

# Keneba & Manduar

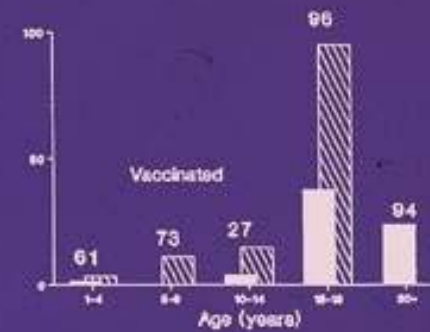
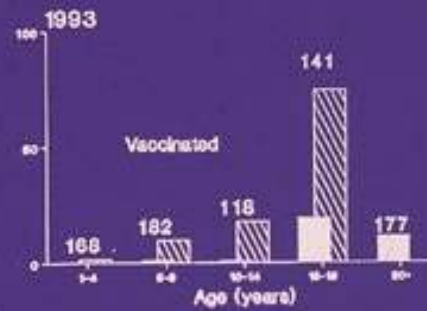
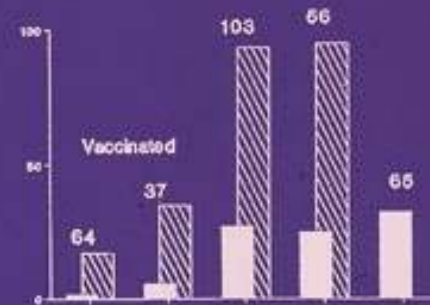
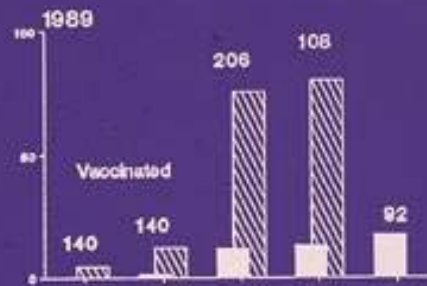
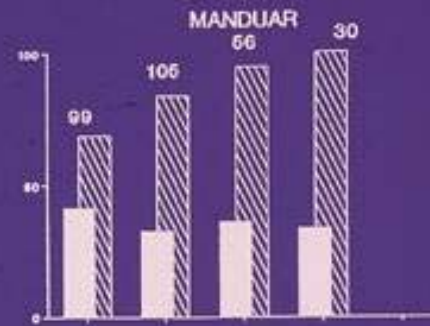
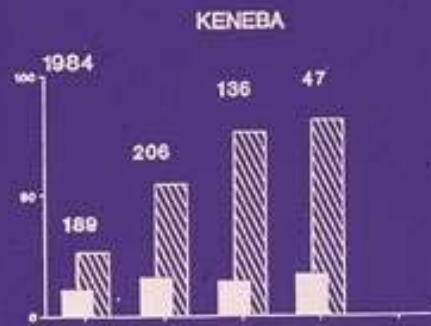
- Pilot villages for national introduction
- Combination of longitudinal and repeated cross sectional studies

# K&M 2

- 1980 Cross sectional survey of children & mothers for HBV markers
- 1984 Vaccination of all susceptibles under the age of 5 + ongoing vaccination of newborns
- From that time all newborns vaccinated with 2,3,4 month regime + blood sample at one year of age for antibody level

# K&M 3

- Repeated cross sectional surveys of those under 20 years of age
- 1989
- 1993
- 1998
- 2003 (preliminary data)



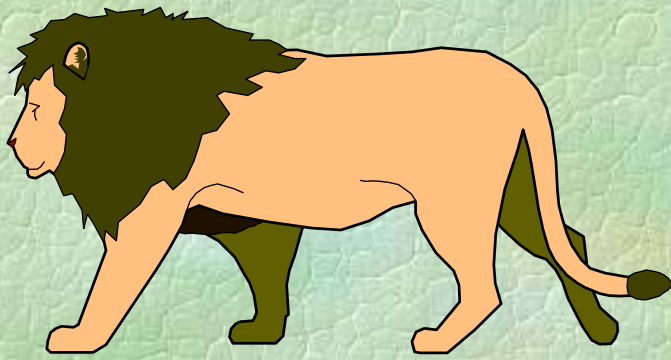
# K&M 1998

	Keneba		Manduar	
Age (yrs)	Core +	HBsAg+	Core +	HBsAg+
1-4	4/175	2/175	5/65	1/65
5-9	5/167	0/167	4/58	0/58
10-14	20/172	1/172	14/73	1/73
15-19	40/119	1/119	10/27	2/27

# K&M vaccine failures

- Four children have become hepatitis B carriers despite 3 doses of vaccination and who were infected after the perinatal period.
- Three of these had undetectable peak antibody levels (non-responders).
- One had a peak antibody of 406 iu/l.





