

# DRIVE

Development of Robust  
and Innovative Vaccine  
Effectiveness

## Brand-specific influenza vaccine effectiveness: results from the DRIVE network 2019/2020

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ESCAIDE

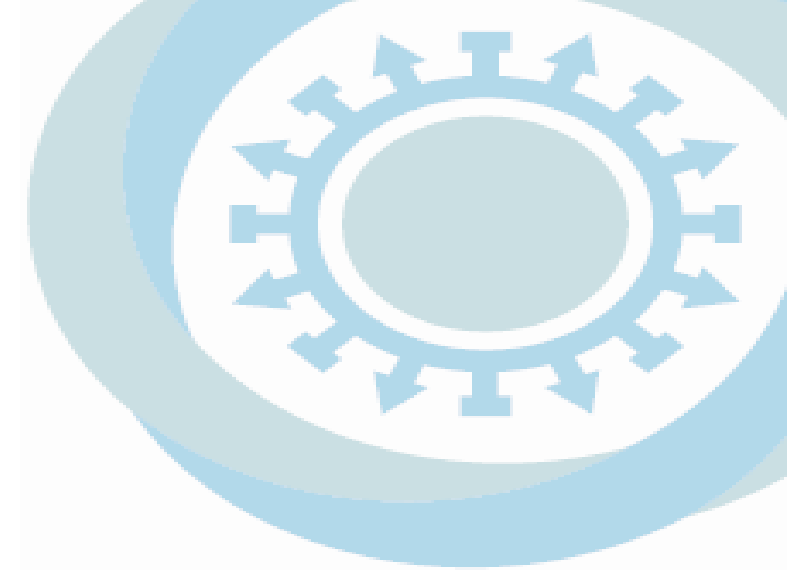
November 2020



### Acknowledgement

DRIVE project has received funding from the Innovative Medicines Initiative 2 Joint Undertaking under grant agreement No 777363, This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme and EFPIA.

# DRIVE



## AIMS

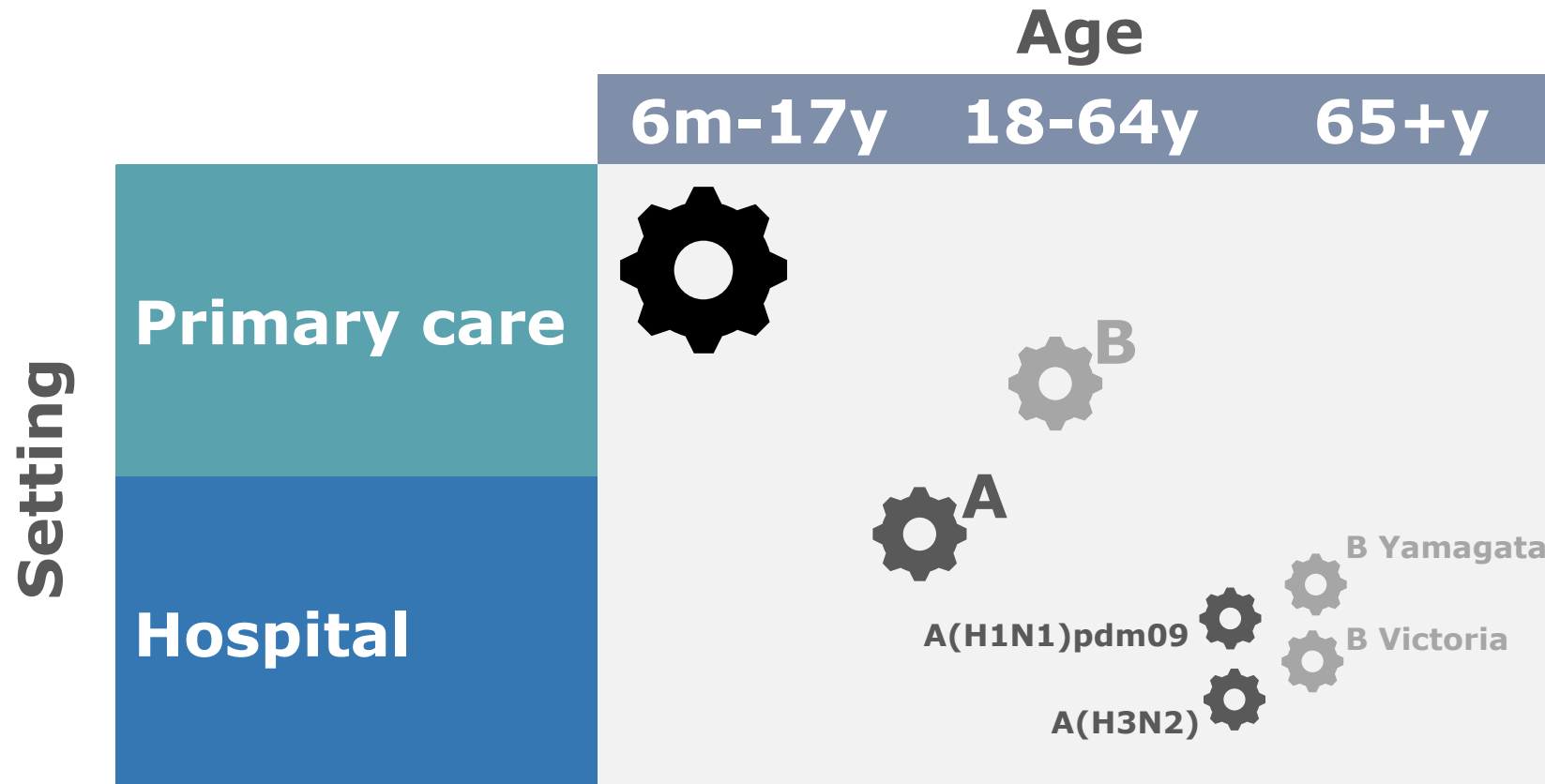
- \*Sufficiently sized network
- \*Brand-specific effectiveness estimates
- \*All seasonal influenza vaccines in EU
- \*Annual assessment



