Does the WHO recommended vaccination schedule truly benefit child survival?

Preliminary analysis, Matlab

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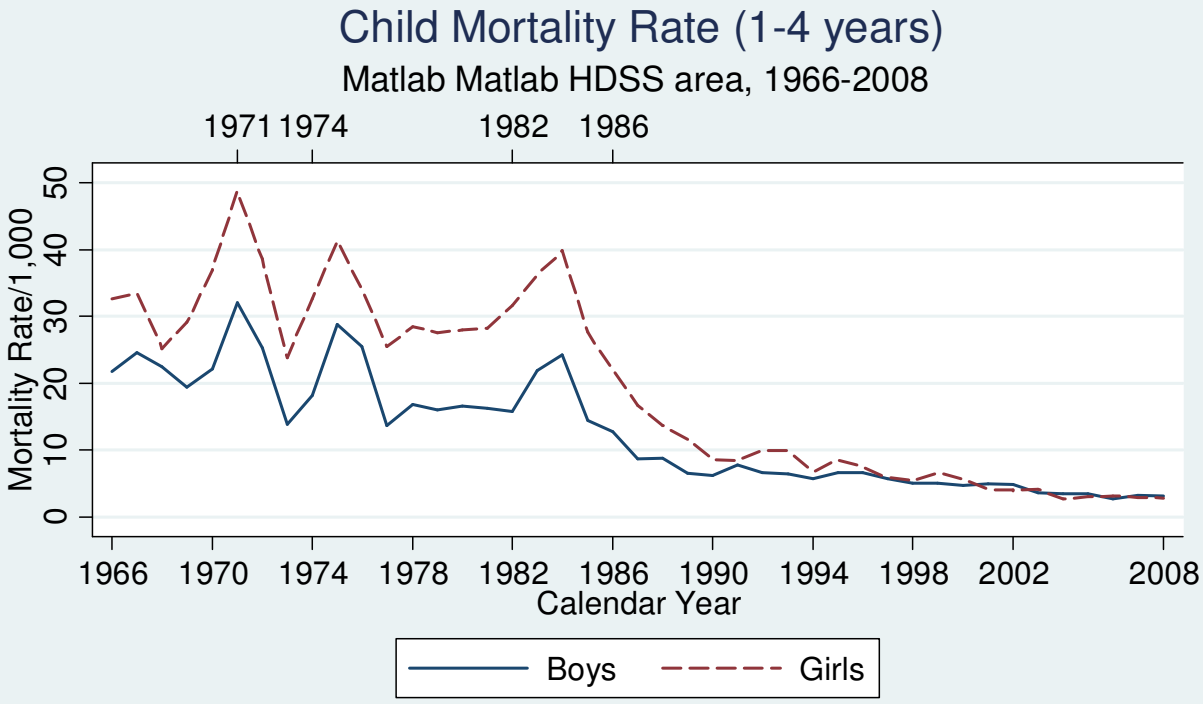
Background

Routine childhood vaccination is an effective intervention to reducing mortality



Source:Matlab HDSS
(1971: Liberation war)
(1974: Famine)
(1982-85: Measles Vaccine Trial)
(1986-2008: EPI(BCG,DPT,Measles, and Polio) and Vitamin A)

Most of the developing countries are implementing the WHO immunization programme

WHO vaccination schedule	Practice	
	BCG/DPT	DPT/MV
BCG and OPV at birth	BCG before DPT	DPT before MV
OPV & DPT at 6/10/14 wk	BCG with DPT	DPT with MV
Measles vaccine (MV) at 9 mo	BCG after DPT	DPT after MV

Objective

Examine the effect of vaccination on child survival in Bangladesh in the following sequence of vaccination:

- BCG/DPT vaccination
- DPT/MV vaccination

Methods

- 42,554 children was followed-up until 3 years of age.
- Data on survival status, out-migration, vaccination, and causes of death have been collected systematically through a regular household visit of fortnightly (1987-1998) and monthly (1999-2005).

