

THE ETHICAL AND LEGAL IMPERATIVE OF INFECTION PREVENTION AND CONTROL: A FRAMEWORK GROUNDED IN ISLAMIC BIOETHICS

Abba Amsami Elgujja*,
Fatimah Saad Alshahrani*,
Umar Alkali***

ABSTRACT

Infection Prevention and Control (IPC) is central to safeguarding health systems, but in Saudi Arabia it raises critical questions: is IPC an ethical and legal obligation, or merely a professional option? Drawing on the Kingdom's experiences with MERS-CoV, COVID-19, and the rapid integration of artificial intelligence (AI) under Vision 2030, this article interrogates IPC through the intersecting lenses of statutory law, Islamic bioethics, and global health governance. The analysis identifies three persistent challenges: (1) weak enforcement of the Personal Data Protection Law (PDPL) in health data use, (2) unresolved liability in AI-driven surveillance and decision-making, and (3) ethical tensions in isolation orders, digital contact tracing, and vaccination mandates. Islamic principles of *maslahah* (public interest), *adl* (justice), *amanah* (trust), and *darura* (necessity) are shown to provide a culturally coherent framework for balancing collective safety with individual rights. The article makes three key contributions. First, it demonstrates how Saudi statutory law operationalizes these ethical commitments but suffers from enforcement gaps. Second, it highlights the underexplored legal risks of AI adoption in IPC, particularly algorithmic bias and liability. Third, it proposes a governance model integrating ethical oversight committees, AI-specific regulation, and inclusive engagement of religious scholars, healthcare professionals,

* King Saud University, Riyadh, Saudi Arabia.

** Faculty of Law Al-Ansar University, Maiduguri

*** Faculty of Law, University of Maiduguri

Corresponding Author: Dr. Abba Amsami Elgujja; elgujja@yahoo.com;
966559470423

and the public. Actionable recommendations include strengthening PDPL enforcement through independent oversight, embedding Islamic bioethics into IPC training, and institutionalizing transparent, participatory governance. By reframing IPC as a binding obligation rather than optional, the article positions Saudi Arabia to advance ethically grounded, legally robust, and culturally resonant infection prevention aligned with Vision 2030.

Keywords: Infection, Prevention, Islamic Ethics, Saudi Arabia, Maṣlaḥah,

1. Introduction

Infection prevention today extends far beyond hand hygiene and surface disinfection. It has evolved into a complex, interdisciplinary field that intersects with law, ethics, health policy, digital innovation, and theology. In Saudi Arabia, these intersections are uniquely shaped by Islamic moral values, Shariah-informed legal principles, and the nation's strategic ambition to be a global leader in digital health innovation. Vision 2030 has accelerated this transformation, positioning healthcare modernization and technological integration as core national priorities.¹ Within this framework, Infection Prevention and Control (IPC) has become not only a clinical necessity but also a cornerstone of public trust, cultural legitimacy, and national resilience.

The Kingdom's experience with Middle East Respiratory Syndrome Coronavirus (MERS-CoV) since 2012 laid an early foundation for developing robust IPC strategies.² However, the COVID-19 pandemic brought unprecedented challenges, requiring rapid scale-up of surveillance, diagnostic, and containment measures. Responses included mass testing programs, temporary lockdowns, mandatory isolation orders, and the nationwide deployment of AI-enabled health applications such as *Tawakkalna* and *Tabaud*.³ While these innovations enhanced outbreak control capacity, they also raised important

¹ Saudi Vision 2030 (Kingdom of Saudi Arabia, 2016).

² Ziad A Memish, Stanley Perlman, Maria D Van Kerkhove and Alimuddin Zumla, 'Middle East Respiratory Syndrome' (2020) 395(10229) *The Lancet* 1063

³ Saudi Gazette (Riyadh, 5 September 2021) 'Tawakkalna App Users Hit 23 Million; Offers 100 Services' <<https://saudigazette.com.sa/article/610607>>.

questions about autonomy, privacy, proportionality, and procedural fairness, issues at the heart of both global bioethics⁴ and Islamic jurisprudence.⁵

Saudi Arabia's swift and decisive public health measures were internationally recognised as effective in curbing viral transmission, particularly in high-risk contexts like the Hajj pilgrimage.⁶ Yet, these measures also highlighted a persistent governance challenge: how to integrate emerging technologies into IPC without eroding public confidence. Surveillance systems and digital contact tracing tools, while powerful, must operate within ethical and legal guardrails that protect human dignity (*karamah*), safeguard confidentiality (*hifz al-sirr*), and ensure equitable treatment (*adl*) across diverse population groups.

Research Gap. Existing literature has largely examined IPC in Saudi Arabia through clinical and technical lenses, or as part of general pandemic response strategies. What remains underexplored is the intersection of Islamic bioethics, statutory law, and emerging technologies in shaping IPC legitimacy and enforcement. Specifically, critical questions remain regarding:

- the weak enforcement mechanisms of the Personal Data Protection Law (PDPL) (SDAIA, 2021);
- unresolved liability in AI-assisted infection control tools⁷; and

⁴ Tom L Beauchamp and James F Childress, *Principles of Biomedical Ethics* (8th edn, Oxford University Press 2019) 172.

⁵ Mohammed Ali Al-Bar and Hassan Chamsi-Pasha, *Contemporary Bioethics: Islamic Perspective* (Springer 2015) 88.

⁶ Jaffar A Al-Tawfiq and Ziad A Memish, 'COVID-19 in the Eastern Mediterranean Region and Saudi Arabia: Prevention and Therapeutic Strategies' (2020) 55 *International Journal of Antimicrobial Agents* 105968.

⁷ AA Elgujja and others, 'Ethical and Legal Implications of Artificial Intelligence in Infection Prevention and Control: A Saudi Arabian Perspective' (11 August 2025) OSF Preprints https://doi.org/10.31219/osf.io/2a8v5_v3

- the ethical dilemmas of isolation, surveillance, and vaccine mandates for healthcare workers^{8,9}.