# **Gambia Hepatitis Intervention Study**

International Agency for Research  
on Cancer (WHO)

Gambia Government

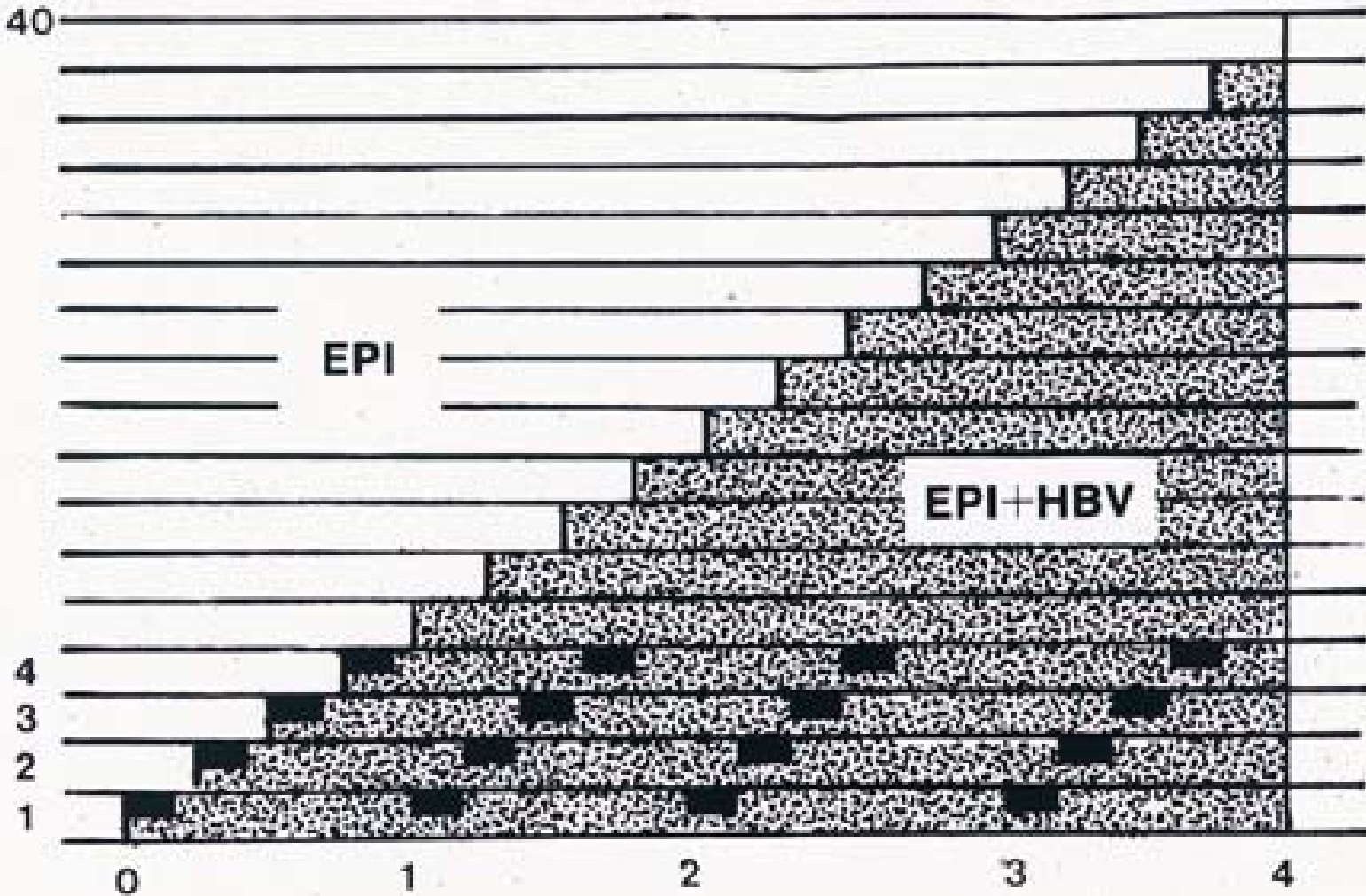
Medical Research Council (UK)



