Theme 5: Training & Capacity Building

LABORATORY

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NIHR Global Health Research Group on Brain Infections
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Recap from January 2019 Meeting...
Lab capacity assessment

• Define ideal lab:
  • Test repertoire – simple to complex
  • Turnaround time
  • Equipment
  • Cost
  • Quality
  • Safety

• Brief assessment tool
  • Needs to be focused, brief, easy to apply

• Scoping exercise:
  • Local investigator
  • Non-local investigator
Likely lab training within the intervention

- Combine laboratory training with clinicians’ training on requesting/interpretation
- Identify what’s needed at each site (staged approach) – train accordingly
- Quality and safety should be essential components
- Framework available for JE/measles
  - For national labs, one pathogen
  - Modification to context and tests required
  - Could train master trainers -> disseminate
Progress since January
General Updates

• Microbiology-specialist biomedical scientist Jess Jones has volunteered to help with assessments
• Decided formal capacity assessments can’t occur until participant recruitment starts – concern about impacting current practice
• Movement towards defining ideal lab, and developing assessment tool
• Horizontal and vertical audit – link with ‘specimen journey’ exercise in theme 1
‘Ideal’ Lab Definition

- Copies of draft provided for review
- Could apply to any lab, but focus on district / Tier 2
- Brain infection & test-specific sections
- General sections
- Prescriptive for some areas; unbiased recording for others
Domains - Essential/optional tests

1. Overview
2. Microscopy
3. Rapid tests
4. Culture
5. Serology
6. Molecular tests
7. General lab issues
8. Quality
9. Staffing
10. Health and safety

Sayed Lancet 2018
<table>
<thead>
<tr>
<th>Tier</th>
<th>Tests / Activities</th>
<th>Purpose</th>
<th>Equipment / Durable Resources</th>
<th>Consumables</th>
<th>Reagents</th>
<th>Human resources</th>
<th>Conditions / Infrastructure (continuous, steady supply)</th>
<th>Pathogens (main syndrome, if applicable)</th>
<th>Additional Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Microscopy</td>
<td></td>
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<tr>
<td>All</td>
<td>Cell count, total &amp; differential - CSF</td>
<td>Confirm presence of inflammation; inform likelihood of various pathogens being responsible</td>
<td>Microscope Counter</td>
<td>Slides (Kova, Neubauer) Pipette (Pasteur/Gilson’s)</td>
<td>Nil</td>
<td>Trained microscopist</td>
<td>Electrical supply</td>
<td>All Including freshwater Amoebae</td>
<td>Non-CSF fluids</td>
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<tr>
<td></td>
<td>Gram stain – CSF; cultured colonies from CSF &amp; blood</td>
<td>Presumptive identification of specific bacteria</td>
<td>Microscope Centrifuge Staining rack Hot plate/Bunsen burner/spirit lamp</td>
<td>Bottles for reagents Slides ( Pipette/loop Immersion oil Tissues/lens cloth) Tubes for supernatant</td>
<td>Gram’s stain reagents</td>
<td>Trained microscopist</td>
<td>Water Electrical supply</td>
<td>Bacteria &amp; Fungi (meningitis or septic encephalopathy)</td>
<td>Non-CSF fluids</td>
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</tbody>
</table>
Laboratory Assessment Tool

• First draft provided for comments
• Based on sections and specific points within ideal lab
• Should be possible to complete in <2 hours per lab?
## Laboratory Assessment Tool

<table>
<thead>
<tr>
<th>Item</th>
<th>Area to be audited</th>
<th>Compliant/Non compliant</th>
<th>Evidence</th>
<th>Comment/observations</th>
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</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Do you have a microscope</td>
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<tr>
<td>2.2</td>
<td>Make/Model</td>
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<td>2.3</td>
<td>What objectives do you have</td>
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<td>2.4</td>
<td>Routine maintenance</td>
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<td>2.5</td>
<td>What counting chamber do you use for cell counts</td>
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<tr>
<td>2.6</td>
<td>Can you do Gram stains</td>
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<tr>
<td>2.7</td>
<td>Reagents in place</td>
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<tr>
<td>2.8</td>
<td>Can you do India ink stain</td>
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<tr>
<td>2.9</td>
<td>Reagents in place</td>
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<tr>
<td>2.10</td>
<td>AFB microscopy (LM or FM (LED))</td>
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<td>2.11</td>
<td>Reagents in place</td>
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<tr>
<td>2.12</td>
<td>Malaria microscopy</td>
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<tr>
<td>2.13</td>
<td>Reagents in place</td>
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</table>
Outcomes for Breakout Session (see group allocations table)
Outcomes (overlap with patient journey section)

5.5: Plan lab capacity assessment

Questions:

1. Is the Ideal Lab document reflective of what should be provided in a lab in each country?

2. Does the lab capacity assessment tool measure whether labs are meeting the requirements of an ideal lab in enough detail to make a valid assessment?

3. Is the assessment tool easy and quick to use?

4. Who could be the local lab-specialist to assist Jess & Chris in assessing labs in each centre?
Outcomes

5.4: Draft plans for delivering LAB training within the intervention
(Build upon discussion in January 2019 in Liverpool)

Questions:
1. Who could deliver lab training at each centre?
2. What format could this training take (eg classroom vs bench)?
3. What resources might be needed (financial, materials)?
Questions/discussion...

Small e-mail group