



Pneumococcal conjugate vaccine coverage

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PCVs – a brief history

- › 1911 – first pneumococcal vaccine trial (S Africa)
- › Immunity due to antibodies against polysaccharide capsule
- › Polysaccharide vaccines
 - 4-valent – 1945
 - 14-valent – 1970
 - 23-valent – 1983
- › Problem
 - Probably not effective in children
- › Solution
 - Bind polysaccharide to a protein (conjugate)

Penicillin introduced

Pneumococcal conjugate vaccines

- › **7-valent Pnc-CRM** (*Prevnar7*®, Wyeth/Pfizer) licensed in US, 2000
- › **9-valent Pnc-CRM** trialed in South Africa and Gambia, but **never licensed** (includes 1&5)
- › **11-valent vaccine** from Sanofi Pasteur trialed in Philippines, but **never licensed**
- › **10-valent Pnc-Protein D** (*Synflorix*®, GSK) licensed in Europe 2009
- › **13-valent Pnc-CRM** (*Prevnar-13*®, Pfizer) licensed in US 2010
- › **10-valent PCV-CRM** (*Pneumosil*®, Serum Institute of India) - awaiting WHO pre-qualification

Pneumonia vaccine saves 500,000 lives in world's poorest countries

Over 109 million children in the developing world have now received pneumococcal conjugate vaccine (PCV)

Geneva, 12 November 2017 – The rollout of pneumonia vaccine has prevented the deaths of over half a million children in developing countries over the past decade, Dr Seth Berkley, CEO of Gavi, the Vaccine Alliance, said today.

Since 2007, 109 million children have received pneumococcal conjugate vaccine (PCV), which protects against the leading cause of pneumonia, with the support of Gavi. Vaccination coverage in Gavi-supported countries has now reached 41%, up from 35% in 2015 and almost equaling the global average of 42%.

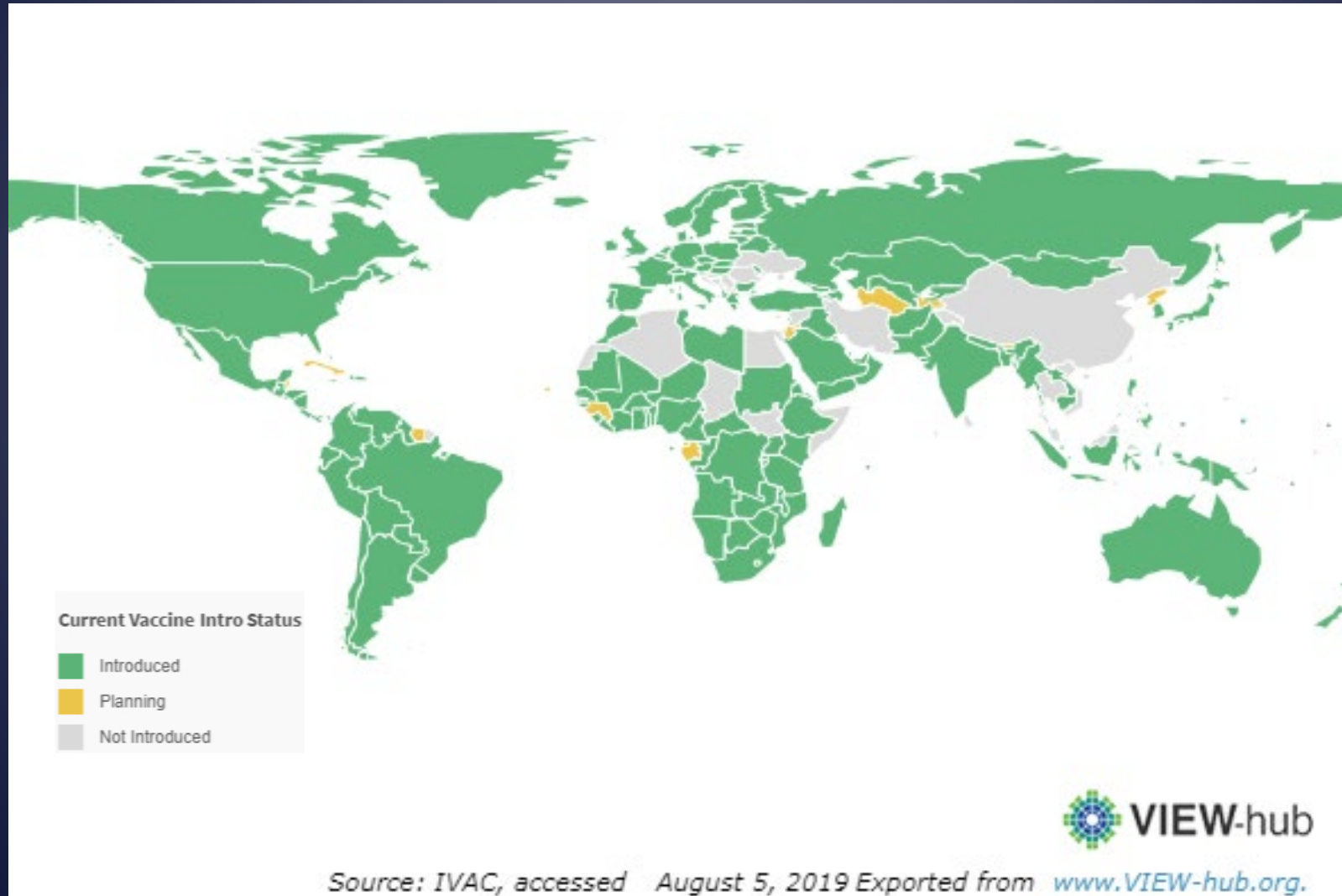
“Hundreds of thousands of children in the world’s poorest countries are alive today thanks to pneumococcal vaccine,” said Dr Berkley. “I’m