- ✓ Enhanced monitoring of influenza vaccine effectiveness (IVE) by public health institutes
- ✓ Allow manufacturers to fulfil European Medicines Agency (EMA) requirements

All IVE studies are conducted by the public partners

# Objective: to estimate brand-specific influenza VE against lab-confirmed influenza by age and setting



Test-negative design (TND) and population-based cohort study

Studies are not powered/designed for comparisons between brands

# Study sites: 2019/2020

## 4 primary care TND sites

388 GPs

3 countries

## 8 hospital TND sites

19 hospitals

5 countries

## 1 population-based cohort

National registers

Finland



# Site characteristics

		All ages ≥6m	Case definition (+confirmed flu)	RT-PCR	Subject selection	No control matching
<b>TND: primary care</b>			<b>ILI (ECDC)</b>		<b>Systematic</b>	
Austria	MUV	✓	✓	✓	✓	✓
Italy	CIRI-IT	✓	✓	✓	✓	✓
Italy	ISS	✓	✓	✓	✓ / All ≥65y	✓
UK	RCGP RSC	✓	✓	✓ (point of care)	✓	✓

<b>TND: hospital</b>			<b>SARI (I-MOVE)</b>		<b>All</b>	
Finland	HUS	≥18y	✓	✓	✓	✓
France	INSERM	≥18y	✓	✓	✓	✓
Italy	CIRI-IT BIVE	✓	✓	✓	✓	✓
Romania	NIID	✓	✓	✓	✓	✓
Spain	LPUH	≥18y	✓	✓	✓	✓
Spain	VHUH	✓	✓	✓ **	✓	1:1
Spain	GTPUH	✓	✓	✓ **	✓	1:1
Spain	FISABIO	✓	Adapted*	✓	✓	✓

## Population-based cohort: mixed setting

Finland	THL	6m-6y; 65y-100y	Lab-confirmed flu (National Disease Register)	✓ or any other test	n/a	n/a
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\* <5y: acute hospitalization; ≥5y: hospitalization with ILI; \*\* <18y: antigen detection

# Data flow and analysis

## Data collected by sites (up to Feb 29, 2020)

- Using a **generic protocol**,
- Transferred to the DRIVE Research Server



## Site-specific estimates were centrally calculated

- Using a **predefined SAP**
- Logistic regression, Poisson regression
- Confounder-adjustment: age, sex, calendar time
- 3531 cases, 5546 controls; 512,000 person-years



## Site-specific estimates from TND studies were pooled

- Random-effects meta-analysis

# 8 of 11 brands in EU 2019/20 were captured in the DRIVE network

		Trivalent				VE %(95%CI) obtained		Quadrivalent				
		Egg based, standard dose				Adjuvnted	High Dose	Egg based, standard dose			Cell-based	Live att.
		Afluria	Agrippal	Influvac	Vaxigrip	Fluad	TIV High Dose**	Fluarix Tetra	Influvac Tetra	Vaxigrip Tetra	Flucelvax Tetra	Fluenz Tetra
TND PC	6m-17y*	x	✓	x	x	na		✓	✓	✓	✓	✓
	18-64y	x	x	x	x	na		✓	✓	✓	✓	na
	65+y	x	x	x	x	✓		✓	✓	✓	x	na
TND Hosp	6m-17y	x	✓	x	x	na		x	✓	✓	x	✓
	18-64y	x	✓	x	x	na		✓	✓	✓	✓	na
	65+y	x	x	✓	x	✓		✓	✓	✓	✓	na
Cohort	6m-6y*	x	x	x	x	na		x	x	✓	x	✓
	65-100y	x	x	x	x	x		x	x	✓	x	na

\*≥9y for Flucelvax Tetra; ≥2y for Fluenz Tetra; ≥3y for Influvac Tetra.

\*\*Licensed but not marketed

na: vaccine not licensed for age group; x: no estimate available

# Data gaps reflect transition from 'conventional' TIV to QIV

		TIV				VE %(95%CI) obtained		QIV				
		Egg based, standard dose				Adjuvnted	High Dose	Egg based, standard dose			Cell-based	Live att.
		Afluria	Agrippal	Influvac	Vaxigrip	Fluad	TIV High Dose	Fluarix Tetra	Influvac Tetra	Vaxigrip Tetra	Flucelvax Tetra	Fluenz Tetra
TND PC	6m-17y*	x	✓	x	x	na		✓	✓	✓	✓	✓
	18-64y	x	x	x	x	na		✓	✓	✓	✓	na
	65+y	x	x	x	x	✓		✓	✓	✓	x	na
TND Hosp	6m-17y	x	✓	x	x	na		x	✓	✓	x	✓
	18-64y	x	✓	x	x	na		✓	✓	✓	✓	na
	65+y	x	x	✓	x	✓		✓	✓	✓	✓	na
Cohort	6m-6y*	x	x	x	x	na		x	x	✓	x	✓
	65-100y	x	x	x	x	x		x	x	✓	x	na

