

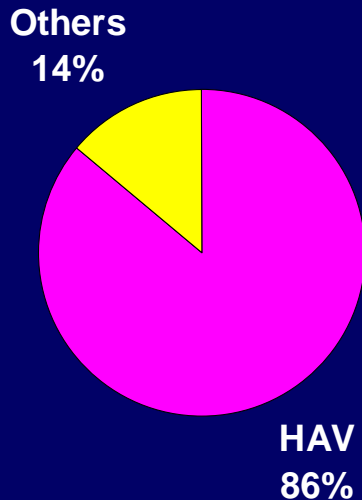
Hepatitis A Epidemiology: INDIA

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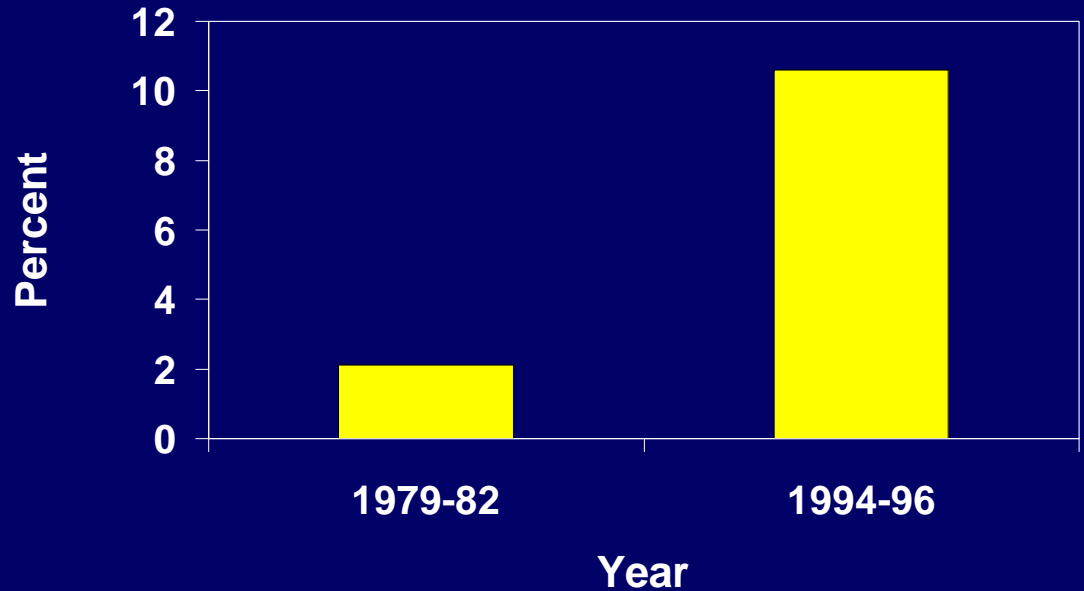
Epidemiology of Hepatitis A is changing in India