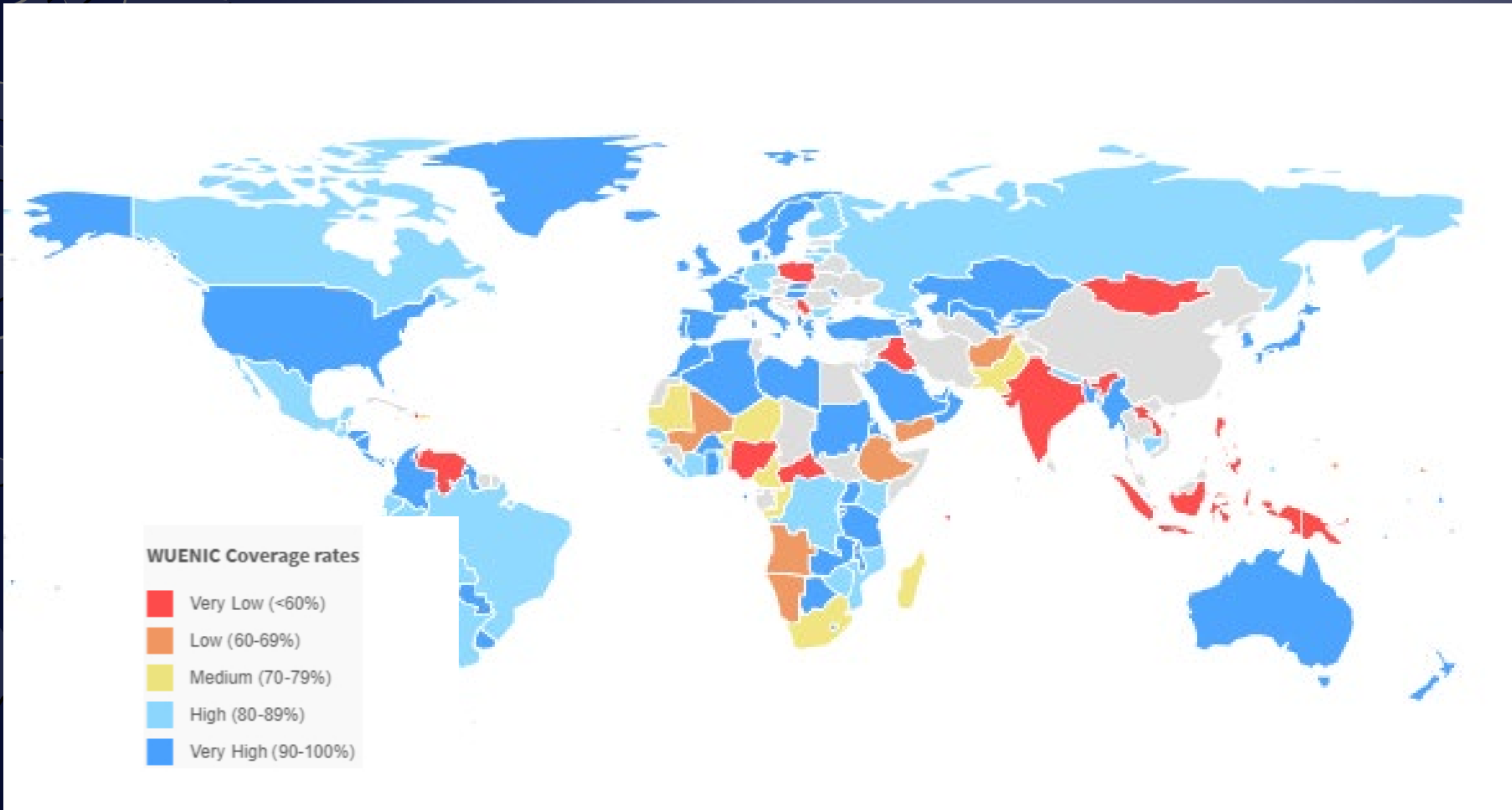
A health care worker prepares PCV vaccine for four-month-old Saeed in rural health centre Manga Mindi, Lahore, Punjab province, Pakistan.