Objective and Research Question: This manuscript addresses these gaps by analyzing IPC in Saudi Arabia as both a legal obligation and an ethical duty, rather than an optional clinical practice. It evaluates statutory frameworks such as the Public Health Law (Saudi Public Health Law, 2018) and PDPL, situates them within Islamic bioethical principles (*maslahah*, *adl*, *amanah*, *darura*), and interrogates unresolved dilemmas around enforcement, accountability, and inclusivity. The central research question guiding this analysis is:

- *To what extent is IPC in Saudi Arabia a binding obligation, legally, ethically, and culturally, and how can governance frameworks be strengthened to ensure legitimacy, accountability, and trust in the age of AI and digital health?*

2. Islamic Bioethics: A Cultural Compass for IPC

Effective Infection Prevention and Control (IPC) rests not only on technical guidelines but also on an ethical foundation that harmonises universal bioethical norms with Islamic moral theology. In the Saudi context, four principles, *maslahah* (public interest), *adl* (justice), *amānah* (trust), and *ḍarūra* (necessity), serve as guiding values.¹⁰ These principles do more than inspire moral reasoning; they inform statutory duties and regulatory enforcement, thereby bridging ethics and law.¹¹

2.1. Public Interest (*Maslahah*) and the Duty to Do No Harm (*La Darar*)

The concept of *maslahah* emphasises collective welfare, prioritising public health and safety when individual interests conflict with

⁸ JF Childress, RR Faden, RD Gaare and others, 'Public Health Ethics: Mapping the Terrain' (2002) 30(2) *Journal of Law, Medicine & Ethics* 170 <https://doi.org/10.1111/j.1748-720X.2002.tb00384.x>

⁹ MA Al Bar and H Chamsi-Pasha, *Contemporary Bioethics: Islamic Perspective* (Springer 2015) <https://doi.org/10.1007/978-3-319-18428-9>

¹⁰ Glossary note: *Maslahah* refers to public interest or welfare, a principle in Islamic jurisprudence prioritising communal benefit.

¹¹ Saudi Public Health Law, Royal Decree NO M/47 OF 2018, art 12.

communal survival.¹² Similarly, *‘adl* (justice) requires fairness in distributing burdens and benefits of IPC measures, such as equitable access to vaccines or transparent allocation of scarce resources.¹³ The principle of *amānah* frames healthcare workers as trustees of life and health, bound by both legal duty and divine accountability.¹⁴ Finally, *ḍarūra* (necessity) justifies extraordinary measures, such as quarantine or mandatory vaccination, when indispensable to preserving public health, provided such interventions remain proportionate and temporary.¹⁵

Maslahah prioritizes communal welfare, legitimizing temporary restrictions on individual freedoms when proportionate and transparent.¹⁶ In IPC practice, this principle justifies measures such as isolation, vaccination drives, and environmental disinfection. The doctrine of *la darar wa la dirar* (no harm and no reciprocation of harm) parallels biomedical non-maleficence.¹⁷ Saudi mask mandates and curfews during COVID-19 exemplified this principle in practice, aligning with *hifz al-nafs* (protection of life), one of the *maqasid al-shariah* (objectives of Islamic law).

Legal link: The Public Health Law¹⁸ authorizes such restrictive measures, embedding *maslahah* into statutory authority. By embedding these principles within Saudi statutory law and public health governance, IPC is elevated from a professional choice to a religiously and legally grounded obligation. This unique alignment strengthens compliance, fosters legitimacy, and integrates IPC into the ethical fabric of society.

¹² Mohammad Hashim Kamali, **Principles of Islamic Jurisprudence** (Islamic Texts Society 2003) 268.

¹³ Mashood A Baderin, **International Human Rights and Islamic Law** (OUP 2003) 94.

¹⁴ Gamal Serour, ‘Health and Medicine in the Islamic Tradition Based on the Book of Medicine (Kitab al-Tibb) of Sahih al-Bukhari’ (1995) 5 *Islamic Quarterly* 321

¹⁵ WHO, *International Health Regulations* (2005), art 6.

¹⁶ MA Al Bar and H Chamsi-Pasha, *Contemporary Bioethics: Islamic Perspective* (Springer 2015) <https://doi.org/10.1007/978-3-319-18428-9>

¹⁷ TL Beauchamp and JF Childress, *Principles of Biomedical Ethics* (8th edn, Oxford University Press 2019)

¹⁸ Saudi Public Health Law (Royal Decree No M/47, 2018) Ministry of Health, Saudi Arabia

2.2. Respecting Autonomy Amid Surveillance and Duty to Obtain Consent

Respect for autonomy is central to biomedical ethics, yet public health emergencies justify limited intrusions to prevent wider harm.¹⁹ In Arabia, *hurriyyah* (freedom) is acknowledged within communal responsibility. AI-powered surveillance tools and mandatory testing during COVID-19 protected the public but raised concerns about proportionality and informed consent.

Legal link: The Personal Data Protection Law²⁰ codifies consent as the default standard but provides limited exemptions for public health. This creates ongoing debates about whether surveillance tools like *Tawakkalna* meet ethical and legal standards for proportionality and necessity.

2.3. Justice (*Adl*) and Equitable Access to IPC Resources

Adl demands fairness in distributing both the burdens and benefits of IPC.²¹ This principle requires protection for vulnerable groups, healthcare workers, migrants, pilgrims, and the elderly, by ensuring equal access to vaccines, PPE, and safe care environments²².

