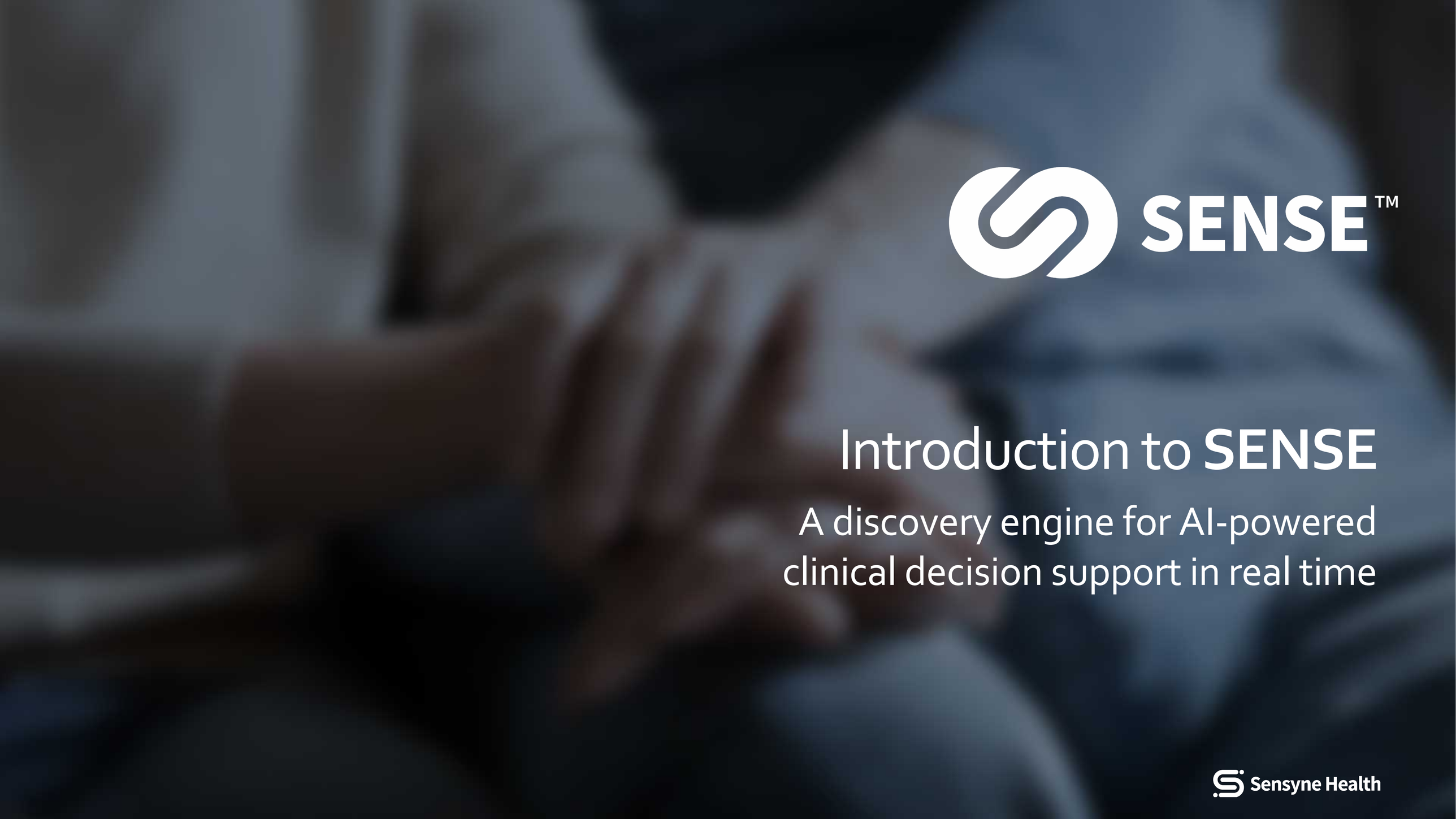


SENSE™

Introduction to **SENSE**

A discovery engine for AI-powered clinical decision support in real time

Sensyne Health

SENSE aims to unlock a more proactive or ‘anticipatory’ model of care

Personalised AI-powered insights that help clinicians take preventative action earlier

Real-time decision support to prevent avoidable hospitalisation and acute deterioration

Predictive models to help managers to make better operational decisions

Spot problems or pinch-points in time to take action and to reallocate resources

Technologies designed with and for the NHS

AI designed working closely with NHS clinicians, targeted on front-line problems and supported by clinical evidence

Actionable and ‘explainable’ insights

Predictions that have impact, the basis of which are clearly and accurately explained

