Use of Valneva vaccine as a heterologous booster dose

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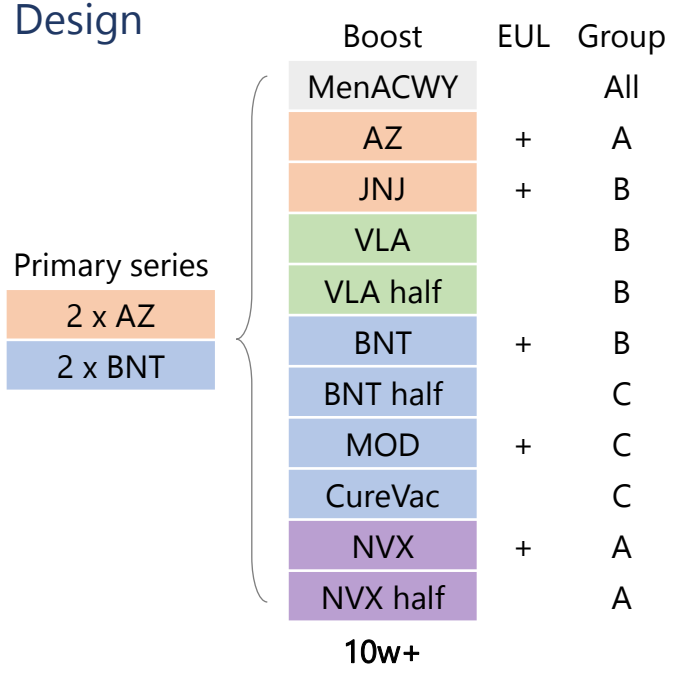
COV-BOOST study: heterologous vs homologous booster schedules

Overview

Study	Munro et al; Lancet
Start date	01 June 2021
Country	UK
Study type	Blinded RCT
Population	Adults ≥30y No SARS-CoV-2 history 105–119 per subgroup >90% participants White ≥10w post dose 2

