



Intervention Trial for Vaccine Uptake: Lessons from Sindh, Pakistan

Pneumococcal Vaccine Impact in Pakistan (PVIP Group)

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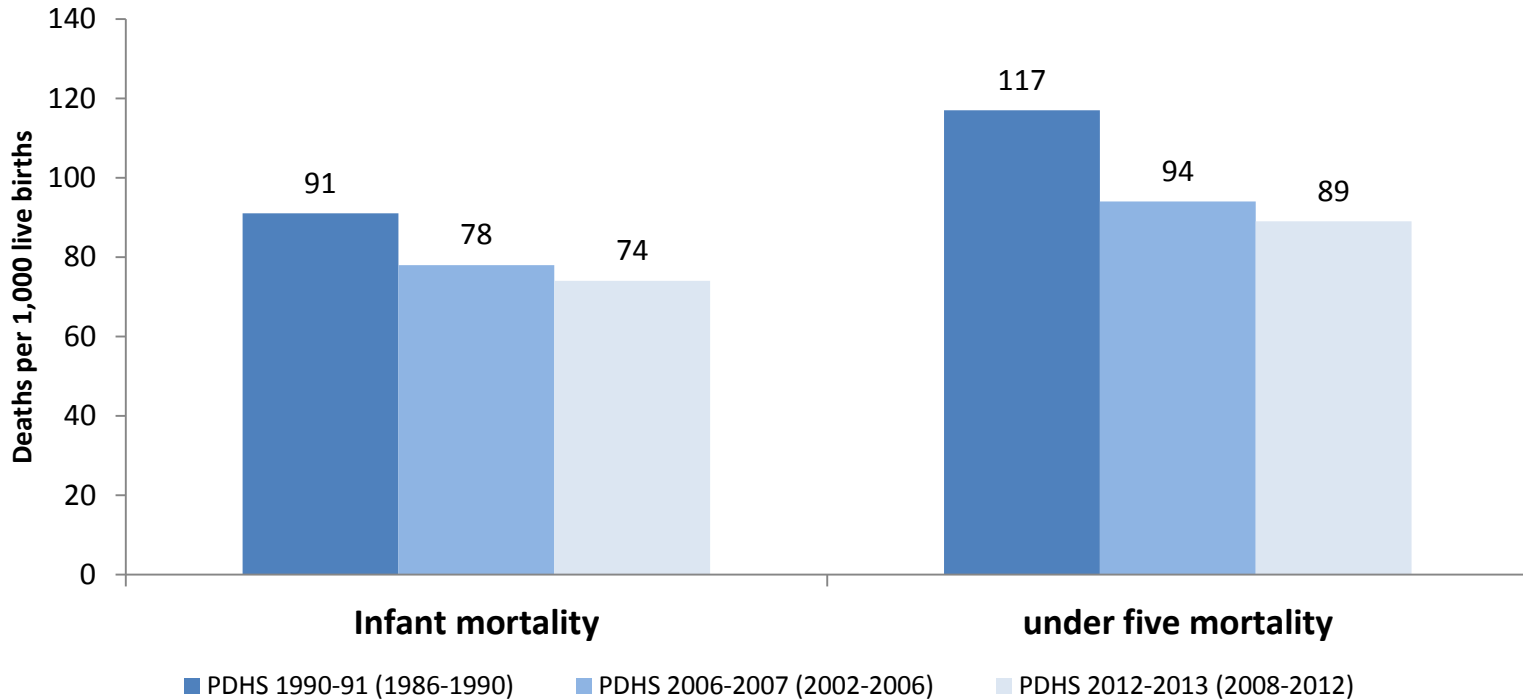
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Outline

- Background
- Study Rationale
- Preliminary Results & Trial Methodology
- Lessons from the field

