

## Appendix Env: Standard Operating Procedure for Environmental Sampling to detect Antimicrobial Resistant Gram Negative Bacilli (GNB)



In addition environmental swabs should be taken and recorded when there is a known sepsis case, for example, swab the baby's incubator / mattress and a note will be made of the baby that this corresponds to.

**Aim:** To sample the patients' environment and identify multiple drug resistant (MDR) isolates of GNB which can be transmitted from the environment to mothers and their neonates due to poor infection and prevention control (IPC) protocols.

### Objectives:

- To determine the most frequently colonised environmental sites that may contribute to the transmission of GNB to mothers and neonates;
- To investigate the molecular basis of the antibiotic resistance profiles exhibited by the GNB isolates collected;
- To generate evidence-based IPC interventions contributing to reduce the transmission of GNB from medical devices to mothers and neonates.

### 1. Environmental sampling

- 1.1. Approximately 500 samples per year will be obtained per participating country – if there is more than one site (healthcare facility) per country, then the number of samples will be divided between these sites.
- 1.2. Samples will be taken in a uniform manner to ensure that data between the centres will be comparable.
- 1.3. Approximately, 45 samples should be taken per month/country. Sampling should be carried out regularly from the various maternity and neonatal and/or paediatric units.
- 1.4. Sampling is best done during regular visits to the ward. There is no need to warn the staff that you will be taking samples.

### 2. Type of environmental samples

- 2.1. Any moist or wet areas or areas with visible organic contamination should be sampled. These should include any devices, utensils/objects and surfaces, like:

- Any tubing which is used on a patient, e.g. IV line, gastric tube, oxygen tube, catheter...;
- Ventilator tubing;
- Oxygen masks
- Basins with water standing in them, used for bathing babies;
- Bed pans, urinals;
- Suction bottles;
- Baby tags;
- Mattresses, particularly, if torn;
- Bed sheets;
- Bed frames;
- Stethoscopes and any other medical devices;
- UV lamps;

2.2. Figure 1 (end of the document) shows examples of devices, utensils / objects and surfaces that should be sampled.

### 3. Collecting environmental samples

- 3.1. Label each swab as per instructions in 'Appendix L: Labelling'; in addition please add date, site and patient related to the sample (if applicable), with a waterproof marker / pen.
- 3.2. Moist a sterile charcoal swab in sterile saline if the sampling site appears dry. If a wet / moistened area is sampled, there is no need for using saline.
- 3.3. Rub the charcoal swab up and down over a selected area, rotate it several times in both directions and diagonally to make sure a good sample is obtained.
- 3.4. Place the swab into the same tube deep enough that medium covers the cotton tips.
- 3.5. Seal tubes with Sellotape and place the samples in sealed, waterproof containers (i.e., plastic bags). Refrigerate at 4°C.
- 3.6. Shipment will be via containers UN3373 and sent via a reliable courier, DHL, FedEx, World Courier etc.
- 3.7. It is important that every time a shipment of samples is sent to the UK, an excel file with the list of samples with the information depicted on table 1 is emailed to the CU-UK team [barnards@cardiff.ac.uk](mailto:barnards@cardiff.ac.uk)

### 4. Record environmental samples

4.1. Keep a record of all samples taken by date, time and site and mark this on the swab so it can be identified.

4.2. An example of a log chart is shown in table 1.

**Table 1 – Table for recording environmental samples information and example of how it should be filled in.**

| Sample ID | Date      | Area sampled                | Patient sample relates to | Ward in hospital |
|-----------|-----------|-----------------------------|---------------------------|------------------|
| BC-E1     | 15.1.2016 | Table                       | BC-M14                    | G8               |
| BC-E2     | 15.1.2016 | IV line                     | BC-M14                    | G8               |
| BC-E3     | 15.1.2016 | Inside surface of incubator | BC-M14                    | G8               |
| ZAT-E63   | 16.5.2016 | Inner side of cot           | BC-B81                    | G1               |
| ZAT-E64   | 16.5.2016 | Photo therapy head lamp     | BC-B81                    | G1               |
| ZAT-E65   | 16.5.2016 | Oxygen tube                 | BC-B81                    | G1               |
| ZAT-E66   | 16.5.2016 | Gastric tube                | BC-B81                    | G1               |

Figure 1 – Examples of surfaces, devices and objects to be sampled.