Hepatitis A as a sporadic disease

HAV in Children



HAV in Adults



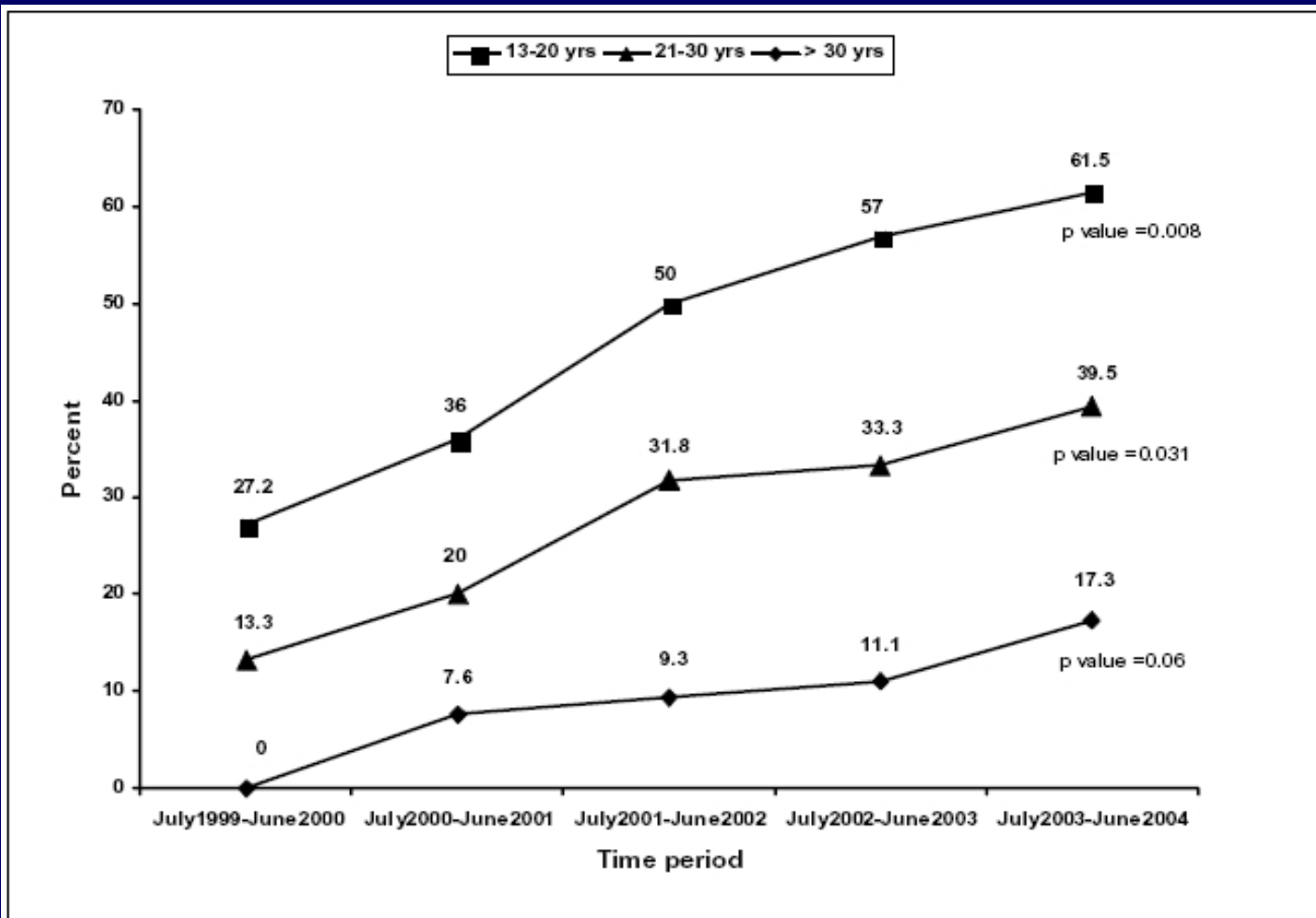
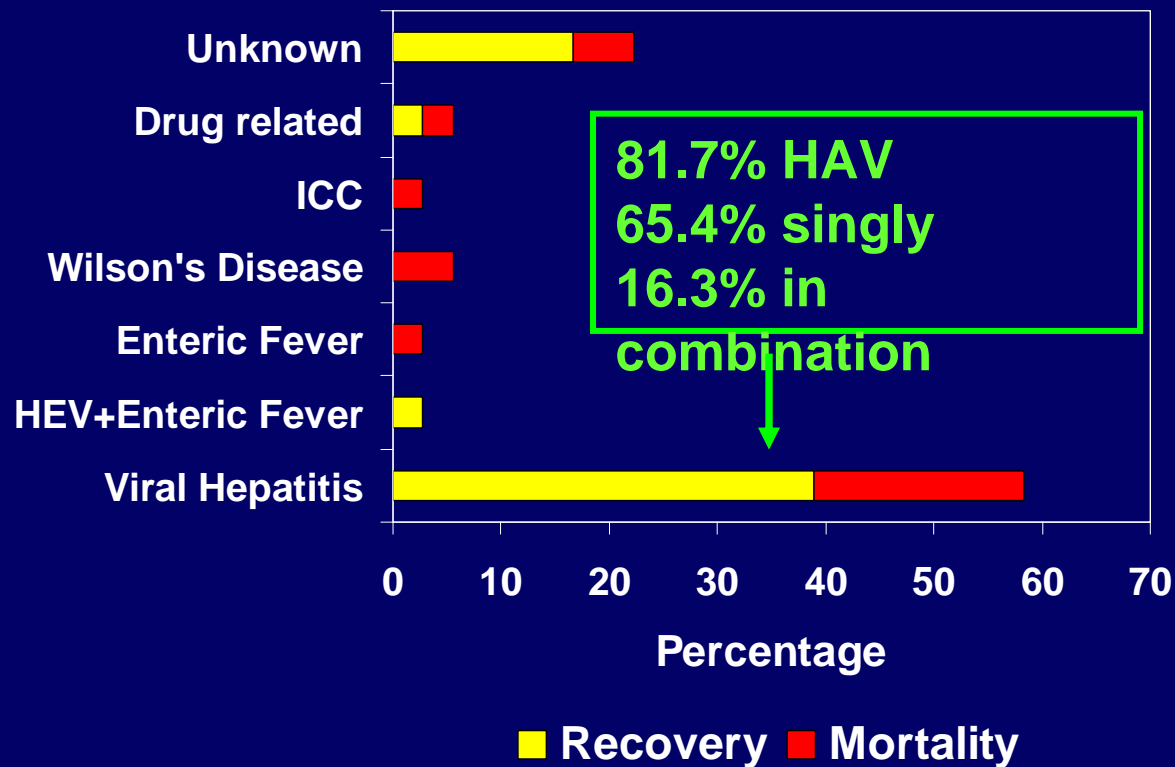


