Position Statement

Artificial Intelligence

This Position Statement was developed as an educational tool based on the opinion of the authors. It is not a product of a systematic review. Readers are encouraged to consider the information presented and reach their own conclusions.

The American Academy of Orthopaedic Surgeons (AAOS) recognizes the immense potential of artificial intelligence (AI) to transform the health care landscape. However, we must also remain vigilant about the potential risks AI poses, such as medical misinformation, algorithmic bias, lack of trust and transparency, escalation in costs, and technological dependence.

The AAOS endorses a set of guiding principles that are emerging in academic and regulatory domains to ensure safe, secure, ethical, and trustworthy development and adoption of AI algorithms and applications. ***AI should:***

1. ***Ensure health care algorithms and their use are transparent and explainable***
   There must be practical steps to include stringent documentation and disclosure of AI governance standards, model development, data privacy and security controls, clearly defined processes for release to consumers, and pro-active monitoring in the health care marketplace.
2. ***Promote health and delivery of equitable healthcare during all phases of the health care algorithm life cycle***
   The AAOS supports frameworks that are designed to mitigate risks and promote equity throughout various decision points along the adoption of the 'AI algorithm life cycle'. It is imperative that such frameworks and solutions are utilized to generate accurate prognostic and diagnostic health information for all, especially people from underserved and racial / ethnic minority communities, alongside those with complex clinical and / or psychosocial needs.
3. ***Authentically engage patients and communities during all phases of the health care algorithms life cycle, and earn trustworthiness***
   Developers of AI algorithms must authentically engage with multiple interdisciplinary stakeholders, throughout all phases of the AI life cycle to ensure alignment with patient values, needs, and ethical standards.
4. ***Explicitly define algorithmic fairness and potential trade-offs for AI solutions***
   Adherence to FAIR principles (i.e., being findable, accessible, interoperable, and reusable) will ultimately improve the performance and usability of A.I models, and build trust among policymakers, clinicians, and the public that the data used in AI models are responsibly sourced, developed robustly, and used fairly.

5. ***Establish accountability for equitable health care delivery from health care algorithms***
   Establishing accountability around the use of AI algorithms in clinical practice will require commitment to the following measures:
   - *Adherence to federal mandates*
   - *Equity in AI development for accurate prognostic and diagnostic health information*
   - *Clinical responsibility*
   - *Consumer AI applications*
   - *Professional oversight*
   - *Patient on clinical education*
   - *Regulatory enforcement*
6. **Ensure the intimate involvement of clinicians in the development of AI tools**
   AI developers must engage orthopaedic surgeons and other clinicians and include documented clinical input at every stage of development, from needs assessment and problem definition, through iterative development and testing, to validation, implementation, and continuous monitoring.

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