Novel diagnostic strategies for urinary tract infection in hospital

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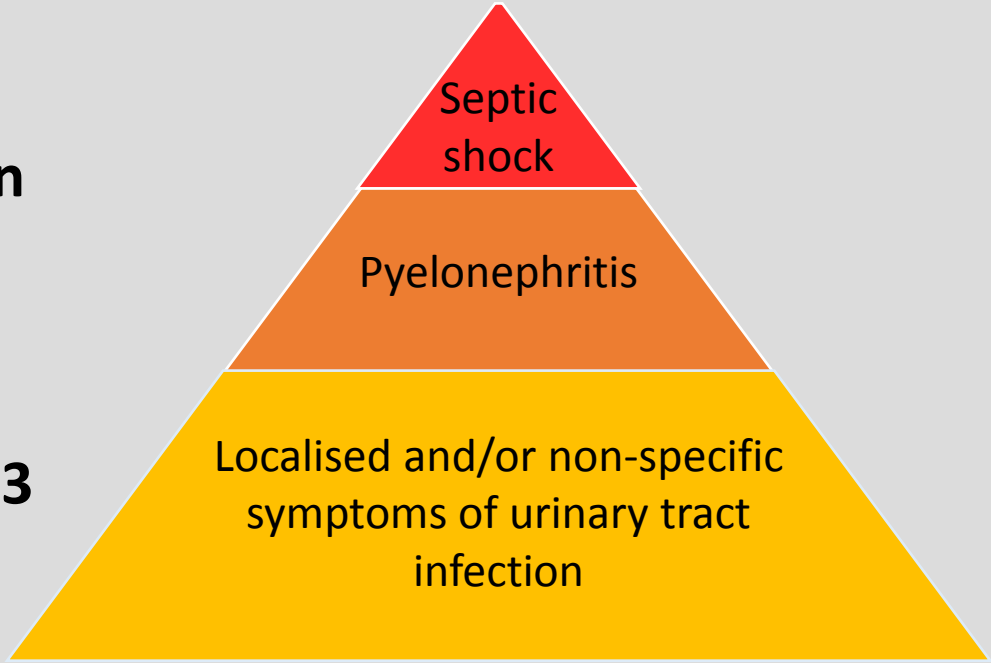
Inappropriate antibiotic prescribing has a major impact in hospital

- Drug-resistant infection, vulnerable patients
- High frequency (broad spectrum) prescribing