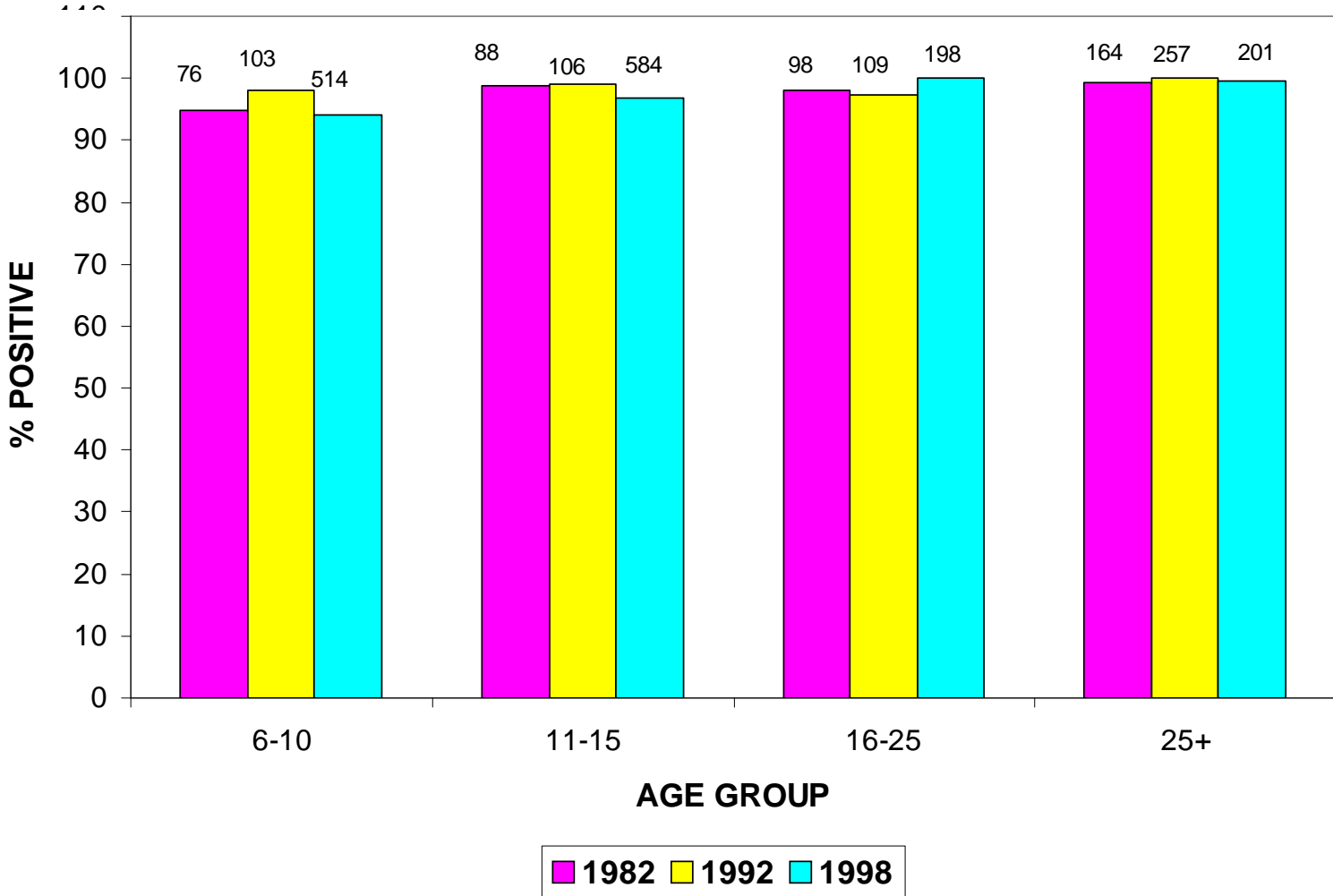
Fig: Changing trend of proportion of patients with acute hepatitis due to HAV infection in different age groups