Legal link: The Public Health Law and occupational safety regulations, supported by CBAHI standards,²³ operationalize *adl* by mandating institutional responsibility for safe environments. AI-

¹⁹ TL Beauchamp and JF Childress, *Principles of Biomedical Ethics* (8th edn, Oxford University Press 2019)

²⁰ Saudi Data and Artificial Intelligence Authority (SDAIA), *Personal Data Protection Law (PDPL)* (SDAIA 2021) <https://sdaia.gov.sa>

²¹ MY Rady and JL Verheijde, 'Islam and End-of-Life Organ Donation: Moral Obligations and Religious Duties' (2009) 2(1) *HAMA Journal of Islamic Medical Ethics* 21

²² M Ghaly, *Islam and Disability: Perspectives in Theology and Jurisprudence* (Routledge 2010)

²³ Central Board for Accreditation of Healthcare Institutions (CBAHI), *National Standards for Infection Prevention and Control in Healthcare Facilities* (CBAHI 2021) <https://portal.cbahi.gov.sa>

assisted IPC tools also require fairness safeguards, such as explainability and bias-prevention²⁴.

2.4. Trust (*Amanah*) and Confidential Data Stewardship

Amanah emphasizes trustworthy stewardship over health responsibilities, including sensitive patient data. In IPC, this means surveillance systems and AI tools must protect confidentiality and prevent misuse.²⁵

Legal link: The PDPL (SDAIA, 2021) reflects this duty by requiring proportional, purpose-specific, and secure use of health data. Embedding *amanah* in digital IPC systems enhances legitimacy, especially when oversight includes Shariah scholars to assure public confidence.²⁶

2.5. Necessity (*Darura*) and Emergency IPC Measures

Darura allows temporary suspension of certain rights when harm is imminent, alternatives are lacking, and interventions are time-bound.²⁷ During COVID-19, for example, fatwas from the Council of Senior Scholars permitted limited data-sharing for contact tracing, provided confidentiality and proportionality were maintained.²⁸

Legal link: This principle is reflected in the Public Health Law, which empowers the Ministry of Health to impose emergency restrictions under strict necessity and proportionality criteria.

These principles, *maslahah*, *adl*, *amanah*, and *darura*, form the ethical compass that legitimizes IPC measures in Saudi Arabia. Importantly,

²⁴ AA Elgujja and others, 'Ethical and Legal Implications of Artificial Intelligence in Infection Prevention and Control: A Saudi Arabian Perspective' (11 August 2025) OSF Preprints https://doi.org/10.31219/osf.io/2a8v5_v3

²⁵ G Alahmad, M Al-Jumah and K Dierickx, 'Confidentiality in Islamic Medical Ethics' (2012) 12 *Developing World Bioethics* 104 <https://doi.org/10.1111/j.1471-8847.2012.00327.x>

²⁶ AA Elgujja, A Arimoro, FS Alshahrani, AS Hersi, AA Elgujja and S Ezreqat, 'Mobile Apps for Health Surveillance: Balancing Public Health Needs with the Privacy of Personal Data' (2024) 8(11) *JIPD*, <https://systems.enpress-publisher.com/index.php/jipd/article/view/5703>

²⁷ M Ghaly, *Islam and Disability: Perspectives in Theology and Jurisprudence* (Routledge 2010).

²⁸ General Secretariat of the Council of Senior Scholars, *Fatwa on COVID-19 Data Sharing and Public Health Surveillance* (Council of Senior Scholars 2021, Riyadh).

they do not remain abstract values; they are operationalized in statutory instruments such as the Public Health Law, the PDPL, and occupational health regulations. The next section examines these legal foundations in detail, showing how ethical commitments are codified into binding obligations for both institutions and practitioners.

3. Legal Foundations: Rights, Duties, and Enforcement in IPC

The legal architecture governing Infection Prevention and Control (IPC) in Saudi Arabia reflects a convergence of public health imperatives, statutory duties, and religiously informed ethical principles. This framework is designed to protect both individual rights and collective safety, but persistent challenges remain in enforcement and accountability.

Infection Prevention and Control (IPC) in Saudi Arabia is governed by a combination of statutory law and Shariah-informed principles. While the Public Health Law, the Personal Data Protection Law (PDPL), and the Law of Practicing Health Professions provide the backbone of IPC regulation, their effectiveness depends on enforcement and clarity in addressing new technological challenges, especially artificial intelligence (AI).

Despite this robust framework, enforcement challenges persist. Limited transparency in reporting, inadequate accountability mechanisms, and gaps between statutory mandates and practice weaken compliance. Strengthening enforcement remains essential for ensuring IPC's ethical and legal credibility.

3.1. The Public Health Law (Royal Decree No. M/47, 2018)

The Public Health Law establishes the Ministry of Health's duty to prevent, monitor, and control communicable diseases, empowering it to enforce measures such as isolation, contact tracing, and mandatory vaccination.²⁹ The Law empowers the Ministry of Health (MOH) to implement measures such as mandatory notification, isolation, vaccination, and outbreak management. While this reflects *maslahah*

²⁹ Saudi Public Health Law, Royal Decree No M/47 OF 2018, arts 4–6.

(public interest), critics note its heavy reliance on executive discretion.³⁰

Safeguards such as due process and proportionality exist in principle, but mechanisms for independent review are weak. This risk turning protective measures into punitive ones, particularly for vulnerable populations such as migrant workers or pilgrims.³¹

Critical Gap: The law centralizes authority in MOH without robust oversight mechanisms, raising questions of proportionality and transparency in enforcement.

3.2. The Personal Data Protection Law (PDPL, 2021)

The Personal Data Protection Law (PDPL) introduces safeguards for health-related data, mandating lawful processing, minimisation, and confidentiality.³² It regulates health data collection, processing, and storage, including for IPC. While it enshrines consent, minimization, and proportionality, several weaknesses limit its impact:

- **Institutional independence:** The Saudi Data and Artificial Intelligence Authority (SDAIA), which enforces the PDPL, is both regulator and promoter of AI adoption. This dual role undermines impartial enforcement.
- **Judicial review:** The PDPL lacks clear avenues for individuals to challenge data misuse in courts, limiting redress and accountability.
- **Public health exemptions:** While exemptions for epidemic control are necessary, their vague scope risks overreach, especially in AI-enabled surveillance (*Tawakkalna, Tabaud*).

