Wherever the art of medicine is loved, there is also a love of humanity.

Healthcare
Presentation

Presented By :
Ashish Chauhan

Welcome
everyone

Today, we're going to explore how to manage healthcare effectively, not just from a clinical perspective, but from a systems, administrative, and human centered viewpoint. Whether you're a healthcare provider, administrator, policymaker, or just curious, this presentation will give you a clear picture of key strategies and practices that lead to a strong healthcare system.

Understanding
the Healthcare Ecosystem

First, let's understand the ecosystem. Healthcare is more than hospitals and doctors. It includes public health agencies, insurance providers, pharmaceutical companies, technology systems, and most importantly patients. Effective management requires aligning all these parts to deliver care that is accessible, affordable, and high-quality.
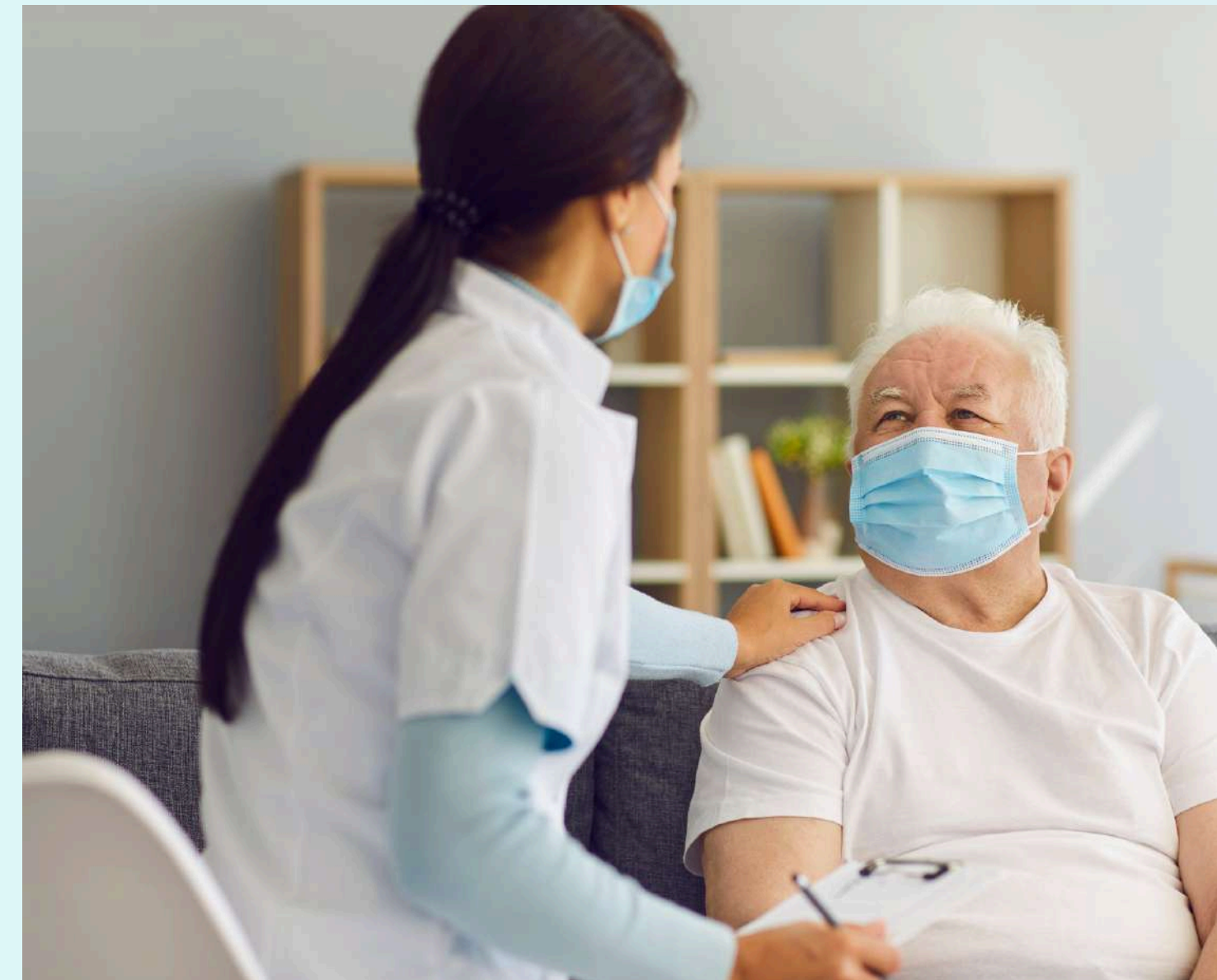
Business Problem
Healthcare Management

The healthcare industry faces several challenges that directly impact patient care, operational efficiency, and cost management .