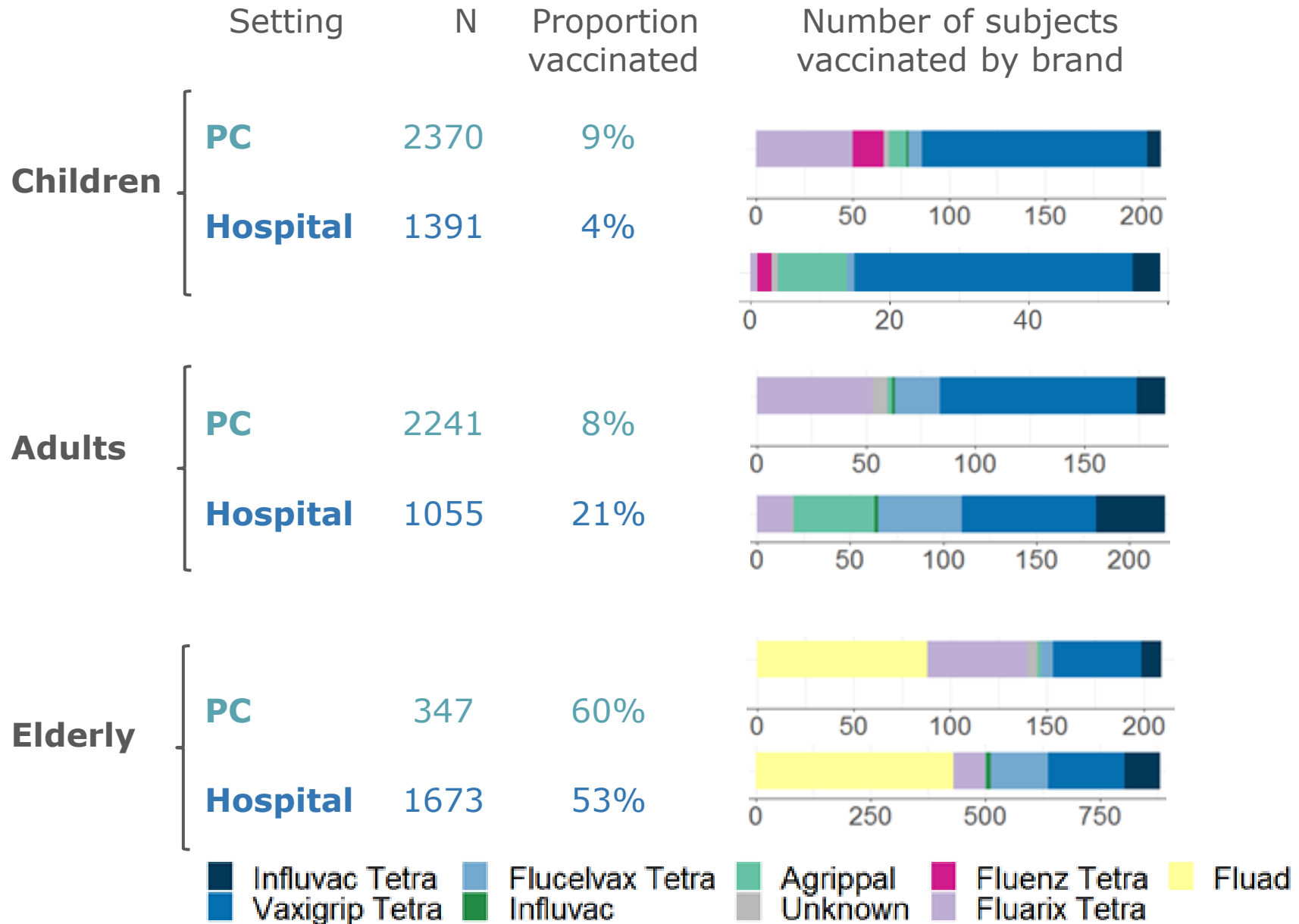
\*≥9y for Flucelvax Tetra; ≥2y for Fluenz Tetra; ≥3y for Influvac Tetra.