Comparative Insight: Under the EU's GDPR, exemptions for public health are narrowly defined and subject to proportionality tests, with

³⁰ Saudi Public Health Law (Royal Decree No M/47, 2018) Ministry of Health, Saudi Arabia

³¹ AA Elgujja and others, 'Ethical and Legal Implications of Artificial Intelligence in Infection Prevention and Control: A Saudi Arabian Perspective' (11 August 2025) OSF Preprints

³² Personal Data Protection Law, Royal Decree NO M/19 OF 2021, arts 5–8.

oversight by independent Data Protection Authorities. The EU AI Act³³ goes further, requiring risk-classification and transparency for high-risk AI systems. Saudi law, by contrast, lacks explicit mechanisms for periodic review, independent oversight, or algorithmic transparency.

3.3. Occupational Health and Workplace Safety Standards

Occupational safety is addressed by regulations obligating healthcare institutions to provide adequate infection control resources, personal protective equipment, and safe working environments for healthcare workers.³⁴

Occupational health regulations, reinforced by CBAHI standards,³⁵ mandate protective equipment, vaccinations, and reporting mechanisms for healthcare workers. The Law of Practicing Health Professions links IPC adherence to professional accountability, with penalties for negligence or misconduct. These laws codify *adl* (justice) by obligating institutions to protect staff and patients alike.

Critical Gap: While robust in principle, enforcement depends heavily on institutional compliance audits. Independent monitoring and whistleblower protections remain underdeveloped.

3.4. AI Liability in IPC: An Emerging Legal Void

As AI systems monitor compliance and predict outbreaks, liability for algorithmic errors is a pressing but unresolved issue in Saudi law. For instance, a false-positive case flagged by AI thermal scanning at Hajj could wrongly restrict a pilgrim's mobility. Who bears responsibility—the hospital, the AI vendor, or the regulator?

- **Strict liability model:** Places responsibility on the operator/vendor, regardless of fault. Ensures compensation but may discourage innovation.

³³ Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 on artificial intelligence (OJ L 1689, 12 July 2024) art 5; see also art 64 (governance provisions)

³⁴ Saudi Ministry of Health, 'Infection Prevention and Control Guidelines' (2021).

³⁵ Central Board for Accreditation of Healthcare Institutions (CBAHI), *National Standards for Infection Prevention and Control in Healthcare Facilities* (CBAHI 2021) <https://portal.cbahi.gov.sa>

- **Fault-based liability:** Requires proof of negligence or defective design, but may leave victims without redress.
- **Shared liability approaches:** As emerging in the EU AI Act, allocate responsibility across developers, deployers, and regulators, recognizing the distributed nature of AI systems.

Saudi Context: Currently, liability defaults to institutions under the Law of Practicing Health Professions, but no AI-specific provisions exist. Without clarity, hospitals may over-rely on vendor disclaimers, leaving patients with limited remedies.

Saudi Arabia's ratification of the International Health Regulations³⁶ reinforces its duty to maintain core IPC capacities and report outbreaks transparently. Yet global expectations for AI governance highlight gaps in Saudi frameworks, particularly around algorithmic accountability, cross-border data transfers, and independent oversight.

3.4 The Law of Practicing Health Professions

The Law of Practicing Health Professions codifies professional responsibilities, including adherence to IPC protocols as an ethical and legal duty.³⁷ The Law reinforces accountability by defining the professional duties and ethical obligations of healthcare providers. It establishes that practitioners must deliver care in accordance with recognized professional standards, adhere to infection prevention protocols, and maintain patient safety. Breaches of these obligations, whether through negligence, omission, or willful misconduct, can result in disciplinary actions, financial penalties, suspension, or revocation of the license to practice. This law thereby aligns clinical accountability with statutory enforcement, ensuring that professional misconduct in IPC is not only a matter of institutional policy but also a legal infraction subject to regulatory oversight.

Furthermore, Saudi Arabia's ratification of international agreements like the International Health Regulations³⁸ reinforces its legal

³⁶ World Health Organization (WHO), Ethics and Governance of Artificial Intelligence for Health: WHO Guidance (WHO 2021) <https://www.who.int/publications/i/item/9789240029200>

³⁷ Law Of Practicing Health Professions, Royal Decree NO M/59 OF 2005, art 9.

³⁸ World Health Organization (WHO), International Health Regulations (3rd edn, WHO 2005) <https://www.who.int/publications/i/item/9789241580496>

commitment to maintain core IPC capacities and report outbreaks responsibly, extending legal accountability beyond national borders.

3.5. Code of Ethics for Healthcare Practitioners

The Code of Ethics for Healthcare Practitioners acts as a guide for professional conduct. It outlines the duties of practitioners toward patients, the community, their colleagues, and themselves. The Code specifies that a practitioner's responsibilities include maintaining the highest standard of knowledge, competence, and integrity. It also highlights their role as community members and leaders, who must contribute to public health and the development of health policies. Code of Ethics for Healthcare Practitioners provides a vital foundation for this, outlining the professional duties that complement and reinforce statutory law.

In sum, while Saudi law provides a strong foundation for IPC, its effectiveness is constrained by **enforcement gaps in the PDPL, weak independent oversight of MOH powers, and the absence of clear AI liability provisions**. Comparative frameworks such as the EU's GDPR and AI Act demonstrate that accountability, transparency, and independent review are essential for balancing public health imperatives with individual rights. Strengthening Saudi IPC governance will therefore require not just legal provisions, but mechanisms for **enforcement, redress, and technological accountability**.

Saudi Arabia is also bound by international commitments, most notably the International Health Regulations (IHR 2005), which require member states to develop core capacities for surveillance, reporting, and emergency response.³⁹ These obligations are reinforced by national strategies under Vision 2030, linking IPC to health security, digital transformation, and global health governance.⁴⁰

To situate this analysis within the Saudi context, Table 1 presents a structured framework of local references, including statutory laws, national policies, professional ethics, religious rulings, academic contributions, and media sources, alongside their critical gaps and

³⁹ World Health Organization, International Health Regulations (2005), arts 5–6.

