Birth Dose Improvement Projects in the Western Pacific Region

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Outline

- Projects in 3 countries in WPR
  - Kiribati
  - Cambodia
  - Papua New Guinea

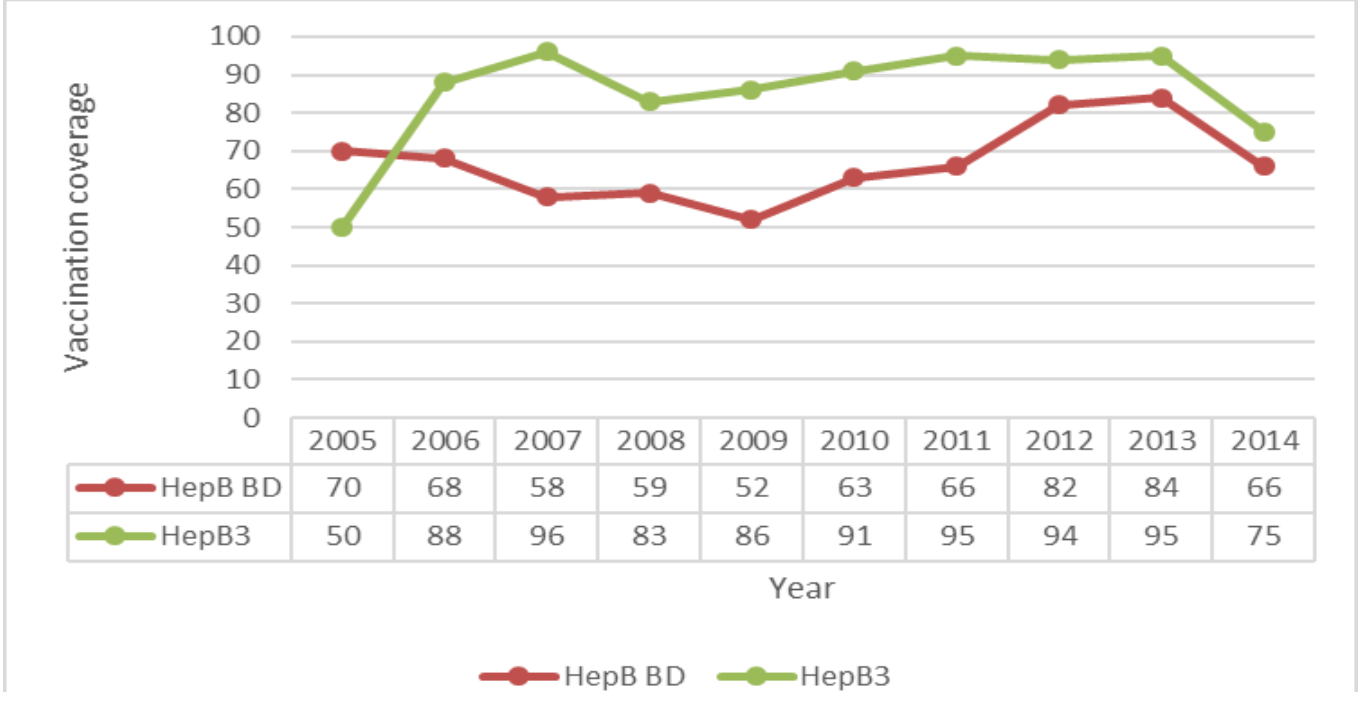
- Efforts need to be stressed for 3 categories to improve HepB BD coverage
  1) Improve vaccine delivery for facility births
  2) Improve vaccine delivery for home births
  3) Increase community awareness and demand for the BD

Kiribati

Background

- Pop: 112,000, annual births: 3,300 (2014 JRF)
- Prevalence of chronic HepB among adults: 15-30%
- National HepB BD (<24hrs) & 3doses (6, 10, 14 wks) since 1995
- HBsAg serosurvey at grade 1 : 3.28% (95%CI: 2.4-4.6) in 2014

- ~20% deliveries at home
- ~90% of all births with SBA
  - 85% in hospitals
  - 5% at home



Kiribati Birth Dose Project

Objective: Determine if HepB BD coverage can be improved in hard-to-reach areas of Kiribati by a training package including;

- Education of pregnant women
- Enhancing linkages between health facilities and communities, by improving communication between health workers and village health volunteers (VHVs)

Sites: 16 health facilities with BD coverage <70%

Duration: November 2014 – April 2015

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Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Vaccine

Improving hepatitis B birth dose coverage through village health volunteer training and pregnant women education

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[e] World Health Organization Country Office, Kiribati

Interventions

1) Education of pregnant women

- Health workers: monthly meetings with pregnant women on HepB disease, prevention by vaccination and other health education
- VHVs: monthly household visits
  - Register all pregnant women
  - Encourage antenatal care visits, facility delivery and birth dose vaccination

2) Enhancing linkages between health facilities and communities

- Monthly review meetings between health workers and VHVs
- VHVs:
  - Update pregnancy registers, share the list of pregnant women
  - Immediate report home deliveries to health facility staff
- Health workers: provide outreach vaccination for home deliveries