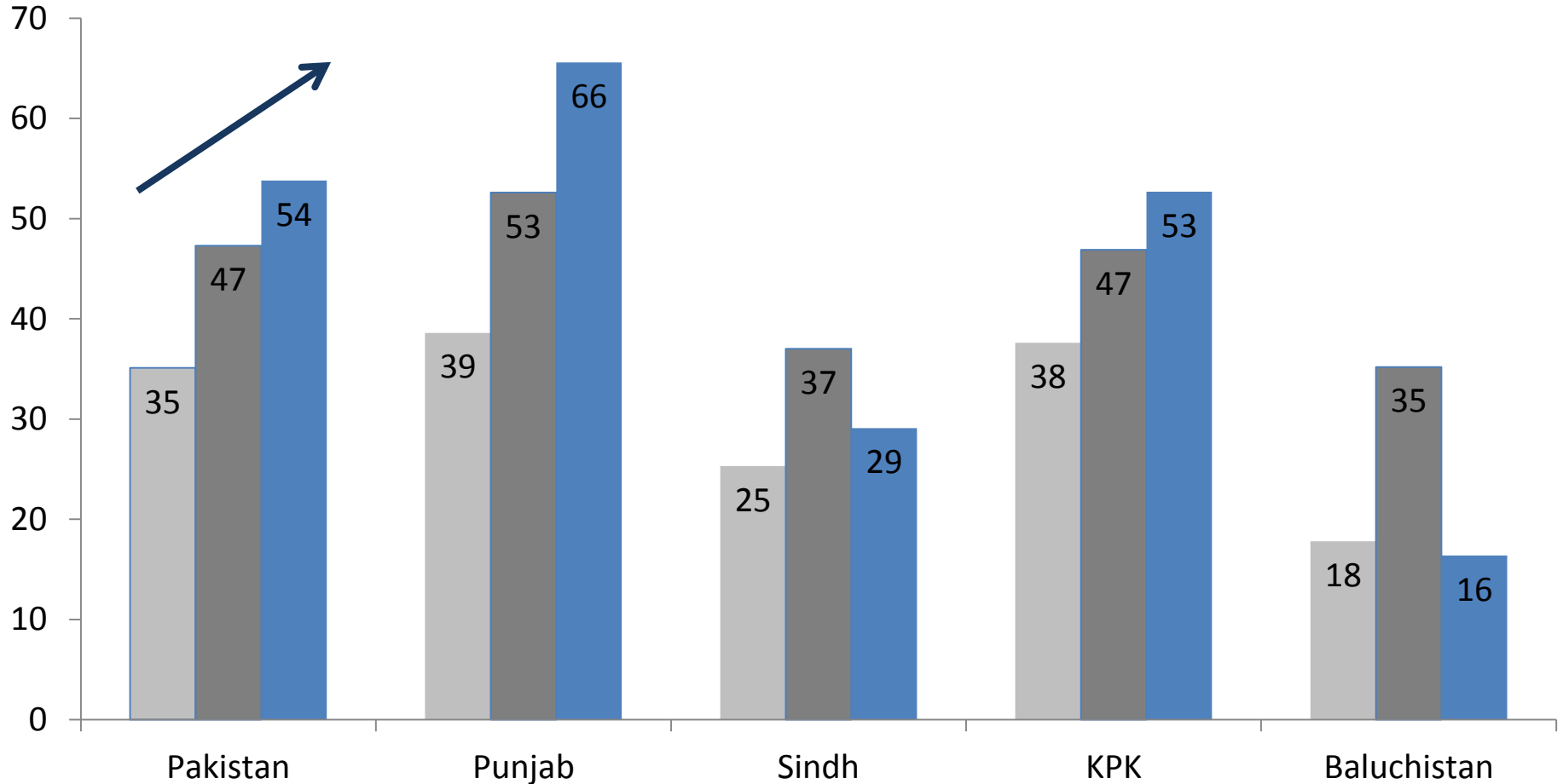
Child health in Pakistan

- Fifth most populous nation in the world



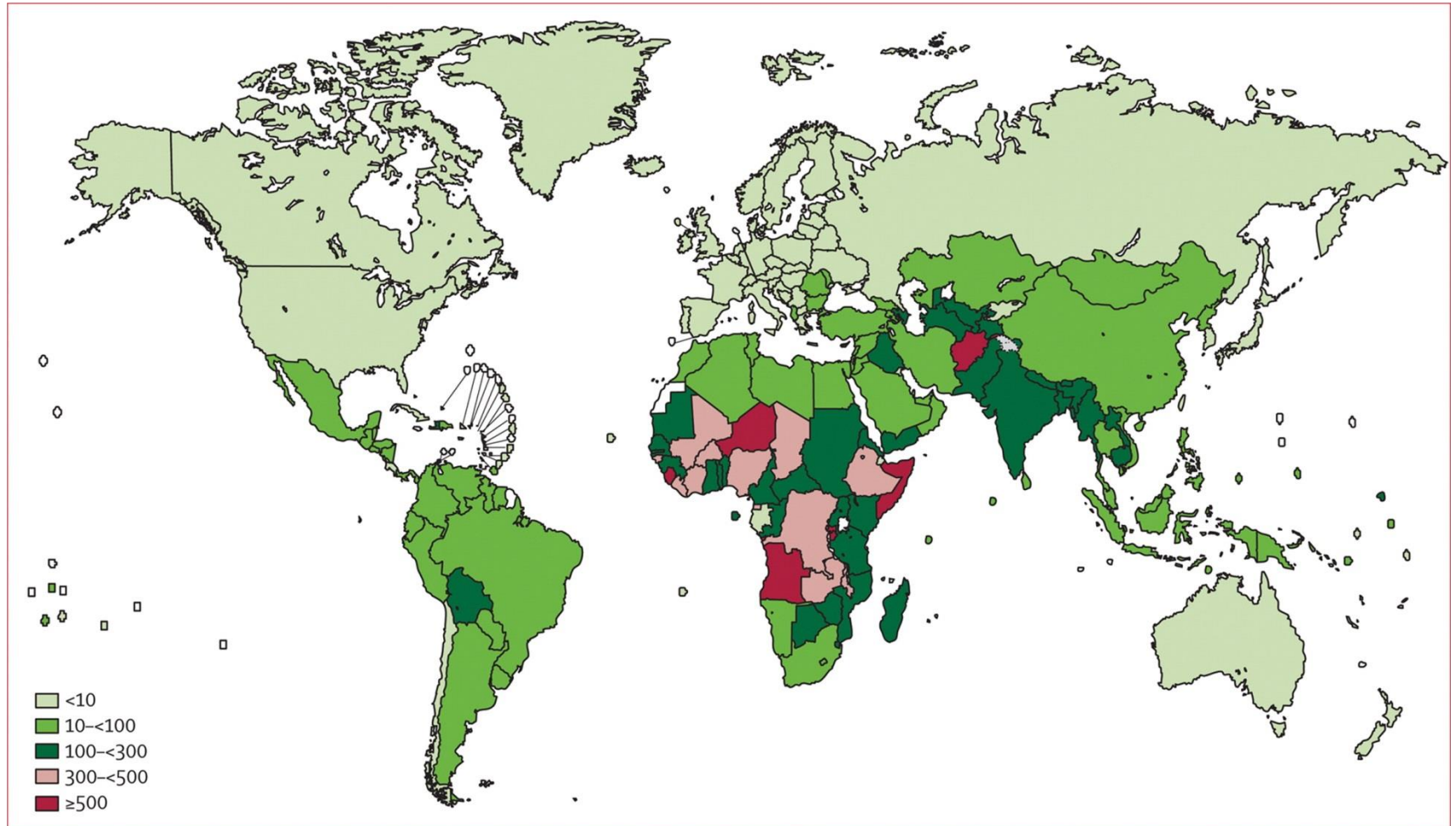
- Infectious illnesses including pneumonia, diarrhoea, Measles & meningitis account for a large proportion of deaths among under five year olds