# Gambia: HBV Vaccination

Team

40



Time in years since start of programme

■ Study Group 1

# GHS design

- Stepped wedge introduction of vaccine
- 1000 vaccinated children followed up yearly
- Cross sectional surveys to estimate vaccine efficacy aged 4 and 9 years
- National Cancer Registry
- Linkage of registered liver cancer patients to their vaccine status



# VACCINATION SCHEDULE

## FOR CHILDREN UNDER 1 YEAR OLD

**1st Month** VACCINATE AGAINST THESE DISEASES





1st Polio  
1st Hep. B

**2nd Month** VACCINATE AGAINST THESE DISEASES







DIPHTHERIA  
PERTUSSIS  
TETANUS  
2nd Polio  
2nd Hep. B

**3rd Month** VACCINATE AGAINST THESE DISEASES






DIPHTHERIA  
PERTUSSIS  
TETANUS  
3rd Polio

**4th Month** VACCINATE AGAINST THESE DISEASES







DIPHTHERIA  
PERTUSSIS  
TETANUS  
4th Polio  
3rd Hep. B

**9th Month** VACCINATE AGAINST THESE DISEASES






Measles  
Yellow Fever  
5th Polio  
4th Hep. B

**VACCINATE YOUR CHILDREN NOW**



# GHS vaccination

- MSD plasma derived vaccine 20 ug/dose
- Integrated into Expanded Programme on Immunisation
- Target ages 0, 2, 4 and 9 months



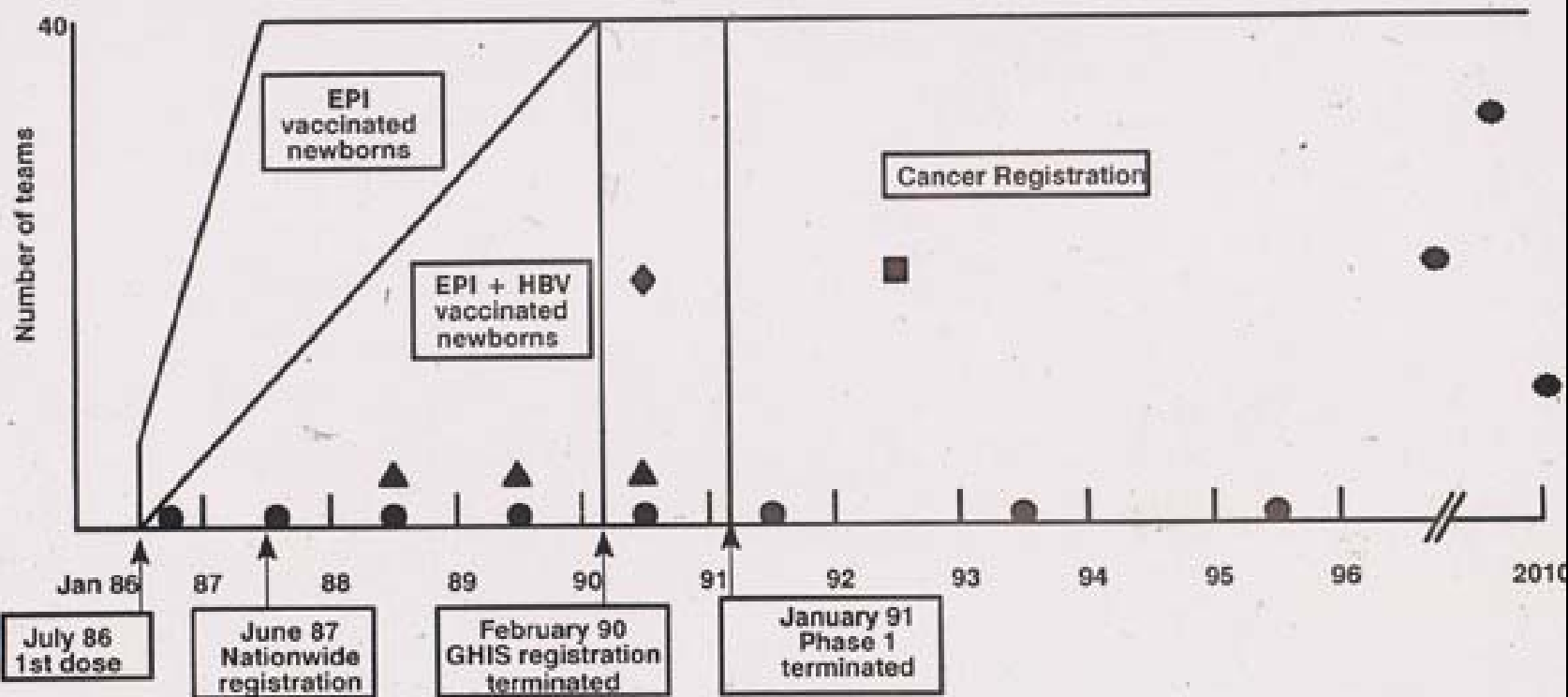


# Sample size

- Original estimate required 120,000 children (60,000 vaccinated) followed to the age of 35 years
- But
  - VE observed 94%
  - Vaccine coverage 90%
  - HCC rates higher than expected (esp in 20s)

