

# Position Statement regarding Artificial Intelligence

**15 December 2022**

## Background

Recent years have seen a rapid development in clinically-orientated Artificial Intelligence (AI) including Machine Learning (ML) applications, and other emerging technologies. These innovations represent a potentially powerful set of tools with which to enhance the delivery of healthcare in the acute setting, and a number of different applications have emerged, including:

- 1) Prognostic indicators identifying the probability of a patient developing a particular disease state and/or those at risk of deterioration.
- 2) Image analysis, e.g. identifying potential abnormalities in medical imaging or for prognostication
- 3) Diagnostic tests, able to identify patients with a specific pathology based on healthcare data
- 4) Optimising treatment regimens
- 5) Service and workflow optimisation, e.g. prediction of patient attendance and admission rates

An Emergency Department (ED) visit is often a critical point in patients' acute healthcare journey, with significant data generated from triage, history taking and diagnostic tests linked to the electronic health record. As such the ED is both a key potential end-user and a vitally important test-bed for the development, evaluation and implementation of Digital Health Technologies (DHTs). In particular, the high volume and undifferentiated nature of the ED patient cohort leads to an exceptionally high use of diagnostic tests, as Health Care Professionals seek to resolve clinical uncertainty at a point of significant risk. Clinical decision support may reduce variation, improve patient outcomes, streamline processes and reduce clinician cognitive overload. Key areas of focus for these technologies should include improved patient experience, enhanced care giver experience and reduced healthcare costs.

The forthcoming NICE Evidence Standards Framework (ESF)<sup>1</sup> articulates a set of standards for the evaluation and implementation of such digital applications in the context of a clinical setting and a number of AI-orientated reporting guidelines have been developed to help clinicians appraise the evidence supporting these emerging technologies.<sup>2,3</sup>



The Royal College of Emergency Medicine recognises the significant opportunity that these technologies represent for improving the quality of healthcare in the Emergency Department, but this appeal must be balanced against the need for careful prior evaluation of their strengths and limitations and the appreciation of the necessary safeguards to protect patients and clinicians prior to implementation. Key to successful implementation of AI-based technology is having an Emergency Medicine workforce cognisant to the evaluation and assessment of these systems<sup>4</sup> as well as their day-to-day use and interpretation.<sup>5,6</sup>

## RCEM Key Recommendations

When assessing new AI technology consideration should be given to:

### **1. Applicability of evidence and data to UK Emergency Departments:**

- **How was the algorithm created?**

- A clear description should be available of datasets and methods used to develop the algorithm
- To ensure that it is sufficiently generalisable and valid, the dataset should be representative of the casemix of a standard UK Emergency Department, including consideration of relevant Populations at Risk (PaR) AND/OR demonstrate technical performance prior to deployment
- The origin, demographics and ethnicity of the populations used to test and check (validate) the algorithm are of considerable importance and must be open to external scrutiny

- **Evidence and Evaluation**

- Evaluation should have been undertaken in a UK Emergency Department setting or reflect UK Emergency Medicine workflow
- A clear evaluation of technical diagnostic performance, potential impact on ED workflow (e.g. value stream mapping), and health economic impact should be available
- Demonstration of performance using a local dataset and appropriate algorithm settings (if applicable)
- Clinical safety should have been evaluated where appropriate reflecting current ISO and international standards



- Service-specific (i.e. evaluations should relate to the ED not other clinical settings/radiology alone)
- User-specific (i.e. evidence of use by intended range of practitioners and seniority in UK EDs)
- Population Specific (e.g. performance at typical condition prevalence of UK ED), taking into account relevant Populations at Risk, demographics and measures of health and deprivation

## **2. Implementation for clinical use:**

- Integration with clinical workflows
  - Preliminary analysis of likely impact on workflow e.g. value stream mapping
  - Demonstration of user interfaces and human factors with particular focus on usability
  - Integration with current technical systems (e.g. PACS, EPR) with consideration to optimising clinical engagement and workflow
  - Ensure fits with local data strategy/governance and existing IT systems
- Governance
  - Compliance with local and NHS-wide Information Governance/ Data Security and Integrity
  - Establish Standard Operating Procedures for interpretation of and action on AI findings, including discrepancies
- Clinical Safety
  - The Emergency Clinician must be able to use clinical judgement to override the algorithm output if needed, i.e. the AI findings must be 'explainable' in order to support clinical decision making
  - A training package for clinicians should be available which outlines the risk of potential bias based on AI output
- Regulatory approval



- UK Conformity-Assessed (UKCA), (previously 'CE-marked') for intended use case
- Value case / procurement
  - Health Economic Analysis in UK ED Setting
  - Consideration of cost implications of limitations in AI performance
- Adoption
  - Emergency Department clinicians are best placed to advise on the development and adoption of AI in emergency departments. Early consultation and collaborative working with EDs should be undertaken to ensure adequate testing and evaluation in the ED setting prior to implementation
  - Consider seeking support from existing centres of AI expertise, along with local academic institutions and networks with data science/ AI workstreams
- Post-implementation
  - Commitment to ongoing post-implementation surveillance, reporting and update
  - Define standards and identify platforms to enable interchange between and integration of different AI-based products
  - Governance defining secondary use of clinical data



## References

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