Vaccination coverage among children aged 12-23 months



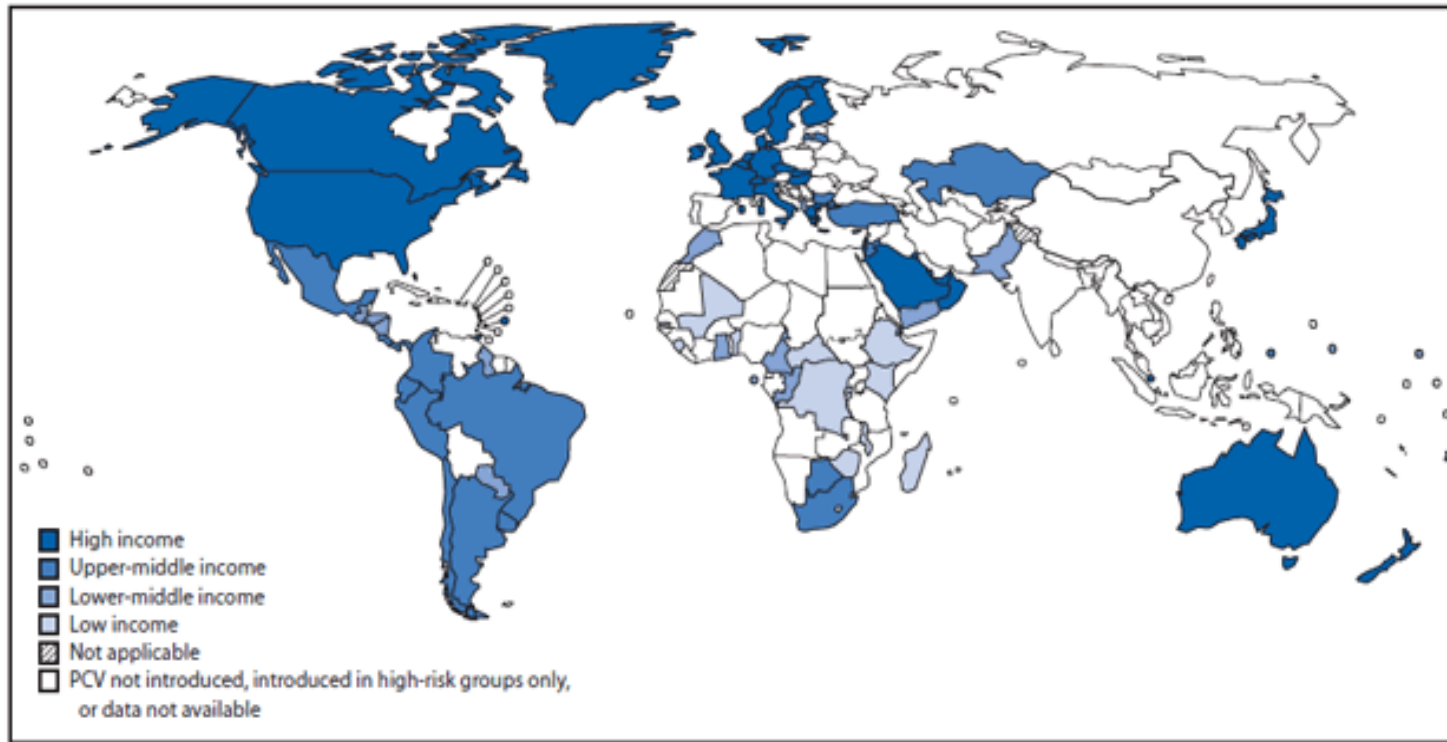
(Pakistan Demographic & Household Survey (PDHS) 1990-91, 2006-07, 2013-14)