**Result in 2018?**

- Group 1. Follow up of 1000 HBV-vaccinated infants
- ◆ Group 2. Cross sectional sample of 1000 EPI-vaccinated infants (4-5 year old)
- ▲ Group 3. Three groups of 500 HBV-vaccinated infants (12-17 months)
- Cancer Epidemiology Course
- Identification of cases of liver cancer

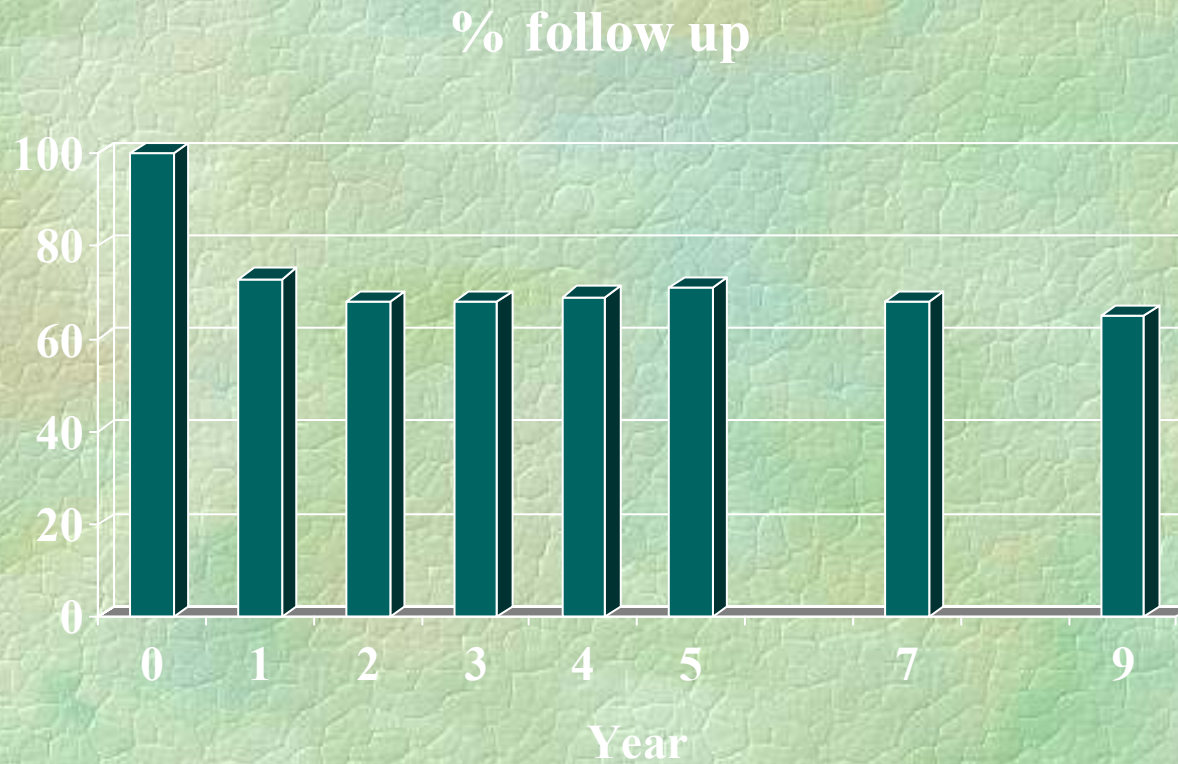








# GHIS overall cohort follow-up





Serological status Year one

Negative all markers 11 (1%)

