

Exploring the Ethical Challenges of Large Language Models in Emergency Medicine: A Comparative International Review

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Study Objectives

- To explore the ethical challenges of LLM deployment in **Emergency Medicine**.
- To analyse global regulatory and adoption variations.
- To propose directions for future research and development.

Why Focus on Emergency Medicine?

- **High stakes:** Decisions in Emergency Medicine are often critical.
- **Time sensitivity:** Rapid responses require reliable tools.
- Increasing reliance on LLMs for triage and documentation.

Connection to our Earlier Work

Conferences > 2023 IEEE International Confe... ?

Explainable NLP Model for Predicting Patient Admissions at Emergency Department Using Triage Notes

Publisher: IEEE

[Cite This](#)

[PDF](#)

Conferences > 2020 IEEE International Confe... ?

Deep Learning to Predict Hospitalization at Triage: Integration of Structured Data and Unstructured Text

Publisher: IEEE

[Cite This](#)

[PDF](#)

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Learning Embeddings from Free-text Triage Notes using Pretrained Transformer Models

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Methodology: Review Questions

1. What are the primary ethical considerations associated with the use of LLMs in Emergency Medicine?
2. What legal and regulatory challenges are identified in the literature regarding LLM deployment in emergency care?
3. How do different countries approach the adoption and regulation of LLMs in Emergency Medicine, and what factors influence these approaches?

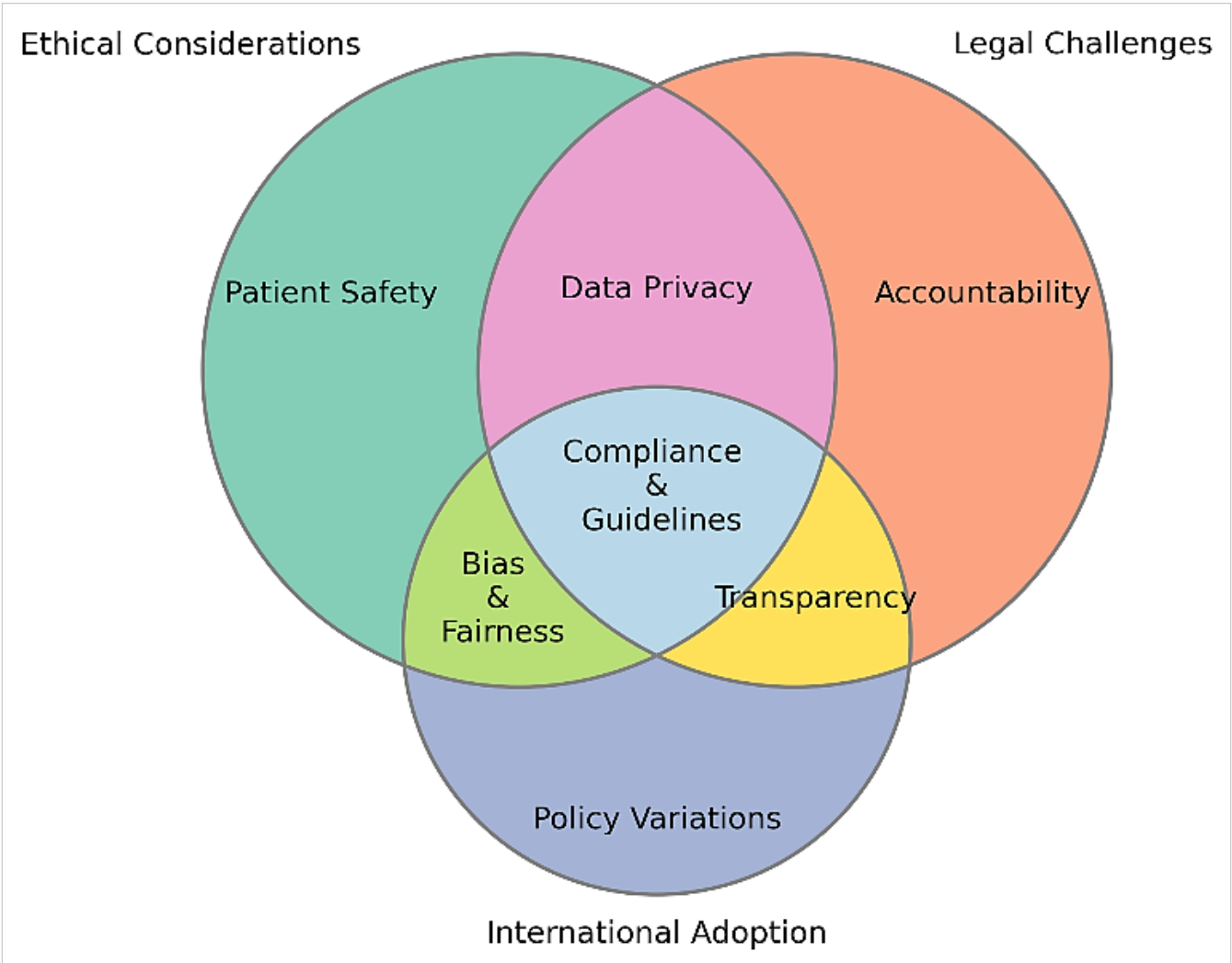
Methodology: Search Strategy

- **Database:** PubMed.
- **Keywords:** "Large Language Models," "Emergency Medicine," "Ethical Challenges," "Regulatory Variations."
- **Timeframe:** 2020–2024.
- **Included:** Studies addressing LLMs in Emergency Medicine, focusing on ethics, legality, or international policy.
- **Excluded:** Traditional NLP methods, non-relevant healthcare domains.

Thematic Analysis

- **Key themes:**
 - Ethical considerations,
 - legal challenges,
 - and international adoption.

Key Themes – Overview



Key Themes – Ethical Considerations

- 1. **Patient Safety:**
 - Risks from biased or incorrect outputs (hallucinations).
 - Potential to reinforce healthcare disparities.
- 2. **Data Privacy:**
 - Handling sensitive patient data.
 - Compliance with data protection regulations like GDPR.
- 3. **Transparency:**
 - Explainability (XAI) is critical to build trust among clinicians.
 - Black-box nature of LLMs poses challenges in high-stakes decisions.
- 4. **Accountability:**
 - Ethical responsibility for decisions made using LLM outputs.
 - Integration of clinician feedback loops to strengthen reliability.

Key Themes – Legal and Regulatory Challenges

1. Accountability:

- Who is liable for errors made by LLMs in clinical decisions?

2. Data Compliance:

- Adherence to regulations like GDPR and HIPAA for patient data protection.

3. Regulatory Gaps:

- Lack of harmonised standards for LLM deployment in health.

Key Themes – International Adoption and Policy Variations

1. Global Disparities

- High-resource regions lead in adoption due to advanced infrastructure.
- Limited deployment in low-resource settings exacerbates healthcare inequities.

2. Policy Variations

- Regulatory frameworks differ significantly across countries.
- Challenges in creating harmonised international standards.

3. Opportunities

- Cross-border collaboration to address disparities and create universal guidelines.

Future Directions

- 1. **Context-Specific Models**
 - Develop models tailored for Emergency Medicine scenarios.
- 2. **Explainability (XAI)**
 - Focus on transparent outputs to build clinician trust.
- 3. **Guardrails and Feedback**
 - Implement frameworks to mitigate risks (e.g., hallucinations, vulnerabilities).
 - Embed clinician feedback loops for continuous learning.
- 4. **Global Collaboration**
 - Harmonise regulatory frameworks to ensure equitable AI adoption.

Thank You!

Please feel free to contact me for any opportunity for collaboration:

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