Pneumococcal mortality rate in children aged 1–59 months per 100,000 children younger than 5 years (HIV-negative pneumococcal deaths only)



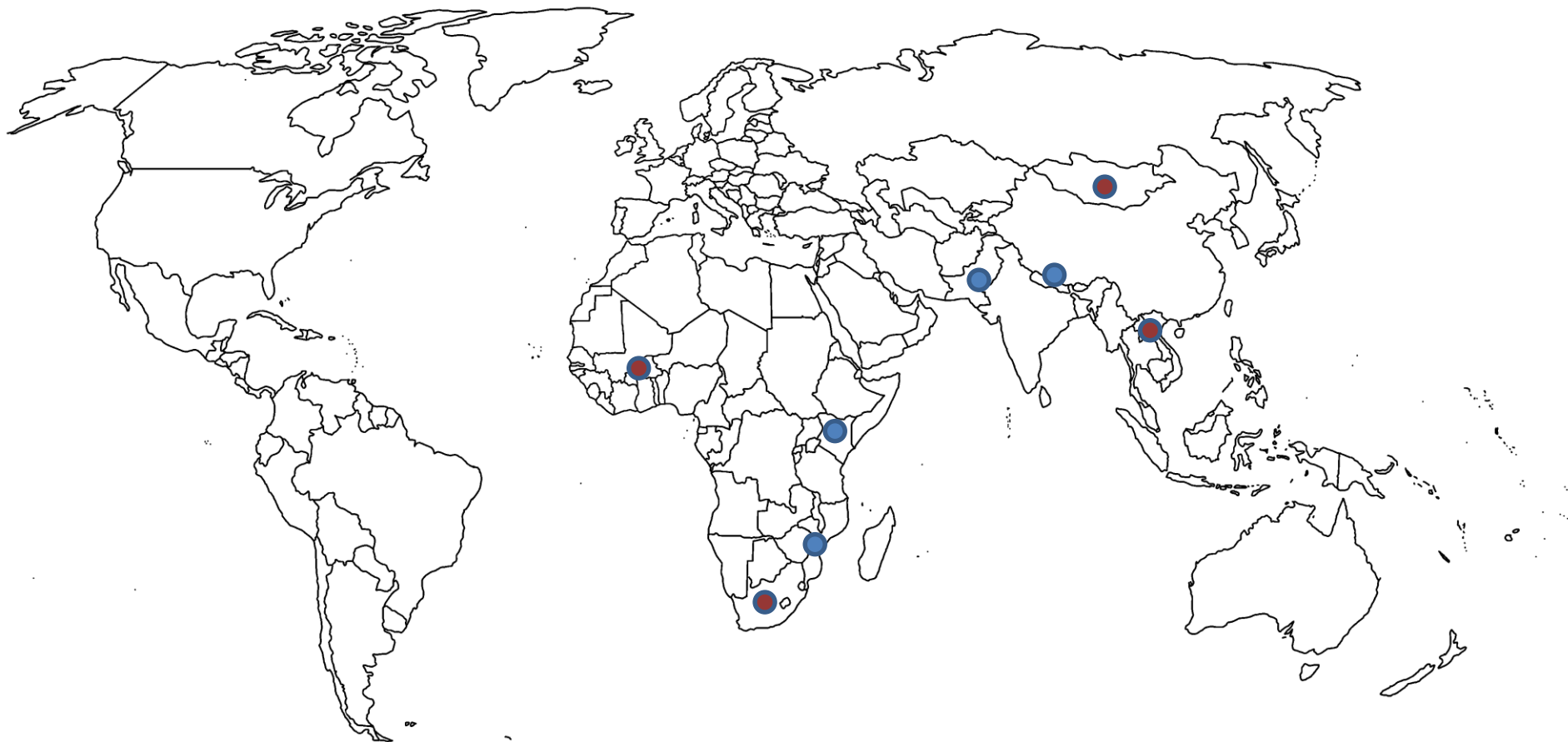
Burden of disease caused by *Streptococcus pneumoniae* in children younger than 5 years: global estimates Katherine L O'Brien et al. Lancet 2009; 374: 893–902

Pneumococcal Vaccine Impact in Pakistan (PVIP)



- PCV-10 vaccine launched in December 2012, Punjab & March 2013 in Sindh
- PVIP designed to establish the impact of PCV-10 vaccine introduction in Sindh