⁴⁰ Saudi Vision 2030 (Kingdom of Saudi Arabia, 2016).

limitations. This mapping illustrates both the strengths of Saudi Arabia’s infection prevention and control (IPC) governance and the areas where further legal, ethical, and institutional reforms are urgently required.

Table 1. Local Saudi References for Infection Prevention and Control (IPC) Governance and Critical Gaps

Category	Reference	Scope / Contribution	Gaps / Critical Issues
Statutory Law	<i>Saudi Public Health Law. (2018).</i>	Provides statutory authority for mandatory notification, isolation, vaccination, and outbreak management; operationalizes <i>maslahah</i> (public interest).	Centralizes power in MOH with weak independent oversight; lacks transparent appeal processes; risk of disproportionate enforcement.
	<i>Personal Data Protection Law (PDPL). (2021).</i>	Regulates health data use, consent, and proportionality in IPC; central to digital surveillance debates.	Enforcement undermined by SDAIA’s dual role (regulator/promoter of AI); vague epidemic exemptions; no clear judicial review or redress mechanisms.
National Policies & Strategies	<i>Saudi Vision 2030. (2016). Vision 2030 Kingdom of Saudi Arabia.</i>	Anchors healthcare modernization and AI-driven IPC within	High-level strategy without binding legal force; lacks detailed IPC

Category	Reference	Scope / Contribution	Gaps / Critical Issues
		broader national reforms.	enforcement mechanisms.
	<i>Saudi Ministry of Health. (2022). National Infection Prevention and Control Manual.</i>	National operational IPC framework; establishes institutional responsibilities for hospitals.	Compliance is uneven; monitoring relies on internal audits rather than independent inspections.
	<i>CBAHI. (2021). National Standards for IPC in Healthcare Facilities.</i>	Integrates IPC into accreditation and occupational health requirements; enforces institutional accountability.	Enforcement depends on hospital self-compliance; whistleblower protections and independent monitoring remain limited.
Religious & Ethical Guidance	<i>General Secretariat of the Council of Senior Scholars. (2021). Fatwa on COVID-19 Data Sharing and Public Health Surveillance.</i>	Provides Islamic bioethical legitimacy for emergency data-sharing, grounded in <i>darura</i> (necessity).	Limited to COVID-19 context; lacks ongoing guidance for future technologies or pandemics.

Category	Reference	Scope / Contribution	Gaps / Critical Issues
Professional Ethics	<i>Saudi Commission for Health Specialties (SCFHS). Code of Ethics for Healthcare Practitioners.</i>	Defines professional duties toward patients, colleagues, and society; embeds IPC as a moral and professional responsibility.	Broad in scope; lacks binding sanctions unless linked to licensing or disciplinary procedures by SCFHS.
Saudi Academic Scholarship	<i>Elgujja, A. A. et al (2024)⁴¹.</i>	Explores confidentiality and AI ethics within Saudi law and Islamic principles.	Conceptual; lacks judicial application or case law precedents.
	<i>Elgujja, A. A., & Alshahrani, F. (2025).⁴²</i>	Highlights AI liability gaps; integrates Islamic ethics with legal analysis.	No statutory framework yet for AI liability; proposals remain academic.
	<i>Alshahrani, F., Elgujja, A. A., et al. (2025).</i>	Local empirical evidence of IPC practice in a Saudi healthcare institution.	Single-site study; limited generalizability across the Kingdom.

⁴¹ AA Elgujja, A Arimoro, FS Alshahrani, AS Hersi, AA Elgujja and S Ezreqat, ‘Mobile Apps for Health Surveillance: Balancing Public Health Needs with the Privacy of Personal Data’ (2024) 8(11) Journal of [Insert Journal Name] 5703 <https://systems.enpress-publisher.com/index.php/jipd/article/view/5703>

⁴² AA Elgujja and others, ‘Ethical and Legal Implications of Artificial Intelligence in Infection Prevention and Control: A Saudi Arabian Perspective’ (11 August 2025) OSF Preprints https://doi.org/10.31219/osf.io/2a8v5_v3

Category	Reference	Scope / Contribution	Gaps / Critical Issues
	<i>Alquayt, A., Aljuhani, O., et al. (2025).</i> ⁴³	Case study on AI-enabled IPC during mass gatherings (Hajj).	Innovation-focused; lacks systematic legal or ethical evaluation of AI liability during Hajj.
Local Media & Public Engagement	<i>Saudi Gazette. (2021, Sept. 5). Tawakkalna App users hit 23 million; offered 100 services.</i>	Captures real-time adoption of digital health surveillance; illustrates public perceptions of convenience vs. privacy.	Journalistic source; not peer-reviewed; lacks longitudinal evidence of trust or consent sustainability.

As the table demonstrates, Saudi Arabia possesses a diverse array of ethical, legal, and policy instruments to support IPC; however, the persistence of enforcement gaps, limited judicial oversight, and emerging challenges around AI liability underscore the need for governance mechanisms that are not only legally robust but also ethically legitimate and socially trusted.

4. Ethical–Legal Dilemmas in IPC

While Saudi Arabia’s legal and ethical frameworks provide a robust foundation for Infection Prevention and Control (IPC), their implementation often generates dilemmas at the intersection of individual rights and collective safety. These tensions are particularly evident in emergency contexts, where rapid action is necessary but may conflict with personal autonomy and procedural fairness.