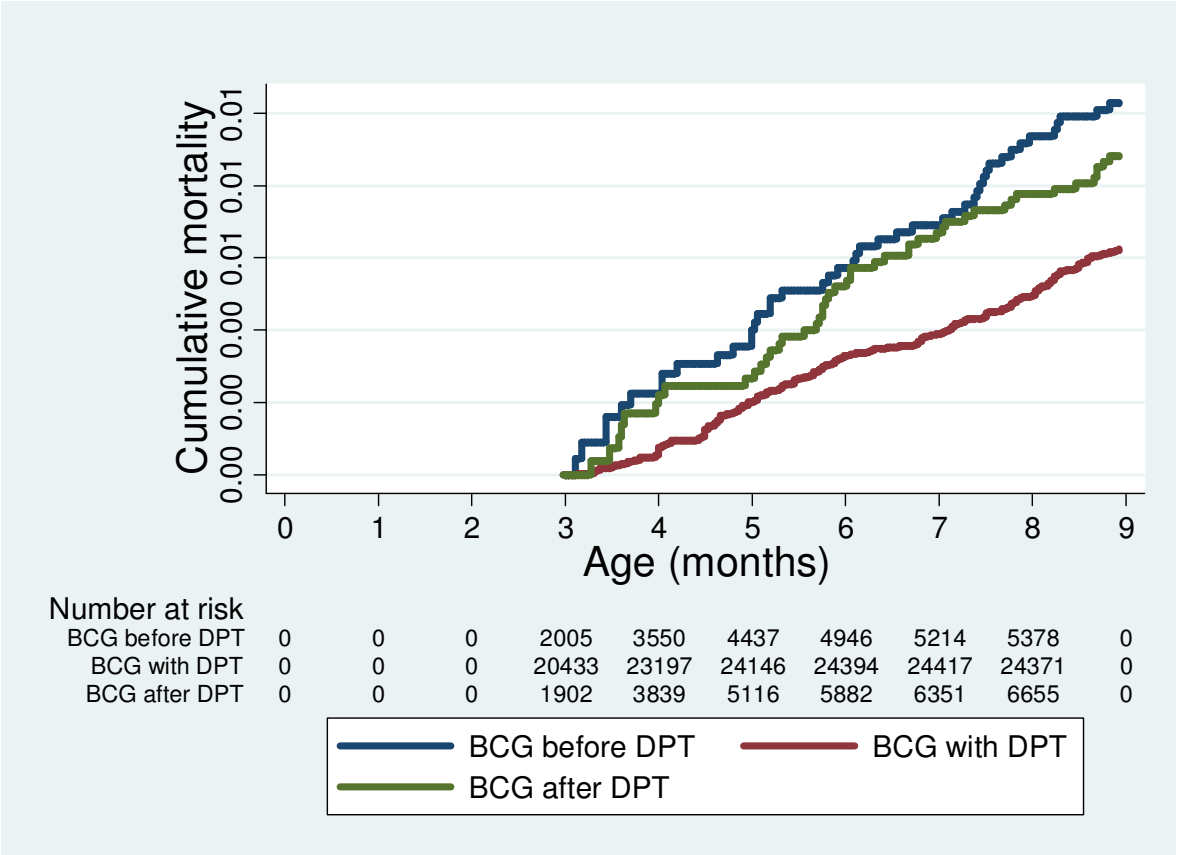
Effect of BCG/DPT sequence of vaccination on child survival for infectious diseases

Mortality by BCG/DPT sequence of vaccination

Sequence	Median age in days (IQR)	D/N	%	HR (95% CI)
BCG before DPT	104 (81-140)	46/5,629	0.82	Ref.
BCG with DPT	64 (53-81)	172/25,103	0.69	0.76 (0.53-1.08)
BCG after DPT	114 (89-159)	46/6,986	0.66	0.83 (0.55-1.24)
Total	74 (58-74)	264/37718	0.70	-