Source: Dr P Kar, Maulana Azad Medical college, Delhi

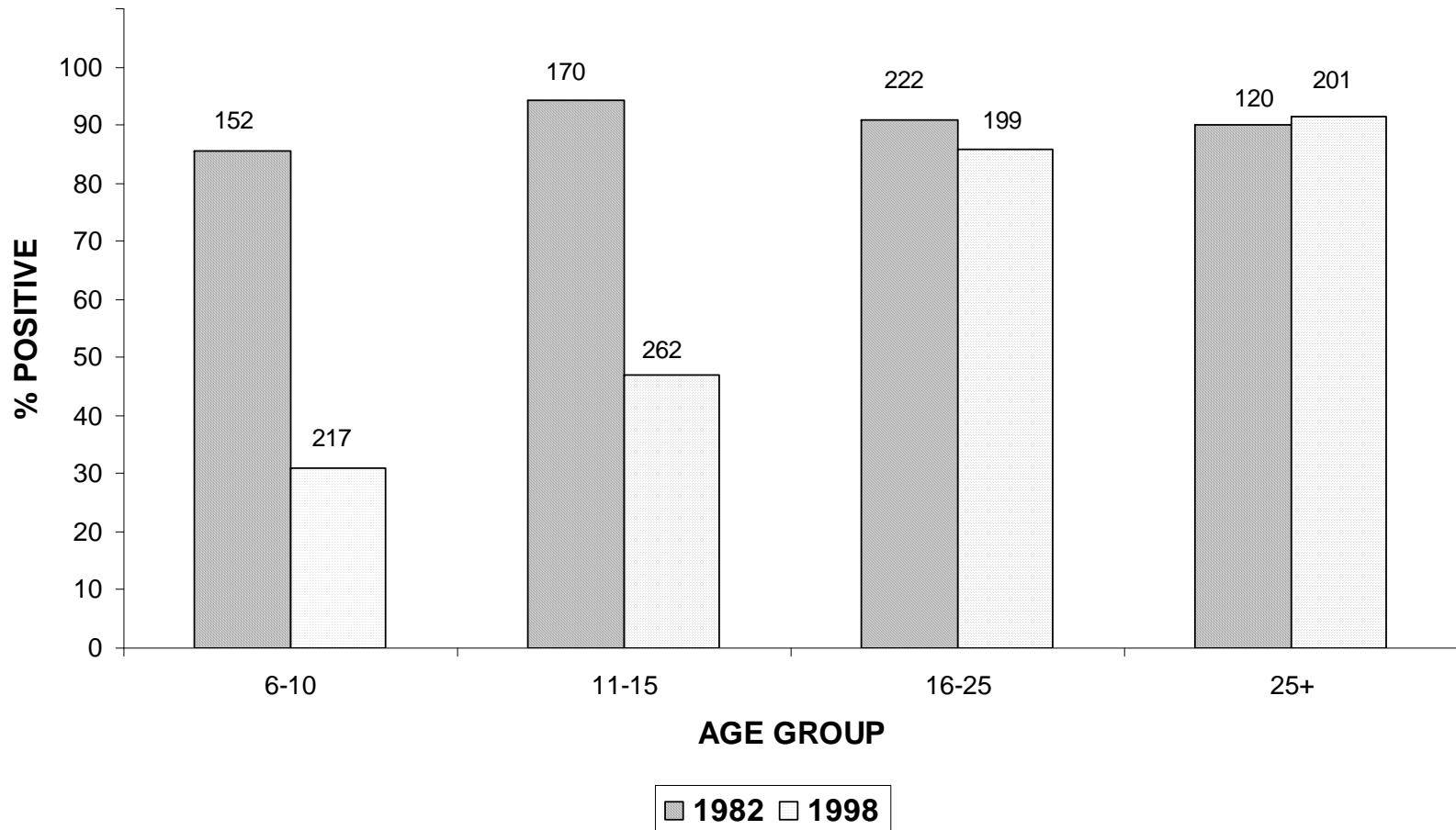
Etiology and Mortality among children with FHF



