



## Randomised trials of BCG to low-birth-weight children in Guinea-Bissau (Christine Benn)

The age of BCG vaccination and the decline in  
neonatal mortality: Evidence from Navrongo  
(Paul Welaga)



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# BCG

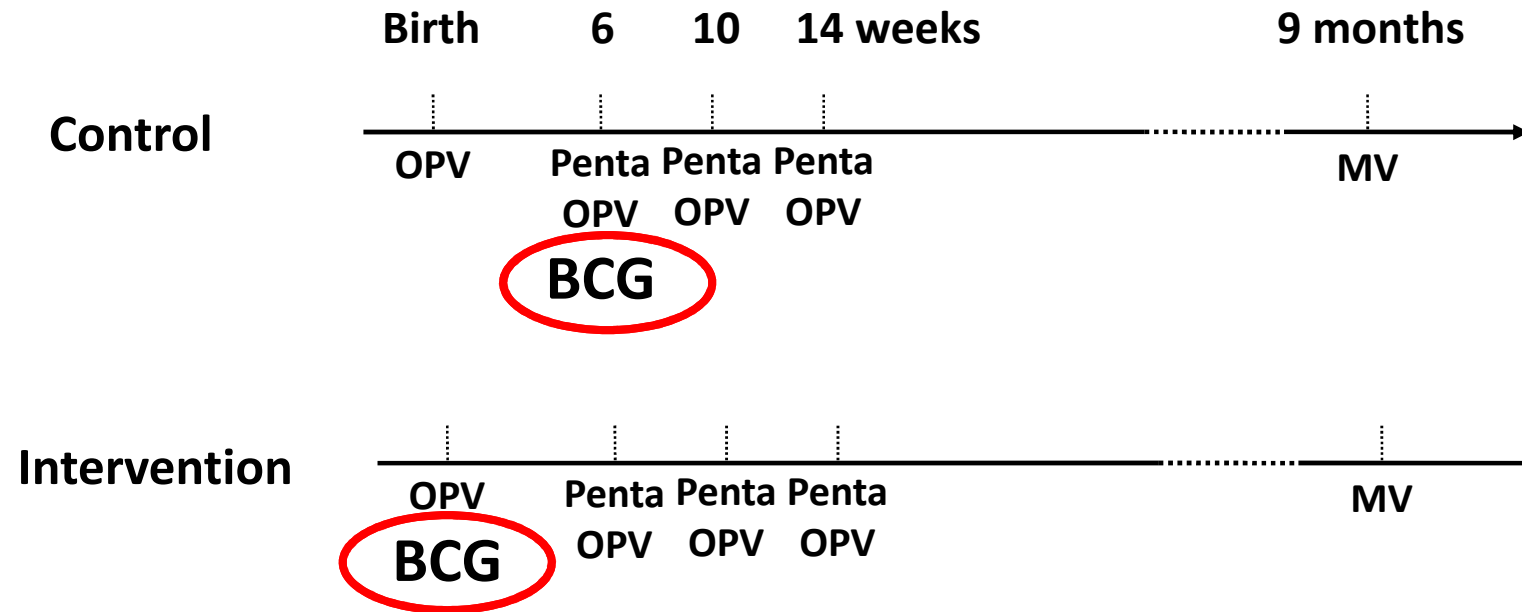
- Vaccine against tuberculosis (TB), given at birth



