

Impact story

Transforming medicine through AI-enabled healthcare

World-leading expertise in healthcare-focused machine learning, from Turing researchers and collaborators, combined with the world's largest, high-quality cancer data collection service could lead to a quantum leap in personalised medicine.

- When deciding on a cancer treatment, decisions are typically made on the basis of data from clinical trials, using "on-average" data applied to the individual. This is therefore a blunt tool.
- The teams of Turing Fellow Mihaela van der Schaar, and Jem Rashbass, National Director for Disease Registration of Public Health England, have joined forces to tackle the issue.
- The collaborators have created a revolutionary machine learning system that takes into account every detail of a person's clinical history.
- The system can then make patient-specific predictions about that person's disease trajectory.
- The system goes beyond predictions of risk: it can also recommend which treatments would be most effective for a given patient, instead of relying on one-size-fits-all recommendations.
- The system can also find the other patients in the country who are most similar to the presenting patient, to see how their cancer progressed and their treatment outcomes.
- This transformative decision-support for clinicians and patients could help deliver truly personalised medicine.

See the full story and others like it at turing.ac.uk/impact

Impact

- The team built a live demonstrator system based on breast cancer, fuelled by anonymised real-world data.
- The goal is real-time, personalised decision-support for individual patients and clinicians – right across the NHS.
- Addresses a key Turing challenge to revolutionise healthcare.

“What is going to happen in medicine, is that we will see a fundamental shift to doing things algorithmically.”

Jem Rashbass, National Director for Disease Registration, Public Health England

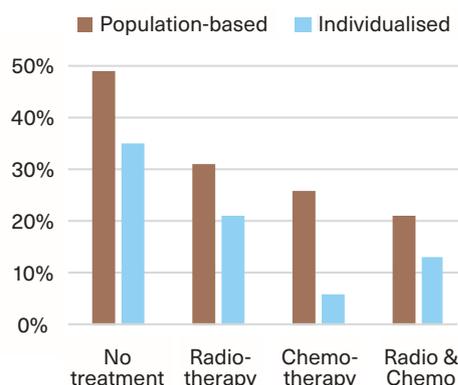


Chart data source: ML-AIM

Chart shows % risk of cancer recurrence after one year, for a specific patient, using a standard, population-based prediction and an individualised prediction. The population prediction suggests combined chemo and radiotherapy as the best course of treatment, whereas the tailored prediction suggests chemotherapy alone to have the best outcomes.