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BIOETHICS & TECHNOLOGY IN MUSLIMLAW: POTENTIAL AND PORTENTS

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Abstract

Technological advances in medicine from assisted reproduction to CRISPR gene editing, xenotransplantation and artificial intelligence (AI) in healthcare raise complex ethical, legal and theological questions for Muslim communities and jurists.Islamic bioethics draws on scriptural sources, the *usul al-fiqh*i.e. the methodology of jurisprudence and *maqasid al-shariah* i.e. the objectives of Islamic law, to deliberate permissibility, harm/benefit and social policy. This paper maps the conceptual tools used by Muslim jurists to engage new technologies, analyses debates AROUND six contemporary technologies such as assisted reproductive technologies, genetic editing, organ transplantation and death determination, xenotransplantation, biobanks or data privacy and AI in healthcare, and proposes a pragmatic framework for policy and *fatwa* making that balances scientific evidence, *maqasid* reasoning and procedural safeguards. The paper concludes with recommendations for institutionalising plural deliberation, improving clinical guidance and protecting vulnerable groups while enabling beneficial research.

Introduction

Modern biomedical and information technologies pose unprecedented possibilities and risks. For Muslim communities, the encounter between modern biomedicine and Islamic legal-ethical thought is mediated by centuries-old methodology but must respond to novel modalities that the classical jurists could not foresee. Islamic bioethics therefore operates at the intersection of textual exegesis, juristic analogy i.e. *qiyas* and principle-based reasoning i.e. *maqasid*and maxims, together with attention to public interest i.e. *maslahah*and prevention of harm i.e. *darar*. This paper asks:

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1. What conceptual resources does Muslim law bring to technological bioethics?
2. How have these resources been deployed in recent debates about key technologies?
3. What procedural and substantive recommendations can reconcile religious legitimacy with scientific safety and human rights?

The analysis draws on leading scholarship in Islamic bioethics and recent case literature on gene editing, transplantation and AI.[2]

Conceptual and Methodological Foundations

- **Sources and Methods**

  Islamic juristic reasoning on biomedical issues the classical hierarchy of sources i.e. the Qur'an, *Sunnah, Ijma* (consensus), *Qiyas* (analogy)and the secondary tools such as*istihsan*(juristic preference), *maslahah*(public interest) and *maqasid al-shari'ah*(objectives of the law). Contemporary scholars emphasise that bioethical reasoning must be interdisciplinary: medical facts and risk assessments are inputs to legal rulings, not mere afterthoughts. AbdulazizSachedina's influential exposition situates biomedical ethics within this jurisprudential frame and stresses the role of the *maqasid*i.e. protection of life, intellect, lineage, faith and property in adjudicating biomedical dilemmas.[3]

- ***Maqasid*and *Qawa'idFiqhiyya*(Maxims)**

  *Maqasid*reasoning provides orderly priorities when new technologies implicate several values. For example, interventions that clearly protect life i.e. *hifz al-nafs* such as therapeutically indicated somatic gene therapy often attract stronger endorsement that enhancements that risk social harm or undermine lineage i.e. *nasab*.

  Jurisprudential maxims such as "necessities permit the prohibited" *(al darurattubih al-mahzurat)* and "harm must be removed" *(al-dararyuzal)* provide procedural cover for permitting otherwise contentious practices under strict conditions. Contemporary

[2]Abdulaziz A Sachedina, Islamic Biomedical Ethics: Principles and Application (Oxford University Press 2009) ch 1 (on the jurisprudential method and *maqasid*)

[3]*Ibid.;* See also NK Swazo, review of Sachedina, noting the centrality of *maqasid*in contemporary Islamic bioethical reasoning

applications of *maqasid*to gene editing and transplantation are prominent in recent literature.[4]

Key Issues and Debates

1. Beginning of Life: ART, IVF and Embryo Status

Assisted reproductive technologies (ART), in vitro fertilization (IVF), gamete donation, surrogacy, pre-implantation genetic diagnosis (PGD) raise questions about the moral status of embryos, lineage, marital integrity and parental rights. Classical Islamic texts do not directly address IVF; jurists have extrapolated using *maqasid*and legal maxims. A majority of mainstream *Sunni* jurists permit IVF when it involves gametes of a married couple and does not introduce third-party genetic material, on grounds of preserving marriage, lineage and seeking treatment for infertility. Third-party donation and surrogacy are more contested because they introduce *nasab*ambiguities and resemble *zina*-adjacent relational disruptions. Juristic debates therefore, hinge on whether *nasab* preservation and social clarity outweigh the therapeutic interests of infertile couples.[5]

Sachedina discussed assisted reproduction under chapter 4 "Beginning of Life" and notes that interventions preserving marital reproduction and preventing harm can be accommodated within Islamic legal norms, provided that lineage and family structure are protected.[6]

2. Genetic Editing (CRISPR)-Somatic v. Germline

Gene editing is a paradigmatic test for *maqasid*reasoning. The crucial distinction in Islamic debates is between somatic gene therapy, affecting only the treated individual and germline editing i.e. the heritable alterations. Many Muslim scholars and bioethicists accept somatic interventions aimed at curing or preventing serious disease as consistent with *maqasid's*protection of life and intellect, subject to safety and effectiveness. Germline editing, however, is approached with greater circumspection. The risk of unforeseeable harms to future generations, potential violation of divine creation and distributive justice concerns prompt caution. Some recent analysis conclude that therapeutic germline interventions might be permissible only if

[4]See Oxford Research Encyclopedia, 'Islamic Bioethics: Research Ethics' (19th March, 2025)(discussing *maqasid*and public interest)
[5]*Supra* note 1, ch 4
[6]*Ibid.*

a) Safety is established
b) There is grave necessity
c) Robust governance and consent frameworks exist.