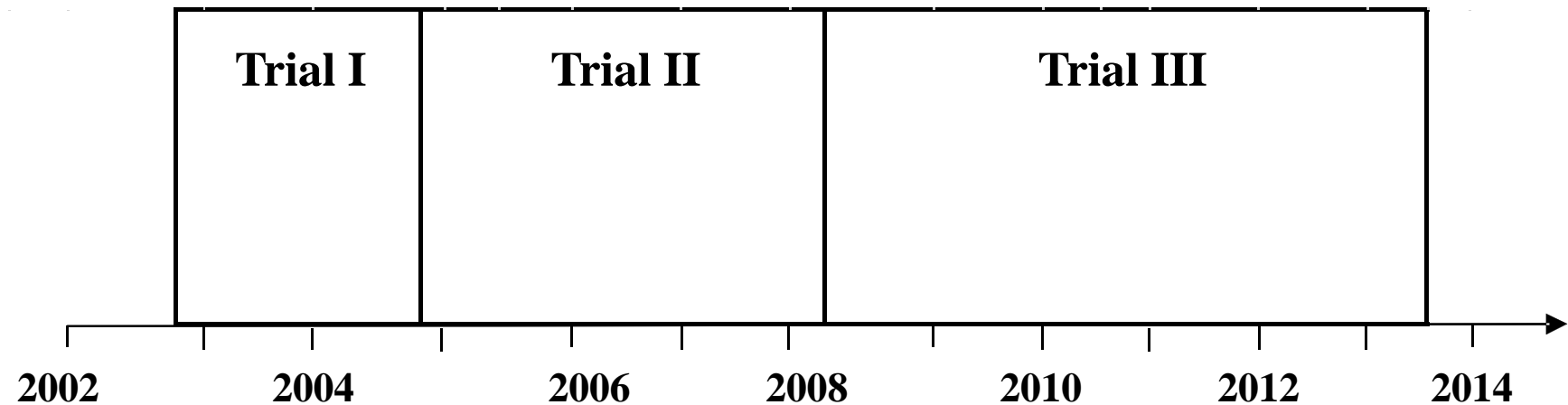
- Many countries delay vaccination in low birth weight children
- Only 50% vaccinated within 4 weeks age in Sub Saharan Africa
- Timing not considered very important since TB takes years to develop

# Randomised trials in Guinea-Bissau

## Low-birth-weight infants (<2,500 g)



# Timeline of the three randomised trials of early BCG to low-birth-weight infants in Guinea-Bissau



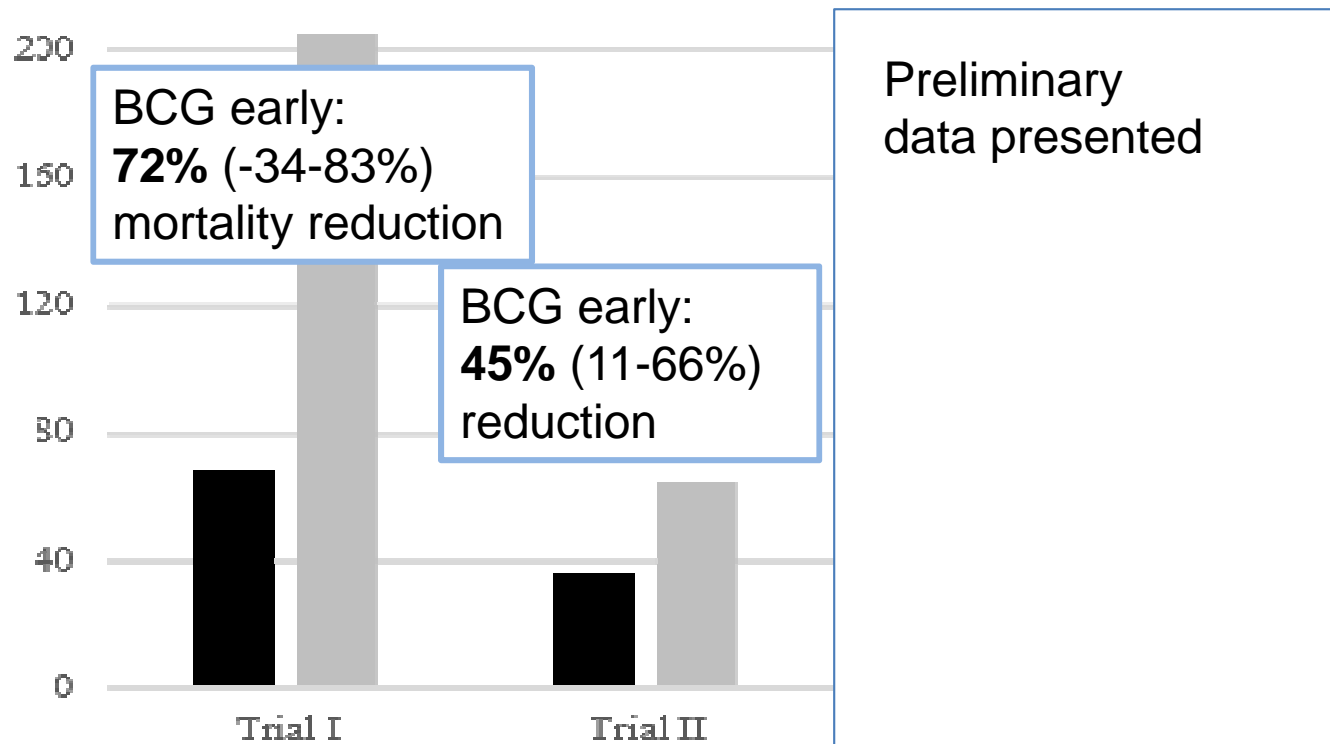
Trial I: Biering-Sørensen et al, Ped Inf Dis J 2012

