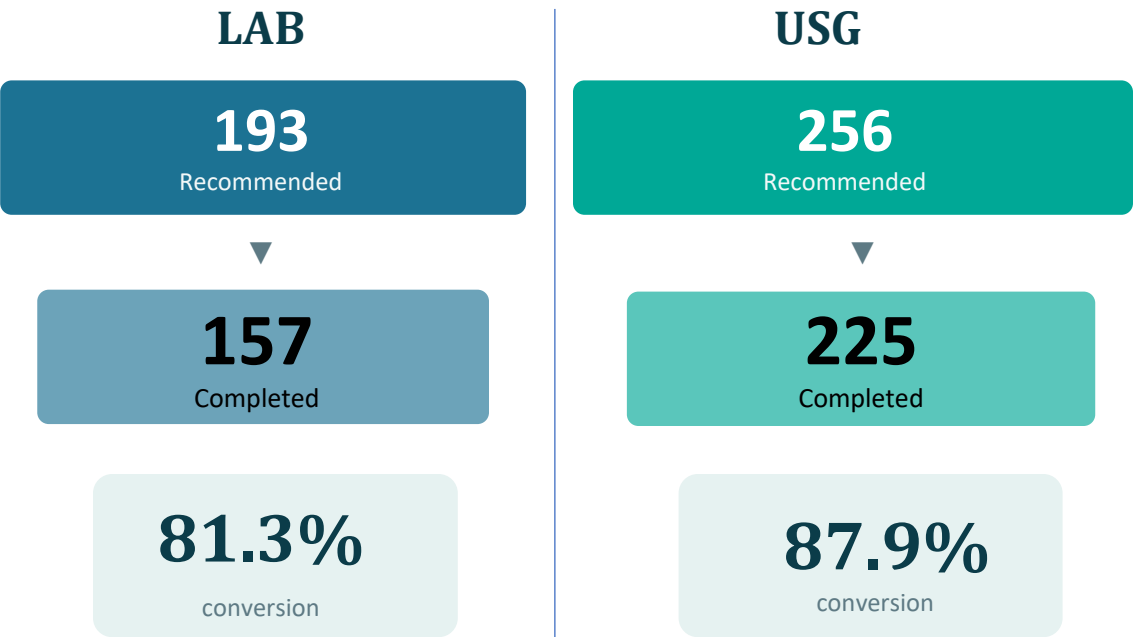
193 recommended

57.1% of OPD

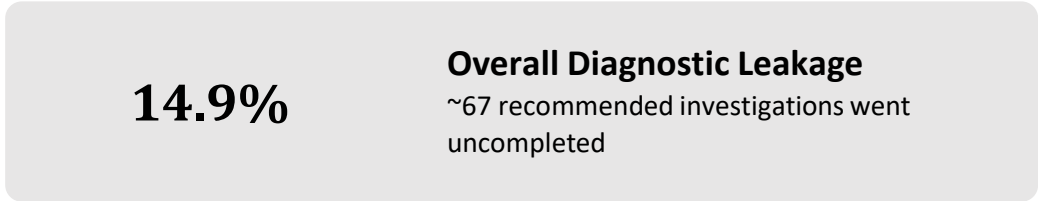
- ✓ The majority of OPD patients (55%) belonged to the 30–39 years age group, indicating a predominantly reproductive-age patient population.
- ✓ USG was recommended to 75.7% of patients, making it the most frequently advised diagnostic investigation.
- ✓ Patient volume remained consistent across March (170) and April (168), suggesting a stable OPD workload during the study period.