These positions combine *maqasid*reasoning with empirical risk-assessment.[7]

Reviews of the He Jiankui case analyse Islamic legal responses and generally frame unauthorised germline manipulation as impermissible because of safety and procedural failure, while leaving open conditional permissibility for therapeutic germline correction under strict constraints.[8]

3. **Organ Transplantation and Definition of Death**

   Organ donation and transplantation involve questions of bodily sanctity, tearing (*harj*) and death determination (brain death vs. circulatory death). Early juristic reticence reflected concerns about bodily mutilation and the sanctity of the corpse, but the imperative to save life which is a central *maqasid*, has driven growing acceptance of organ donation in many Muslim legal councils, with attention to consent, dignity and accurate death criteria. Disagreement persists about the permissibility of declaring brain death as true death, some jurists accept neurological criteria if supported by reliable medical consensus, while others insist on cardiopulmonary criteria. Contemporary juristic practice increasingly ties permissibility to accepted clinical definitions and transparent procedures to avoid error and misuse.[9]

4. **Xenotransplantation and Synthetic Biology**

   Xenotransplantation i.e. animal-to-human organ transfer and synthetic biology raise new theological and animal-welfare questions. Concerns include impure animal matter in human bodies, species boundary transgression, zoonotic risks and dignity. Juristic responses have tended to be conditional, if xenotransplantation is the only life-saving option and impurity can be managed, e.g. via purification rulings, it may be permitted under *darurah*and *maslahah*reasoning, again contingent on safety evidence and public health safeguards. Ethical assessment must integrate veterinary science, public health and *fiqh*.[10]

[7] https://pmc.ncbi.nlm.nih.gov/articles/PMC8298734/?utm_source=chatgpt.com
[8] *Ibid.*
[9] https://pmc.ncbi.nlm.nih.gov/articles/PMC4047256/?utm_source=chatgpt.com
[10] https://www.ectrx.org/detail/archive/2022/20/10/0/885/0?utm_source=chatgpt.com

5. **Bio-banks, Genomic Data and Privacy**

   Large-scale genomic research and bio-banking create questions of consent whether broad or specific, secondary uses, data sovereignty and group harms like stigmatization. Islamic ethics' concern for dignity (*karamah*) and protection of persons supports strong informed consent, transparent governance and protections against exploitation. Public interest (*maslahah*) can support population-level research for epidemic preparedness and disease prevention, but only under governance that respects individual autonomy, confidentiality and equitable benefit-sharing. Jurists and institutional review bodies in Muslim-majority countries are increasingly developing guidance on bio-bank governance, but practice is heterogeneous.[11]

6. **Artificial Intelligence in Healthcare**

   AI systems, diagnostic algorithms, clinical decision support, robotic surgery, predictive risk scoring, challenge accountability, the physician-patient relationship and the dignity of care. Islamic bioethical analysis reframes responsibility across three nodes:

   - God
   - The moral agent
   - Technological intermediaries

   The literature emphasises that AI should remain a tool serving therapeutic ends; ultimate moral agency and responsibility cannot be delegated away. Issues include explainability bias, particularly where datasets under-represent Muslim populations, informed consent for algorithmic decisions and liability when AI errors cause harm. Jurists may permit AI deployment that demonstrably improves health outcomes while requiring safeguards that preserve human oversight, patient dignity and distributive justice.[12]

Fatwas, Councils and Institutional Deliberation

One characteristic of contemporary Islamic bioethics is the proliferation of institutional *fatqa*bodies and interdisciplinary advisory councils. National and regional councils for

[11] https://oxfordre.com/religion/display/10.1093/acrefore/9780199340378.001.0001/acrefore-9780199340378-e-1271?d=%2F10.1093%2Facrefore%2F9780199340378.001.0001%2Facrefore-9780199340378-e-1271&p=emailAWp5euXNL7fC6&utm_source=chatgpt.com

[12] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5041464&utm_source=chatgpt.com

example, Al-Azhar, national *fatwa* councils, academic medical ethics boards, often convene medical experts and jurists to issue context-sensitive rulings. Where centralised *fatwas* do not exist, medical practitioners may rely on scholarly opinions, professional codes and institutional ethics committees. The variability of rulings reflects differing jurisprudential methodologies, textualist vs *maqasidist*, legal schools and socio-political contexts. Institutionalism of deliberation with formal epidemiological and ethical inputs and improves legitimacy and public trust.[13]