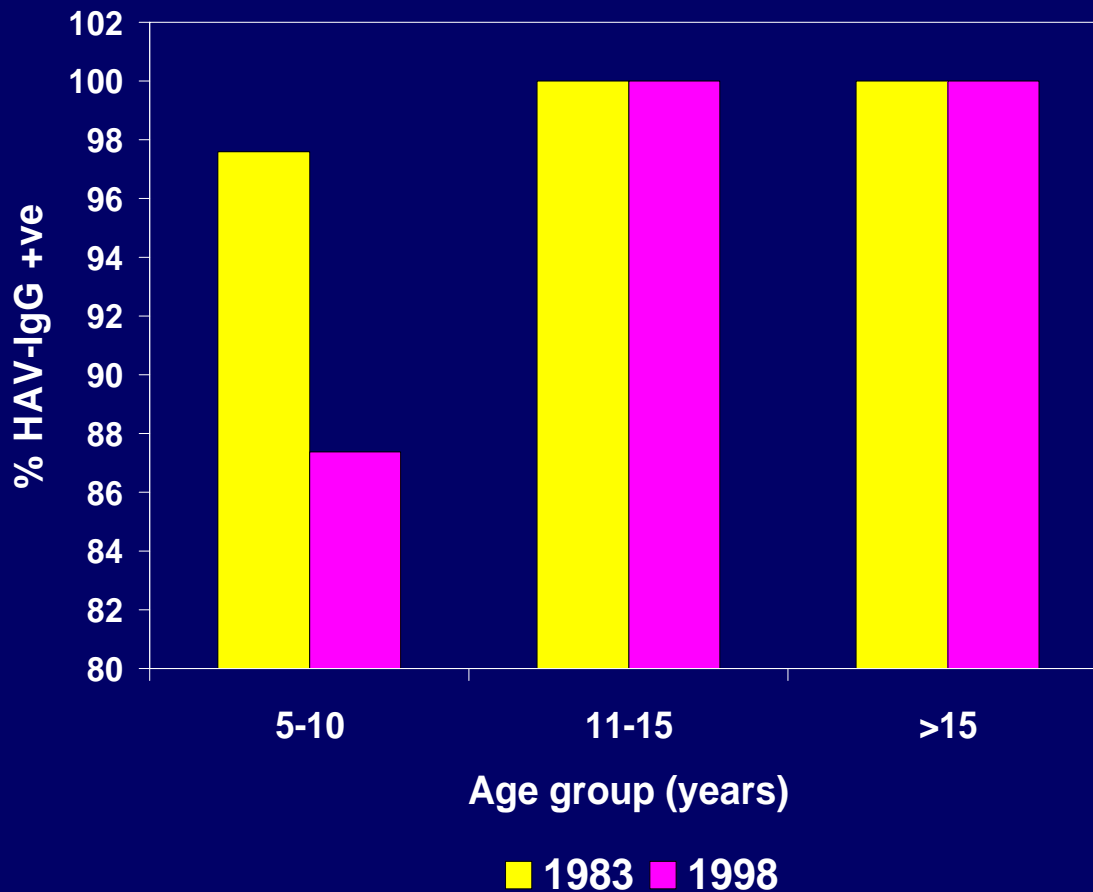
Exposure of LMSS population to HAV (1982-1998)



Exposure of HSS population to HAV (1982-1998)



Exposure of rural population to HAV (1983-1998)



Multivariate logistic regression analysis of Exposure to HAV

Variable	No Analysed	OR (95% CI)	P value
HSS	884	1	
LMSS	3207	22.9 (17.4, 30)	<0.0001
Age<15 yr	2651	1	
Age>15 yr	1440	8.9 (6.5, 12.1)	<0.0001
Family size			
<4	1341	1	
>4	2750	1.6 (1.2, 2)	<0.0006