CONVERSION & LEAKAGE ANALYSIS

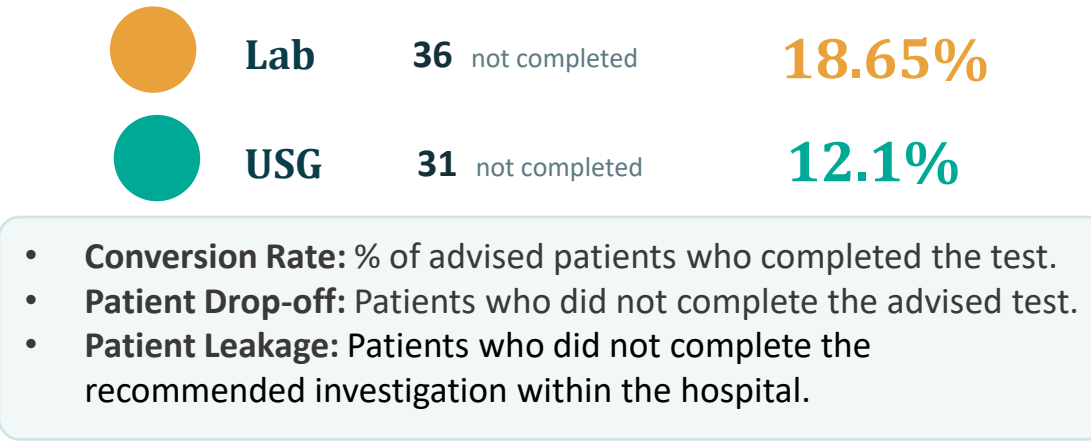
OPD → DIAGNOSTIC CONVERSION



OVERALL DIAGNOSTIC LEAKAGE



BY SERVICE TYPE



KEY FINDINGS

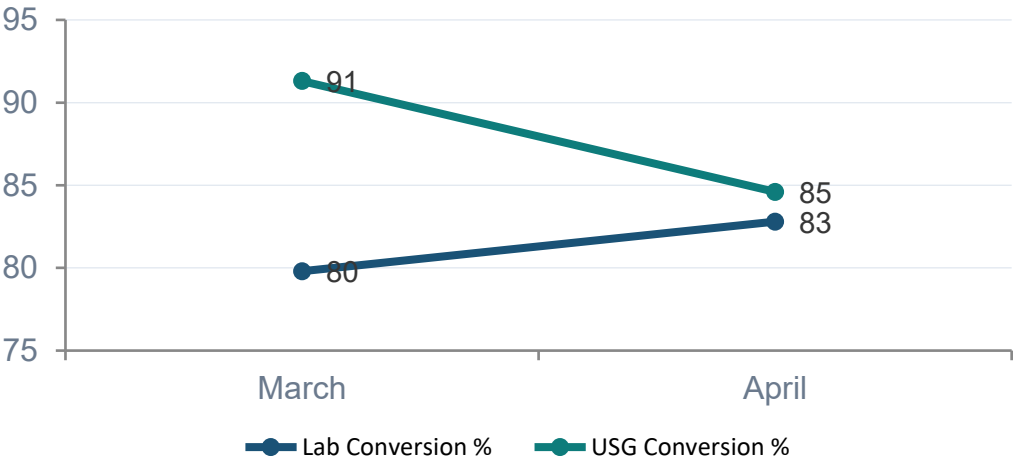
- USG conversion (87.9%) outperformed lab conversion (81.3%). **Laboratory services experienced higher leakage (18.65%) than USG (12.11%)**- most patients completed their investigations in-house, but lab retention is the clearest improvement opportunity.
- Closing the laboratory conversion gap could strengthen both patient care continuity and hospital revenue capture.

CONSULTANT & MONTHLY PERFORMANCE

CONSULTANT-WISE CONVERSION

Doctor-wise Diagnostic Performance Summary				
Doctor_Assigned	Total Patients	Lab Conversion %	USG Conversion %	Leakage %
Dr. Himani	122	77.6%	84.0%	18.8%
Dr. Priya	117	81.0%	86.6%	15.9%
Dr. Preeti	18	90.0%	84.6%	13.0%
Dr. Mitul	68	82.9%	94.7%	9.8%
Dr. Anupama	11	100.0%	100.0%	0.0%
Dr. Susheela	2	100.0%	100.0%	0.0%
Total	338	81.3%	87.9%	14.9%

MONTHLY TREND (MAR → APR 2026)



CHI-SQUARE TEST

Chi-Square Assumptions:

- Independent observations
- Categorical variables
- Mutually exclusive categories
- Adequate expected cell frequencies (≥ 5)

LAB $p = 0.3923$

Fail to reject H_0

USG $p = 0.1477$

Fail to reject H_0

Conversion rates varied slightly across consultants but there was no statistically significant association between consultant doctor and diagnostic conversion rates for either Lab or USG tests ($p > 0.05$).

KEY FINDINGS

- ✓ **Dr. Mitul led overall** Strongest conversion (Lab 82.9%, USG 94.7%) and lowest leakage at 9.8%.
- ✓ **Dr. Himani highest leakage** 18.8% despite the largest patient load (122).
- ✓ **Diverging monthly trends** Lab rose 79.8% → 82.8%; USG eased 91.3% → 84.6%.

CONCLUSIONS, RECOMMENDATIONS & FUTURE SCOPE

- ✓ **Strong diagnostic utilization** with high conversion rates for both Lab (81.3%) and USG (87.9%).
- ✓ **USG demonstrated better patient retention** and lower leakage than laboratory services.
- ✓ **Overall diagnostic leakage remained low (14.9%)**, indicating that most patients completed recommended investigations within the hospital.
- ✓ **No statistically significant consultant-wise variation** was observed in diagnostic completion ($p > 0.05$).

Recommendations for Improvement

- **Improve Lab Retention:** Strengthen patient counselling and simplify the laboratory testing process.
- **Monitor Diagnostic Performance:** Track conversion and leakage rates regularly using dashboards.
- **Enhance Patient Experience:** Reduce waiting times and provide reminders for pending tests.
- **Leverage Healthcare Analytics:** Use data-driven insights for continuous service improvement.

Limitations

- **Single Specialty Hospital:** findings may not be generalizable.
- **Two-Month Study Period** (March–April 2026).
- **Limited Scope:** only **Lab** and **USG** investigations were analysed.
- **Patient Leakage Reasons** were not directly assessed.
- **Lab Service Transition:** outsourced in March and **in-house in April**, potentially influencing conversion patterns.

Thank you