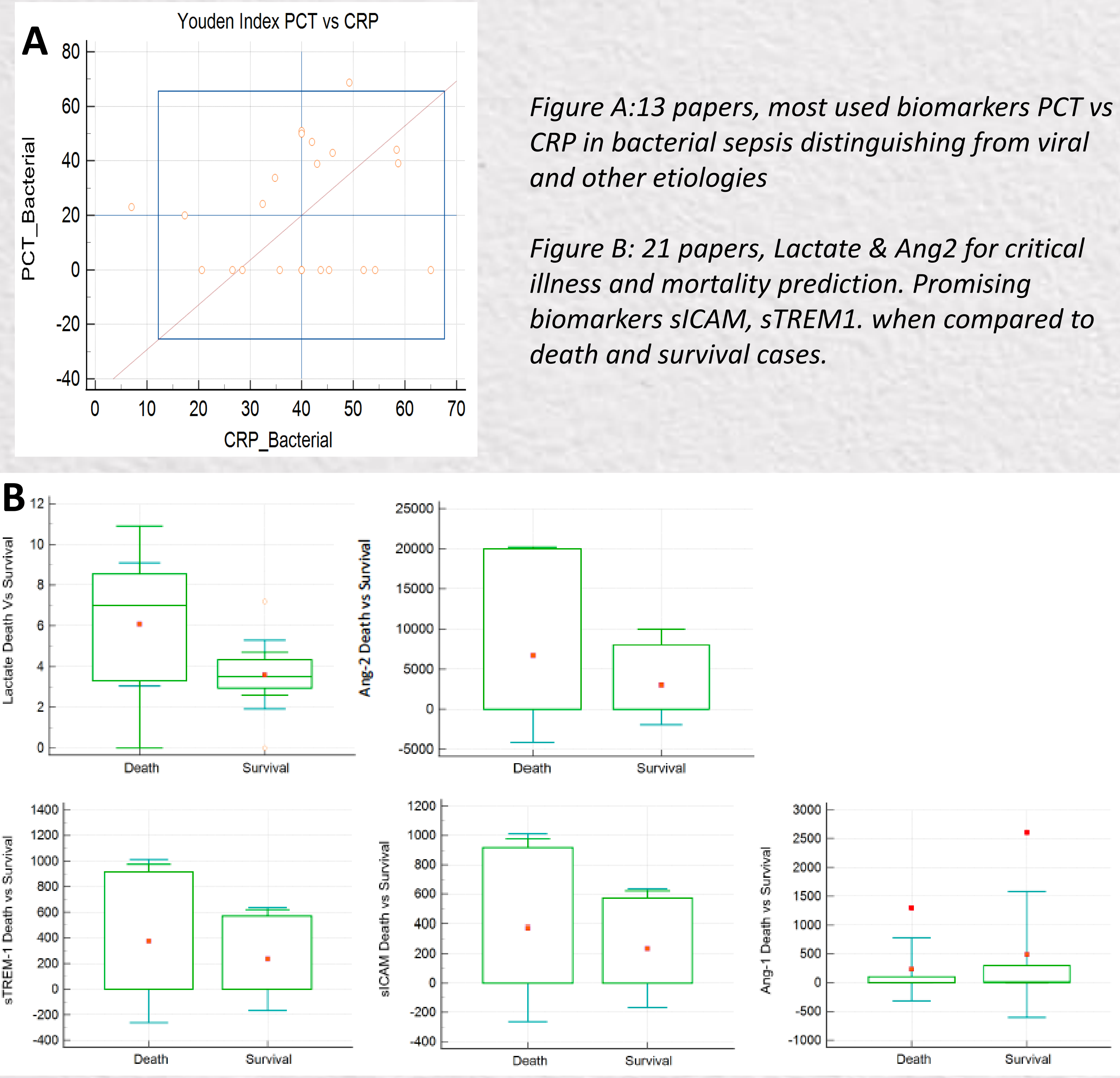


THE ROLE OF BIOMARKERS IN LOW-MIDDLE INCOME COUNTIRES: MALAWI

Msefula J.^{1,2,3}, Havara M.³, Nandoe N.², Witte M.², Hamilton S⁴., Wilson C⁴.,Kamngo'na A.³, Chaima D.³, Woensel, J.B.M van², Calis J^{1,2,3}. IMPALA consortium
1.Amsterdam Institute for Global Health and Development. 2.University of Amsterdam. 3. Kamuzu University of Health Sciences. 4. Imperial College London