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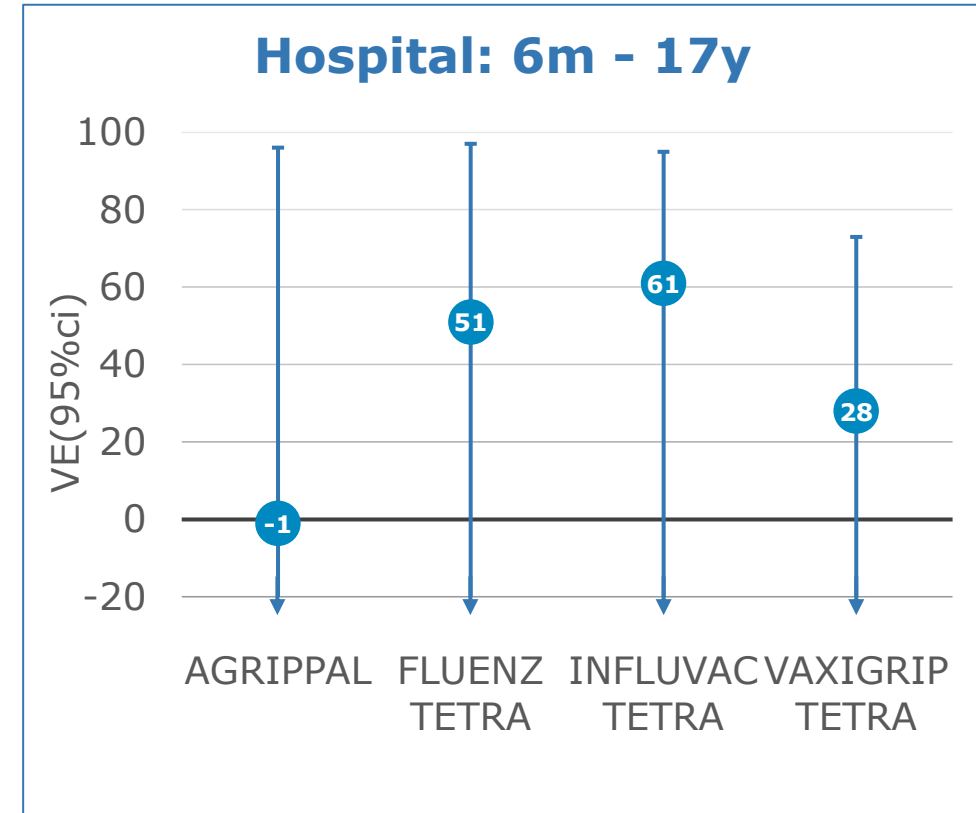
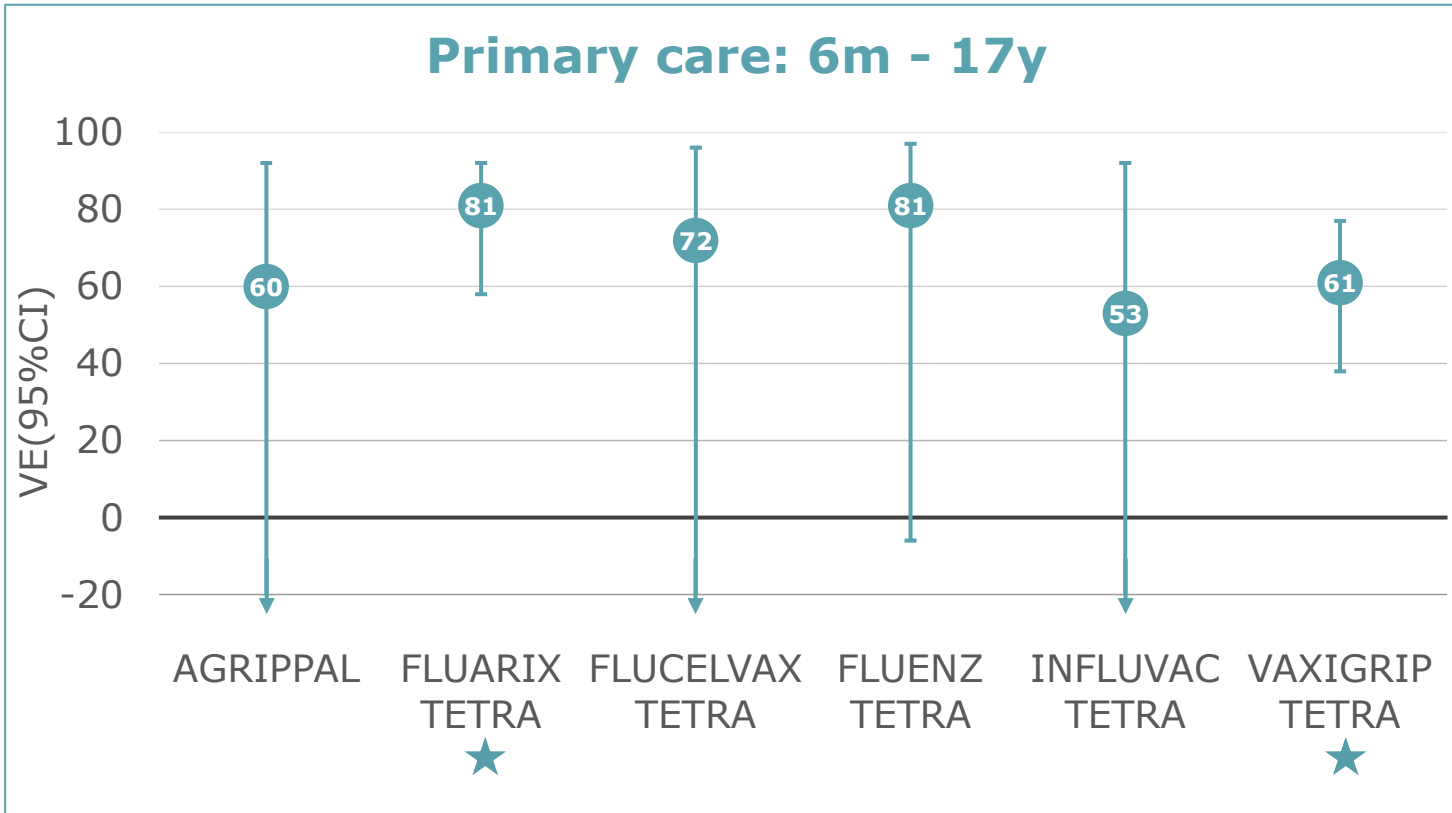
na: vaccine not licensed for age group; x: no estimate available



