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## **A Business-Oriented Approach to Improve Disease Surveillance in Saudi Arabia: A Review**

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- 3.King fahad hospital, Al-Jabar kidney centar
- 4.KING FAHAD HEALTH HOSPITAL(AJKC)
- 5.Erada complex and mental health in dammam
- 6.Maternity and Children Hospital Dammam
- 7.King Fahad Specialist Hospital-Dammam

## ABSTRACT

Disease surveillance is a cornerstone of public health, particularly in Saudi Arabia, where mass gatherings such as the Hajj pilgrimage pose significant risks for infectious disease transmission. Traditional surveillance systems often face challenges such as delayed reporting, fragmented data, and limited real-time analytics. This review explores how adopting a business-oriented approach—incorporating public-private partnerships (PPPs), digital transformation, cost-effective resource allocation, and stakeholder engagement—can enhance disease surveillance in Saudi Arabia. By leveraging artificial intelligence (AI), cloud computing, and collaborative frameworks, Saudi Arabia can build a more efficient, scalable, and responsive surveillance system aligned with its Vision 2030 goals. Key recommendations include strengthening data governance, investing in workforce training, and fostering international collaborations. This paper highlights successful models from other countries and proposes actionable strategies for Saudi Arabia to modernize its disease surveillance infrastructure.

### Key words

Disease surveillance, Public health, Infectious diseases, Saudi Arabia, Hajj pilgrimage

### Introduction

Effective disease surveillance is critical for early outbreak detection and public health response. In Saudi Arabia, factors such as rapid urbanization, a growing population, and the annual influx of millions of pilgrims necessitate a robust surveillance system (1). However, current systems face challenges, including data silos, slow reporting mechanisms, and insufficient real-time analysis(2). A business-oriented approach—applying principles from corporate efficiency, technology integration, and strategic partnerships—can address these gaps and improve surveillance outcomes.

## 1. Current Disease Surveillance in Saudi Arabia

The Saudi Public Health Authority (Weqaya) and the Electronic Health Surveillance System (EHSS) form the backbone of the country's disease monitoring (3). Despite advancements, limitations persist, including:

- Data fragmentation due to multiple reporting systems.
- Delayed outbreak detection from manual data processing.

- Limited predictive capabilities for emerging threats(4).

A business-driven model could optimize these processes by introducing automation, AI-driven analytics, and interoperable platforms.

### Business-Oriented Strategies for Enhanced Surveillance

#### 1.1. Public-Private Partnerships (PPPs)

Collaborations between government health agencies and private tech firms can accelerate innovation. For example:

- AI-powered predictive modeling (e.g., partnerships with IBM Watson Health or local startups).
- Real-time data sharing with private hospitals and pharmacies (5). Singapore's success in PPP-driven surveillance during COVID-19 serves as a benchmark (6).

#### 1.2. Digital Transformation & AI Integration

- Machine learning algorithms can analyze social media, travel data, and clinical records for early warning signals (7)
- Cloud-based platforms (e.g., AWS or local solutions) reduce infrastructure costs while improving scalability (8)

#### 1.3. Cost-Effective Resource Allocation

- Outsourcing non-core functions (e.g., data management to specialized firms).
- Dynamic resource allocation during high-risk periods (e.g., Hajj season).

#### 1.4. Stakeholder Engagement

- Involving private healthcare providers in reporting networks.
- Community-based surveillance through mobile health apps (9)

## 2. Challenges & Recommendations

Challenge	Proposed Solution
Data privacy concerns	Strengthen GDPR-like regulations (10)
Workforce resistance	Training programs on AI and big data analytics.
Interoperability issues	Adopt FHIR standards for health data exchange.

### Conclusion

A business-oriented approach can revolutionize Saudi Arabia's disease surveillance by integrating PPPs, AI, and efficient resource management. Aligning these strategies with Vision 2030 will enhance pandemic preparedness and public health resilience.

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