Efficacy of three alternative hepatitis B revaccination series (Fendrix®, Twinrix® and HBVaxPro-40®) in healthy non-responders; an open-label, randomised controlled multicentre trial

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Background

- Non-protective immunity after hepatitis B vaccination affects, depending on age and gender, 5 to 30 per cent of healthy adults.
- To date it remains unclear which revaccination regimen is most effective.
- We determined the immunogenicity of 3 different vaccines as measured by antibodies against hepatitis B surface antigen (anti-HBs) in non-responders (NR), which are defined as having an anti-HBs < 10 IU/L after one standard series with a recombinant vaccine against hepatitis B virus.

Methods

- Open-label multicentre randomised controlled trial
- Web-based central randomisation programme, allocation ratio: 1:1:1:1
- Primary outcome: height of anti-HBs titre and the percentage of responders (anti-HBs titres ≥ 10 IU/l) measured at month 3
- Laboratory staff who analysed the samples and investigators were masked to vaccine-group assignment.
- Antibody titre measurement: ARCHITECT assay (Abbott Laboratories, Chicago, USA)
- Intention-to-vaccinate analysis with last observation carried forward for missing anti-HBs titre measurements.
- Trial registration: Netherlands National Trial Register (identifier NTR3159)

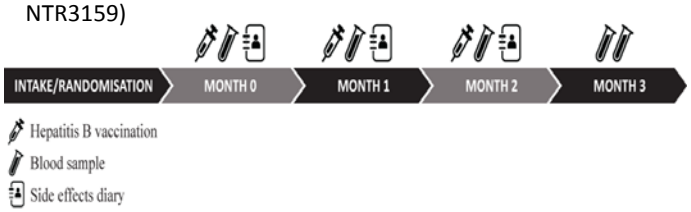

Figure 1. Design of the revaccination trial in healthy non-responders after a standard hepatitis B vaccination series

Results

- 480 participants that were randomly assigned to one of the study-groups
- 459 participants completed a series of 3 revaccinations
- confounding factors (age, BMI, sex, diabetes, primary titre height and smoking) were balanced over all study-groups

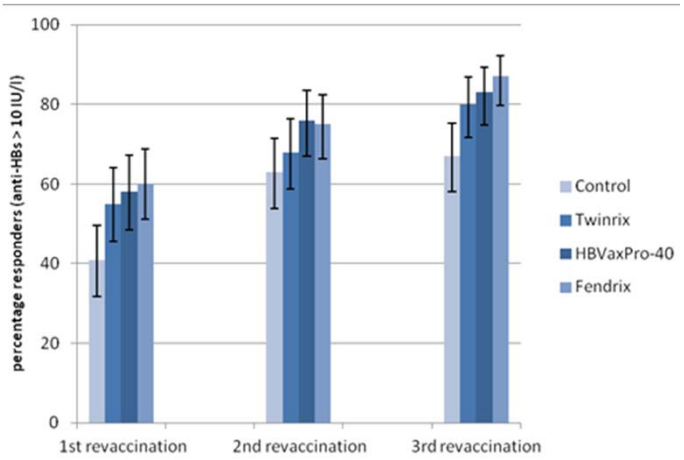

Figure 2. Percentage of responders (anti-HBs ≥ 10 IU/l) after the revaccination series for different study-groups

	Control	Twinrix	HBVaxPro40	Fendrix	Twinrix vs Control (difference [95% CI] or *p*-value)	HBVaxPro40 vs Control (difference [95% CI] or *p*-value)	Fendrix vs Control (difference [95% CI] or *p*-value)
Immune response 3	83/124 (66·9%; 57·9-75·1)	94/118 (79·7%; 71·3-86·5)	95/114 (83·3%; 75·2-89·7)	108/124 (87·1%; 79·9-92·4)	12·7 (1·6-23·9)	16·4 (5·4-27·4)	20·2 (9·7-30·6)
Antibody titre 3	62 (4-185)	85 (19-265)	111 (38-553)	234 (48-661)	0·31	< 0·0005	< 0·0005

Table 1. Immune response at month 3 with the proportion of participants after third revaccination with an anti-HBs titre ≥ 10 IU/l expressed as n/N (%; 95% CI) and the corresponding antibody titres expressed as median (IQR)

Conclusion

- Revaccination with **Fendrix®** or **HBVaxPro-40®** resulted in significantly higher antibody titres and seroconversion rates than the standard revaccination schedule and should be considered for revaccination in healthy non-responders.

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