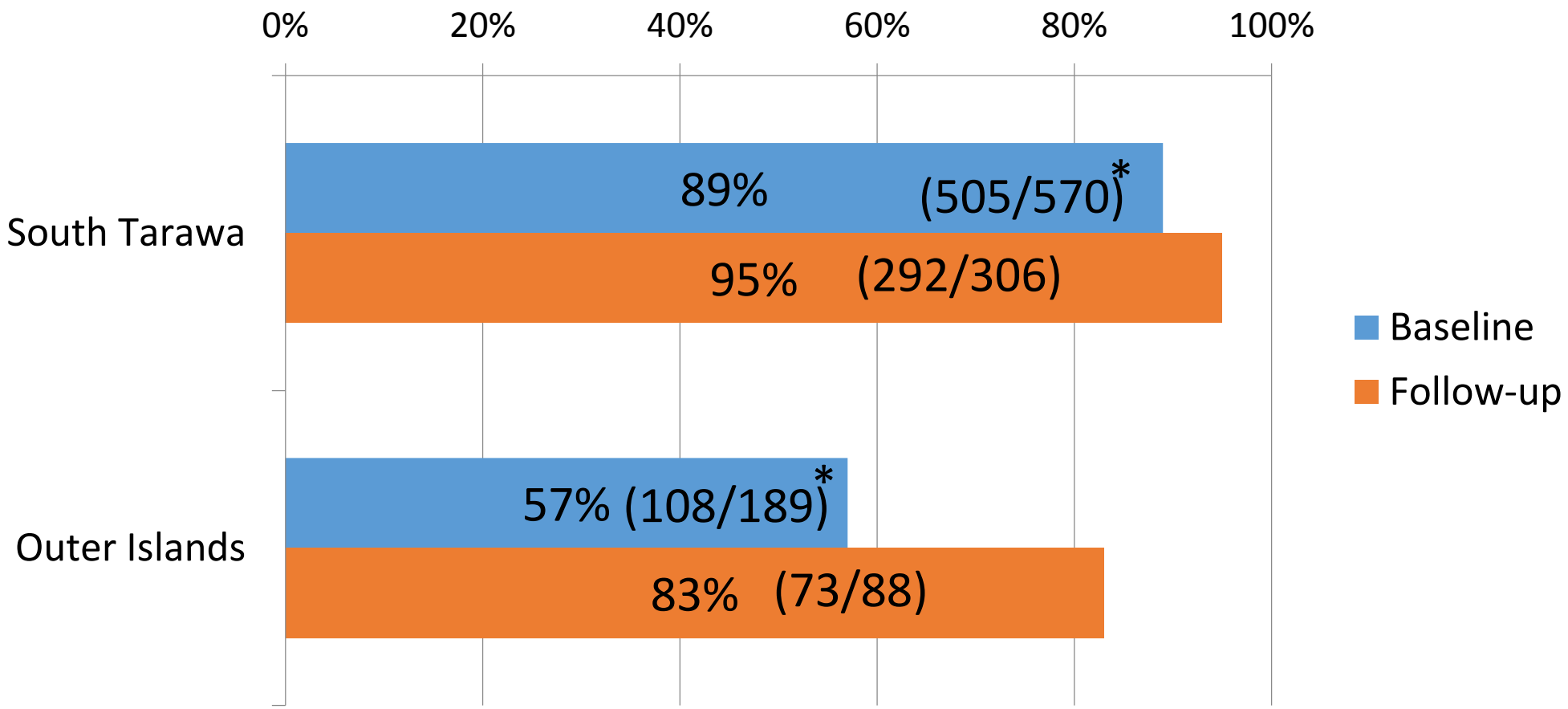
Assessment

- Baseline survey: October 2014
- Follow up surveys: May 2015
- At all selected health facilities and their communities
  - 11 health facilities in the Outer Islands
    - Median population served: 584
    - Perform deliveries
  - 5 health facilities in South Tarawa
    - Median population served: 4,642
    - No deliveries performed
- Interviews
  - health workers at health facilities
  - village health volunteers
  - caregivers of infants born <12 months before and during the project

Findings

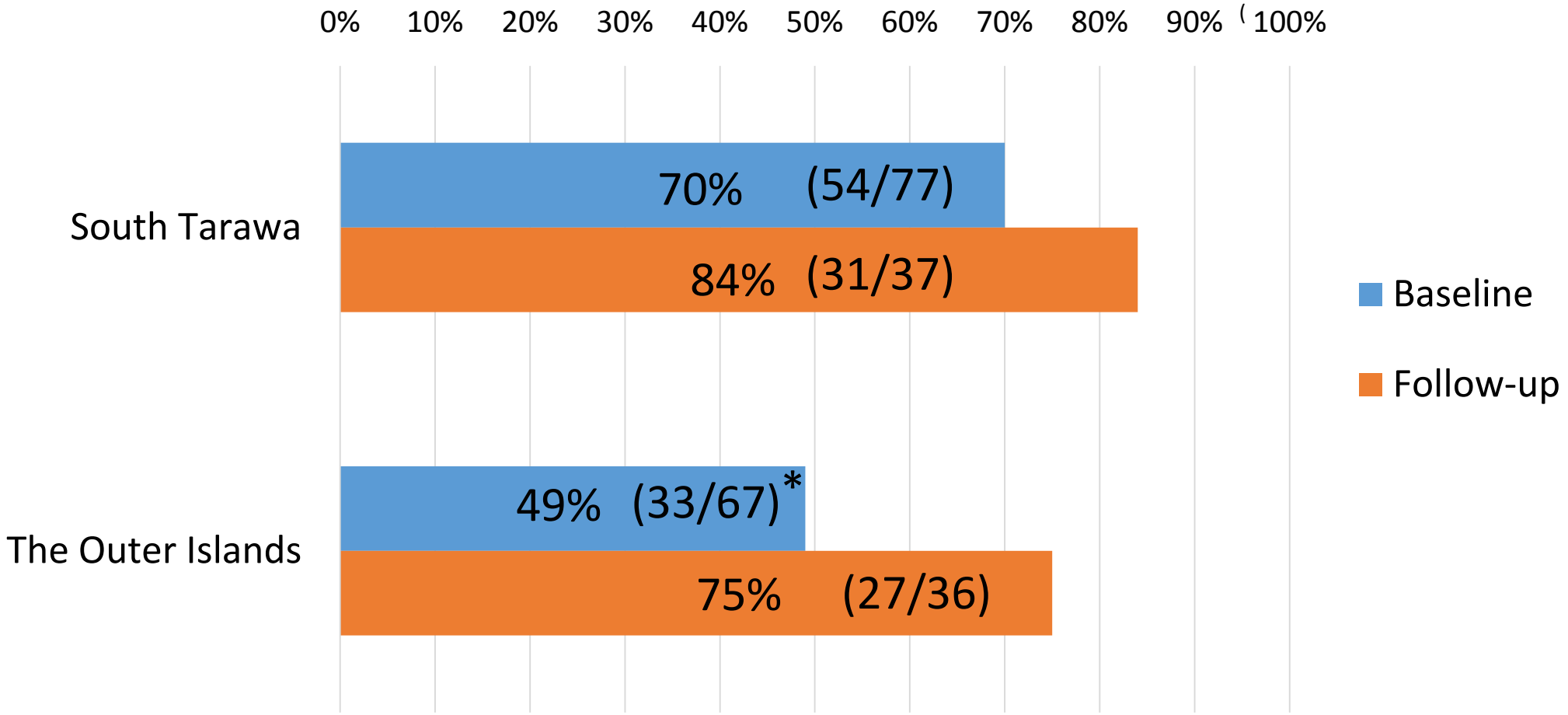
- Caregiver survey
- Health facility survey
- Village health volunteer survey

