Background:
Vacuum extraction is a useful procedure for assisted vaginal delivery. Traditionally, it has been recommended that the negative pressure is increased slowly in a stepwise procedure. However, some experts have advocated rapid increases in negative pressure.

South East Asia Optimising Reproductive and Child Health In Developing Countries (SEA-ORCHID) project aimed to strengthen evidence-based approaches to improve health outcomes for mothers and babies in developing countries in South East Asia, by interventions designed to strengthen the capacity for research synthesis, evidence-based care and knowledge implementation.

Objectives:
To assess the efficacy and safety of rapid versus stepwise negative pressure application for assisted vaginal delivery by vacuum extraction.

Methods:
After educator training by SEA ORCHID project, a Cochrane review on technique of negative pressure application was published in 2008. Only one small RCT was included in this review and the evidence was not strong enough to make any recommendation.

For more evidence a multicenter RCT was conducted involving six hospitals including general, regional and university hospitals in Thailand. The result was published in the British Journal of Obstetrics and Gynaecology in September 2011 and the Cochrane review was updated.

Results:
Two trials involving 754 participants were included. One new trial of 660 participants showed the same success rate of vacuum procedure of 98.2%.

There was no significant difference in detachment rate, Agar score below 7 at one and five minutes, other maternal and neonatal morbidity but significant of procedure duration was seen in rapid technique.

Conclusions:
The rapid negative pressure application reduces duration of the procedure whilst there is no evidence of differences in maternal and neonatal outcomes. Rapid technique of negative pressure application should be recommended for vacuum extraction.

2007 South East Asia Optimising Reproductive and Child Health In Developing Countries (SEA-ORCHID) project

2008 conduct systematic review

2011 conduct vacuum trial

2012 update systematic review

Table 2: Vacuum extraction procedure outcomes by methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Number of trial (%)</th>
<th>Duration (min)</th>
<th>Detachment (%)</th>
<th>Agar score initially</th>
<th>Agar score after 5 min</th>
<th>Overall success</th>
<th>Time from application to complete negative pressure (s). Median (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid method</td>
<td>56.7</td>
<td>3.3</td>
<td>2.7</td>
<td>96.1</td>
<td>96.4</td>
<td>96.2</td>
<td>1.9 (1.0, 2.8)</td>
</tr>
<tr>
<td>Stepwise method</td>
<td>54.2</td>
<td>3.3</td>
<td>3.0</td>
<td>96.4</td>
<td>96.0</td>
<td>96.2</td>
<td>1.9 (1.0, 2.8)</td>
</tr>
</tbody>
</table>

Time from application to complete negative pressure (s).
Median (IQR)

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<td>1.9 (1.0, 2.8)</td>
</tr>
</tbody>
</table>

Risk difference, mean difference or medium difference.

Conceptual framework of R2R