Trial II: Aaby et al, J Inf Dis 2011

Trial III: Biering-Sørensen et al, Submitted

# Combined mortality analysis of Trials I, II, and III

**28 days after birth**

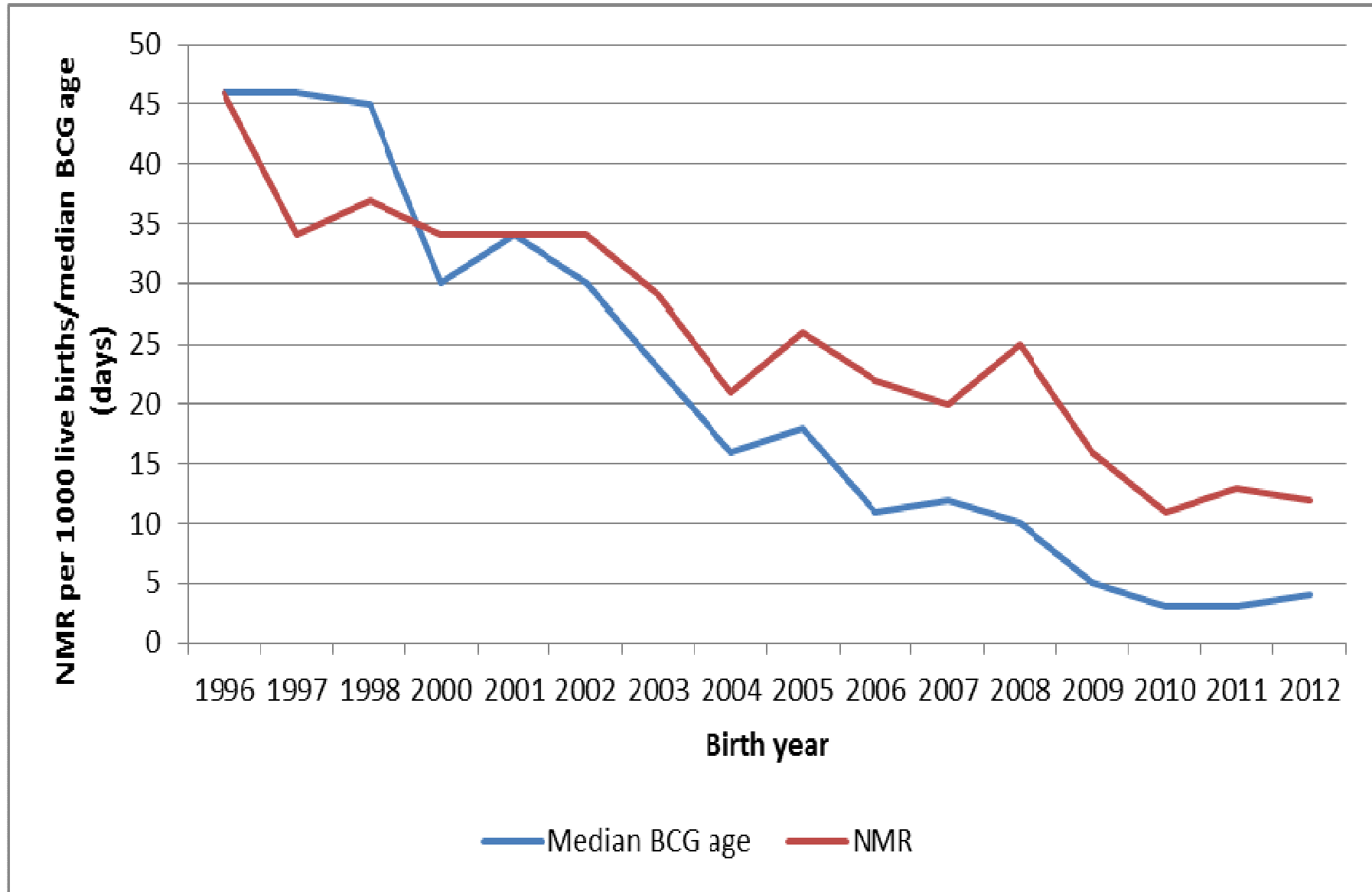


**Combined analysis:  
In the neonatal period:**

After 3 days:  
In the first year of life:

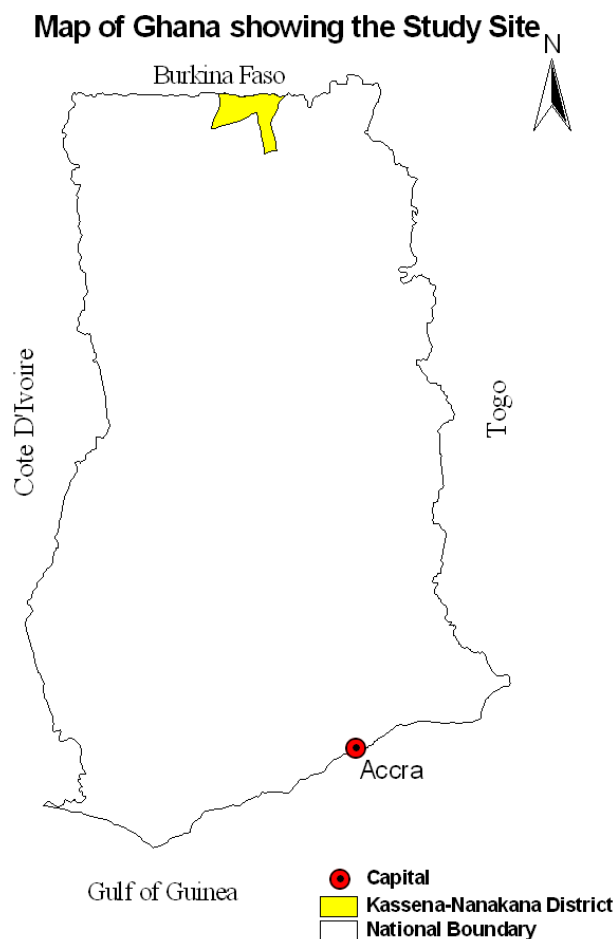
# Navrongo HDSS: 1996-2012

## Neonatal mortality rates and median BCG vaccination age

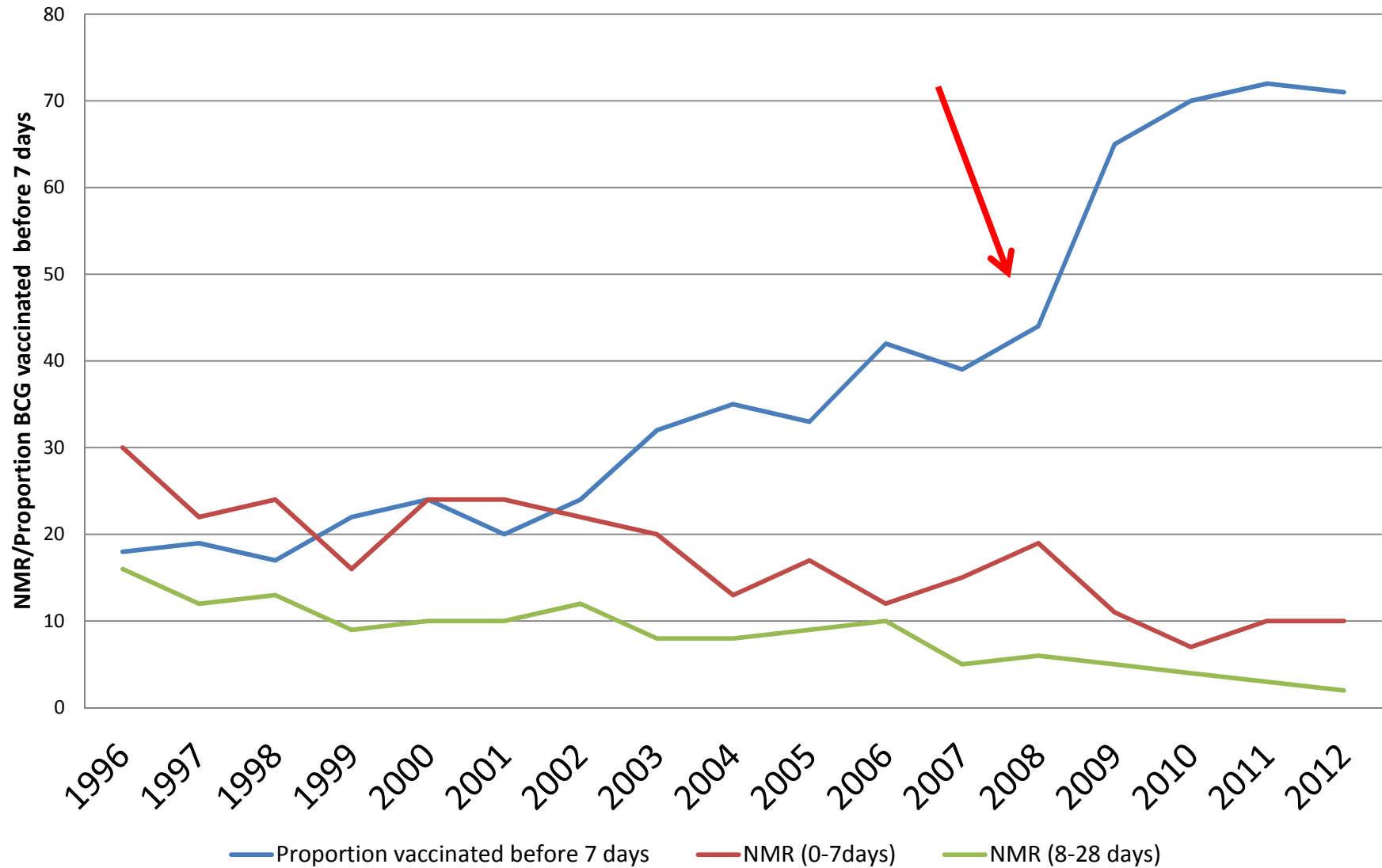


# Methods

- We used routine vaccination data of children in the HDSS born from 1996 to 2012
- Calculated yearly neonatal mortality rates per 1000 live births
- We also calculated median BCG vaccination age by birth year
- We carried out a sub-group analysis of children delivered at home and visited in the first 28 days of life to assess neonatal mortality by BCG status