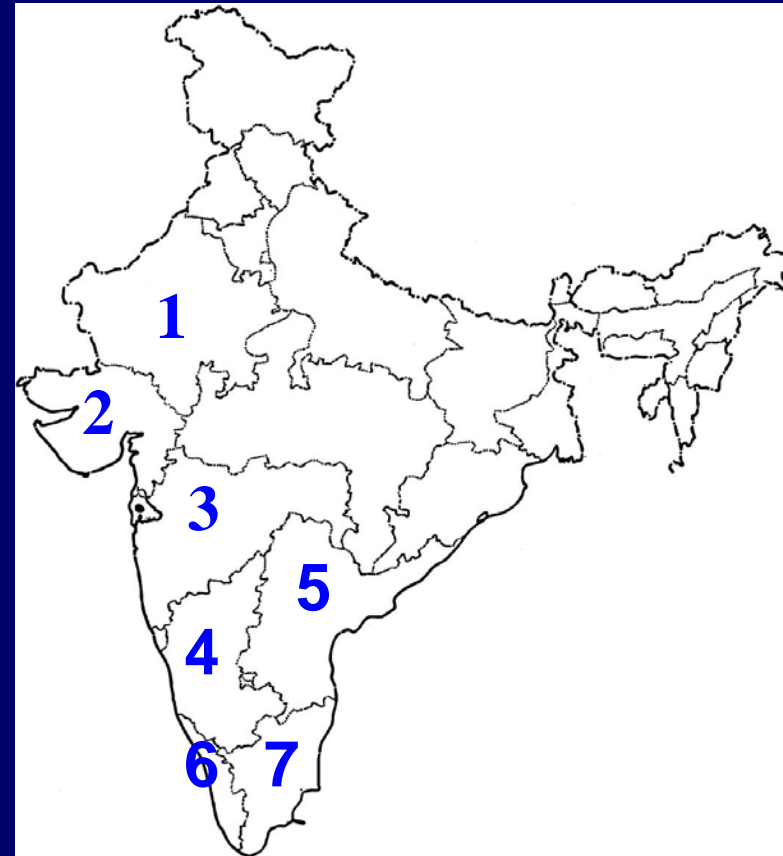
Serosurvey due in 2008

- **In 2004-05, anti-HAV positivity among voluntary blood donors from Pune from High Socioeconomic Strata (88.96%) was significantly less than the middle socioeconomic strata (95.86%) ($P < 0.01$)**
- **The difference was more significant in 18-25 years than in > 25 years age group**

Anti-HAV in rural adults (2006)

1. Rajasthan-133/143 (93%)
2. Gujrat 173/182 (95.1%)
3. Maharashtra 176/182 (96.7%)
4. Karnataka 146/182 (80.2%)
5. A Pradesh 173/182 (95.1%)
6. Kerala 162/182 (89%)
7. Tamilnadu 173/193 (89.6%)

Overall 1136/1246 (91.17%)



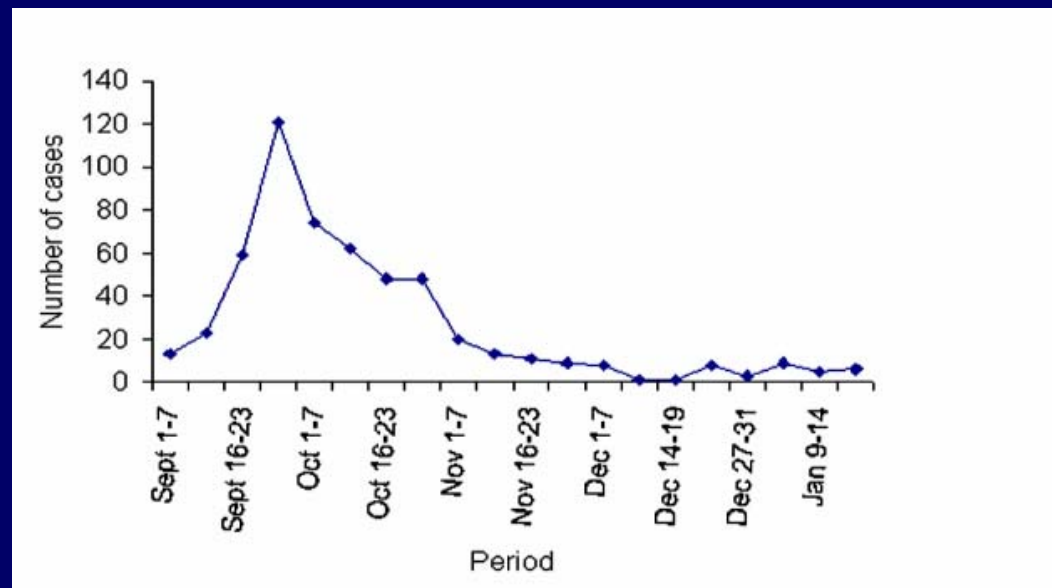
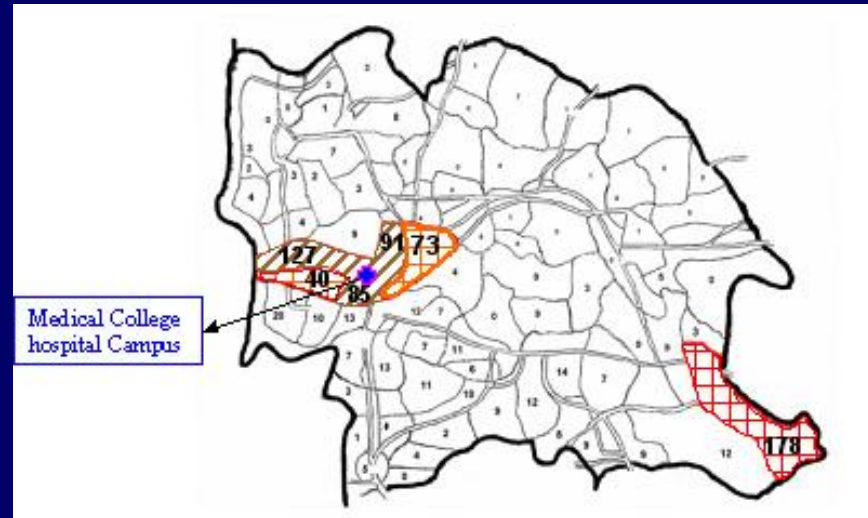
Emergence of outbreaks of hepatitis A

- The prediction of HAV outbreaks has become a reality
- During 2002-2004, 6 outbreaks of hepatitis A were recorded among children from semi-urban and rural Maharashtra
- In 2004, an explosive hepatitis A outbreak occurred in adults from the southern state of Kerala (1170 cases)
- In 2007, Shimla (Himanchal Pradesh, north India) experienced epidemic of Hep A (450 cases)
- It is high time a definite national policy for control of hepatitis A is formulated.