⁴³ A Alquayt, O Aljuhani, AF Alharthi and others, ‘AI-Driven Healthcare Innovations for Enhancing Clinical Services during Mass Gatherings (Hajj): Task Force Insights and Future Directions’ (2025) 25 BMC Health Services Research 876 <https://doi.org/10.1186/s12913-025-13045-5>

4.1. Mandatory Isolation Orders: Public Safety vs. Liberty

The Public Health Law⁴⁴ authorizes isolation and quarantine during outbreaks. Ethically, *maslahah* (public interest) and *darura* (necessity) justify temporary restrictions, but their application risks being perceived as punitive when poorly communicated. Vulnerable groups such as non-Arabic-speaking migrant workers often face disproportionate burdens, raising questions of *adl* (justice) and *rahma* (compassion).⁴⁵

Isolation orders are critical for containing outbreaks but raise questions about proportionality and due process.⁴⁶ While grounded in the principle of *darūra* (necessity), such measures must remain temporary, evidence-based, and subject to oversight.⁴⁷

Here, the Code of Ethics highlights that practitioners have a duty to balance patient welfare with public safety, ensuring that restrictive measures are applied fairly, communicated transparently, and not misused as punitive tools. Without procedural safeguards, isolation measures undermine trust and may reduce compliance.⁴⁸

Comparative insight: Singapore enforced strict quarantine during COVID-19 but coupled it with welfare support and clear legal appeals, enhancing compliance. Lessons show the importance of consultation (*shura*) and transparent appeals processes.

4.2. Tawakkalna Contact Tracing App

Saudi Arabia's *Tawakkalna* and *Tabaud* applications were central to pandemic response, combining contact tracing with access control. By

⁴⁴ *Saudi Public Health Law* (Royal Decree No M/47, 2018) Ministry of Health, Saudi Arabia.

⁴⁵ MA Al Bar and H Chamsi-Pasha, *Contemporary Bioethics: Islamic Perspective* (Springer 2015) <https://doi.org/10.1007/978-3-319-18428-9>.

⁴⁶ Saudi Public Health Law, Royal Decree No M/47 OF 2018, art 15.

⁴⁷ Mohammad Hashim Kamali, **Principles of Islamic Jurisprudence** (Islamic Texts Society 2003) 268.

⁴⁸ AA Elgujja and others, 'Ethical and Legal Implications of Artificial Intelligence in Infection Prevention and Control: A Saudi Arabian Perspective' (11 August 2025) OSF Preprints https://doi.org/10.31219/osf.io/2a8v5_v3

2021, *Tawakkalna* had over 23 million users and offered 100 Contact tracing apps like *Tawakkalna* enhance public health surveillance but implicate privacy rights protected under the PDPL.⁵⁰ Balancing utility with confidentiality remains a key challenge. While uptake was high, surveys revealed public concerns about data permanence and lack of opt-out options.⁵¹

The Code of Ethics reinforces the duty of confidentiality and proportionality, requiring healthcare professionals to safeguard patient data, uphold transparency, and prevent misuse. Although the PDPL codifies these standards, weak enforcement and broad exemptions create gaps in accountability. Aligning professional ethics with statutory obligations is crucial to preserving *amanah* (trust) in digital IPC systems.

Comparative insight: Singapore's TraceTogether app⁵² faced backlash when repurposed for law enforcement, prompting explicit legal amendments to limit data use. The EU, under GDPR, requires that health surveillance apps demonstrate proportionality and strict purpose limitation. Saudi Arabia's PDPL contains similar principles but lacks enforcement independence, leaving gaps in accountability.

Policy tension: The dilemma is not whether to use digital tools, but how to balance their efficiency in outbreak control with safeguards that ensure proportionality, revocability, and independent oversight.

4.3. Healthcare Worker Vaccination Mandates

Vaccination mandates represent another dilemma. While they align with *maslahah* (public interest) and global bioethical principles of

⁴⁹ Saudi Gazette, 'Tawakkalna App Users Hit 23 Million; Offers 100 Services, and Available in 75 Countries' (5 September 2021) <https://saudigazette.com.sa/article/610607>

⁵⁰ Personal Data Protection Law, Royal Decree No M/19 OF 2021, art 5(2).

⁵¹ H Alsulami, A Alharbi and F Alghamdi, 'Public Perceptions of COVID-19 Contact-Tracing Applications in Saudi Arabia: A Cross-Sectional Survey' (2022) 10(4) *JMIR mHealth and uHealth* e35045 <https://doi.org/10.2196/35045>

⁵² Government Technology Agency of Singapore and Ministry of Health, TraceTogether (Government of Singapore, 2020) <https://www.tracetgether.gov.sg> accessed 19 August 2025.

beneficence,⁵³ they risk infringing upon autonomy if not accompanied by transparent communication and accessible exemptions.⁵⁴ Vaccination mandates for healthcare workers are ethically justified by *maslahah* (protecting patients) and *adl* (fair distribution of risks and benefits). However, rigid enforcement without adequate consultation or exemptions risks undermining trust and morale.

The Code of Ethics explicitly requires practitioners to prioritize patient safety while respecting professional integrity. It supports conscientious objection in non-emergency situations provided it does not harm patients and alternative practitioners are available. Islamic bioethics further emphasizes *niyyah* (intentionality), *shura* (consultation), and *ta'lim* (education) as prerequisites for legitimacy.⁵⁵ Thus, mandates must be implemented with procedural fairness and dialogue, not coercion, to sustain long-term compliance.

Comparative insight: In the United States, healthcare worker mandates were contested in courts, often upheld on grounds of public interest but criticized for insufficient accommodations. Saudi Arabia avoided open legal contestation, but a more transparent exemption and appeal process would have improved legitimacy.

4.4. Addressing Dilemmas Through Context-Sensitive Governance

These dilemmas highlight that Saudi Arabia's challenge is not simply adopting measures but embedding them within frameworks that are procedurally fair, ethically grounded, and culturally resonant. The Code of Ethics for Healthcare Practitioners is an essential bridge here: it operationalizes Islamic bioethical values within professional conduct while complementing statutory law.

Actionable implications include:

- Establishing ethics committees to oversee proportionality of isolation and surveillance measures.

⁵³ Tom L Beauchamp and James F Childress, **Principles of Biomedical Ethics** (8th edn, OUP 2019) 172.

⁵⁴ WHO, 'Ethics and COVID-19: Resource Allocation and Priority-Setting' (2020).

