Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.
**eTable 1. Specimen test tube details**

| Biomarker                                                                 | Test Type                        | Minimum Volume |
|---------------------------------------------------------------------------|----------------------------------|----------------|
| **EDTA tube**                                                             |                                  |                |
| Plasminogen activator inhibitor-1 (PAI-1)                                 | 2-Plex Luminex                   |                |
| Antithrombin III                                                          |                                  |                |
| Interleukin-6 (IL-6)                                                      |                                  |                |
| Interleukin-8 (IL-8)                                                      |                                  |                |
| Interleukin-10 (IL-10)                                                    |                                  |                |
| E-Selectin                                                                | 7-Plex Luminex                   | 50uL           |
| Angiopoietin 1 (Ang-1)                                                    |                                  |                |
| Angiopoietin 2 (Ang-2)                                                    |                                  |                |
| Intracellular adhesion molecule (ICAM)                                    |                                  |                |
| Heme oxygenase 1 (HO-1)                                                   | Human Heme Oxygenase (HO-1) ELISA| 100uL          |
| **Urine**                                                                 |                                  |                |
| AKI Risk Score                                                            | Nephrocheck                      | 100uL          |
| Tissue inhibitor of metalloproteinases 2 (TIMP2)                          |                                  |                |
| Insulin-like growth factor binding protein 7 (IGFBP7)                     |                                  |                |
| **Sodium Fluoride**                                                       |                                  |                |
| Lactate                                                                   | Beckman Coulter AU680 and AU5800 analyzers | 200uL          |
| **Heparin tube**                                                          |                                  |                |
| Bicarbonate (HCO3)                                                        | Beckman Coulter AU680 and AU5800 analyzers | 200uL /100uLs  |
| Uric Acid                                                                 |                                  |                |
| C-reactive protein (CRP)                                                  |                                  |                |
| Procalcitonin (PCT)                                                       | BioMerieux MiniVidas Analyzer    | 300uL          |
### eTable 2. Data missingness (n=549)

| Variable                                | Total (n=549) |
|-----------------------------------------|---------------|
| Age                                     | 0 (0%)        |
| Gender                                  | 0 (0%)        |
| Race                                    | 0 (0%)        |
| Elixhauser comorbidities                | 0 (0%)        |
| Premature neutrophil count              | 450 (81.9%)   |
| C-reactive protein                      | 517 (94.2%)   |
| Erythrocyte sedimentation rate          | 547 (99.6%)   |
| White blood cell count                  | 50 (9.1%)     |
| Respiratory Rate                        | 38 (6.9%)     |
| Oxygen saturation                       | 30 (5.5%)     |
| Partial pressure of oxygen              | 475 (86.5%)   |
| Heart rate                              | 29 (5.3%)     |
| Systolic blood pressure                 | 28 (5.1%)     |
| Troponin I                              | 362 (65.9%)   |
| Lactate                                 | 0 (0%)        |
| Bicarbonate                             | 61 (11.1%)    |
| Creatinine                              | 52 (9.5%)     |
| Blood urea nitrogen                     | 51 (9.3%)     |
| Albumin                                 | 87 (15.8%)    |
| Alanine transaminase                    | 88 (16.0%)    |
| Aspartate transaminase                  | 88 (16.0%)    |
| Bilirubin                               | 88 (16.0%)    |
| Hemoglobin                              | 49 (8.9%)     |
| International normalized ratio          | 124 (22.6%)   |
| Platelet                                | 51 (9.3%)     |
| Chloride                                | 50 (9.1%)     |
| Glucose                                 | 46 (8.4%)     |
| Sodium                                  | 51 (9.3%)     |
| Glasgow Coma Scale Score                | 320 (58.3%)   |
Number of VESPRE patients categorized by electronic alert (light blue), eligible (dashed dark grey) and enrolled (light grey)
eFigure 2. Study exclusions

Patients categorized by incorrect blood tubes in laboratory, volume of blood remaining in specimens below minimum necessary, blood drawn after 6-hours of arrival to ED and other (unable to locate specimens, specimens discarded)
Rotated factor analysis (varimax) on 23 clinical variables revealing 5 factors with Eigenvalue > 1. The gradient from green (0%) to red (100%) represents the percentage that each variable loads on the factors.
The OPTICS plot demonstrates a smooth rise in reachability distance (as opposed to well demarcated sets); therefore, partitioning methods are recommended for future machine learning methodology.
eFigure 5. Feasibility of microbiome analyses in enriched subset (N=160)

Quantification of DNA burden, quantified by bacterial DNA gene copies per 20 microliter (µL) well, of isolation controls (light grey), no-template controls (dark grey) and plasma samples (blue). Horizontal lines represent interquartile ranges (IQR)