First report of a large outbreak of hepatitis A in adults

The outbreak occurred in the Kottayam Medical College hospital area (MCHA) and nearby Panchayats of Kottayam district situated in Kerala (reported on 17-9- 2004)

- 1180 cases of AVH were reported from the district including 540 from the KCHA
- Of the 540 cases, 170 were from the members of medical community
- The remaining patients included mainly local residents of three panchayats around MCHA



- **In majority of the cases from areas other than the Panchayats nearby MCHA, a previous history of visit to MCHA & consumption of food/water from unhygienic food establishments around MCH campus were noticed.**
- **A substantial proportion of viral hepatitis patients were care-taking relatives of the patients hospitalized for other causes.**
- **Sewage treatment plant was non-functional since 1990**

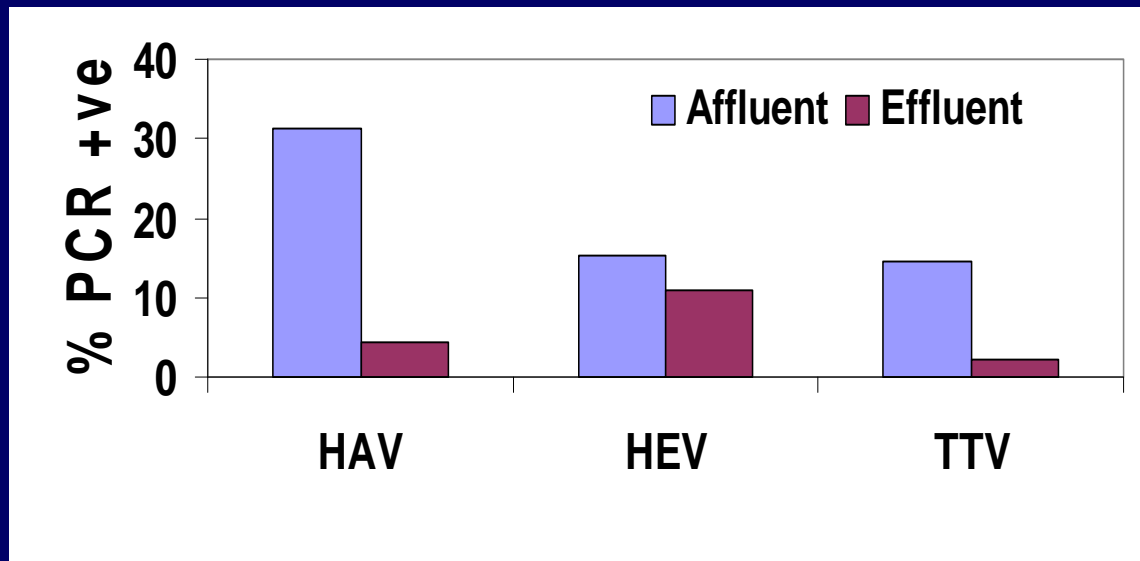
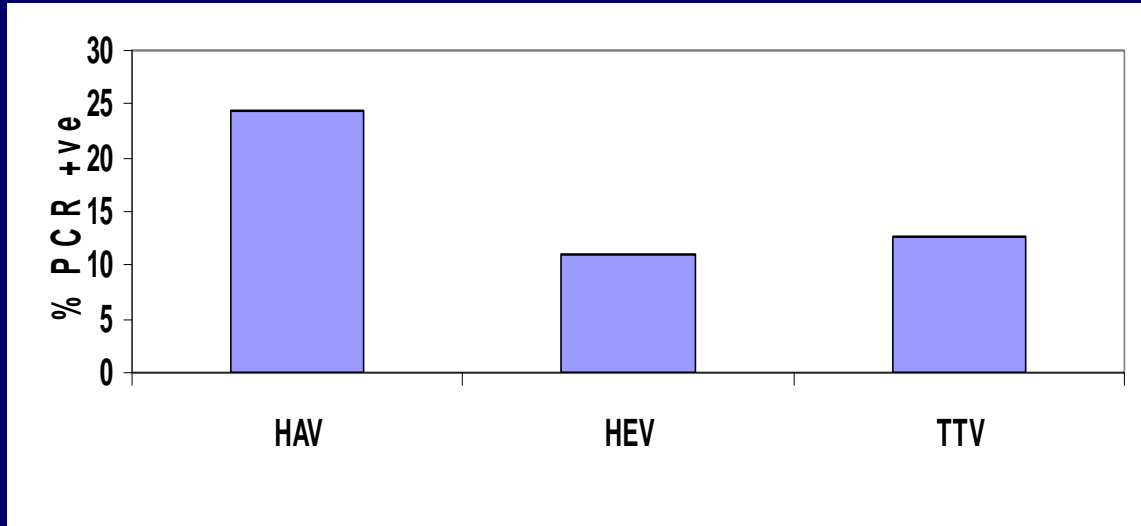
HAV Viral Load