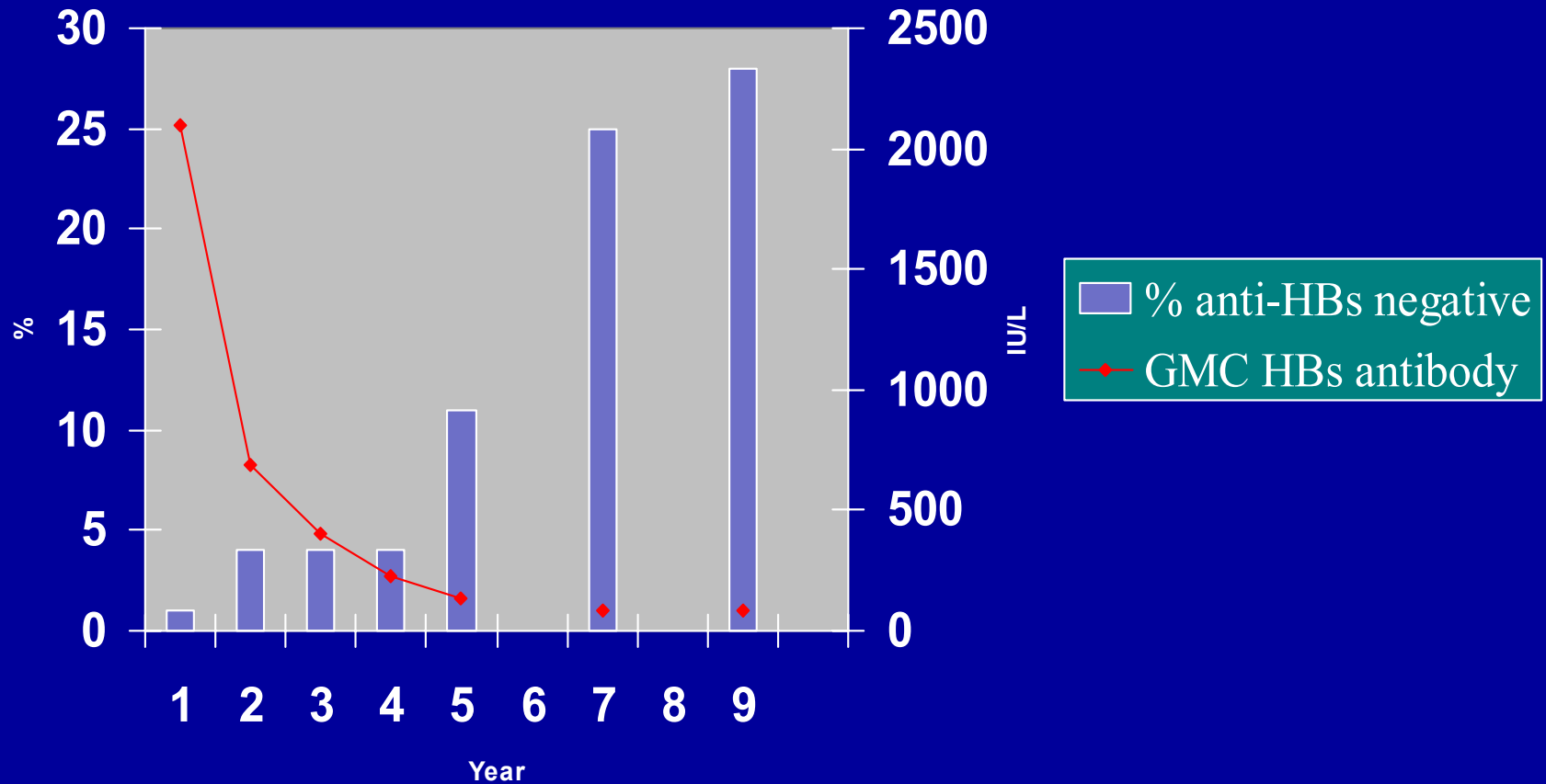
Surface ab + 716 (94)  
Core ab -

Surface ab + 33 (4)  
Core ab +

Surface ab - 4 (0.5)\*\*  
Core ab +

\*indicates surface antigen +

# GHIS: Surface antibody decline



Vaccine efficacy  
(95% CI)

Against infection      Against disease

**At 4**

**years of  
age**

84 (78-89)      94 (84-98)

**At 9**

**years of  
age**

74 (68-79)      94 (84-98)



# Risk of infection by preceding level of surface antibody

Antibody level IU/L	Infections /number at risk	Rate/1000 /annum
>9999	1/224	4.5
1000-	11/1066	10.3
100-	19/1687	11.3
10-	36/1530	23.5
<10	23/568	40.5



# Risk of carriage given infection

Year infection detected	Number infected	Number leading to carriage	% ending in carriage
1	4	2	50
2	6	1	17
3	8	1	13
4	18	0	0
5	16	0	0
7	23	1	4
9	22	3	14

Some unpublished data is not disclosed  
in this online version