Planning in Healthcare
Strategic

Today, we're going to explore how to manage healthcare effectively, not just from a clinical perspective, but from a systems, administrative, and human centered viewpoint. Whether you're a healthcare provider, administrator, policymaker, or just curious, this presentation will give you a clear picture of key strategies and practices that lead to a strong healthcare system.

Healthcare Dataset

About this file

- This dataset consists of 10,000 records, each representing a synthetic patient healthcare record.

- It includes various attributes, such as patient demographics, medical conditions, admission details, and more.

- The dataset is intended for educational and non-commercial use. It is entirely synthetic and does not contain real patient data.

▥	15 columns	
A	String	10
#	Integer	2
▣	DateTime	2
	Other	1

Top 10 Healthcare Case Studies for Data Analysis

Case Study 1: Common Conditions in Elderly Patients

Case Study 2: High-Billing Medical Conditions

Case Study 3: Top Performing Doctors

Case Study 4: Average Hospital Billing

Case Study 5: Emergency Care Leaders

Case Study 6: Insurance Billing Analysis

Case Study 7: Condition-Wise Healthcare Spending

Case Study 8: Diabetes Medication Trends

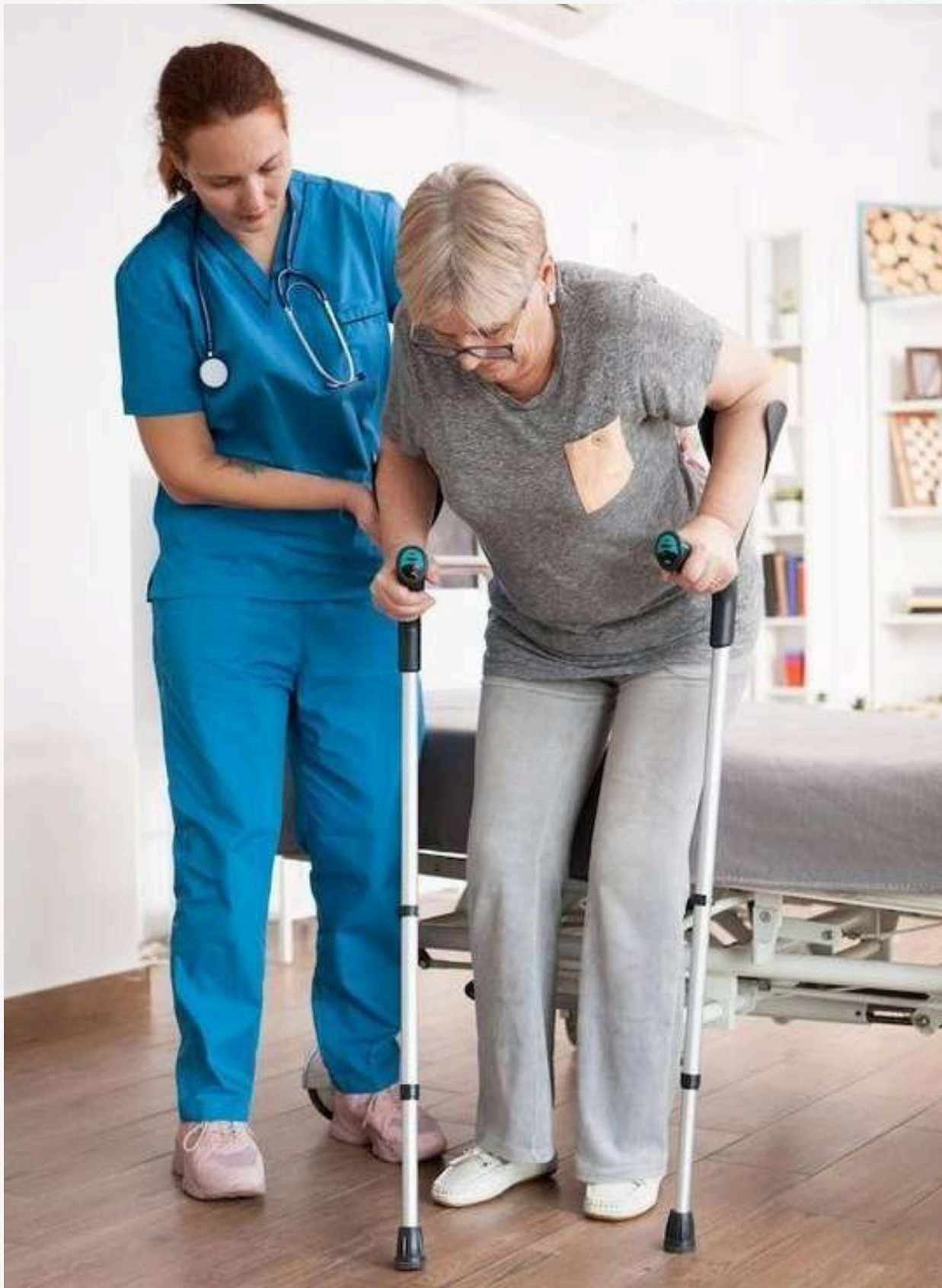Case Study 9: Medication Patterns by Demographics