GAVI-supported PCV studies



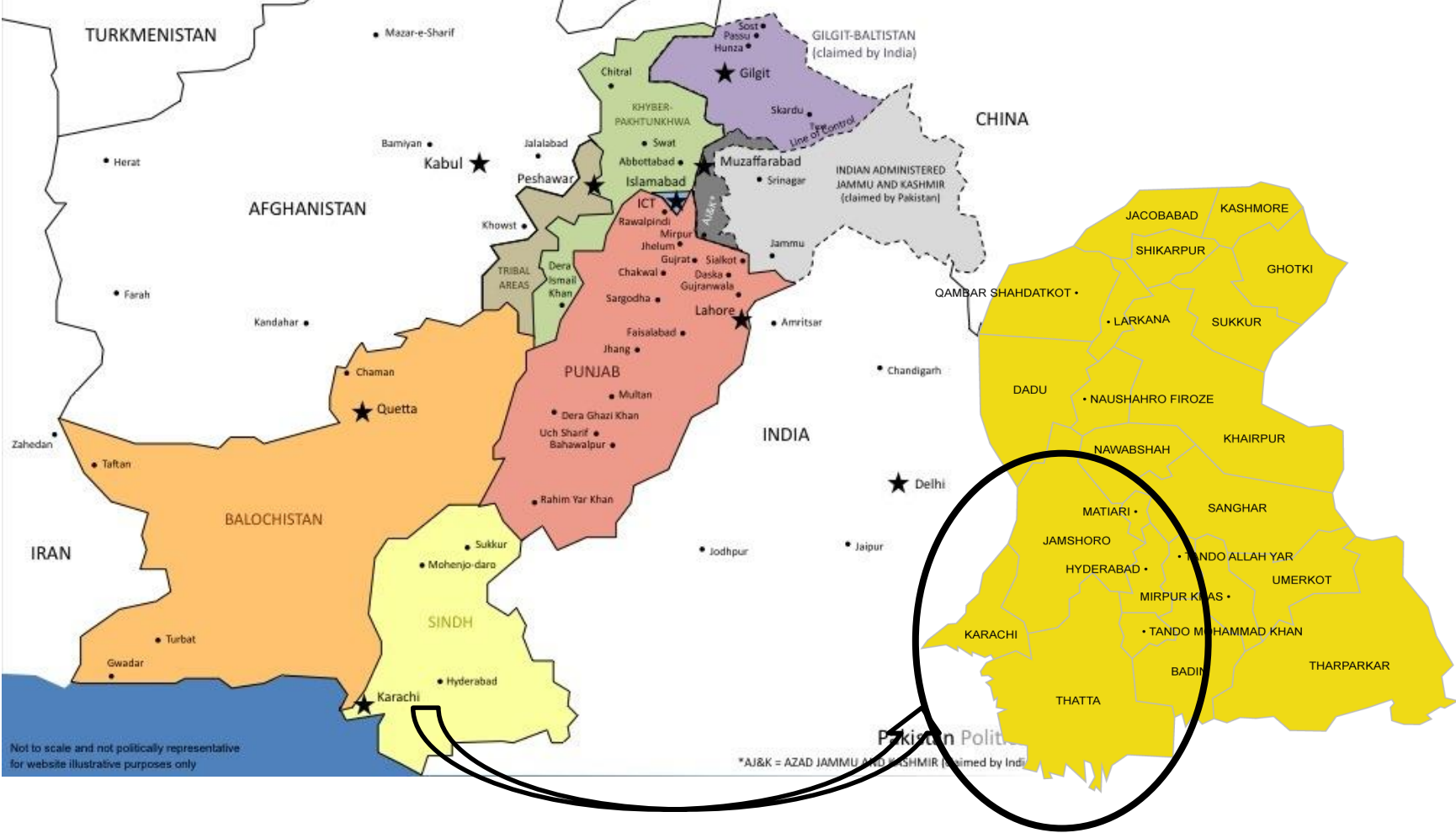
PCV 10



PCV 13

Impact of PCV-10 introduction in Sindh

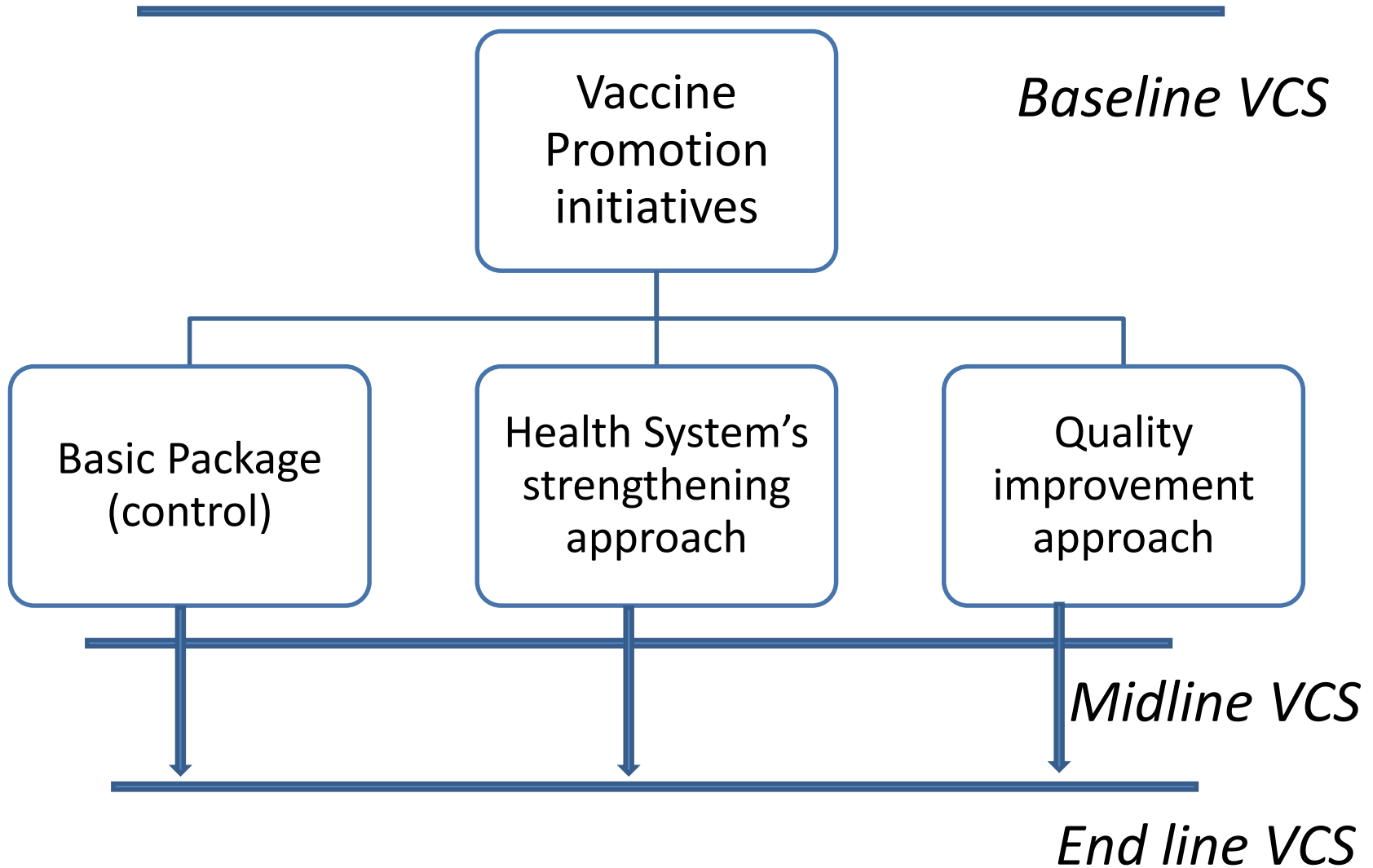
- To demonstrate the impact of introduction of PCV-10 through
 - **IPD surveillance:** Establishment of sentinel site surveillance to determine burden of IPD (pneumonia & meningitis)
 - **Case control study:** Determine vaccine effectiveness in prevention of IPD among children <5 years of age
 - **Nasopharyngeal carriage survey:** Track alteration of nasopharyngeal *S.pneumoniae* serotypes post vaccine introduction
 - **Cost of illness:** Estimate cost of IPD infection
- Determine vaccine coverage among children <5 in target districts
- Improve vaccine coverage in selected districts and generate scientific evidence on successful strategies



Partners

- Health Department, Sindh
- EPI Federal & Provincial offices
- District Representatives DCO/EDOs
- PPHI

Vaccine uptake promotion and evaluation of strategies



Baseline Vaccine Coverage Survey (Jan-Mar 2014)