Caregiver survey:
Increased timely birth dose coverage



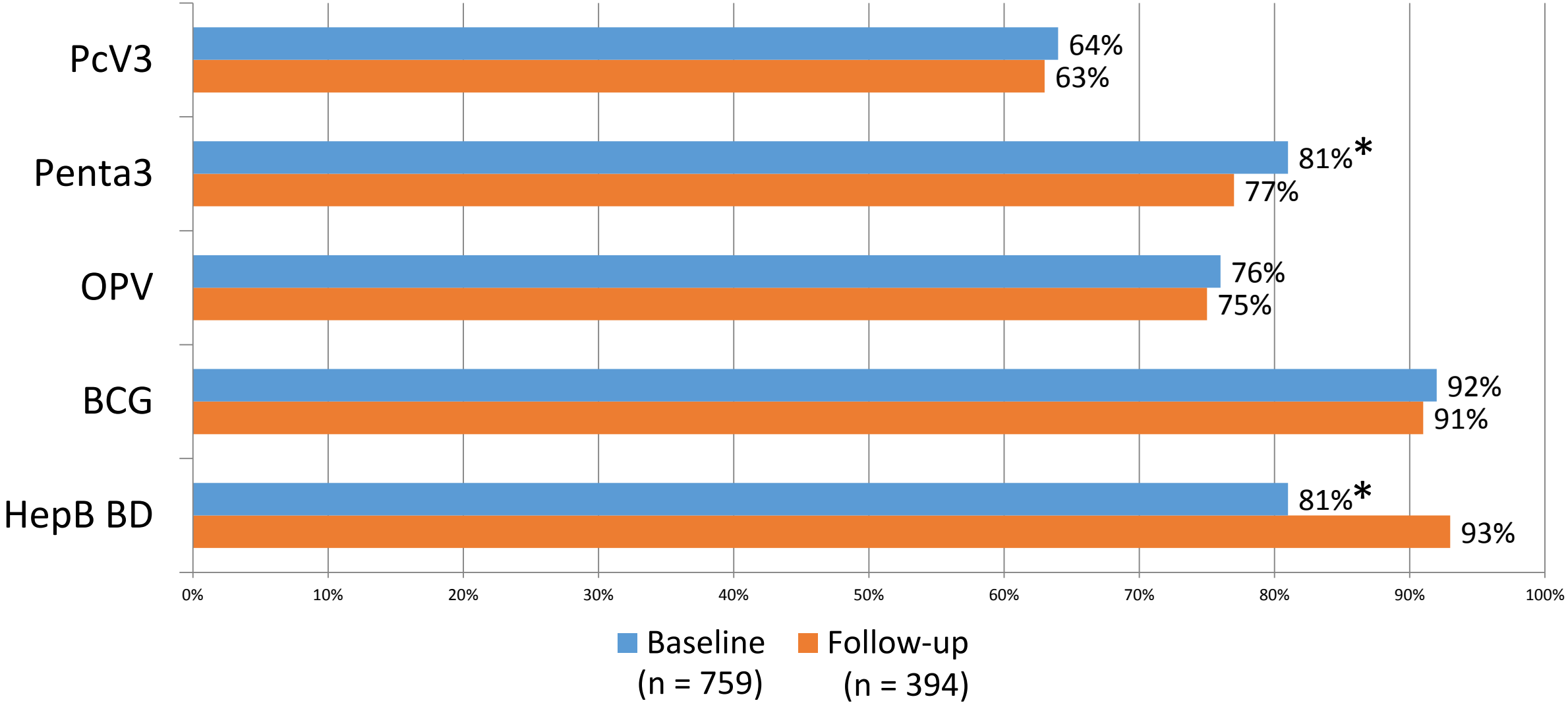
* Indicates a significant difference between survey periods ($p < 0.05$)

Caregiver survey:
Timely birth dose coverage among home births



* Indicates a significant difference between survey periods ($p < 0.05$)

