## GRADE table 1:
### Need for a yellow fever vaccine booster dose in immunocompetent individuals

**Population:** Immunocompetent individuals  
**Intervention:** Primary yellow fever vaccination  
**Comparison:** No primary vaccination  
**Outcome:** Duration of immunity

### Is there evidence that a booster dose of yellow fever vaccine is required to maintain protection in immunocompetent individuals?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Adjustment to rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of studies/starting rating</td>
<td>10/observational</td>
</tr>
<tr>
<td>Limitation in study design</td>
<td>None serious²</td>
</tr>
<tr>
<td>Inconsistency</td>
<td>None serious</td>
</tr>
<tr>
<td>Indirectness</td>
<td>None serious³</td>
</tr>
<tr>
<td>Imprecision</td>
<td>None Serious</td>
</tr>
<tr>
<td>Publication bias</td>
<td>None serious</td>
</tr>
<tr>
<td>Large effect</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Dose-response</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Antagonistic bias and confounding</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Final numerical rating of quality of evidence

2

### Statement on quality of evidence

Our confidence in the estimate of the effect on the outcome is limited.

### Conclusion

Over 540 million doses of yellow fever vaccine have been used (1) with only 12 cases of secondary vaccine failure reported (2-6). Healthy persons rarely fail to develop neutralizing antibodies after vaccination (7). Neutralizing antibody titres can be found in most vaccines more than 10 years after vaccination (8-19). Immunity might also be cell-mediated (13;15). In endemic settings, high primary vaccination coverage (60-80%) prevents outbreaks. (20). In immunocompetent persons there is no demonstrated need for a booster dose every ten years.

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¹ 6 observational studies reported 74.5-100% neutralizing antibody (NTAb) ≥10 years after vaccination. One small study reported 65% (n=13/20) with protective NTAb after 10 years (De Melo et al. 2011). One study (Gomez SY et al. 2008) reported NTAb in >68% in vaccinees after ≥4 years post vaccination. One study (Veit et al. 2009) reported 88% NTAb 1-10 years after vaccination and one study reported 73% with NTAb 3-4 years after vaccination (Gibney et al. 2012).

² Limitations in only 2 of 8 studies therefore no downgrading: No clear description of method and incomplete medical records of vaccinated (Poland et al. 1981). Non-standardized methods such as mouse-protection test used (Groot et al. 1962).

³ Serological marker as proxy to assess level of clinical protection, yet overall agreement in the assumption that titre >1:10 in plaque reduction neutralization test is associated with protective immunity (Hepburn at al. 2006; Monath et al. 2005), therefore no downgrading.
(9) de Melo AB. Description of a prospective 17DD yellow fever vaccine cohort in Recife, Brazil. 2011 Oct.
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