Concept
Main Objective : Predict critical illness/ early recognition through biomarkers.
1. Understand biomarkers currently in use
2. Diagnostic & Prognostic value of biomarkers
3. Develop algorithms - conventional statistics models

Reviews: Bacterial sepsis & Mortality: Africa

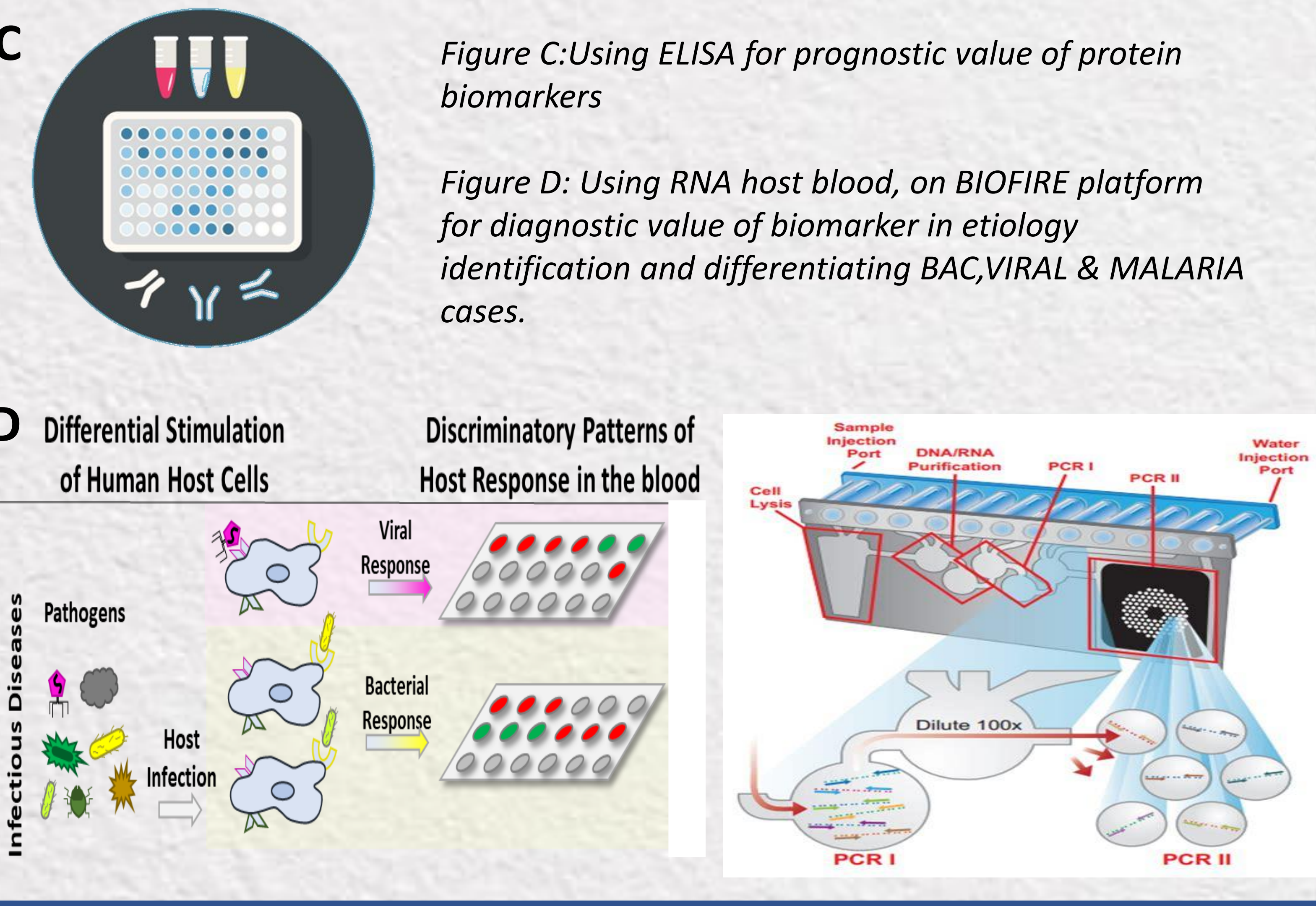


Biomarker selection: Based on Review

Diagnostic and Prognostic Value:

- VWF (bacterial)
- ST2 (bacterial)
- ANGP2 (bacterial & severity)
- CRP (bacterial)
- Hrp2 (malaria)
- MxA (viral)
- Lactate(severity)