Credit: Gavi / Asad Zaidi

Current PCV introduction status



Current (2017) PCV3 coverage status



Afghanistan	–	65%
Bangladesh	–	97%
Cambodia	–	91%
Japan	–	97%
Laos	–	83%
Myanmar	–	89%
Nepal	–	80%
Pakistan	–	75%
PNG	–	44%
Philippines	–	61%

Sources:
IVAC View-hub
WHO



Which countries in the region have not introduced PCV?

- › Indonesia
- › Malaysia
- › Thailand
- › Vietnam
- › China
- › India
 - Excluding UP, Bihar, HP, Rajasthan, MP
 - National coverage by end 2020



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- › Thailand
- › Vietnam
- › China

And where do we think the biggest market for private sales of *Prevnar-13*® (Pfizer) and *Synflorix*® (GSK) are?

Pneumococcal conjugate vaccines (current)

PCV10 (GSK)	1		4	5		6B	7F	9V	14	18C		19F		23F	
PCV13 (Pfizer)	1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F		23F	
PCV10 (Serum Institute)	1		4	5	6A	6B	7F	9V	14		19A	19F		23F	
PCV15 (Merck)	1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	22F	23F	33F



Which children are at risk of pneumonia?

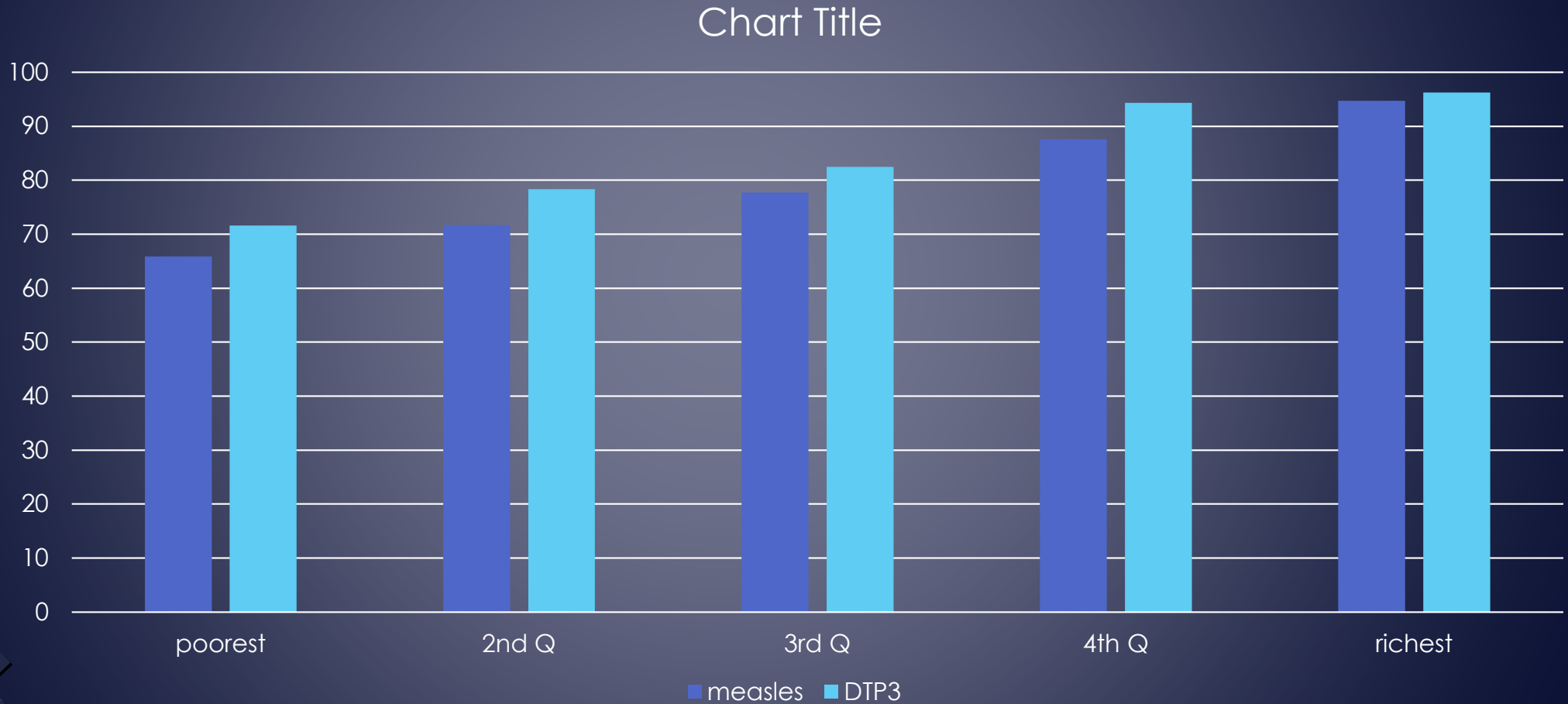
- › Impoverished, disadvantaged, displaced children in *all* countries
- › Malnutrition the dominant risk factor
- › Air pollution is a major factor
 - Indoor air pollution (cooking, heating)
 - Environmental air pollution (urban slum dwellers)
- › Stress and trauma major factors – war, refugee status, internally displaced persons



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- › **So who are the children who are not immunized?**