Case Study 10: Hospital Stay Duration Analysis

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Case Study 1: Common Conditions in Elderly Patients

Objective: Identify the most prevalent health issues in patients aged 60 and above.

```sql
SELECT c.condition_name, COUNT(*) AS total_cases
FROM Admissions a
JOIN Patients p ON a.patient_id = p.patient_id
JOIN Conditions c ON a.condition_id = c.condition_id
WHERE p.age >= 60
GROUP BY c.condition_name
ORDER BY total_cases DESC
LIMIT 1;
```

Result Grid		Filter Rows
	Condition_name	ttl_case
▶	Obesity	3441

← Output

· **Impact: Enables targeted elderly care programs and prioritization of chronic disease management.**

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Case Study 2: High-Billing Medical Conditions

Objective: Determine which condition has the highest average billing.

```
SELECT c.condition_name, ROUND(AVG(a.billing_amount),
2) AS avg_billing
FROM Admissions a
JOIN Conditions c ON a.condition_id = c.condition_id
GROUP BY c.condition_name
ORDER BY avg_billing DESC
LIMIT 1;
```

Result Grid		Filter Rows:
	Condition_name	avg_billing
▶	Obesity	25805.97

← Output

· **Impact: Helps identify cost-heavy diseases and enables insurance companies to adjust coverage strategies.**

Healthcare Management

Case Study 3: Top Performing Doctors

Objective: Find doctors with the highest patient count.

```
SELECT d.name AS doctor_name, COUNT(*) AS
total_patients
FROM Admissions a
JOIN Doctors d ON a.doctor_id = d.doctor_id
GROUP BY d.name
ORDER BY total_patients DESC
LIMIT 5;
```

Result Grid	Filter Rows:	
	Doctor	ttl_patient_cnt
▶	Michael Smith	27
	Robert Smith	22
	John Smith	22
	James Smith	20
	Michael Johnson	20

← Output

· **Impact: Aids in recognizing efficient doctors and identifying staff for mentorship roles or promotions.**

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Case Study 4: Average Hospital Billing

Objective: Understand billing trends across hospitals.

```sql
SELECT h.name AS hospital_name,
ROUND(AVG(a.billing_amount), 2) AS avg_billing
FROM Admissions a
JOIN Hospitals h ON a.hospital_id = h.hospital_id
GROUP BY h.name
ORDER BY avg_billing DESC;
```

Result Grid	Filter Rows:
Hospital	avg_billing
Hernandez-Morton	52373.03
Walker-Garcia	52170.04
Ruiz-Anthony	52154.24
George-Gonzalez	52102.24
Rocha-Carter	52092.67
Briggs Walker Martinez, and	52024.73

← Output

· **Impact: Assists in benchmarking hospital costs and finding outliers for operational review.**

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Case Study 5: Emergency Care Leaders

Objective: Identify hospitals handling the most emergency cases

```
SELECT h.name AS hospital_name, COUNT(*) AS
emergency_admissions
FROM Admissions a
JOIN Hospitals h ON a.hospital_id = h.hospital_id
WHERE a.admission_type = 'Emergency'
GROUP BY h.name
ORDER BY emergency_admissions DESC
LIMIT 1;
```

Hospital	emergency_addmissions
LLC Smith	19
Smith Ltd	14
Wilson Group	12
Smith PLC	12
Inc Jones	12
Johnson PLC	12

Result Grid | Filter Rows:

Result 87 ×

← Output

· **Impact: Informs resource allocation and emergency infrastructure improvements.**

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Case Study 6: Insurance Billing Analysis

Objective: Compare average billing amounts across insurance providers.