# TND: Distribution of vaccine brands



# Brand-specific influenza VE against any influenza in children 6m-17y

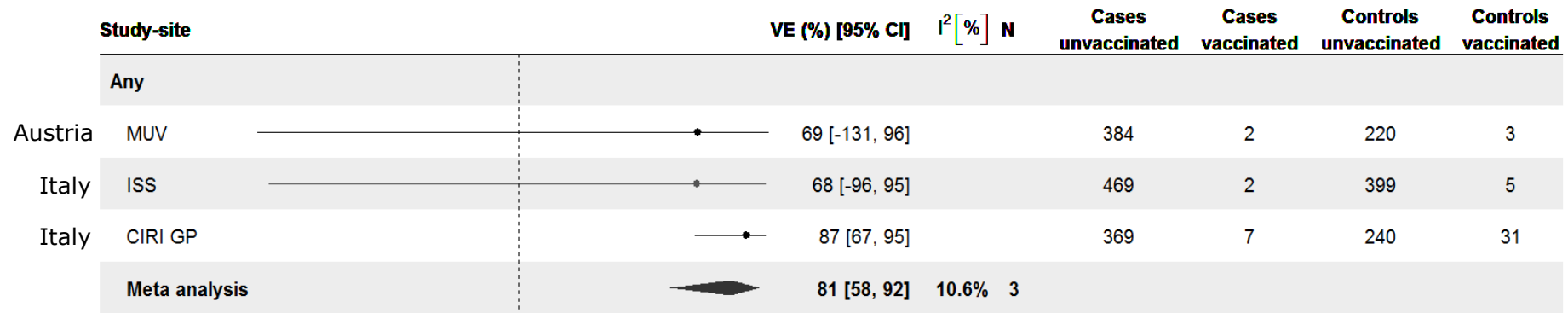


# What is behind the estimates? Example

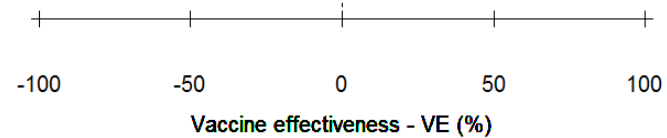
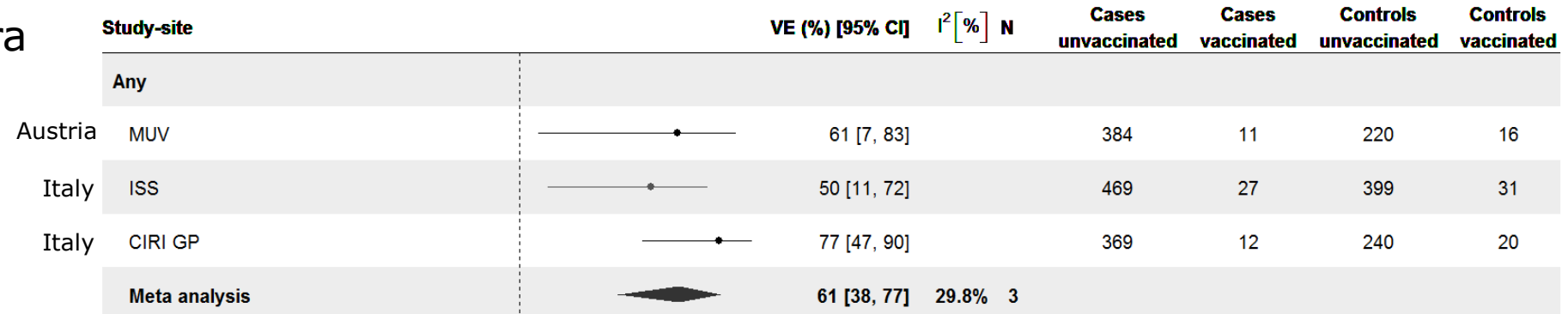
6m-17y, primary care, any influenza

Note: low number of vaccinated subjects

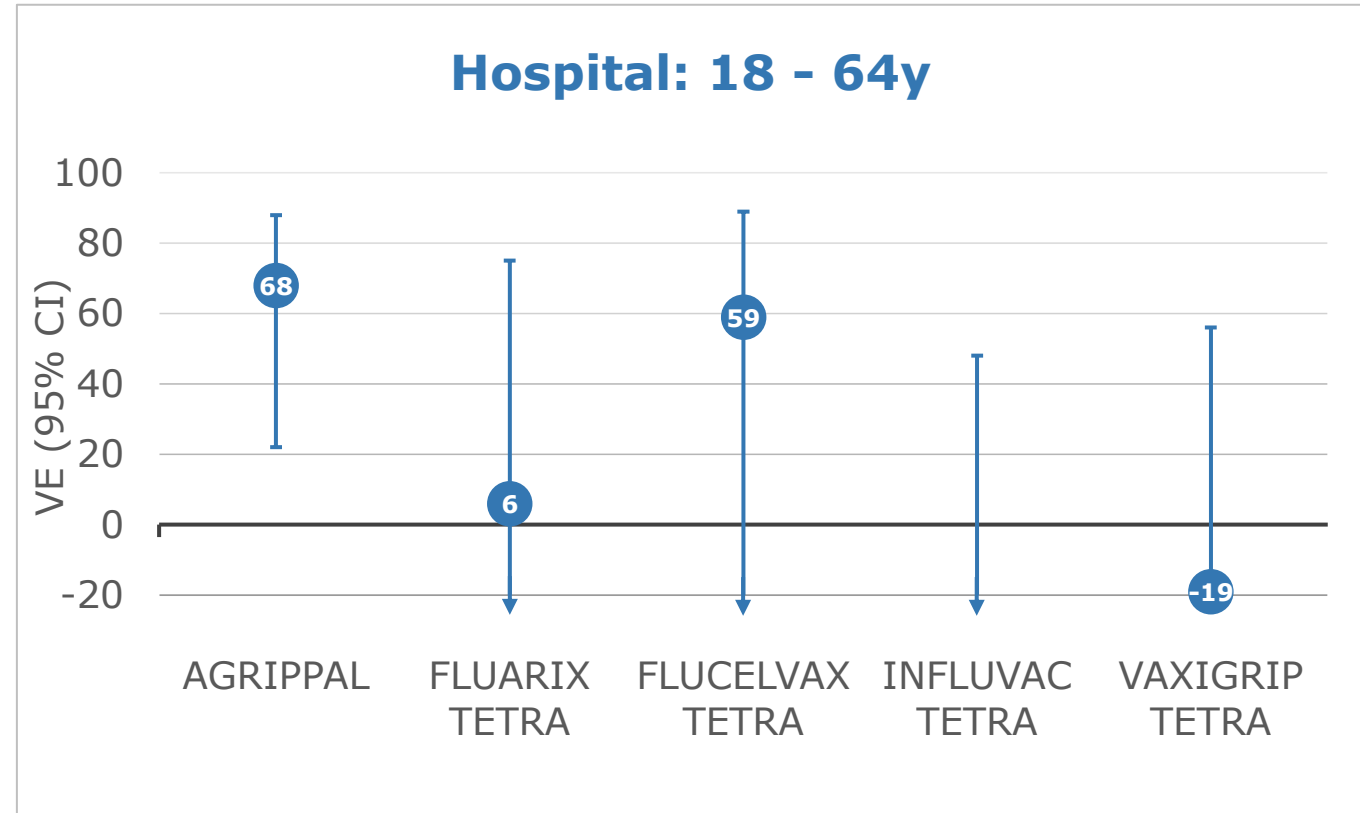
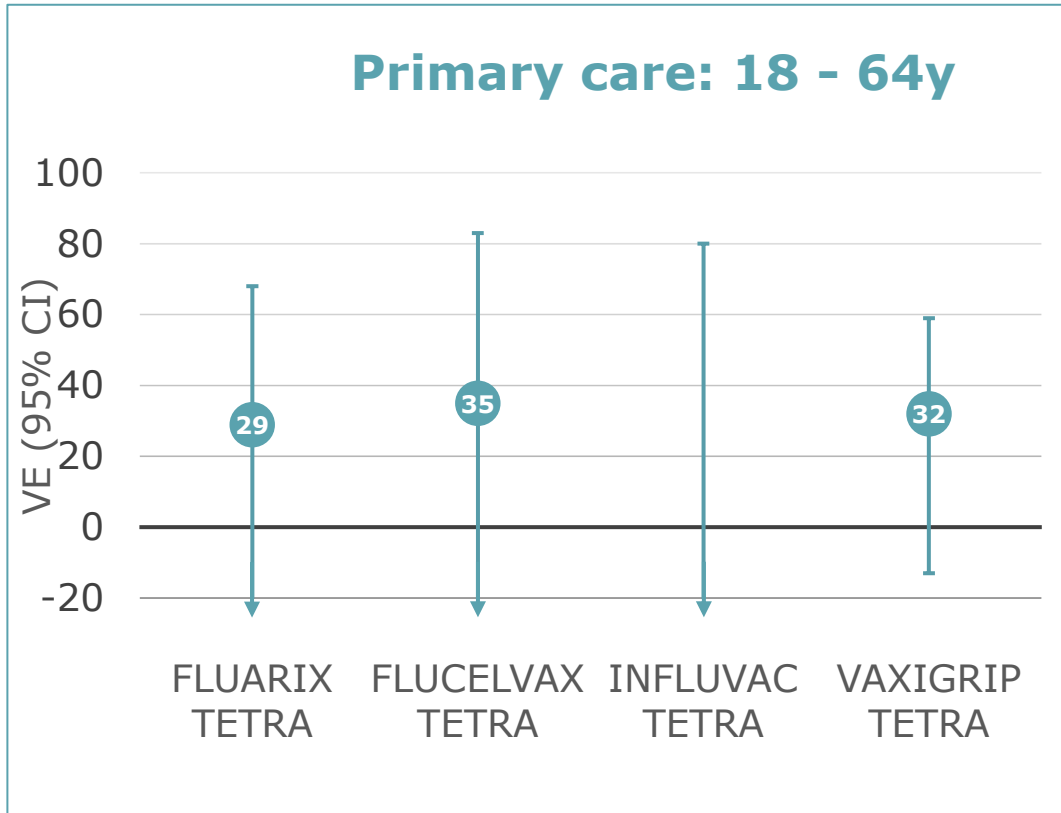
## Fluarix Tetra



