

THE ECOSYSTEM OF EVIDENCE

Navigating the future
of the ecosystem of evidence

Artificial intelligence and digital transformation
in research and healthcare

11th EBHC International Conference
Taormina, 21st – 24th October 2026

#EBHC2026

Predictors of Clinical Deterioration in Hospitalized Adults

A Systematic Scoping Review

Min-Shan Chung[1,2] (presenting Author) | Mei-Ling Yeh[3]

1 Ph.D. Candidate, National Taipei University of Nursing and Health Sciences, Taiwan

2 R.N., Supervisor, Dept. of Quality Management, Chang Gung Medical Foundation, Taiwan

3 Distinguished Professor, National Taipei University of Nursing and Health Sciences, Taiwan

30th 1996-2026 GIMBE EVIDENCE FOR HEALTH

International Society for Evidence-Based Health Care

Background and Aims

01 CLINICAL NEED

Early identification of clinical deterioration is essential for patient safety.

02 CURRENT STATE

Predictive models are increasingly used, yet the optimal combination of predictors remains uncertain.

03 PREDICTOR GAP

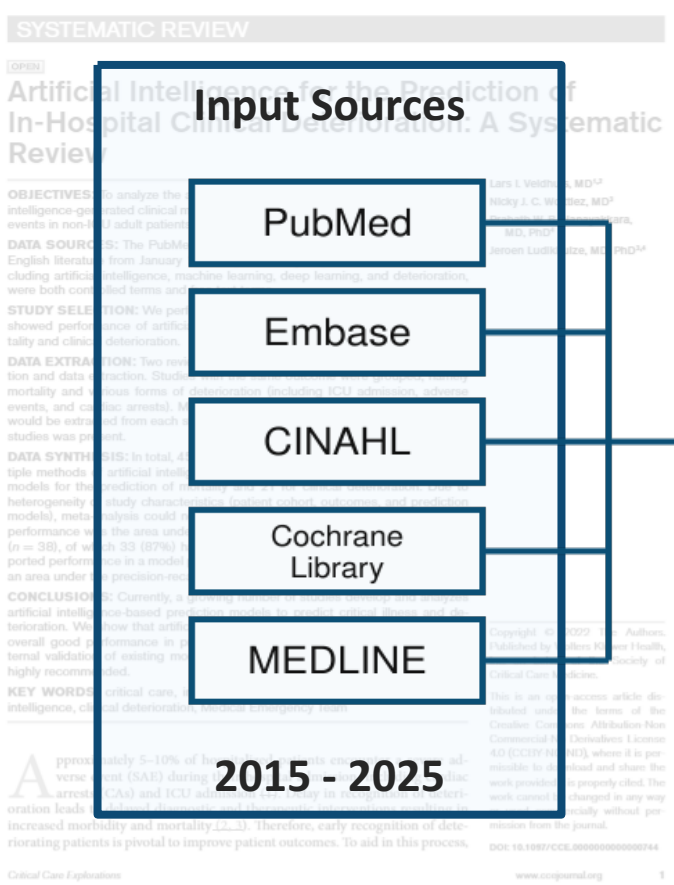
Models rely heavily on intermittent physiological data, potentially limiting the precision of digital health interventions.

AIMS

Map predictor types used in models for hospitalized adults and identify coverage gaps to inform next-generation, AI-driven clinical decision support systems.

Methods

Information Pipeline



Input Sources

- PubMed
- Embase
- CINAHL
- Cochrane Library
- MEDLINE

2015 - 2025

Rayyan Assisted Screening

Reporting Guideline: PRISMA-ScR

Target Outcomes:

Models predicting acute deterioration in general wards (ICU transfer, Cardiac Arrest, Mortality)

- Physiological
- Laboratory
- Contextual
- Nursing-Derived

Results

MODEL PERFORMANCE AND PREDICTOR COVERAGE

87%

of AI and machine-learning models reported AUROC above 0.80

85%

of models relied on intermittent vital signs

< 15%

used high-frequency continuous waveform data

Strong discrimination coexisted with narrow, largely static predictor coverage.

Nursing concern and frailty measures were largely absent.

Results

TEMPORAL AND IMPLEMENTATION GAPS

Only 2 of 103 studies incorporated longitudinal data



8.7% of models achieved full EHR integration

Manual data entry remained common, limiting clinical utility.

Conclusion and Limitations

CURRENT MODELS

- Static physiological snapshots
- Intermittent vital signs
- Manual data entry

FUTURE MODELS

- Dynamic longitudinal data
- **Continuous monitoring and nursing-derived information**
- Integration into clinical workflows

LIMITATIONS

01 Definitions of clinical deterioration varied across studies.

02 Publication bias may favor high-performing models.

Future predictive models should integrate dynamic, multidimensional data from continuous monitoring and nursing-derived information.

DIGITAL BUSINESS CARD

SCAN TO CONNECT

Min-Shan Chung, R.N.

Future models should integrate dynamic, multidimensional data from continuous monitoring and nursing-derived information.

Thank you · Grazie

長庚醫療財團法人 Chang Gung Medical Foundation

國立臺北護理健康大學 National Taipei University of Nursing and Health Sciences