Design

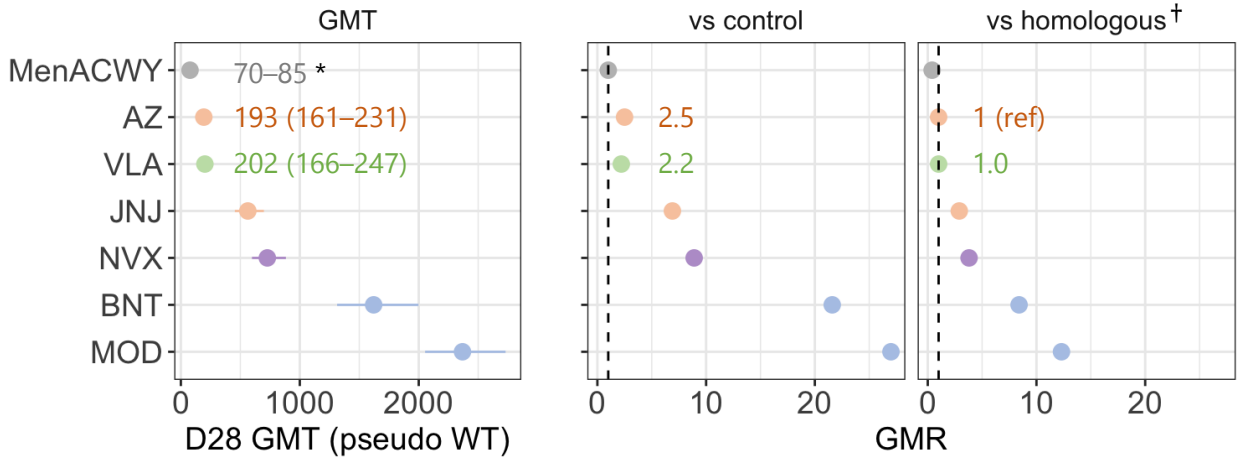


Colour coding: Control | Vector | Inactivated | mRNA | Subunit

COV-BOOST study: EUL/VLA response in AZ-primed

Primary series: 2 x AZ

Boost	EUL	Group
MenACWY		All
AZ	+	A
JNJ	+	B
VLA		B
BNT	+	B
MOD	+	C
NVX	+	A

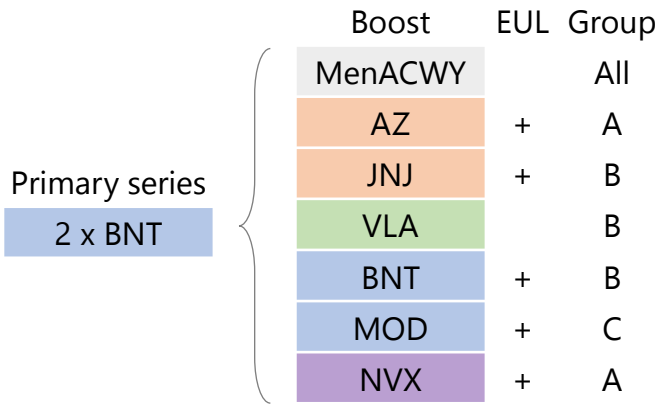


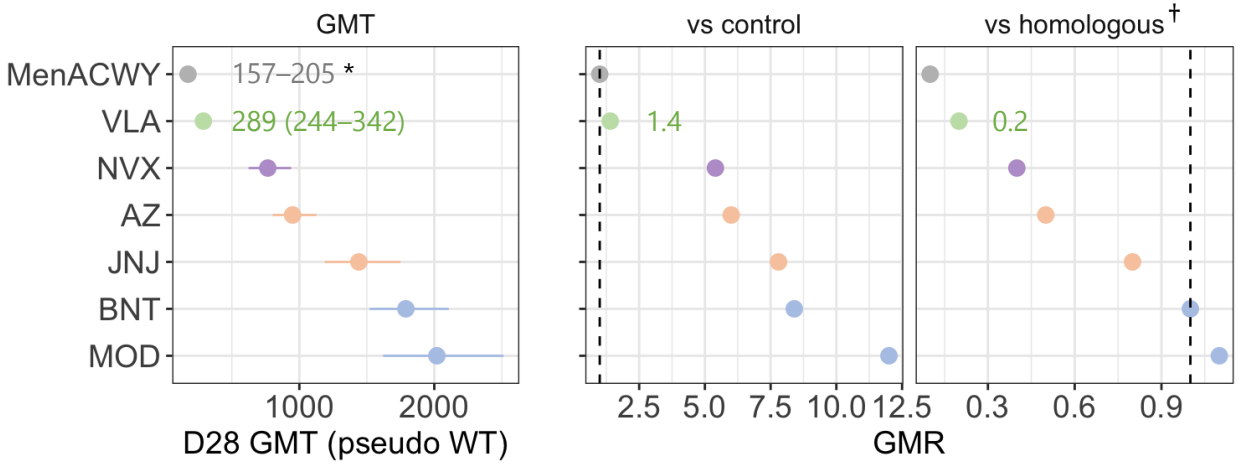
* Varies depending on randomisation group; † Compares across randomisation groups.

Summary

- B-cell response to VLA higher than control, equivalent to AZ, but lower than all other EUL vaccines
- T-cell response to VLA not significantly higher than control
- Attenuated GMRs for Delta compared with WT; no Omicron-specific data available
- Findings consistent in individuals aged 30–69y vs ≥70y

COV-BOOST study: EUL/VLA response in BNT-primed





* Varies depending on randomisation group; † Compares across randomisation groups.

Summary

- B-cell response to VLA marginally higher than control
- IgG GMR upper CI did not reach pre-defined clinically important difference of 1.75
- T-cell response to VLA not significantly higher than control
- Attenuated GMRs for Delta compared with WT; no Omicron-specific data available
- Findings consistent in individuals aged 30–69y vs ≥70y

COV-BOOST study: 3-month follow-up

AZ-primed

Boost	N	Day 84 GMT (95% CI), pseudo-NT_{50}	GMR vs control
MenACWY	272	51 (45–59)	Ref
VLA	85	110 (90–134)	2.2
AZ	97	127 (105–153)	2.5
NVX	92	346 (279–430)	6.8
JNJ	94	410 (334–504)	8.0
BNT	93	639 (531–770)	12.5
MOD	90	1061 (877–1284)	20.8

BNT-primed

Boost	N	Day 84 GMT (95% CI), pseudo-NT_{50}	GMR vs control
MenACWY	291	110 (98–123)	Ref
VLA	85	161 (132–196)	1.5
NVX	100	406 (330–499)	3.7
AZ	90	718 (589–876)	6.5
BNT	94	789 (656–948)	7.2
MOD	85	971 (775–1217)	8.8
JNJ	90	1252 (986–1590)	11.4

Summary

- Antibody persistence varied by prime–boost combination (e.g. higher persistence following JNJ than RNA boost in BNT-primed)
- B-cell response to VLA remained lower than other EUL vaccines and only modestly higher than control

Liu et al, *J Infect* 2022 **84;** 795–813

COV-BOOST conclusions

Prime	Boost	vs control	vs vector	vs RNA
2 x AZ	VLA	+	~AZ <JNJ	–
2 x BNT	VLA	~ (+)	–	–

- VLA had equivalent/lower reactogenicity compared with other EUL vaccines including homologous doses
- In AZ-primed:
  - VLA is equivalent to a homologous boost
- In BNT-primed:
  - VLA only marginally outperformed control

Relative value of VLA depends on what vaccines have been given and what vaccines are available

Ongoing studies

- **NCT05364242**: open-label non-randomised trial of VLA as heterologous booster in the Netherlands (N = 150)