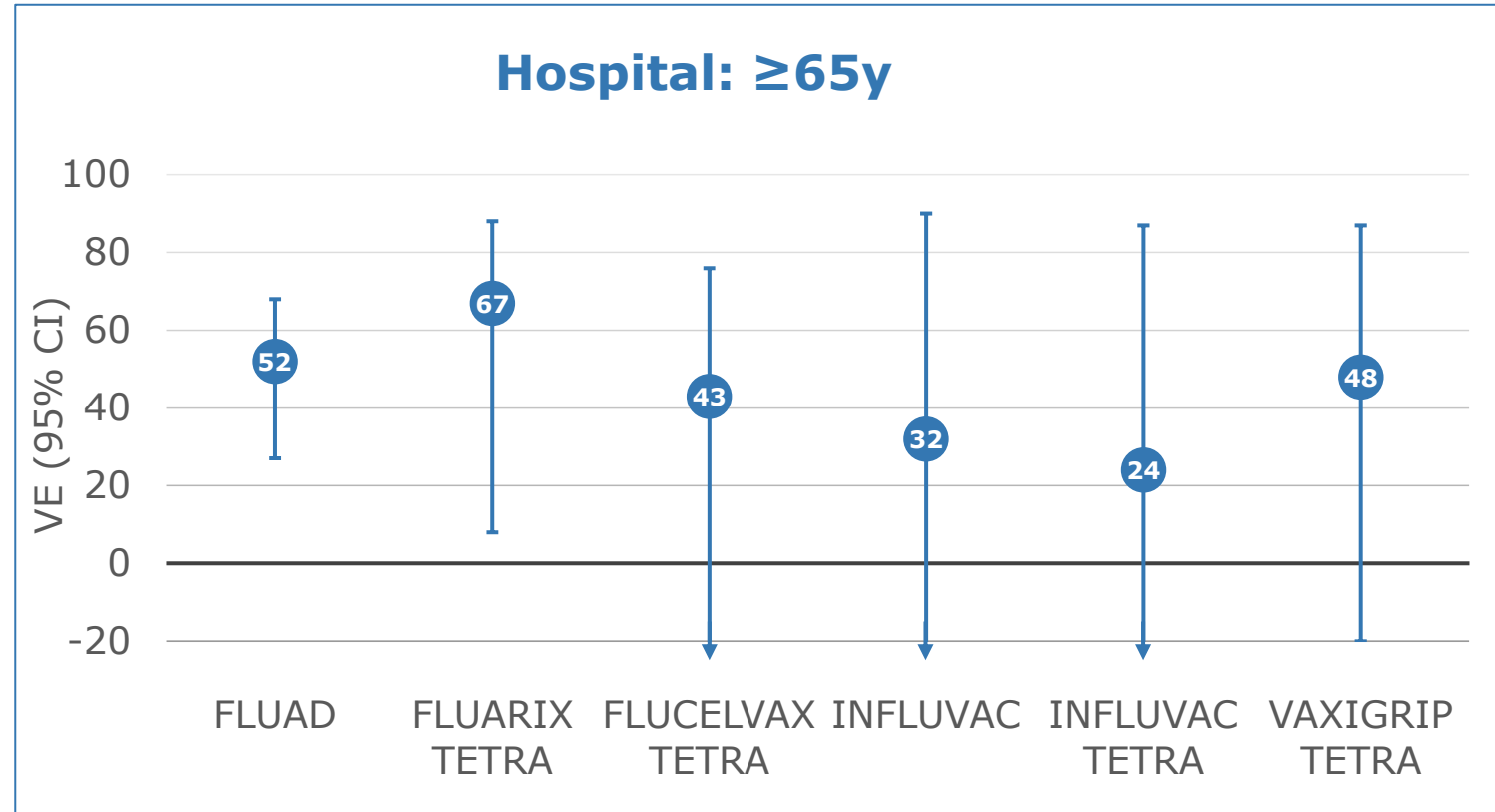
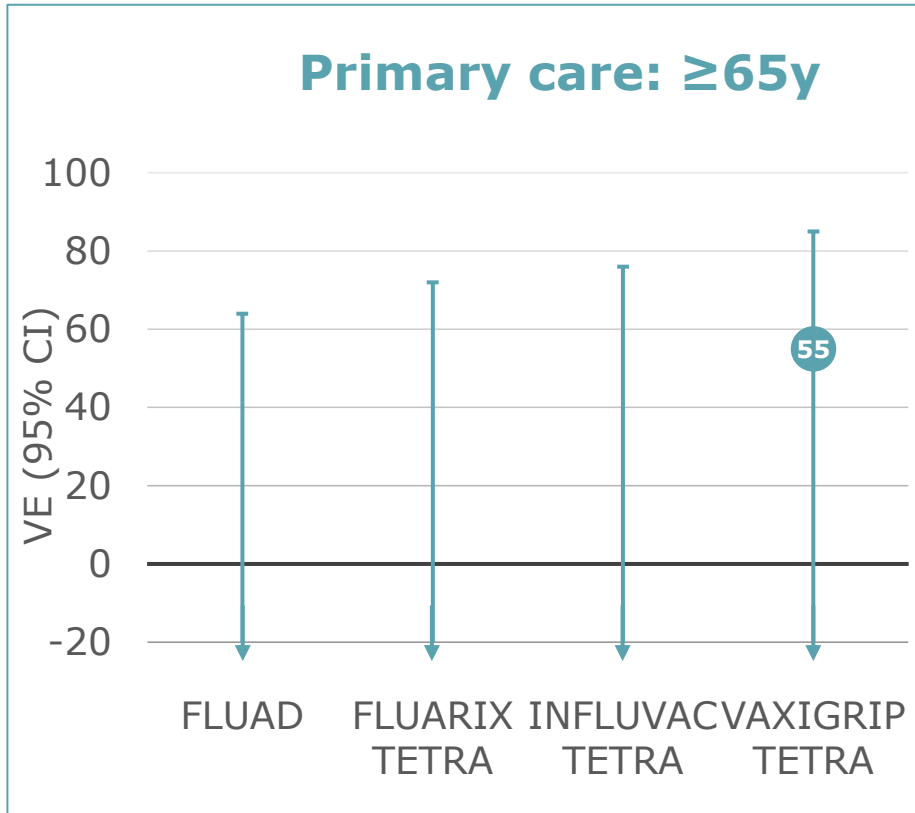
## Vaxigrip Tetra