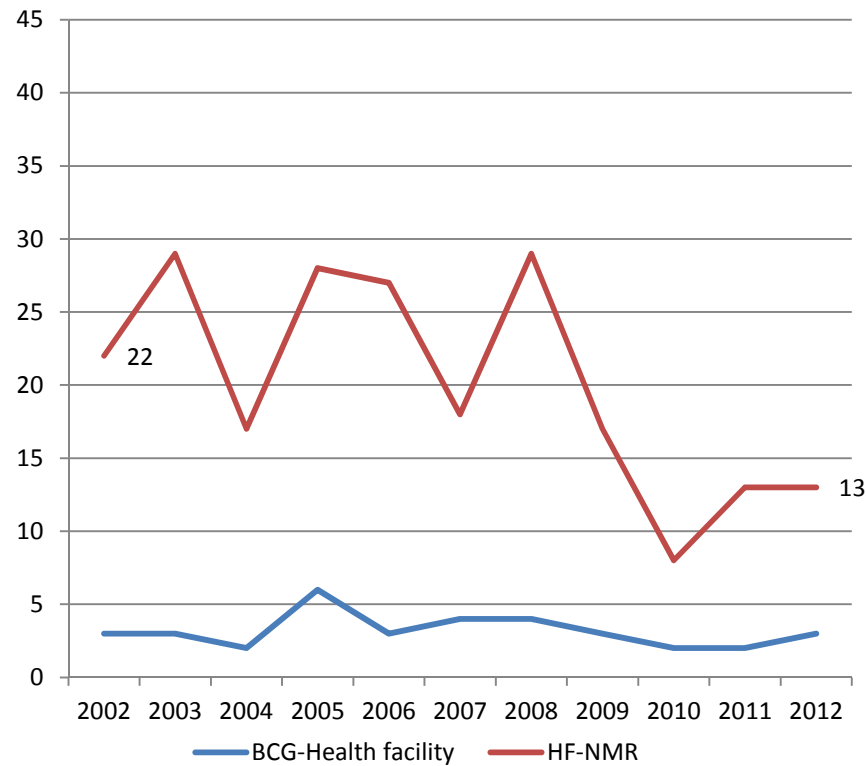
# Proportion BCG vaccinated before day 7 and neonatal mortality rates in Navrongo HDSS: 1996-2012



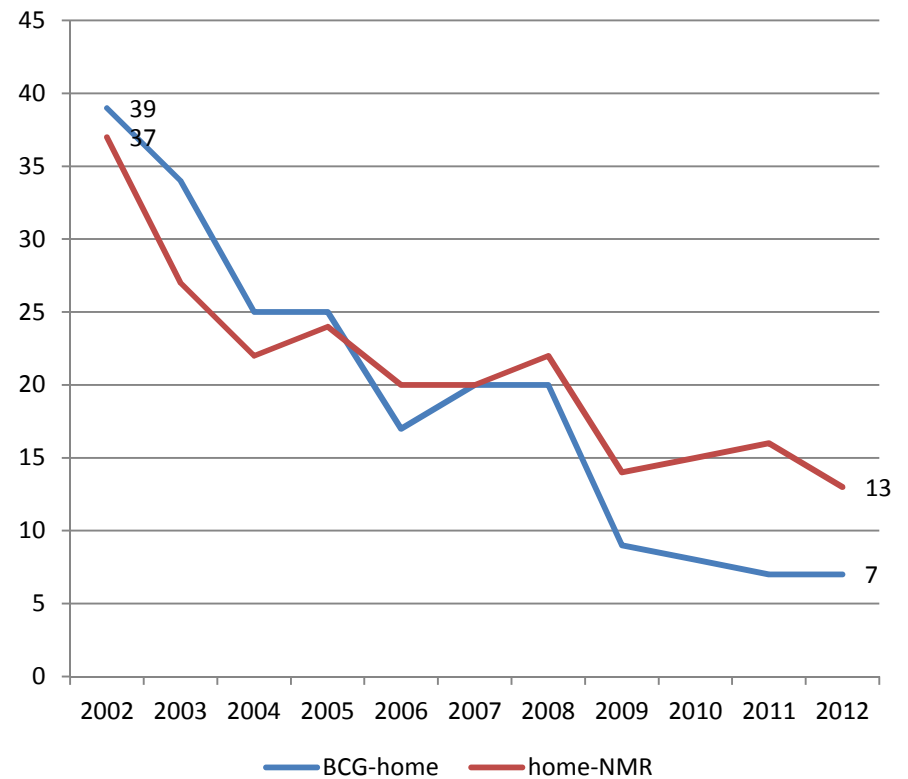


# Median BCG vaccination age and neonatal mortality rates for Home and Health facility deliveries

## Health Facility Deliveries



## Home Deliveries



## Neonatal mortality rates (NMR) and relative mortality for children aged 0-28 days at time of interview by BCG vaccination status

| <b>BCG status</b> | <b>Number (%)</b> | <b>Neonatal mortality rate</b> | <b>Relative mortality (Adjusted)</b> |
|-------------------|-------------------|--------------------------------|--------------------------------------|
| BCG-unvaccinated  | 4049 (82.5)       | 147                            | ref                                  |
| BCG-vaccinated    | 861 (17.5)        | 81                             | 0.53 (0.12-2.35)                     |