- Questionnaire developed & pre-tested
 - Index child: born after 15th February 2013 (4-10 months of age at time of survey)
- WHO 30*7 sampling strategy applied at sub-district level (Taluka-level)
 - 8400 households approached
- Indicators:
 - Age of index child
 - Vaccination status per antigen (card/recall)
 - Distance from local EPI center (GPS coordinates)
 - Public/private sector vaccination
 - Reason for non-immunisation (lack of /misinformation, motivation, tangible obstacles)
 - Vaccine attitudes (VPD experience, perceptions of vaccine efficacy & risk, decision influencers)

Summary Table of Vaccine Coverage Survey

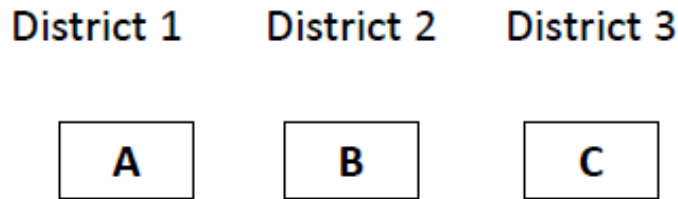
District	No. of Talukas	No. of UCs	Full Immunisation coverage	PCV-3 vaccine coverage	Penta-3 vaccine coverage
Thatta	5	30	12.7%	13.3%	22.6%
Sujawal	4	23	7.4%	7.7% ↔ 18.3%	
TAY	3	20	41.1%	42.7%	47.8%
TMK	3	17	14.3%	14.8%	26.2%
Matiari	3	18	42%	44.4%	48.4%
Hyderabad	4	55	65.3%	65.8%	66.8%
Jamshoro	4	28	68.1%	68.2% ↔ 68.9%	
Karachi		Ibrahim Hyderi, Ali Akber Shah Co, Rehri Goth Bhains Co.	27.1%	27.9%	42.5%