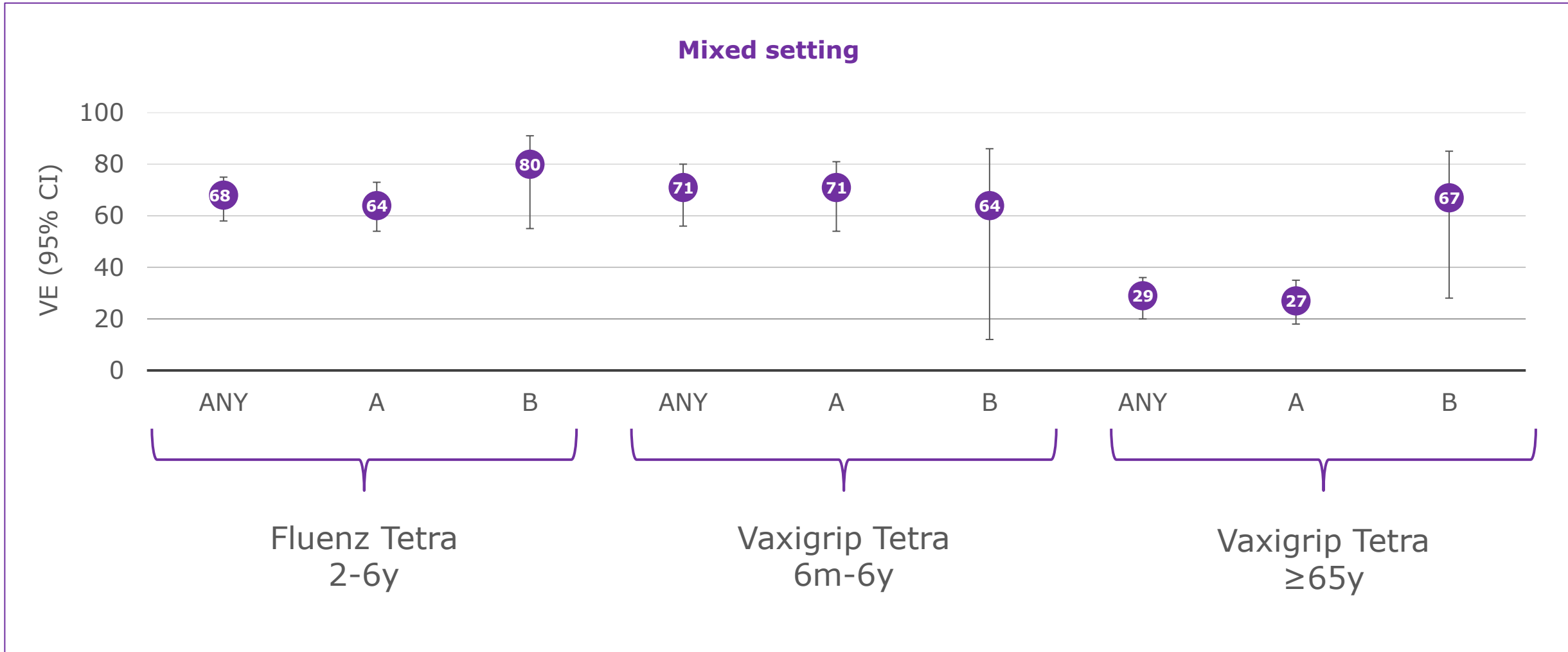
# TND: Brand-specific influenza VE against any influenza in adults 18-64y