SELECT ip.provider_name, ROUND(AVG(a.billing_amount),
2) AS avg_billing
FROM Admissions a
JOIN Insurance_Providers ip ON a.provider_id =
ip.provider_id
GROUP BY ip.provider_name
ORDER BY avg_billing DESC;

| Result Grid | 🔢 | 🔁 Filter Rows: | |
Insurance Provider	avg_billings		
▶ UnitedHealthcare	25389.17
Cigna	25525.77
Aetna	25553.29
Blue Cross	25613.01
Medicare	25615.99

Result 88 ✕

← Output

· **Impact: Useful for financial planning and negotiating better rates with insurers.**

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Case Study 7: Condition-Wise Healthcare Spending

Objective: Identify the most expensive condition in terms of total healthcare cost.

SELECT c.condition_name, ROUND(SUM(a.billing_amount),
2) AS total_spending
FROM Admissions a
JOIN Conditions c ON a.condition_id = c.condition_id
GROUP BY c.condition_name
ORDER BY total_spending DESC
LIMIT 1;

Result Grid	Filter Rows:	
Condition_name	expensive_condition
Diabetes	238539725.49
Obesity	238214920.69
Arthritis	237329120.23
Hypertension	235720650.31
Asthma	235459765.36
Cancer	232167861.31

Result 89

← Output

· **Impact: Supports focused cost-reduction strategies for high-impact conditions.**

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Case Study 8: Diabetes Medication Trends

Objective: List the top 3 medications prescribed to diabetic patients

```sql
SELECT a.medication, COUNT(*) AS count
FROM Admissions a
JOIN Conditions c ON a.condition_id = c.condition_id
WHERE c.condition_name = 'Diabetes'
GROUP BY a.medication
ORDER BY count DESC
LIMIT 3;
```

Result Grid		
Medication	count
Lipitor	1893
Penicillin	1881
Ibuprofen	1861

← Output

Impact: Aids pharmacy inventory management and clinical decision-making

Healthcare Management

Case Study 9: Medication Patterns by Demographics

Objective: Analyze medication trends by gender and age group.

```sql
SELECT p.gender, a.medication, COUNT(*) AS count
FROM Admissions a
JOIN Patients p ON a.patient_id = p.patient_id
GROUP BY p.gender, a.medication
ORDER BY p.gender, count DESC;
```

Output →

	Gender	Medication	coun
▶	Female	Aspirin	5622
	Female	Ibuprofen	5593
	Female	Lipitor	5551
	Female	Penicillin	5528
	Female	Paracetamol	5432
	Male	Paracetamol	5639

Result 91 ✕

```sql
SELECT
  CASE
    WHEN p.age < 30 THEN 'Under 30'
    WHEN p.age BETWEEN 30 AND 59 THEN '30-59'
    ELSE '60 and above'
  END AS age_group,
  a.medication,
  COUNT(*) AS count
FROM Admissions a
JOIN Patients p ON a.patient_id = p.patient_id
GROUP BY age_group, a.medication
ORDER BY age_group, count DESC;
```

Output →

	age_group	Medication	count
▶	30-59	Paracetamol	4996
	30-59	Lipitor	4961
	30-59	Penicillin	4922
	30-59	Ibuprofen	4908
	30-59	Aspirin	4872
	60 and above	Aspirin	4338

Result 92 ✕

Impact: Aids pharmacy inventory management and clinical decision-making

Summary
and Call to Action

This project demonstrates how MySQL-driven insights can improve patient care, streamline hospital operations, and manage healthcare costs effectively. By leveraging data, healthcare providers can make smarter, evidence-based decisions. It's time to turn these insights into action for a more efficient and patient-centered healthcare system.

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