Comparison of HepB BD to other routine immunizations



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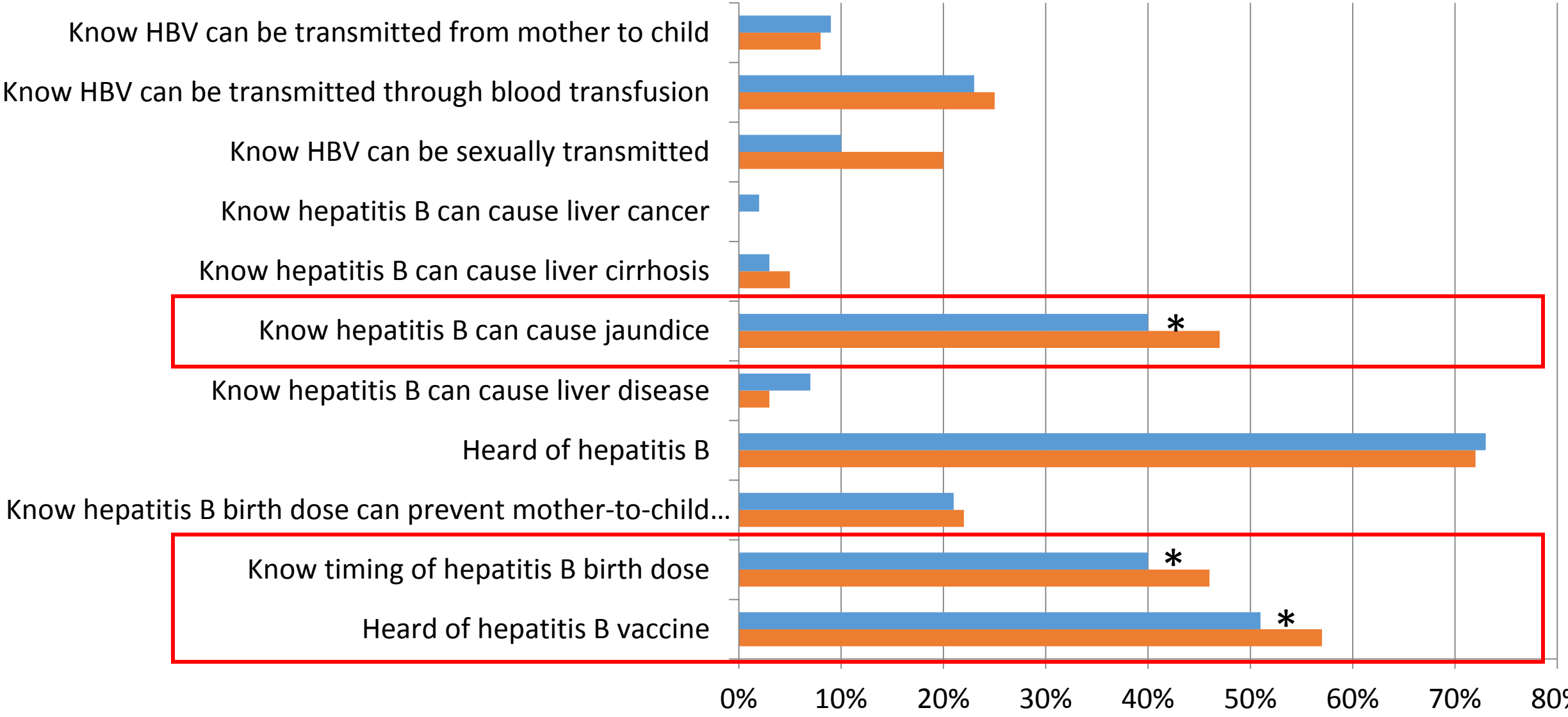
Knowledge of HepB among Caregivers



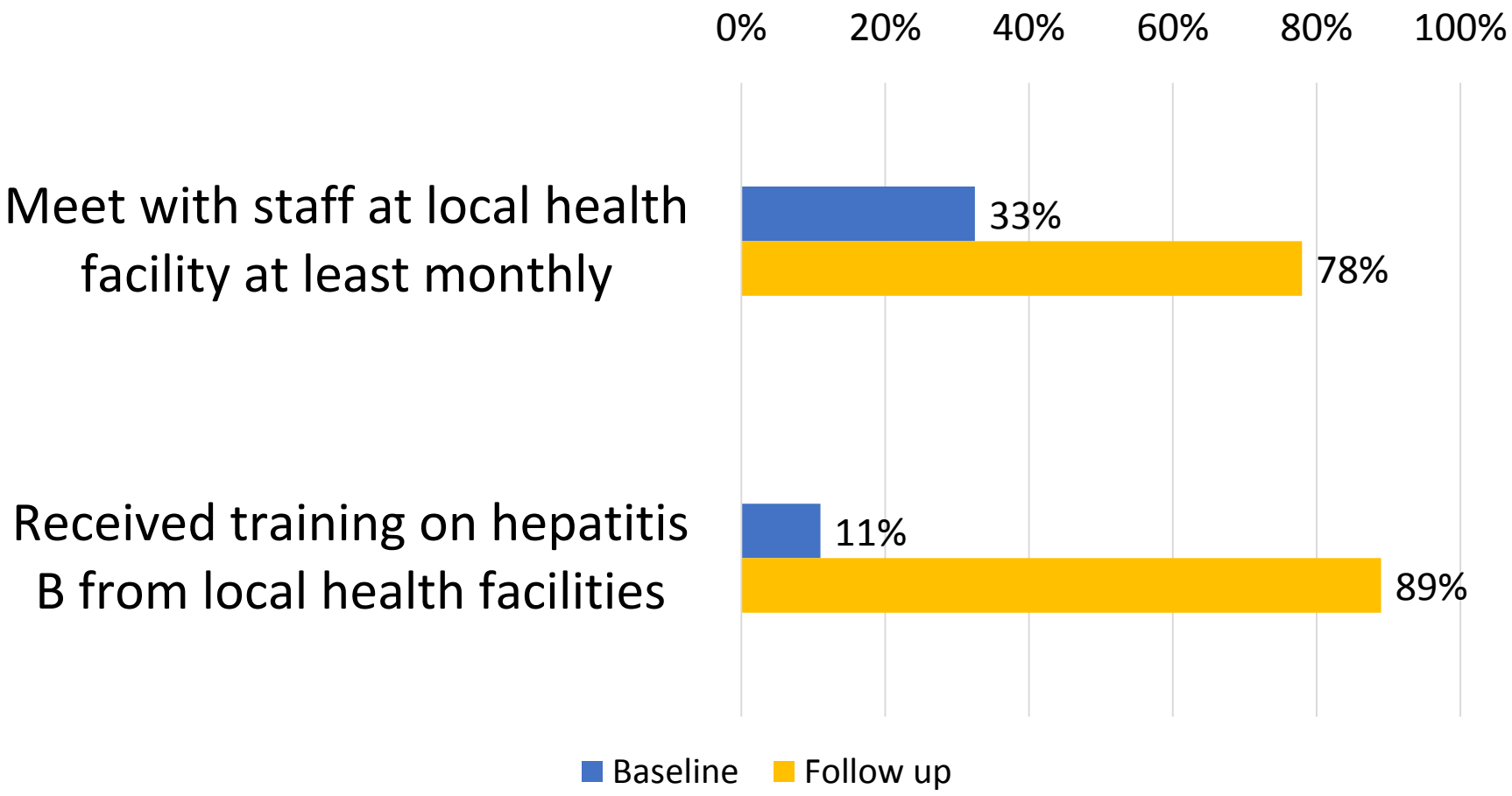
* Indicates a significant difference between survey periods ($p < 0.05$)