Insights drawn from analysis of large sets of deidentified real-world NHS data

Securely held in a Microsoft Azure cloud environment strictly according to the best standards of privacy and information governance

SENSE can accelerate the use of AI in healthcare

Challenges

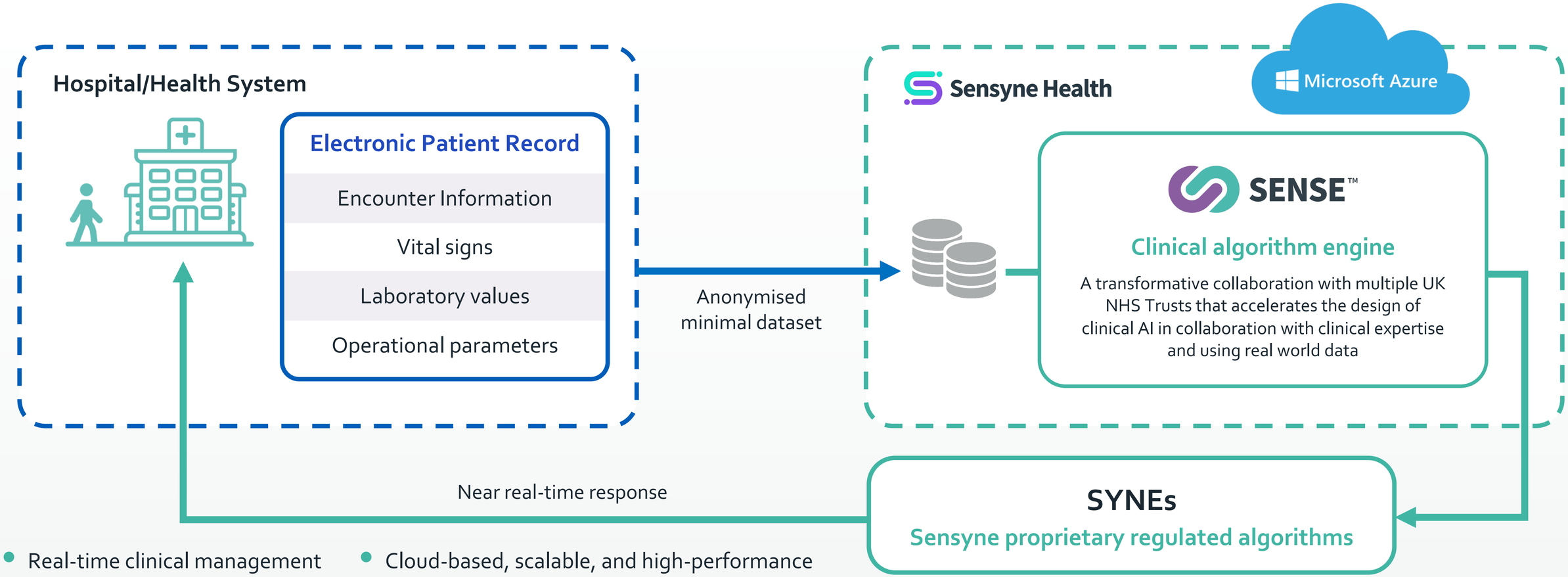
- Underutilised data in disconnected silos
- Information overload hinders effective clinical decision-making
- Poor data access to enable AI development
- Inaccessible AI expertise
- Information governance, security & privacy concerns
- Clinicians' lack of trust in black-box algorithms

Ideal solution

- Proactive use of electronic patient record data
- AI-assisted early intervention on at-risk patients
- Data-driven, personalised clinical pathways
- Real time access to clinical AI insights
- Increased clinical and operational efficiency
- Plain English explanation of clinical AI outcomes