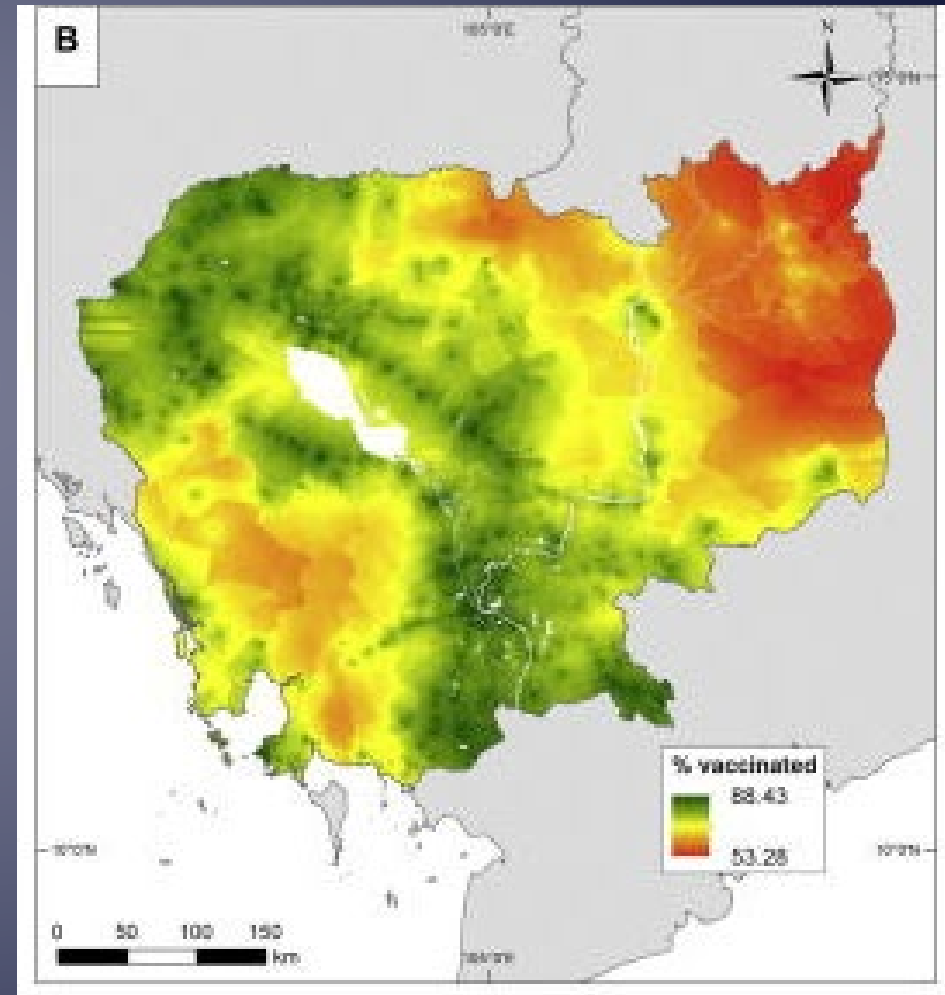
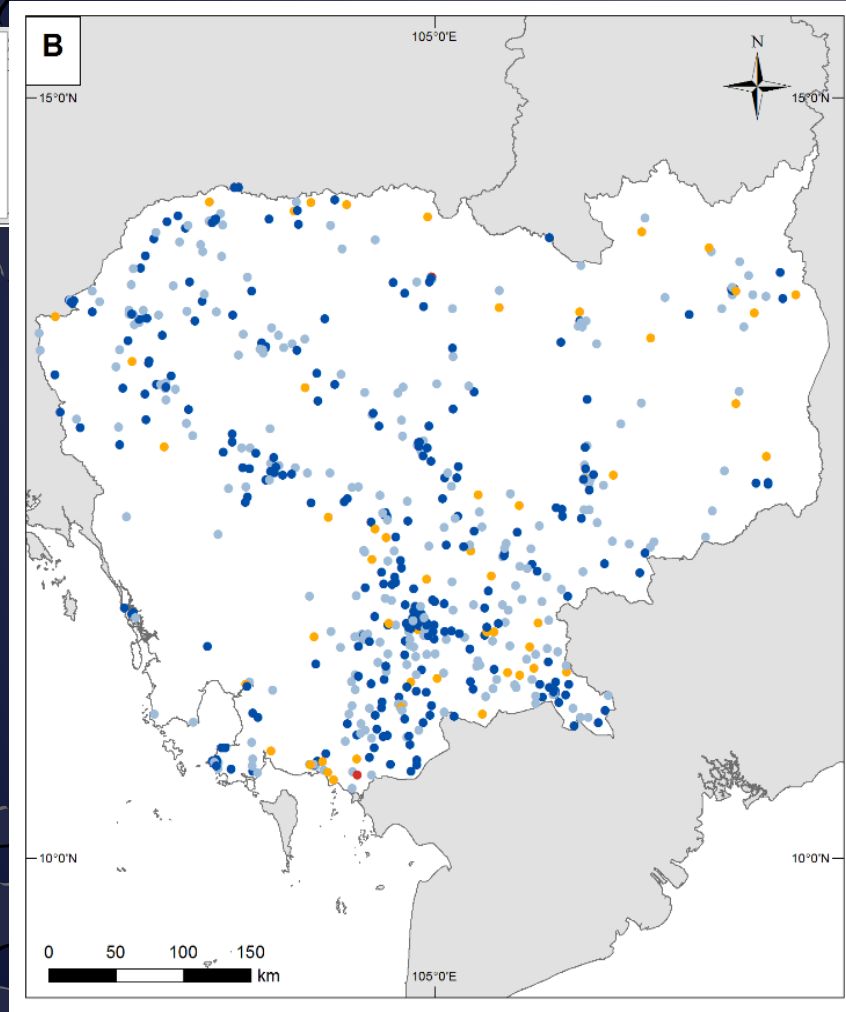
Cambodia – vaccination by wealth quintile



Mapping measles vaccine coverage in Cambodia

DHS cluster level
% under 5 vaccinated

- < 25
- 25 - 50
- 50 - 75
- > 75





So who are the unvaccinated?

- › Remote areas
- › Poor
- › Deprived groups
 - Minority ethnic groups
 - Internally displaced people
 - Refugees



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These groups are frequently not identified in national coverage surveys



Conclusions

- › As with other vaccines, Asia has been the slowest region to introduce PCVs
- › The children who do not receive PCV are certainly the children at greatest risk of pneumonia and death from pneumonia
- › Vaccines are generally seen as pro-equity
- › In fact PCVs are increasing inequity in child health in many parts of Asia