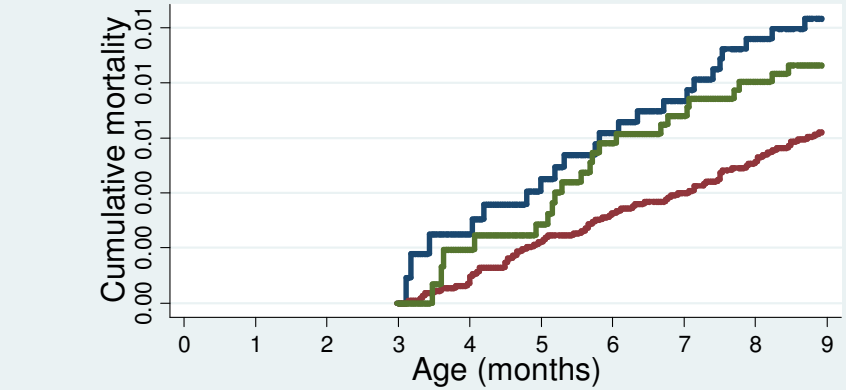
Control for year of birth

Mortality by BCG/DPT sequence of vaccination

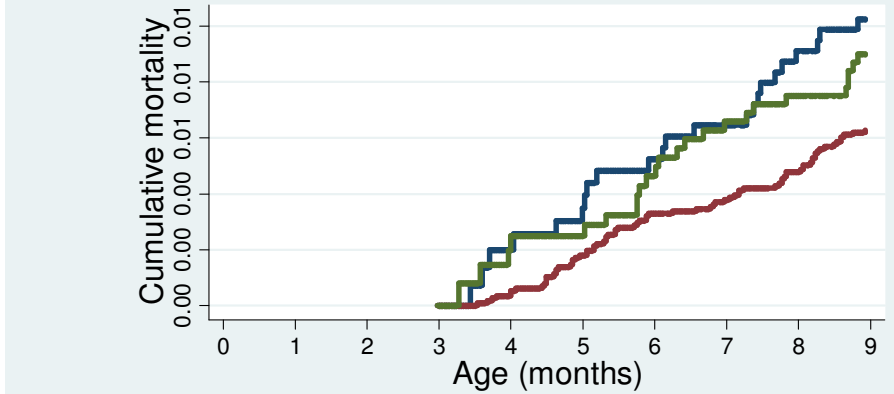


Mortality by BCG/DPT sequence of vaccination

Boys



Girls



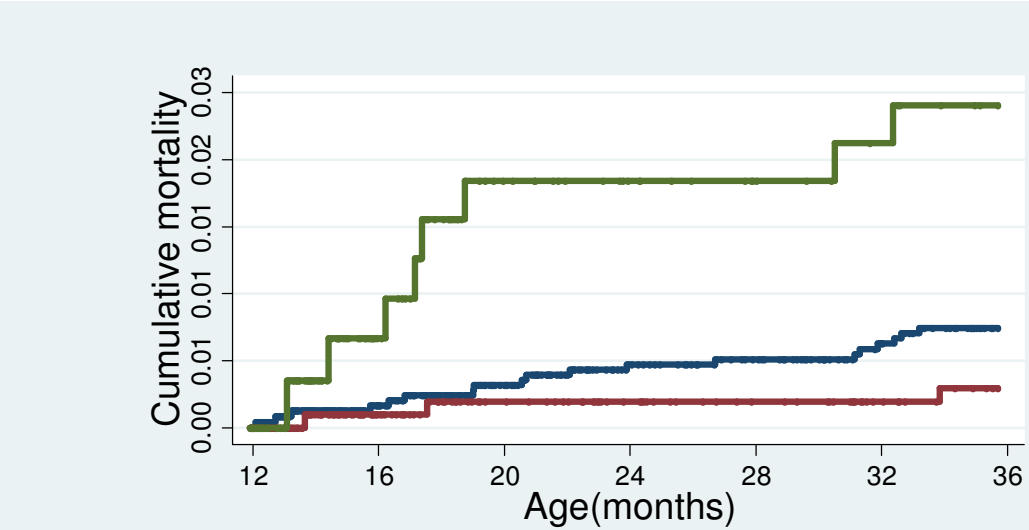
Effect of DPT/MV sequence of vaccination on child survival for infectious diseases

Mortality by DPT/MV sequence of vaccination

Sequence	Median age in days (IQR)	D/N	%	HR (95% CI)
DPT before MV	312 (291-347)	21/2754	0.76	Ref.
DPT with MV	300 (283-328)	5/1086	0.46	0.61 (0.23-1.65)
DPT after MV	299 (280-326)	8/380	2.11	3.12 (1.35-7.21)
Total	307 (288-341)	34/4220	0.81	-