Intra-district variation in rates of PCV 10-3 vaccination

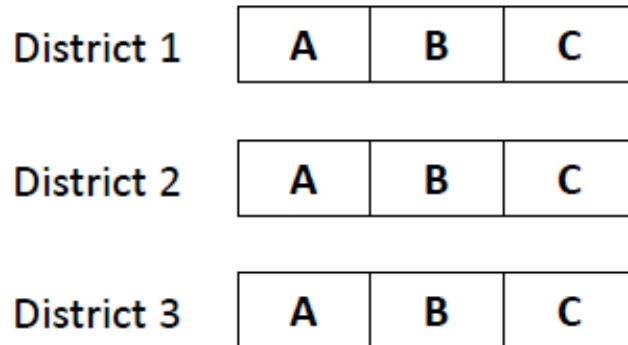
District Thatta (13.3%)	Gorabari	4.8%	District Jamshoro (68.2%)	Thanobula khan	47.6%
	Keti bunder	5.7%		Manjhand	64.3%
	Kharochan	6.2%		Kotri	68.1%
	Mirpur sakro	15%		Sehwan	82.9%
	Thatta	16.9%		Matiari	32.4%
District Sujawal (7.7%)	Shah bunder	4.8%	District Matiari (44.4%)	Saeedabad	49%
	Jati	6.7%		Hala	57.1%
	Mirpur Bathoro	8.1%			
	Sujawal	10.5%			

Setting up the intervention

Option 1

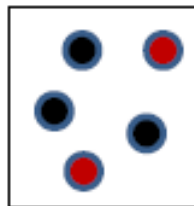


Option 2



Option 3

District 1/
District 2/
District 3



- Urban-rural disparities
- Disparities in vaccine coverage
- Issues of contamination
- Logistical considerations

Cluster randomized trial
with **Taluka** as PSU

Summary Table for PCV-3 coverage at (sub-district) Taluka level

District	Taluka				
Thatta	Gorabari 4.8%	Kharochan 6.2%	Keti bunder 5.7%	Mirpur sakro 15%	Thatta 16.9%
Sujawaal	Mirpur Bathoro 8.1%	Jati 6.7%	Shah bunder 4.8%	Sujawal 10.5%	
TMK	TMK 19.3%	Bulri shah karim 13.8%	Tando Ghulam Hyder 10.2%		

PCV 3 & Penta 3 baseline coverage in different combinations of Talukas

S.No	Districts (Talukas combination)	Penta -3 coverage	PCV 3 coverage	Population size
1	Thatta (All talukas)	22.7%	13.3%	828,145
2	Thatta(Ketibunder,Mirpursakro,Thatta)	26.3%	15.5%	649,847
3	Thatta(Gorabari, Thatta)	20.3%	13.3%	488,169
4	Thatta(Gorabari, Ketibunder, Thatta)	19.8%	12.8%	523,088
5	Thatta (Gorabari, Mirpur sakro)	22.3%	11.4%	413,611
6	Thatta(Gorabari, Ketibunder, Mirpur sakro)	21.5%	11.0%	448,530
7	Sujjawal(All talukas)	18.3%	7.7%	684,441
8	Sujjawal (Mirpur bathor, shah bunder, sujjawal)	19.8%	8.0%	516,020
9	Sujjawal(Jati, Shah bunder, Sujjawal)	17.8%	7.5%	478,034
10	Sujjawal(Jati, Mirpur bathoro, Sujjawal)	18.4%	8.4%	547,790
10	TMK(All talukas)	26.2%	14.8%	482,472
11	TMK (Bulrishah karim, Tandoghulam hyder)	23.3%	12.5%	316,085

Weighted proportions

Vaccine uptake promotion and evaluation of strategies

- Intervention trial of vaccine promotion activities in 3 districts in Southern Sindh with random assignment of intervention
 - Thatta (2 Talukas)
 - Sujawal (3 Talukas)
 - Tando Muhammad Khan (2 Talukas)

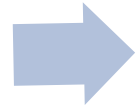
Interventions being evaluated include:

- **Basic Package:** Training & sensitization of District officials and EPI staff on value of vaccines, GIS mapping of coverage at UC level & feedback
- ***Health system strengthening approach:*** top down introduction of interventions shown to be effective through literature
- ***Quality Improvement Initiative :*** Identifying local solutions through iterative PDSA cycles at health facilities for improving vaccination services

Health system strengthening strategy

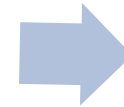
Mixed method formative research

- Facility assessments
- Client exit interviews
- Focus group discussions
- Key Informant Interviews



Design intervention package

- Trainings on vaccination, cold chain & communication
- District micro-plan support
- Cold chain support at facility level
- Outreach fuel support for outreach vaccination
- GIS mapping for vaccinator visits
- M-health interventions for supervision
- Community mobilization
- Communication material