Health Facility Survey:
Health workers' practice and vaccine management

		Baseline	Follow up
Health workers' practice	% delay BD by false contraindication	100%	38%
Vaccine management	% facility of vaccine storage in good condition	28%	50%
	% facility experienced stock outs	90%	27%

- False contraindication: prematurity or low birth weight
- Vaccine storage in good condition: not expired, VVM stage 1-2

Village Health Volunteer Survey:
Strengthened linkage with health workers



Village Health Volunteer Survey:
Improved practice in pregnancy registration and birth reporting

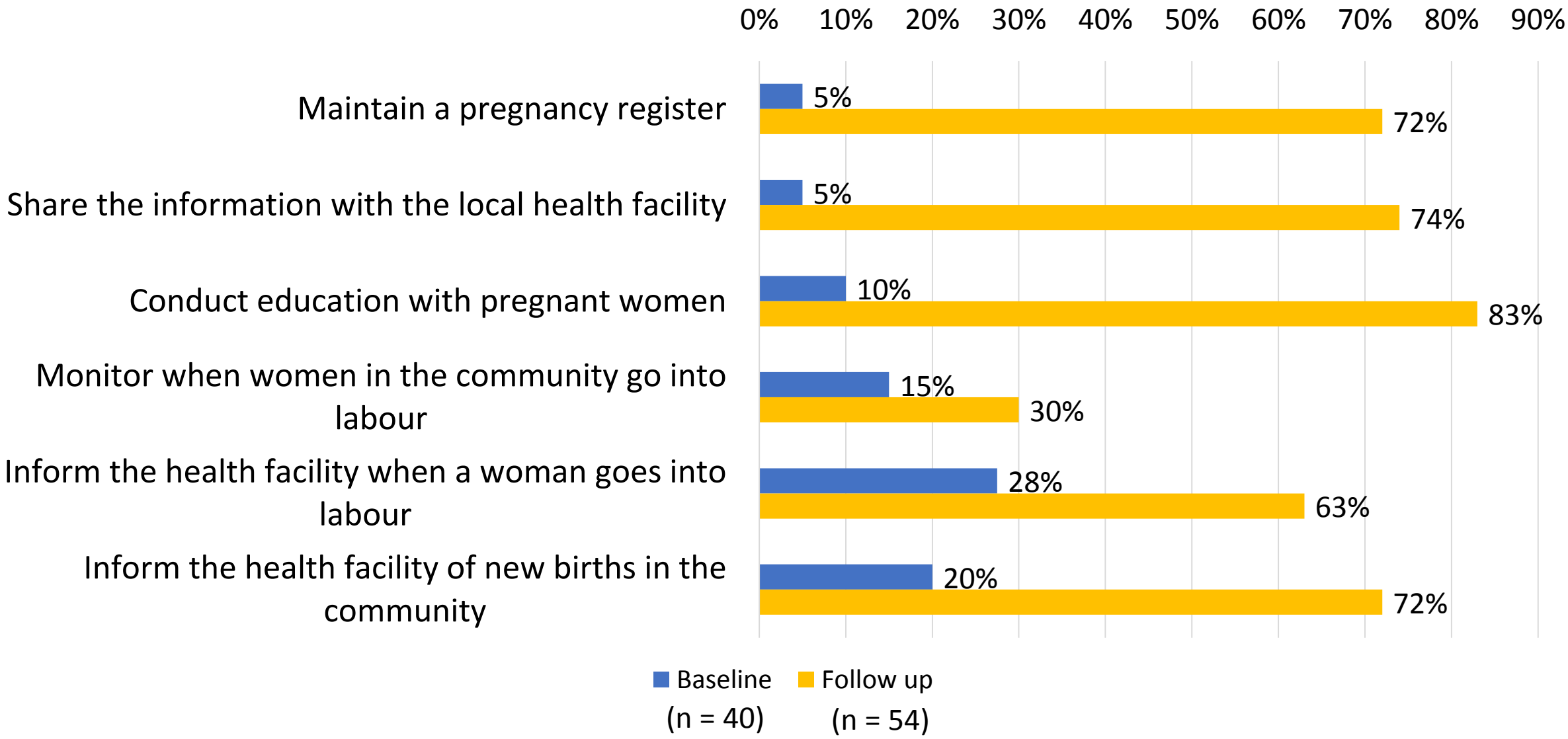


Table 6
Factors associated with timely birth dose.