Sample Type	No Pos / No tested	Viral Load
Fecal sample from acute hepatitis A patient	1/1	1.36×10^7
Sewage tank	1/1	2.57×10^3
Overflowing sewage sample (2 meters away from the tank)	1/1	2.65×10^3
A canal ~ 200 meters away from the sewage tank	1/1	Below 100 copies/ml
Water samples	0/13	-

Epidemic at Shimla

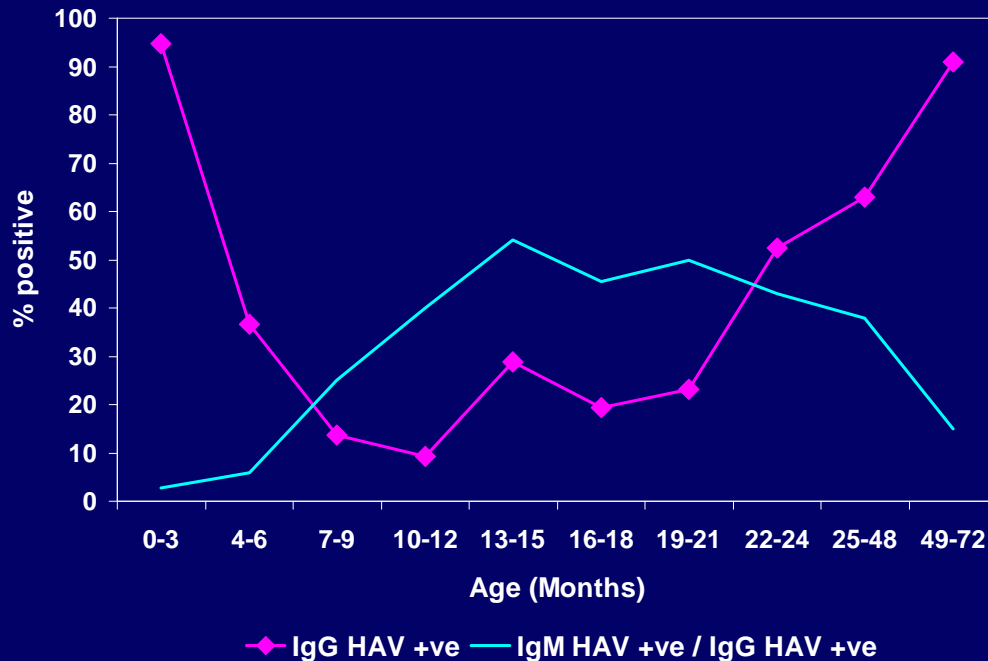
- An epidemic of hepatitis was investigated in Shimla in the month of Feb 07.
- The first case was detected on 21st Jan & 450 cases were reported up to 23rd Feb (population around 50,000).
- Two months before the onset of the epidemic, silver ionization method was introduced for water treatment at Kusumpti tank; chlorination was resumed since 28th Feb.
- Etiology --> HAV

Detection of Hepatitis Viruses in Sewage



- Round the year evaluation of sewage
- 40-fold conc yielded 100% HAV positivity
- HAV RNA positivity significantly higher than HEV RNA ($p < 0.03$)
- Sewage treatment significantly reduced HAV positivity

Age for Hepatitis A vaccination



- Poor response in the presence of maternal antibodies shown
- 9 months appears to be the appropriate age

Anti-HAV Prevalence in chronic hepatitis

- **The prevalence of HAV was 93.2% in patients with cirrhosis of liver and 94.6% in controls (Hyderabad)**
- **Similar results from northern and western India**
- **At present, chronic hepatitis patients do not constitute high-risk group for hep A vaccination**

Conclusions

- **India is experiencing transition in the epidemiology of Hepatitis A**
- **Both hyper and intermediate prevalence co-exist even in the same city**
- **Explosive outbreaks likely**
- **Formulation of national policy for the control of Hepatitis A is desirable**