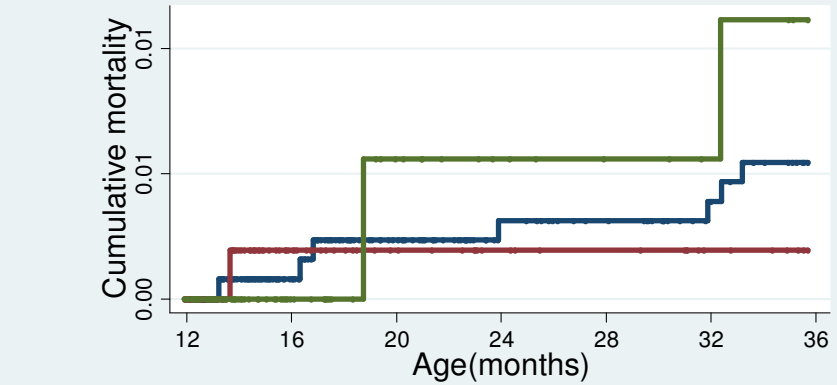
Control for year of birth

Mortality by DPT/MV sequence of vaccination

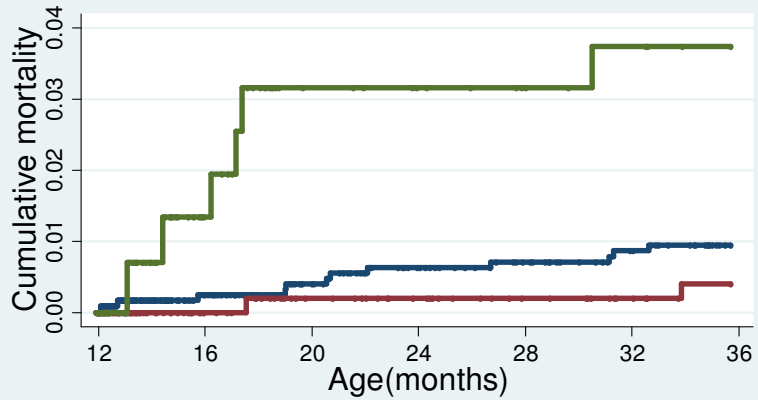


Mortality by DPT/MV sequence of vaccination

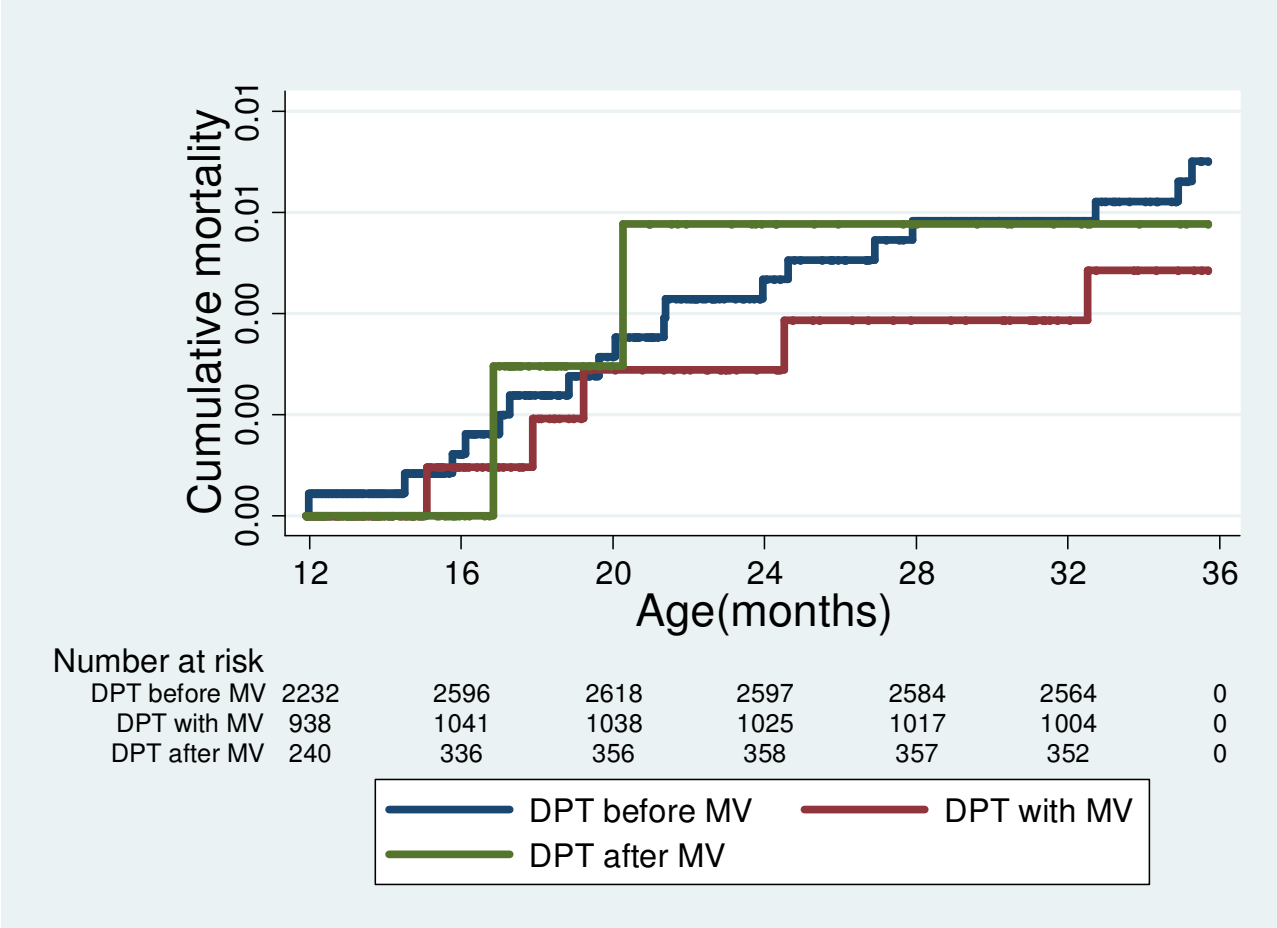
Boys



Girls



Effect of DPT/MV sequence of vaccination for injury cases



Sequence of DPT/MV vaccination has no effects on child survival in case of injury cases,

Conclusion

- BCG out of sequence may be associated with lower mortality than WHO recommended schedule

- Receiving DPT after MV increase the risk of death of children compared to DPT before MV. The negative effect is stronger for girls than boys

Acknowledgement

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- INDEPTH Network

Thank You