Variable	Number	Adjusted odds ratios	95% Confidence interval
Sex			
Male (ref)	622	–	
Female	528	0.91	0.61–1.35
Timing of the birth			
Born before the project (ref)	759	–	
Born during the project	394	3.60[a]	2.15–6.01
Place of birth			
Health facility (ref)	100	–	
Hospital	812	8.55[a]	4.39–16.64
Home	127	1.28	0.67–2.45
Other	21	1.08	0.33–3.60
Caregivers developed a birth dose plan			
No or don't know (ref)	321	–	
Yes	832	2.12[a]	1.38–3.25
Caregivers knew hepatitis B can cause:			
Jaundice			
No or don't know (ref)	666	–	
Yes	487	0.97	0.63–1.50
Liver cirrhosis			
No or don't know (ref)	1108	–	
Yes	45	1.35	0.38–4.87
Liver disease			
No or don't know (ref)	1091	–	
Yes	62	1.47	0.47–4.60
Liver cancer			
No or don't know (ref)	1134	–	
Yes	19	0.59	0.14–2.46
Caregivers knew hepatitis B is transmitted through:			
Sex			
No or don't know (ref)	1000	–	
Yes	153	0.74	0.39–1.40
Blood transfusion			
No or don't know (ref)	879	–	
Yes	274	1.83[a]	1.05–3.18
Mother-to-child			
No or don't know (ref)	1052	–	
Yes	101	0.66	0.30–1.45
Unsafe injection			
No or don't know (ref)	1064	–	
Yes	89	0.85	0.39–1.84

[a] Significant positive association between timely birth dose and the variable ($p \leq 0.05$).

Table 6
Factors associated with timely birth dose.

Conclusion of Kiribati project

- The project provides an example of improving BD coverage by strengthening linkages between communities and health workers and educating pregnant women.

- Further continuous health education and communication to keep awareness of disease or BD, and training of vaccine management are needed.

- The model could be adopted in the other areas of Kiribati and similar settings on other Pacific islands and elsewhere.

Cambodia

Background:

- In 2001, HepB vaccination began as a pilot from 1 district and scaled up nationwide in 2005

- HepB BD <24hrs began in 2005
  - HepB BD coverage: 83% (DHS 2014)

- Place of delivery (data in 2012)
  - 54% at health facilities; midwives play major role
  - 46% at home; 29% without SBA, 17% with SBA

- Training of health care workers (especially midwives) + educating the communities were needed

Objective of Cambodia Birth Dose Project

Determine if health worker training and community education improves HepB BD coverage in Cambodia