How SENSE works: real-time support for clinical & operational decision-makers

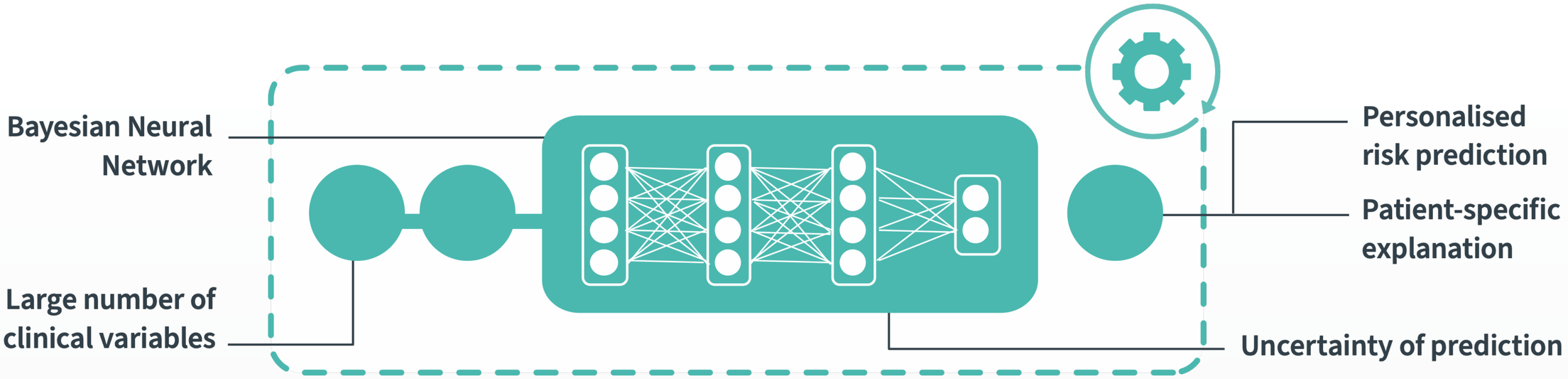
The clinical algorithm engine to provide real time clinical management support for clinicians across multiple conditions



- Real-time clinical management
- Based on clinical evidence
- Built on real world data
- Cloud-based, scalable, and high-performance
- Designed in collaboration with clinicians
- One AI platform, multiple conditions

Sensyne Health

Neural Network technology - explained clearly, with transparent certainty levels



In contrast to other risk prediction engines, SENSE uses advanced Neural Network technology to process large quantities of clinical variables simultaneously, providing personalised predictions with quantifiable certainty levels for each patient, explained to clinicians in plain English.

One AI platform, multiple conditions

Active development

SYNE-OPS-1

Predict ICU beds required for patients with active COVID-19 infection

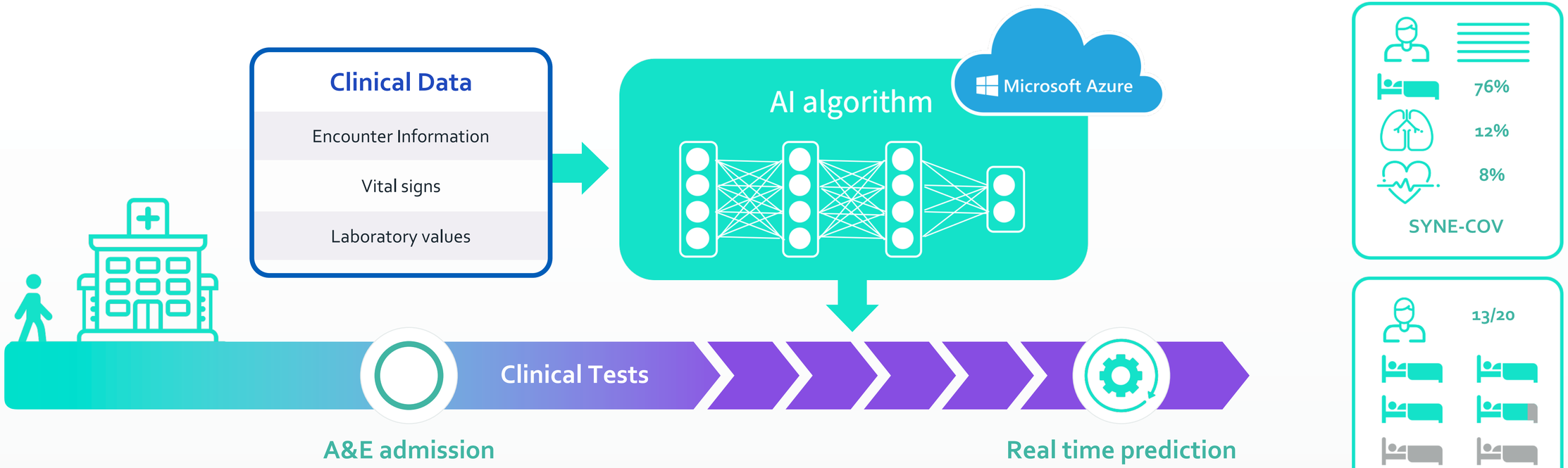
SYNE-COV

Personalised COVID-19 risk predictor (risk of ICU admission, mechanical ventilation, mortality)

Future opportunities

- Congestive Heart Failure
- Stroke
- COPD
- Myocardial infarction
- Beds allocation
- Length of stay
- Diabetes
- Venous Thromboembolism
- Resource prediction
- Medication management
- Sepsis
- Inpatient Hypoglycaemia