# TND: Brand-specific influenza VE against any influenza in elderly $\geq 65y$



# Population-based cohort: all brand-specific IVE against any influenza and by influenza type



# Conclusion, 2019/2020

3rd DRIVE season

Captured 8 influenza vaccine brands in the EU

Increased the number of precise VE estimates with respect to previous season

- ✓ Increase in number of participating study sites
- ✓ Increased use of QIV compared to 2018/19
- ✓ Despite study period being shortened due to COVID-19

Plan for Season 2020/21

- Increased focus on 18-64y and  $\geq 65y$  in hospital setting
- Assessment of COVID-19 impact on IVE

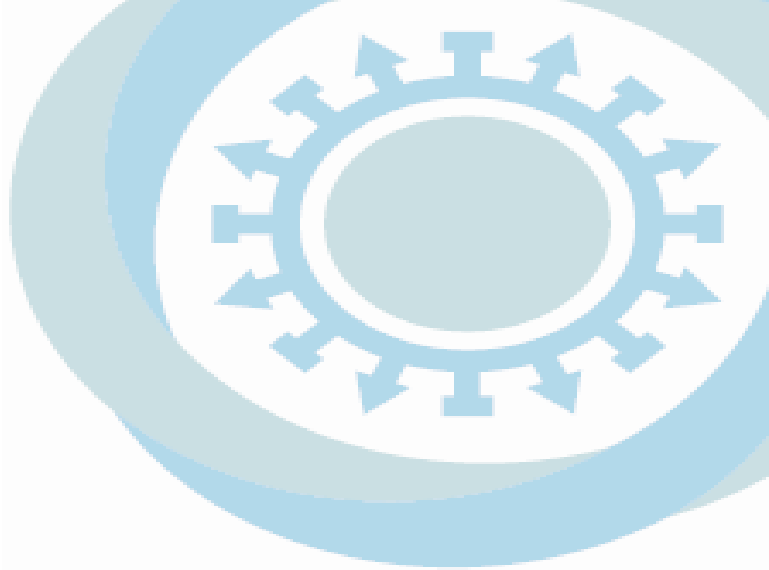
**Public health institutes with surveillance data**

**Hospitals in countries with high influenza vaccine coverage**



You are encouraged  
to join DRIVE!

[www.drive-eu.org](http://www.drive-eu.org)



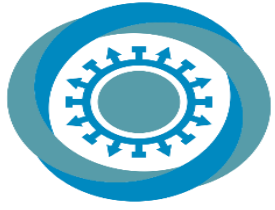
# Acknowledgments

Thank you to all the sites that contributed data and all the patients that participated in the studies.



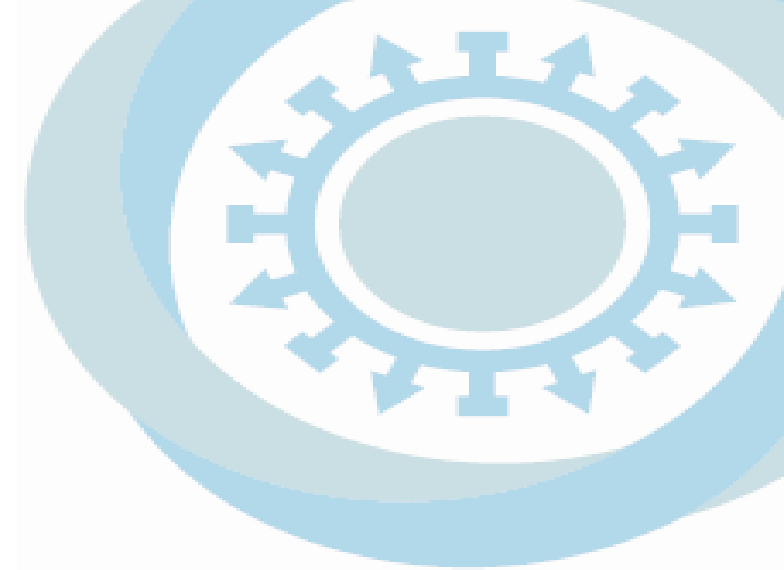
# Acknowledgments

- Medical University Vienna (MUV), Austria
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- Laboratoire National de Santé (LNS), Luxembourg
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- Italian Hospital Network (BIVE), Italy
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- Helsinki University Central Hospital (HUS), Finland
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- The Finnish Institute for Health and Welfare (THL), Finland
- Institut National de la Santé et de la Recherche Médicale (INSERM), France
- La Paz University Hospital (LPUH)
- Germans Trias I Pujol University Hospital (GTPUH)



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# Thank you for your attention!

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