⁵⁵ M Ghaly, *Islam and Disability: Perspectives in Theology and Jurisprudence* (Routledge 2010).

- Mandating transparent disclosure of AI and data use in digital IPC tools like *Tawakkalna*.
- Embedding *Code of Ethics* provisions in enforcement frameworks, ensuring practitioners are held accountable through licensing and disciplinary processes.
- Providing fair exemption and appeal pathways for vaccination mandates, guided by *shura* and procedural fairness.

Governance responses have attempted to mitigate these dilemmas by emphasising proportionality, accountability, and ethical oversight. Nevertheless, ambiguities in enforcement and limited avenues for legal redress can be improved to reduce ethical tension, underscoring the need for clearer statutory safeguards.

Comparative Insights

Saudi Arabia's distinctiveness lies in grounding these policies in Islamic bioethics. Unlike Western jurisdictions that emphasize individual autonomy, Saudi frameworks derive legitimacy from collective solidarity, *amanah* (trust), and alignment with Shariah principles. Leveraging these values, while also adopting comparative best practices in oversight and transparency, offers a balanced path forward.

These dilemmas underscore the difficulty of balancing public health imperatives with ethical and legal safeguards in practice. They highlight tensions between safety and liberty, innovation and accountability, and centralized authority and public trust. At the same time, they reveal the boundaries of the present analysis, which remains constrained by conceptual, empirical, and regulatory gaps—issues that are addressed in the following limitations section.

While comparisons with the EU's GDPR and AI Act highlight global benchmarks of transparency, accountability, and independent oversight, regional developments also provide useful contrasts. The UAE's Law⁵⁶ on Personal Data Protection established an independent Data Office with supervisory authority, moving closer to GDPR-style

⁵⁶ United Arab Emirates, Federal Decree-Law No 45 of 2021 on the Protection of Personal Data, art 5.

oversight. Similarly, Qatar's Law⁵⁷ on the Protection of Personal Data created clear consent requirements and limited exemptions for public interest, albeit with weaker enforcement mechanisms than the EU. Compared to these frameworks, Saudi Arabia's Personal Data Protection Law⁵⁸ reflects a strong normative foundation but lags in enforcement independence, as the Saudi Data and Artificial Intelligence Authority (SDAIA) both regulates and promotes AI adoption. By situating Saudi law against both global and regional comparators, it becomes clear that while the Kingdom is advancing a distinctive Islamic bioethical and Vision 2030-aligned approach, it must also address enforcement gaps to keep pace with regional peers and to establish global credibility.

Limitations

This study is subject to several limitations. First, its analysis is primarily conceptual and doctrinal, relying on legal interpretation and ethical reasoning rather than empirical fieldwork. Second, the rapidly evolving nature of artificial intelligence and infection control technologies means that regulatory responses are still emerging, limiting the ability to assess their long-term effectiveness. Third, the scarcity of Saudi-specific case law and jurisprudence constrains the depth of legal analysis, requiring reliance on comparative references. Fourth, while the Code of Ethics for Healthcare Practitioners provides an important normative anchor linking professional responsibility to statutory duties, its practical enforceability through licensing boards, disciplinary processes, or judicial rulings remains underexplored. Finally, limited availability of public trust surveys or uptake data restricts empirical validation of proposed frameworks.

These constraints do not diminish the relevance of the study but rather situate its findings within a rapidly evolving field, where legal interpretations, technological applications, and ethical debates are still in flux. Recognizing these limitations not only defines the scope of this study but also highlights the urgent need for targeted recommendations and practical strategies to ensure that Infection Prevention and Control

⁵⁷ State Of Qatar, Law No 13 of 2016 on the Protection of Personal Data, art 4.

⁵⁸ Saudi Data and Artificial Intelligence Authority (SDAIA), Personal Data Protection Law (PDPL) (SDAIA 2021) <https://sdaia.gov.sa>

in Saudi Arabia is governed in a manner that is both legally enforceable and ethically legitimate.

5. Recommendations and Policy–Practice Implications

Addressing the ethical and legal dilemmas in Infection Prevention and Control (IPC) requires reforms that integrate statutory enforcement, Islamic bioethics, and participatory governance. The following recommendations aim to strengthen compliance, enhance legitimacy, and align IPC with Saudi Arabia’s Vision 2030.

First, enforcement of the Personal Data Protection Law (PDPL) should be strengthened through independent oversight bodies with authority to audit, sanction, and guide compliance.⁵⁹ This will enhance public trust in digital health tools and safeguard privacy rights.

Second, Islamic bioethics should be embedded into IPC training programs for healthcare workers.⁶⁰ This would reinforce concepts such as *amānah* (trust) and *maslahah* (public interest), ensuring that clinical practice reflects both legal and moral duties.

Third, governance should be made more transparent and participatory. Establishing ethics oversight committees that include healthcare professionals, religious scholars, and patient representatives would help balance efficiency with legitimacy.⁶¹

Finally, IPC must be reframed as a binding legal and ethical obligation rather than an optional professional practice. By institutionalising IPC within statutory mandates, Saudi Arabia can strengthen accountability, enhance health security, and consolidate its leadership in ethically grounded digital health innovation.⁶²

The preceding analysis demonstrates that Infection Prevention and Control (IPC) in Saudi Arabia cannot be treated as a matter of professional discretion but as a binding ethical, legal, and cultural obligation. Translating this normative conclusion into actionable

⁵⁹ Personal Data Protection Law, Royal Decree No M/19 OF 2021, arts 9–11.

⁶⁰ Mohammed Ali Al-Bar and Hassan Chamsi-Pasha, *Contemporary Bioethics: Islamic Perspective* (Springer 2015) 112.

⁶¹ WHO, ‘Ethics and Governance of Artificial Intelligence for Health’ (WHO 2021).

⁶² Saudi Public Health Law, Royal Decree No M/47 OF 2018, art 4.

outcomes requires a clear road-map that bridges policy development at the national level with practical implementation in healthcare institutions.