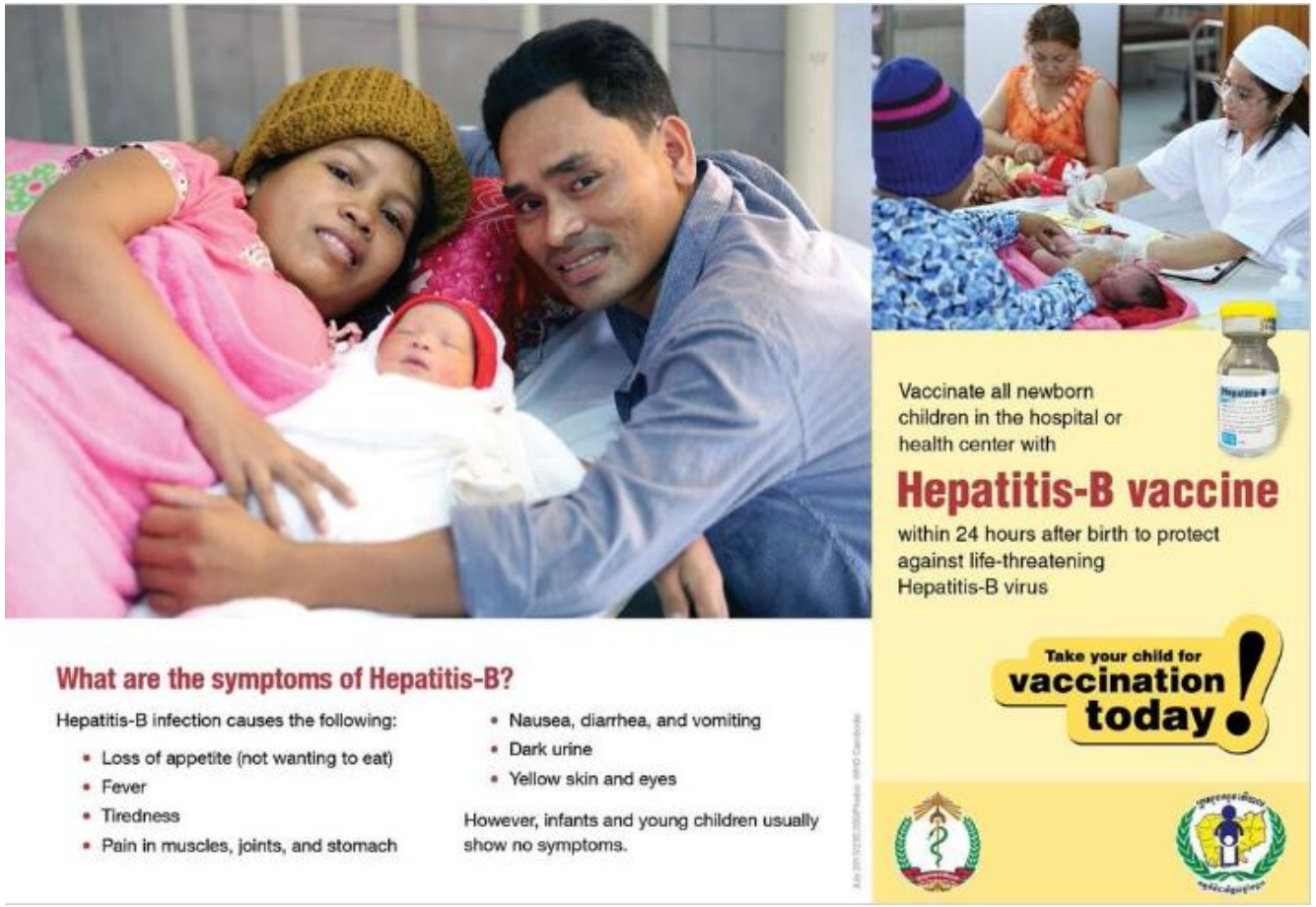
Interventions

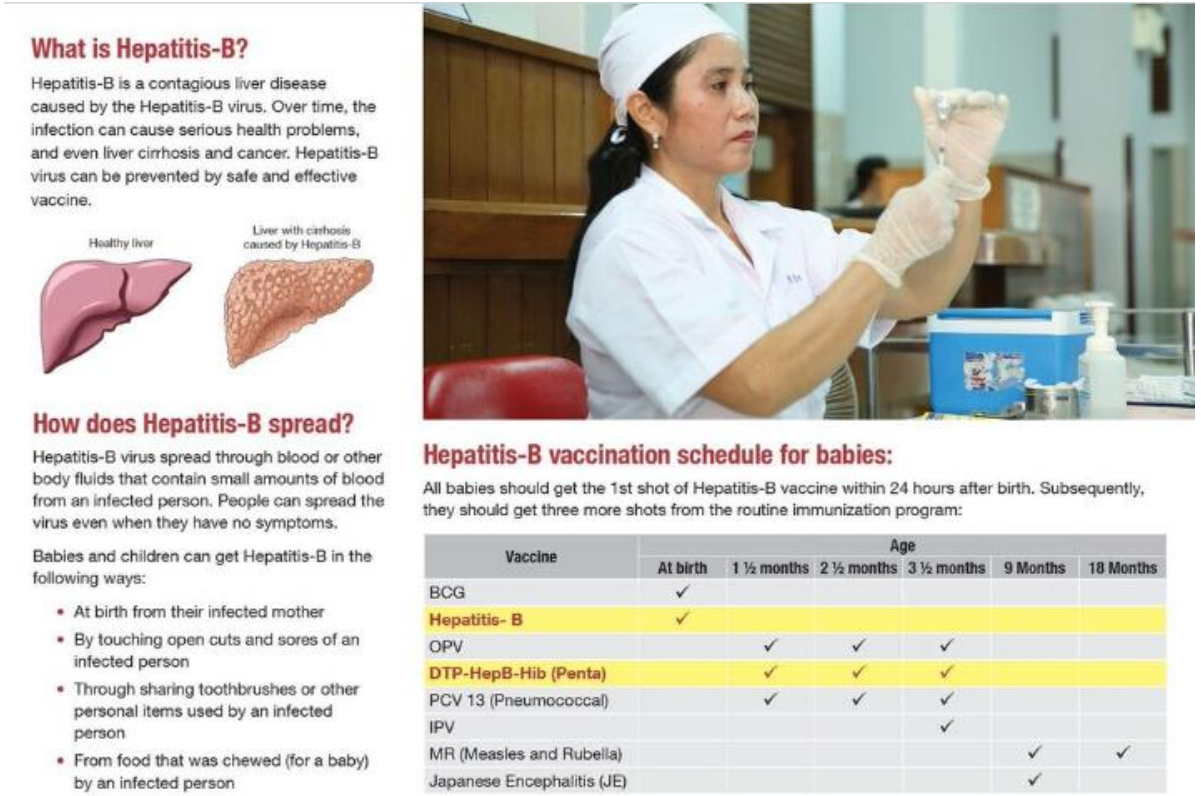
1. Distribute HepB BD guidelines to all national, provincial, referral hospitals and health centres that provide vaccine

2. Training workshop: in total 274 participants (focusing on MWs) of 34 national/provincial hospitals and 64 referral hospitals
   - BD, injection techniques, safe immunization practices
   - Cold chain, vaccine and logistics management

3. Communication
   a. Develop video and pamphlet on HepB BD
      - Distribute during antenatal and postnatal care by midwives
      - Distribute to communities by health volunteers
   b. Posters on HepB BD at hospitals/health centres

Pamphlets and Poster





Vaccine	Age					
	At birth	1 ½ months	2 ½ months	3 ½ months	9 Months	18 Months
BCG	✓					
Hepatitis- B	✓					
OPV		✓	✓	✓		
DTP-HepB-Hib (Penta)		✓	✓	✓		
PCV 13 (Pneumococcal)		✓	✓	✓		
IPV				✓		
MR (Measles and Rubella)					✓	✓
Japanese Encephalitis (JE)					✓	

Outcome:
Findings of field visits after interventions

1. Revealed marked improvement of midwives' knowledges on immunization practices and handling cold chain

2. Coordination between EPI and MCH unit (midwives belongs to) has improved and well-functioning

Papua New Guinea

Background

- National HepB vaccine since 1992, BD was added in 2005
- HepB3 coverage: 68%, BD coverage: 37% (2013)

