# Implementation of Clinical Artificial Intelligence in Healthcare in Denmark — AI Decision-Support in Emergency Department, Odense University Hospital (OUH)

Case Study

Hybrid Healthcare

A project at Odense University Hospital in Denmark aims to implement AI-based decision-support tools in the Emergency Department to optimise patient triage, resource allocation and diagnostics. The objective is to embed AI into clinical workflow, improving staff efficiency and patient outcomes.

**Description of Technology or System**

- Technology: AI/ML algorithms for decision-support in emergency care: triage support, risk-prediction of deterioration, resource optimisation. The project identifies where AI can improve workflows for staff and patients.
- Use & Objectives: Integrate AI into ED triage and diagnostics, reduce delays, support staff decision-making, improve patient flow and match resources to need.

## Implementation Process

- Steps Taken: Review and identification of candidate clinical pathways for AI support; develop prototype algorithms; integrate with hospital IT systems; pilot in ED setting; monitor staff and patient impact.
- Stakeholders Involved: ED clinicians and nurses, AI/data scientists, hospital IT management, data governance/regulatory staff, patients.
- Timeframe: Ongoing; initial phases include pilot sub-projects within one hospital. (Exact timeframe not specified in public summary.)

## Impact and Results

- Quantitative Results: Detailed outcomes are not fully published; project is ongoing. The strategic context shows potential for resource efficiency and improved diagnostics.
- Qualitative Outcomes: The project highlights the importance of configuring AI to clinical context, addressing explainability, staff interaction and workflow integration.

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| **Country** | Denmark |
| **Institution/Organisation** | Odense University Hospital (OUH) in partnership with Danish national health-technology initiatives and AI research groups. |
| **Type of setting** | Hospital Emergency Department and acute care setting, focusing on AI tools integrated into clinical operations. |
| **National Context** | Denmark's national AI strategy gives priority to healthcare applications; strong national registry infrastructure, digital health ecosystem and public-private collaboration make it a fertile context for AI implementation. |

## Success Factors

- National digital infrastructure; strong collaboration between AI research and clinical departments; a clear focus on workflow-integrated AI rather than stand-alone tool.

## Challenges and Barriers

- Clinical workflow disruption; staff acceptance and training; explainability of AI outputs; alignment with regulatory/data governance and ethical frameworks.

## Resources and Funding

- Supported by Danish national health-technology strategy and hospital digital-innovation funding.
- Required resources: AI/data science teams, hospital IT integration, clinician engagement, pilot evaluation.

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## Key Lessons Learned

- Embedding AI into clinical practice requires more than technical performance; workflow, staff adaptation and context-specific design matter.
- Explainability and transparency for clinicians increase uptake.
- Strong data governance and integration with hospital systems are essential.
- Early piloting and evaluation of staff perceptions and organisational readiness help success.

## Recommendations

- Begin AI implementation in well-defined clinical pathways (e.g., ED triage) with clear metrics.
- Engage clinical staff in co-design of the AI tool and workflow.
- Provide training and feedback loops for clinicians using AI outputs.
- Prioritise data ethics, governance, transparency and contextual adaptation.

## Integration in Education Settings

- Use this case in modules on AI in healthcare, digital transformation in hospitals, and implementation science for new technologies.
- Useful for teaching about socio-technical, regulatory and ethical dimensions of AI in clinical practice.

## Specific Environment and Limitations

- Denmark's advanced digital infrastructure may be more favourable than many other contexts; replication may need adaptation.
- The project is ongoing, so long-term outcome data may not yet be available.
- AI tools bring challenges of trust, explainability and workforce change that are universal but may be under-estimated.

## Supporting Materials

- Website: Implementation of Clinical Artificial Intelligence in Healthcare in Denmark.
- Jensen VV, et al. Ethics in Danish healthcare AI policy: A document analysis. (2025)

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