Case study: real-time decision support for COVID-19

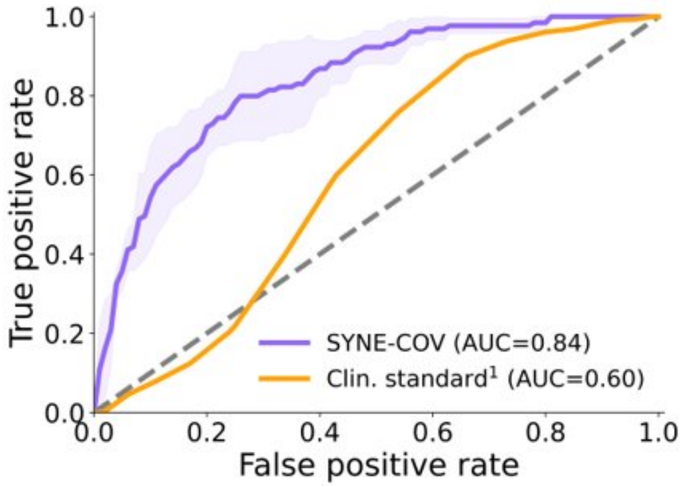


Potential benefits

- Personalised clinical care and early intervention for at-risk patients
- Faster recovery; less time spend in ICU, on ventilators and in hospital
- Improved operational planning (# of ventilators and ICU beds needed)

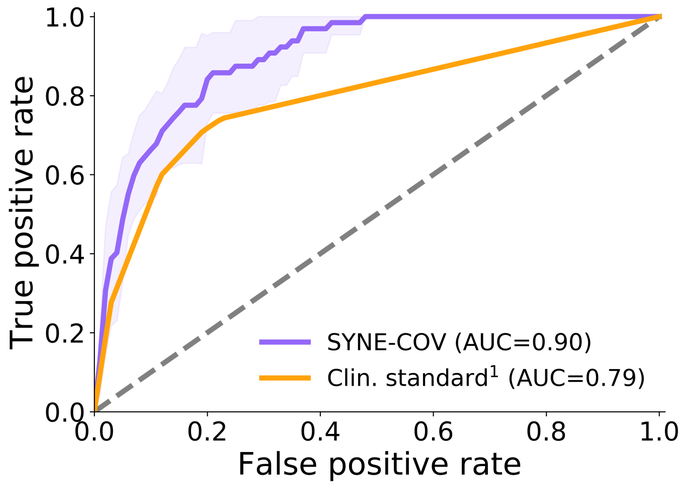
SYNE-COV outperforms traditional risk indicators

ICU admission



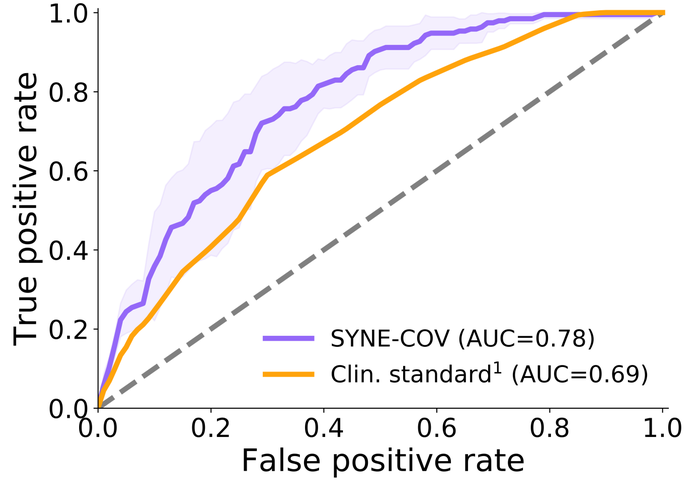
Clinical standard
NEWS2

Invasive mechanical ventilation



Clinical standard
respiratory component of SOFA

Mortality



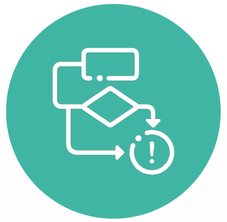
Clinical standard
Apache II

Better performance compared to clinical standard
(NEWS 2, APACHE II, SOFA)

Sensyne Health

Potential benefits of adopting SENSE

Improved patient outcomes



Regulated algorithms

Increase capacity through clinical efficiency

Interoperable with existing systems

Rapid, better informed clinical decisions

Enhanced security & privacy

Improve operational efficiency

Increased data accuracy

Sensyne Health

Designed by clinicians, focused on patients, powered by AI

Clinically led and scientifically validated

Developed in partnership with Chelsea & Westminster NHS Trust

Heldt et al., medRxiv, 2020

Abu-Jamous et al., medRxiv, 2020

Velardo et al., JMIR (pre-print) 2020

Fletcher et al., medRxiv, 2020

Andreotti et al., Arxiv 2020