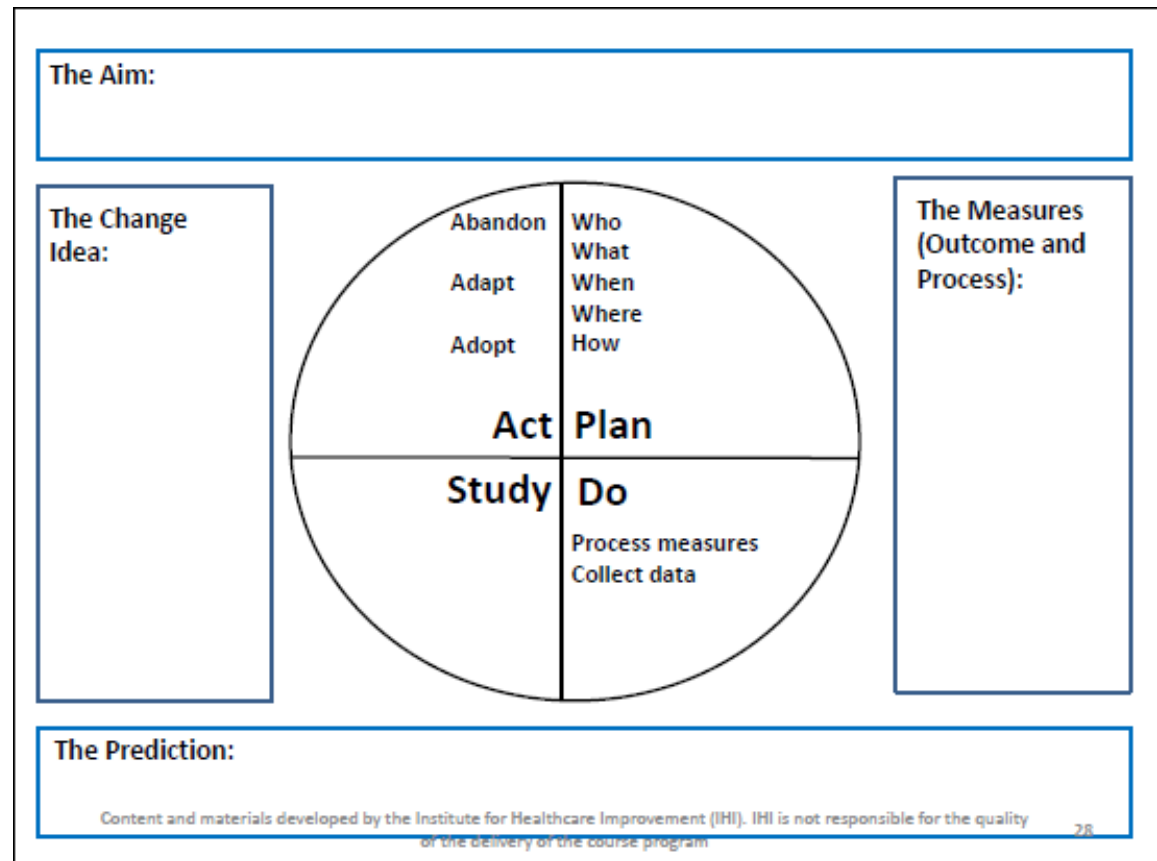
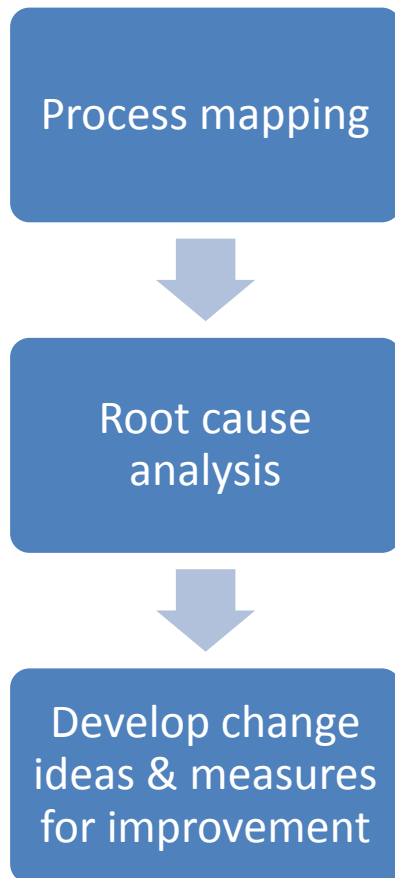


Implementation of interventions

- Independent & collaborative monitoring

Quality Improvement strategies

- Formative research to understand the dynamics of vaccination service provision in target areas
- Facility-level identification of issues & development of solutions



Lessons from the field

- Involvement of Provincial & District stakeholders vital for ownership
- Understanding & navigating the administrative & political health system network on ground
- Development of collaborations for leveraging expertise
- Regular updates & information sharing with collaborators
- Field presence & regular monitoring to assess project implementation and early identification of road blocks
- Considerations of exit & communication strategy

Thank you