Procedural and Substantive Principles for Responsible Deliberation

Based on the preceding analysis, the following set of procedural and substantive principles is proposed for Muslim law deliberation on technology:

1. **Evidence-based requirement:** Juristic permissibility should be contingent on reliable, peer-reviewed medical evidence regarding safety and efficacy. *Maqasid*demands that benefits be real and harms minimised.[14]
2. **Distinguish therapy from enhancement:** Therapeutic interventions aimed at curing or preventing serious disease carry stronger *maqasid*justification than non-therapeutic enhancements that risk social harms or inequity.[15]
3. **Prioritize *nasab*and social clarity:** In reproductive technologies, policies should protect lineage and social clarity to avoid long-term familial harms unless compelling therapeutic need exists.[16]
4. **Procedural transparency and consent:** Informed consent, independent clinical review and publicly available procedural standards like death determination protocols, donor screening, AI validation essential for legitimacy.[17]
5. **Precaution plus conditional permissibility:** Where science is nascent for example, germline editing, xenitransplantation, adopt a precautionary principle: temporary

[13]https://oxfordre.com/religion/display/10.1093/acrefore/9780199340378.001.0001/acrefore-9780199340378-e-1159?d=%2F10.1093%2Facrefore%2F9780199340378.001.0001%2Facrefore-9780199340378-e-1159&p=emailAES.1xNZhu6gk&utm_source=chatgpt.com

[14]Alsomali (n 6) and Isa NM, 'Islamic Perspectives on CRISPR/Cas9' (2019) (on evidence-based conditional permissibility)

[15]See research on distinctions between therapy and enhancement in Islamic literature (e.g., Shahridzuan MSA, 2024)

[16]JA Ali (n 4)(on *nasab*and reproductive technologies)

[17]Rady &Verheijde (n 8) and OxfordRE (n 10) (on procedural transparency and death determination)

moratoria, controlled research frameworks and international collaboration are appropriate until safety is demonstrated.[18]

6. **Equity and access:** Technologies should not exacerbate inequality. Regulatory frameworks should aim for fair access and guard against commodification of life or lineage.[19]
7. **Interdisciplinary institutionalisation:** Ethics committees should include jurists, clinicians, ethicists and community representatives to ensure plural legitimacy and scientific competence. Institutional bodies must document reasoning and publish guidance.[20]

Recommendations for Policy and Practice

1. **Establish National Interdisciplinary Bioethics Councils:**
   These councils should publish clear, accessible guidance on emergent technologies, including procedural checklists for clinical trials, consent forms, conflict-of-interest declarations and death determination protocols. Their deliberations should ne public to build trust.[21]
2. **Adopt Conditional Regulatory Pathways:**
   For high-risk technologies like germline editing, xenotransplantation, implement phased-research approvals: laboratory evidence, pre-clinical safety, independent ethics review, limited clinical trials and post-market surveillance. Religious permissibility should be tied to demonstrated safety and proportionality.[22]
3. **Embed *Maqasid*Reasoning into IRB Protocols:**
   Institutional Review Boards (IRBs) and Research Ethics Committees in Muslim contexts should include a *maqasid*checklist to ensure that proposed research coheres with the protection of life, lineage and dignity. This will facilitate consistent, transparent rulings.[23]
4. **Transparency and Public Education:**

[18]For policy guidance on precautionary approaches to germline editing, see contemporary analyses (e.g., Progress.org piece 2024; Alsomali 2021)
[19]See literature on distributive justice and gene editing (Abuhammad et al. 2021)
[20]OxfordRE (n 12) (on IRB composition and institutional deliberation)
[21]Institutional recommendation based on contemporary scholarship on national bioethics councils (OxfordRE; Sachedina)
[22]See analysis suggesting phased clinical pathways for germline and xenotransplantation research (Progress.org; Isa NM 2019)
[23]Oxford ResearchEncyclopedia (n 3) (on embedding *maqasid*in IRB review)

Educational campaigns explaining technologies, religious reasoning and safeguards reduce mistrust and illicit "DIY" interventions. *Fatwas* should be accompanied by accessible explanations of empirical conditions that inform permissibility.

5. **International Collaboration and Data Sharing:**
   Scientific risk assessment benefits from broad datasets; Muslim juristic institutions should engage in international fora to harmonise safety standards and avoid parochial decisions driven by ignorance of scientific realities.[24]

Conclusion

Bioethics and technology within Muslim law illustrate the adaptive capacities of Islamic jurisprudence when paired with scientific evidence and institutionalised deliberation. The *maqasid*framework, together with juristic maxims and procedural safeguards, provides robust, principled route for assessing new technologies. The balance is delicate: fidelity to textual and moral commitments must be combined with rigorous empirical assessment and procedural transparency to protect life, dignity and social justice. The future of Islamic bioethics depends on interdisciplinary institutions that can adjudicate fast moving technologies without sacrificing scholarly legitimacy or public safety.

[24]https://archive.org/details/islamicbiomedica0000sach?utm_source=chatgpt.com