To that end, the following framework consolidates the study’s recommendations into five interlinked pillars. Each pillar identifies the policy direction necessary for systemic reform and the practical implications for healthcare regulators, institutions, and practitioners. This integrated approach ensures that IPC is not only mandated in law but also embedded in practice in ways that are ethically legitimate, enforceable, and culturally resonant. Table 2 illustrates the five pillars and recommendations for policy and practices.

Taken together, these recommendations underscore a decisive shift: IPC in Saudi Arabia must be understood not as a matter of professional discretion but as a binding obligation—an argument that the following conclusion brings into sharp focus.

Table 2. Recommendations and Policy–Practice Implications

Pillar	Policy Action	Practice Implications
1. Strengthen PDPL Enforcement & Oversight	<ul style="list-style-type: none"> - Establish independent supervisory authority beyond SDAIA. - Introduce judicial review and transparent appeal pathways. - Mandate regular audits of AI-enabled IPC tools. 	<ul style="list-style-type: none"> - Regulators ensure impartial data governance. - Healthcare institutions conduct compliance audits. - Patients gain redress mechanisms for misuse of health data.
2. Clarify AI Liability in IPC	<ul style="list-style-type: none"> - Define liability frameworks (strict, fault-based, or shared). - Require transparency and explainability in AI- 	<ul style="list-style-type: none"> - Hospitals and vendors share responsibility for errors. - Clinicians receive clear guidance on AI use. - Patients are protected from

	assisted decision-making.	harm caused by algorithmic bias.
3. Institutionalize Ethical Oversight Committees	- Establish committees at hospital and national levels with clinicians, ethicists, Shariah scholars, legal experts, and patient representatives.	- Oversight ensures proportionality in isolation, surveillance, and mandates. - Multidisciplinary review strengthens legitimacy and trust.
4. Embed Ethics & Cultural Legitimacy into IPC Training	- Integrate Islamic bioethics, confidentiality, and proportionality into IPC curricula. - Use real-world Saudi case studies in medical and nursing education.	- Healthcare workers understand both <i>how</i> and <i>why</i> IPC protocols matter. - Professional accountability linked to codes of conduct and licensing.
5. Enhance Public Engagement & Trust-Building	- Collaborate with religious leaders to contextualize IPC as moral duty. - Deliver multilingual, transparent campaigns explaining policies. - Ensure vulnerable populations (migrants, disabled) are included.	- Communities see IPC as shared responsibility, not top-down imposition. - Improved compliance through trust rather than coercion.

6. Conclusion

Infection Prevention and Control (IPC) in Saudi Arabia is not merely a clinical necessity but an ethical and legal imperative rooted in Islamic bioethics, statutory law, and international commitments. The principles of *maslahah* (public interest), *‘adl* (justice), *amānah* (trust), and *ḍarūra*

(necessity) provide a normative compass that grounds IPC within the Kingdom's cultural and religious context.⁶³

Saudi laws, including the Public Health Law, the Personal Data Protection Law, and the Law of Practicing Health Professions, codify IPC as a statutory obligation, aligning it with both Shariah principles and global public health standards.⁶⁴ Yet, enforcement gaps and ambiguities in accountability remain pressing challenges.

Ethical–legal dilemmas—whether around isolation, digital surveillance, or vaccination—illustrate the need for proportionality, transparency, and fairness.⁶⁵ By strengthening enforcement, embedding Islamic bioethics in professional training, and institutionalising participatory governance, Saudi Arabia can consolidate IPC as a binding ethical–legal obligation. This not only advances the Kingdom's Vision 2030 goals but also positions it as a leader in integrating bioethics, law, and innovation for resilient and culturally grounded public health governance.⁶⁶

This study set out to ask whether Infection Prevention and Control (IPC) in Saudi Arabia is an obligation or an option. The findings make clear that IPC is an obligation: a binding duty under Saudi law, an ethical requirement grounded in Islamic principles of *maslahah* (public interest), *adl* (justice), and *amanah* (trust), and a cultural expectation tied to the protection of community welfare.

The analysis of Saudi regulatory frameworks, particularly the Personal Data Protection Law and the governance of AI in healthcare, reveals both progress and gaps. Enforcement challenges, questions of liability, and tensions between innovation and accountability illustrate why IPC cannot be left to professional discretion. Comparative insights from jurisdictions such as the EU reinforce the need for Saudi Arabia to

⁶³ Mohammad Hashim Kamali, *Principles of Islamic Jurisprudence*, (Islamic Texts Society 2003) 268.

⁶⁴ Saudi Public Health Law, Royal Decree No M/47 OF 2018, art 4; Personal Data Protection Law, Royal Decree No M/19 OF 2021, art 5; Law Of Practicing Health Professions, Royal Decree No M/59 OF 2005, art 9.

⁶⁵ WHO, 'Ethics and COVID-19: Resource Allocation and Priority-Setting' (2020).

⁶⁶ Saudi Vision 2030 (Kingdom of Saudi Arabia, 2016).

strengthen legal clarity while maintaining its ethical and cultural distinctiveness.

By consolidating these insights into a five-pillar framework, this study provides a road map that links national policy to institutional practice. The implication is clear: IPC must be treated as a coherent system of governance that is enforceable, legitimate, and trusted. Future research should build on this foundation by examining empirical data on public trust, implementation outcomes, and the evolving role of AI. In doing so, Saudi Arabia can advance a model of IPC that is not only obligatory but exemplary.

Recommendations for Further Research

Future research should focus on:

- Empirical studies of public trust in AI-enabled IPC tools;
- Comparative analyses of Islamic and non-Islamic legal frameworks for IPC;
- Evaluation of ethics committees and religious scholar engagement in IPC policy-making; and
- Longitudinal impact assessments of AI surveillance in healthcare settings.

Such inquiry will not only refine Saudi IPC governance but also position the Kingdom as a regional and global leader in integrating ethics, law, and technology for public health.