Methodology: Malawi



Sample Collection: Malawi

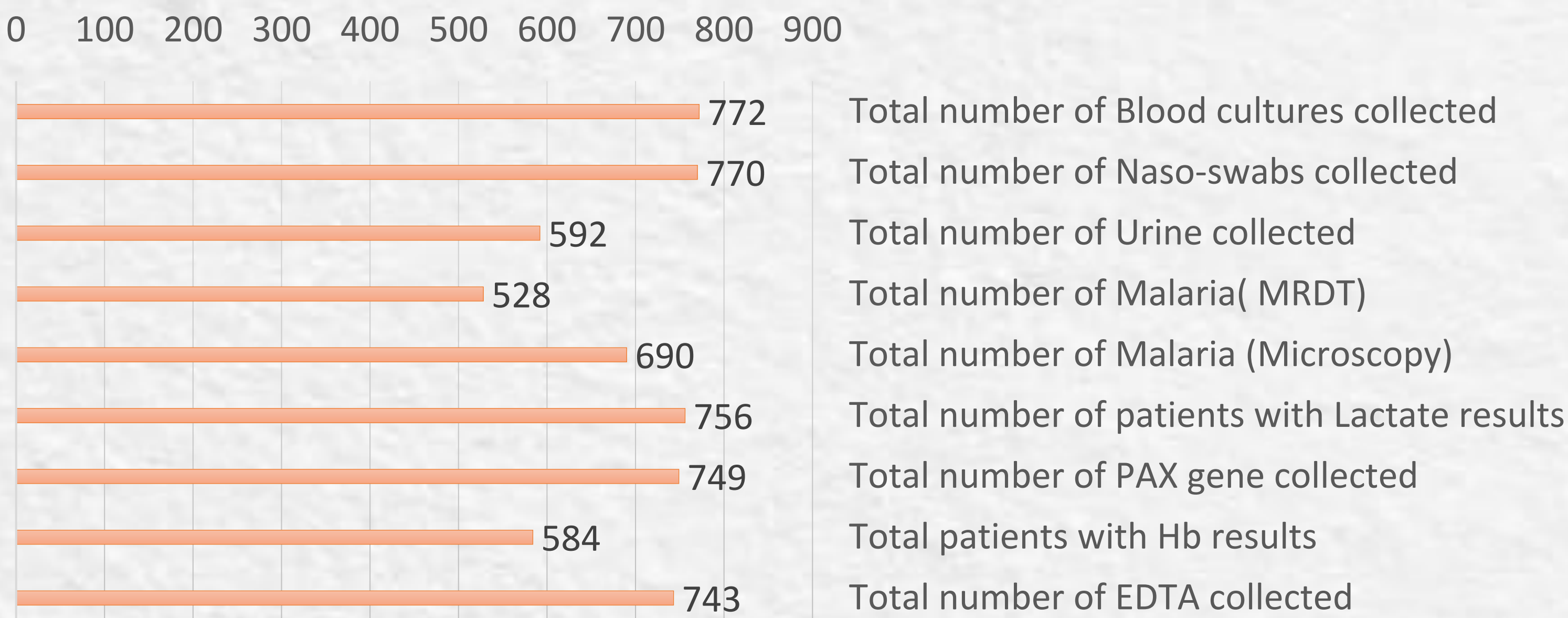
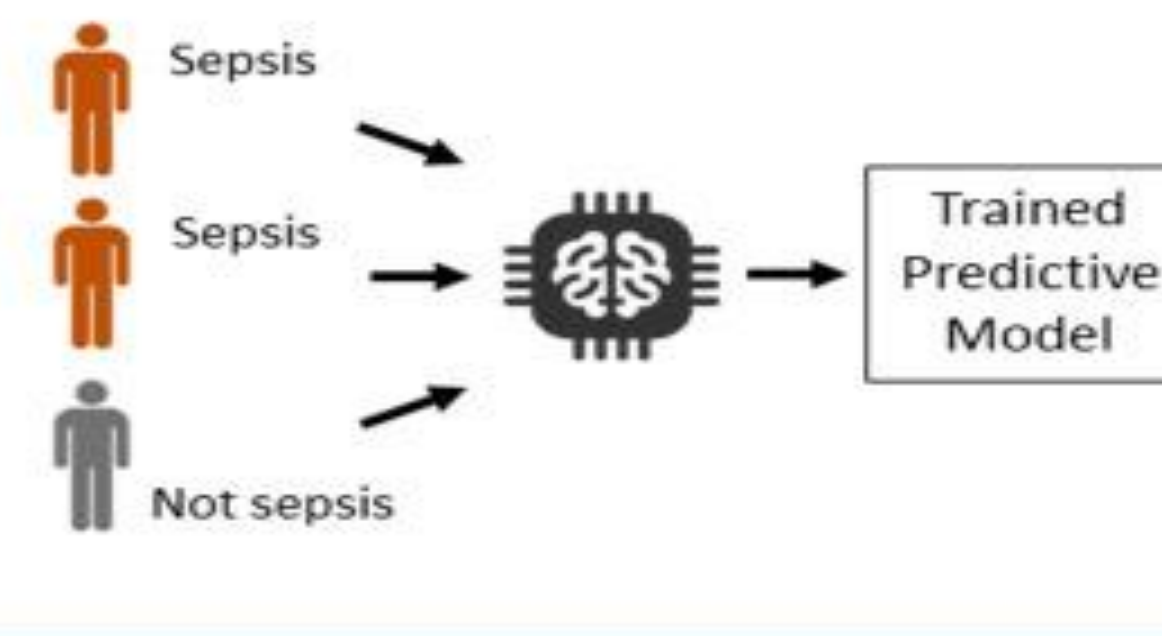
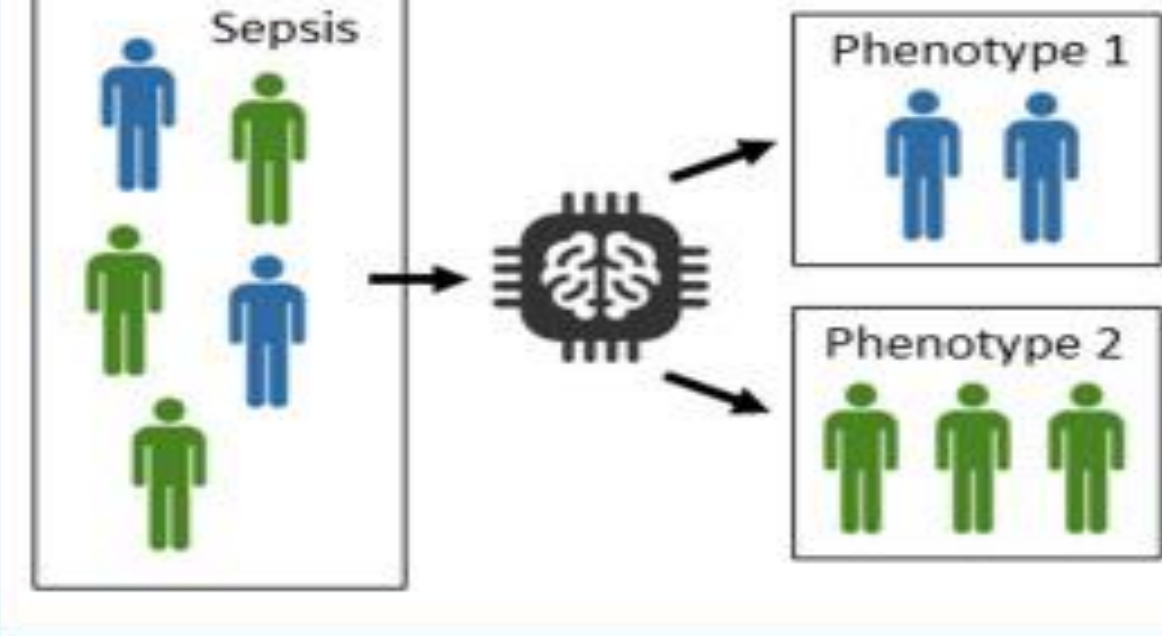


Table 1: Total samples collected from children <5 in Intensive Care Unit. JUNE 2023-JUNE 2023

Predictive Algorithm Development

Figure E:Komorowski et al. Prediction algorithm model for supervised & Unsupervised learning for critical illness prediction (Combined with Disease SCORE) and etiology identification & differentiation.

	Supervised learning	Unsupervised learning
Objective	Learn the mapping between input data and labels	Learn the data structure or identify homogeneous subgroups
Model training		
Model use		
Examples of algorithms	<ul style="list-style-type: none">• Logistic regression• Gradient boosting• Deep neural network	<ul style="list-style-type: none">• K-means clustering• Latent class analysis• Dimensionality reduction
Examples of applications	<ul style="list-style-type: none">• Sepsis prediction model• Transcriptomics sepsis signature	<ul style="list-style-type: none">• Sepsis phenotypes from clinical/lab• HTE across phenotypes• Clustering of plasma metabolites