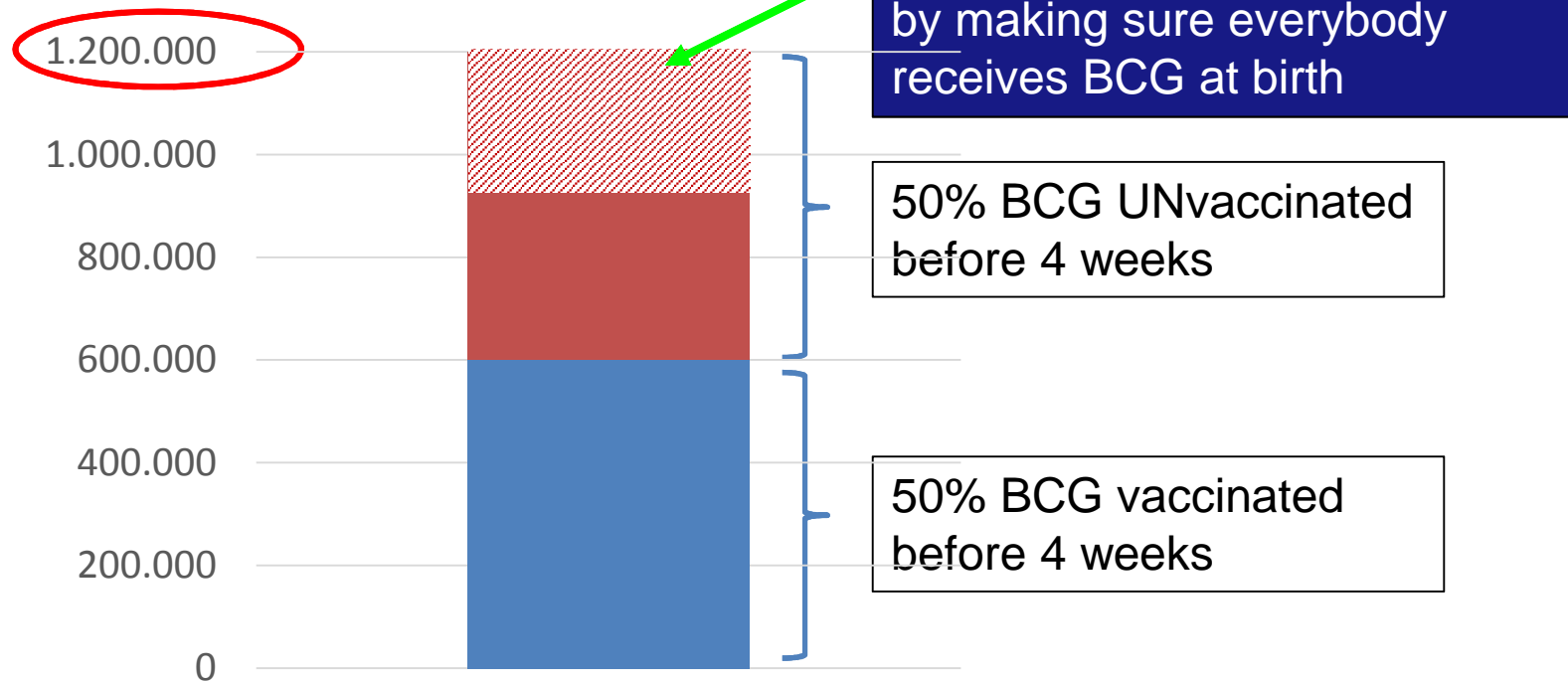
# Navrongo conclusion

- Though an observational study, the data point to an association
- Strong emphasis on lowering BCG vaccination age could contribute to reducing neonatal mortality rates

# Conclusion

- Results of RCTs in Guinea-Bissau and observational studies in Ghana support that BCG has important non-specific beneficial effects on neonatal mortality
- Sub Saharan Africa:

Deaths before 4 weeks of age per year



Thank you for your attention