APPLYING A DIGITAL HEALTH FRAMEWORK TO MONITOR INVASIVE FUNGAL INFECTIONS

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Background & Aim

- Invasive fungal infections (IFIs): High mortality in haematological malignancy (HM) & stem cell transplantation[1,2]
- Traditional methods for IFI surveillance are manual and resource-intensive[3]
- Aim: To **develop an automated tool** for standardised IFI surveillance in high-risk HM patients

Methods

Co-design
- Stanford University Design Thinking Framework[4]
- Focus groups with potential end users (Haematologists, infectious disease physicians, haematology nurse consultants)

Prototype
- Interactive prototype of key user interface screens was created

Feedback
- Perceived usability: system usability scale (SUS)[5]
- Feedback facilitated modifications to the interface to improve utility

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Invasive Fungal Infection Surveillance (IFIS), a web-based clinical portal, supporting IFI surveillance and management of high-risk HM patients

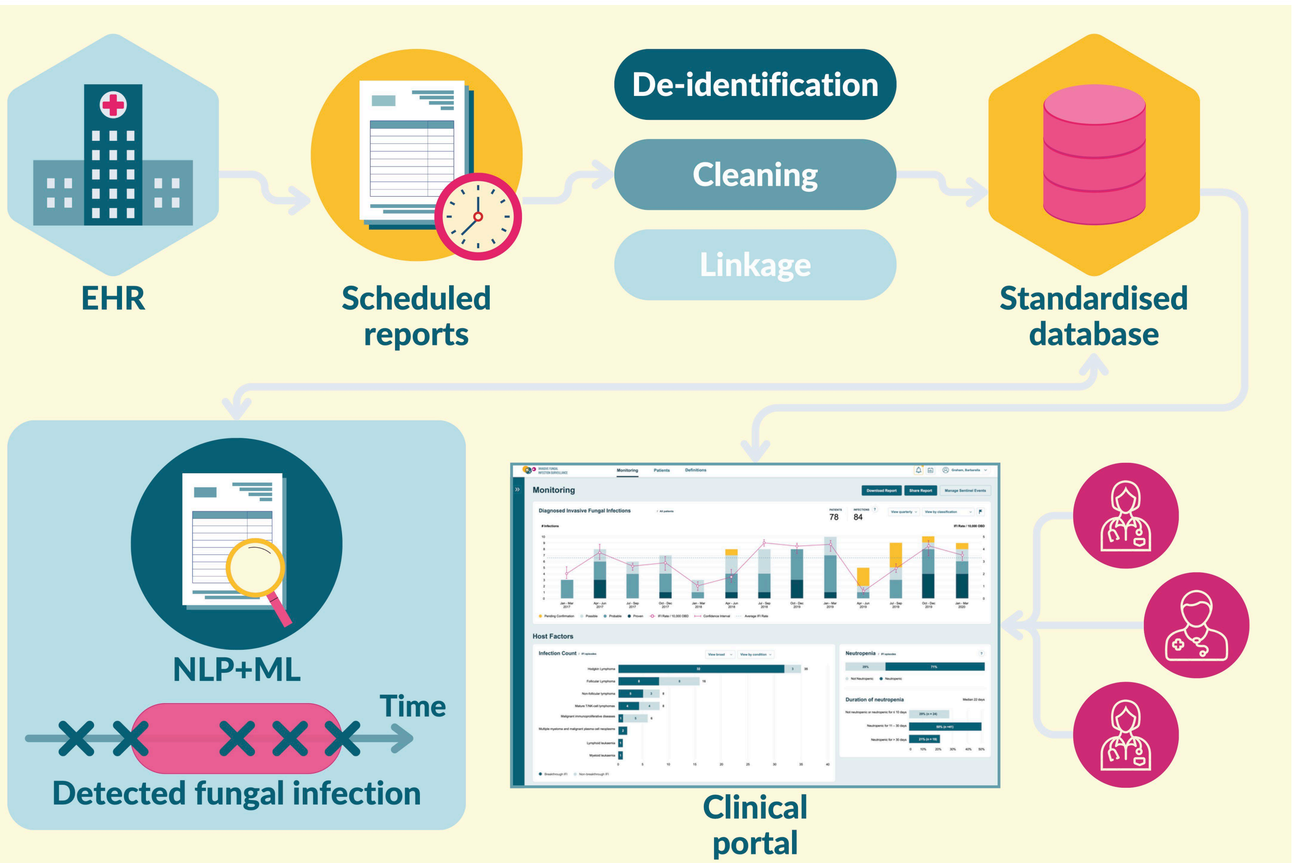

Figure 1. Schema of the IFIS data pipeline from the electronic health records system to the end user showing the infection monitoring dashboard, the key functionality of the IFIS clinical portal. EHR: Electronic health record; NLP: Natural language processing; ML: Machine learning.

Results

Various data (microbiology, imaging, histopathology reports, antifungal prescribing, ICD-10 codes) extracted on scheduled basis

NLP (histopathology[6], CT & PET reports), ML and rule-based methods: Identify characteristics suggestive of IFI

Clinical portal (Figure 1): Monitor IFI rates & review patient-level IFI episodes

Prototype usability testing with 7 clinicians. Excellent usability: mean SUS sore of 81.4

Conclusions

- IFIS will facilitate identification of infection outbreaks & emerging infection risks while improving patient care & clinical outcomes.

References

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