Urinary tract infection (UTI) syndromes

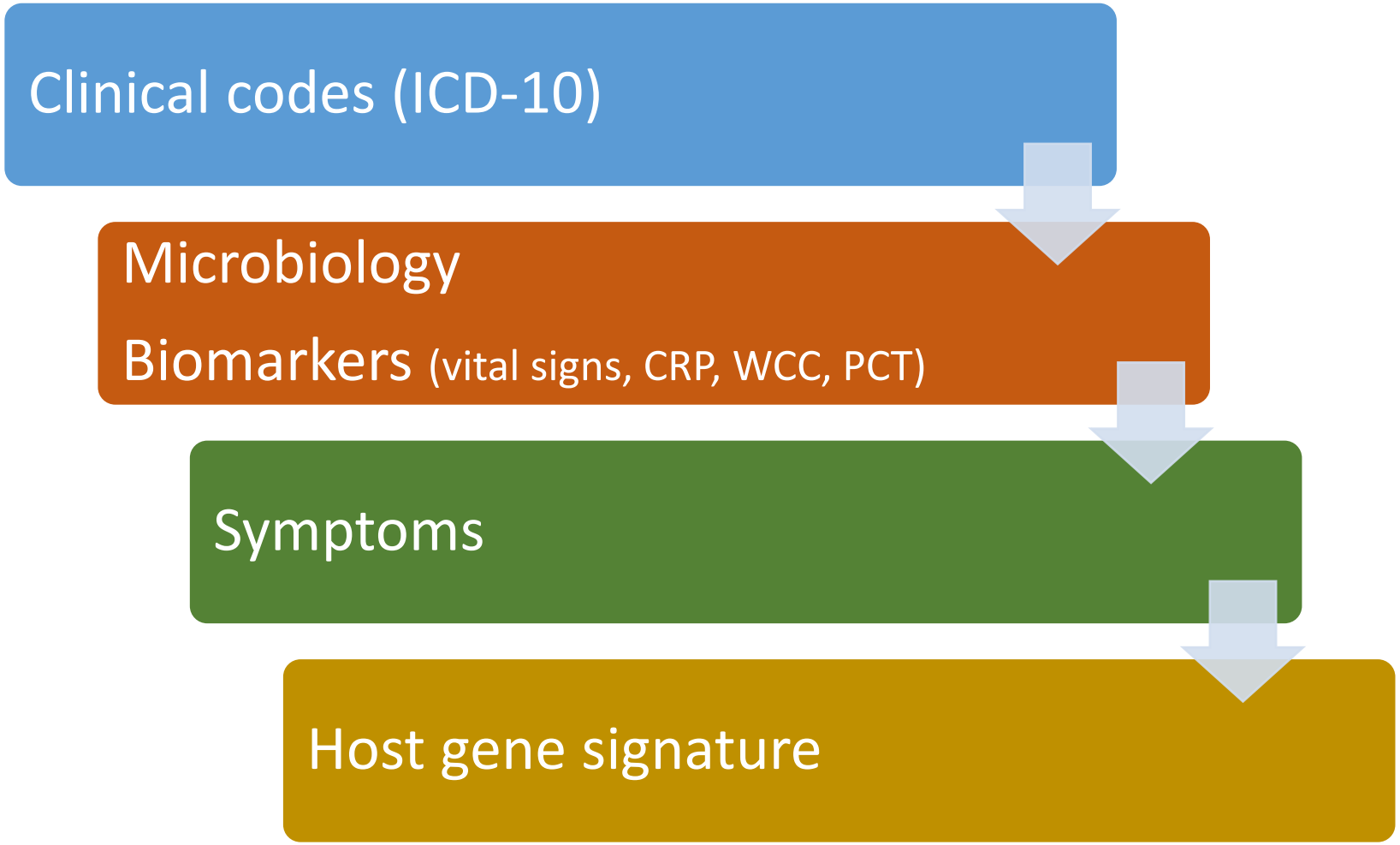
22% Emergency admissions in 2012/13

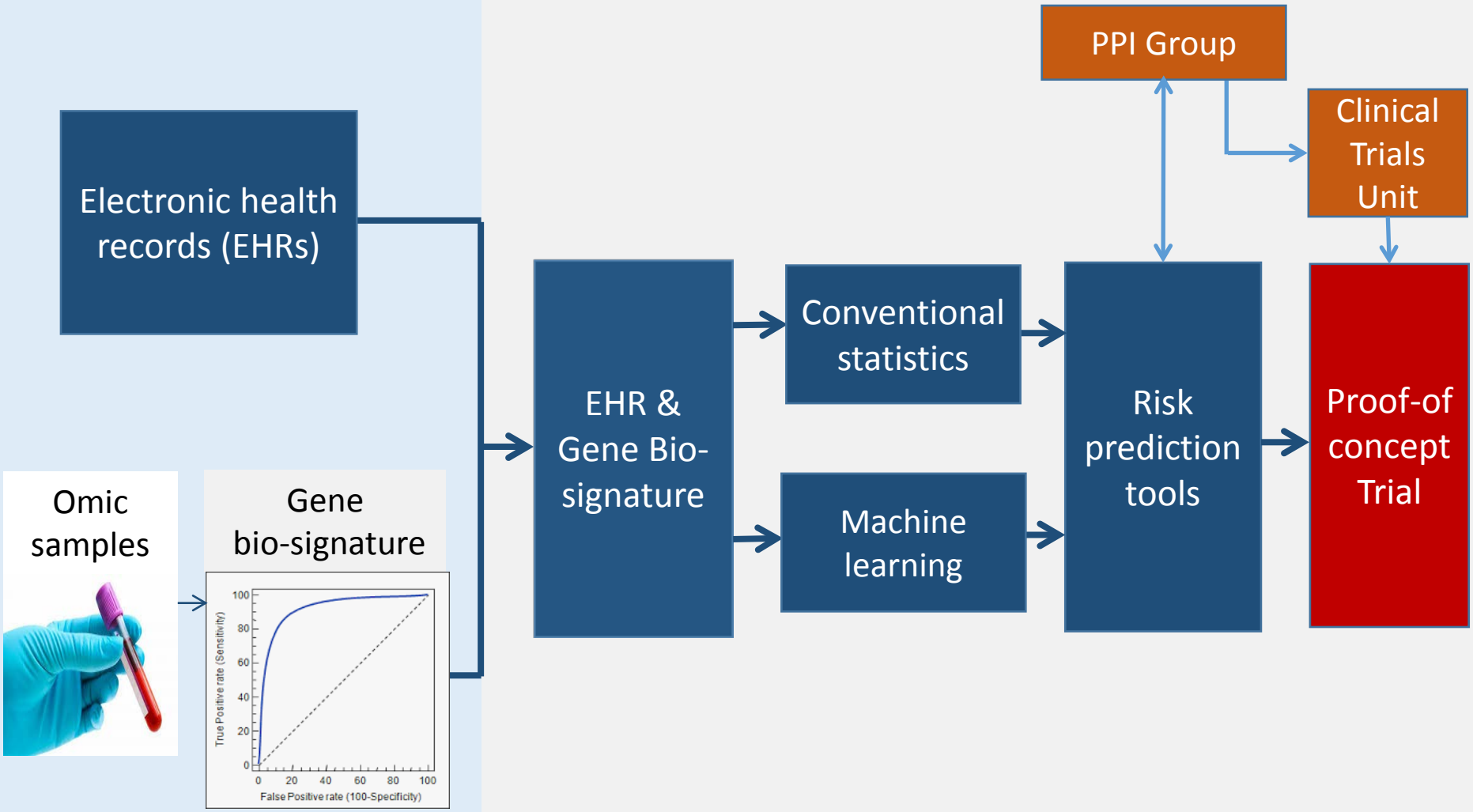


The epidemiology of UTI syndromes in hospital

Dataset	Prescribing	Resistance	Individual-level	Scale
Hospital Episode Statistics	N	N	Y	Y
Electronic health records	Y	Y	Y	Y
Surveys eg ECDC	Y	Y	N	Y
Local studies	Y	Y	Y	N
Hospital Prescribing Audit (HPA)	Y	N	Y	Y

Phenotyping patients with suspected UTI syndromes




PPI Group
Clinical Trials Unit
Electronic health records (EHRs)
Omic samples
Gene bio-signature
True Positive rate (Sensitivity)
False Positive rate (100-Specificity)
EHR & Gene Bio-signature
Conventional statistics
Machine learning
Risk prediction tools
Proof-of concept Trial

Conclusions

- Integration of clinical data + omics is a potential strategy to identify patients for early antibiotic cessation
- Clinical trials would be required to test this approach
- Developing a test is only part of the problem……