- HBsAg seroprevalence among 4-6 year olds in 2012-13: 2.3%
  - Vaccine history: 28% received a timely BD, 81% received HepB3
  - Delivery: 64% in health facility, 31% at home without a SBA, 3% at home with a SBA
- Challenges of BD both babies born at home and health facilities – comprehensive understanding of vaccination program status were required

Am. J. Trop. Med. Hyg., 92(3), 2015, pp. 501–506
doi:10.4269/ajtmh.14-0537

Hepatitis B Surface Antigen Seroprevalence among Children in Papua New Guinea, 2012–2013

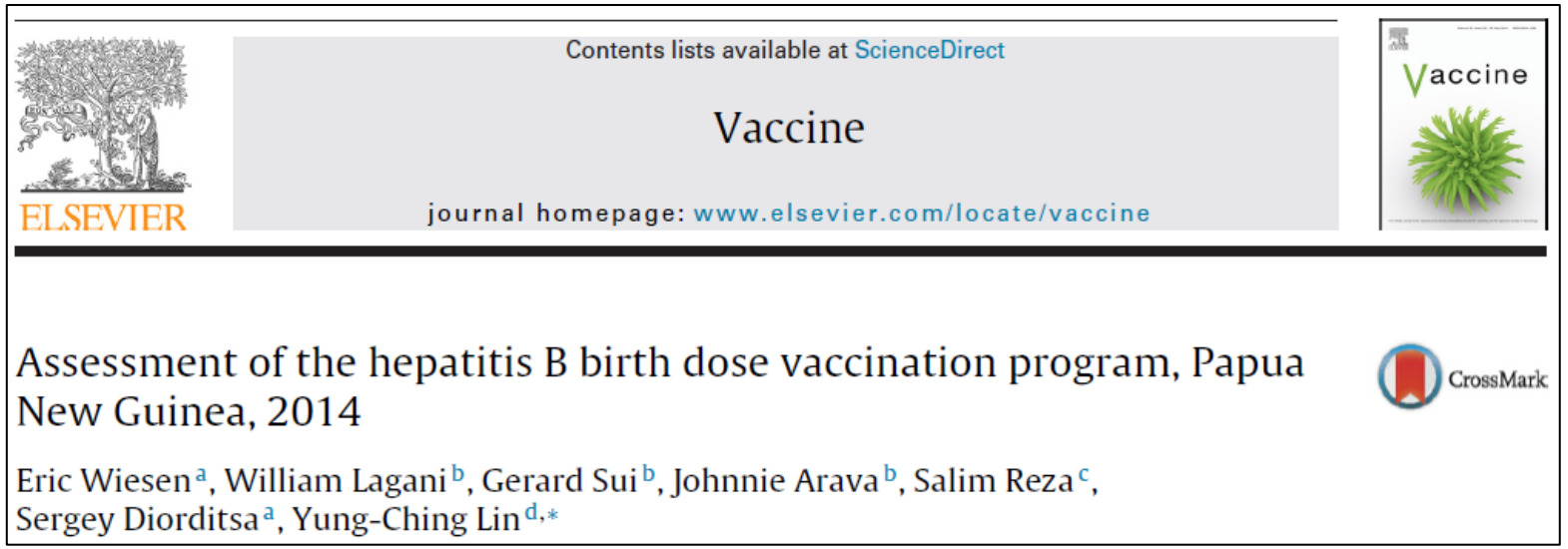
Russel Kitau, Siddhartha Sankar Datta,* Minal K. Patel, Karen Hennessey, Kathleen Wannemuehler, Gerard Sui, and William Lagani

PNG BD Project

Objective: To identify factors and barriers of timely BD vaccination related with HepB prevalence by a field assessment to develop strategies for improving BD coverage in PNG

Sites: 5 provinces with high- and 5 with low-HepB prevalence

Duration: November – December 2014



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Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Assessment of the hepatitis B birth dose vaccination program, Papua New Guinea, 2014

Eric Wiesen[a], William Lagani[b], Gerard Sui[b], Johnnie Arava[b], Salim Reza[c], Sergey Diorditsa[a], Yung-Ching Lin[d,*]

Methods

- 9 randomly selected health facilities at each province
- Interview provincial and district EPI officers and health facilities
  - Knowledge, attitude and practice including outreach service
  - BD vaccination policy and vaccine management
  - Staff training and supervision
  - Data recording and reporting
- Interview communities (VHVs and caregivers) in catchment areas on KAP

- Compare health facilities of higher BD coverage vs lower BD coverage (<30%)
- Compare caregivers whose children received BD vs did not receive BD

Results

Table 1
Numbers of interviews and records reviews conducted in low and high HBsAg prevalence provinces, Papua New Guinea, 2014.

	Low HBsAg prevalence provinces ($N = 4$)	High HBsAg prevalence provinces ($N = 6$)	Total
Caregivers	159	187	346
EPI officers/health officers	4	17	21
Health facilities	38	48	86
Village health volunteers	12	10	22
NHIS review: health facilities	34	49	83
NHIS review: provincial hospitals	3	6	9

Results

- Overall timely BD coverage at hospitals (Jan – Oct 2014): 31%
- 81% of health facilities provided HepB BD
- Health facility factors and barriers of timely BD
  - 13% of health facilities could locate BD policy, 27% had written guideline
  - 22% reported ≥1 HepB vaccine stock out in 2013
  - 6% HWs had received training, 30% received regular supervision
  - 45-56% of HWs knew about HepB disease information and vaccine storage condition
  - 17% could provide coverage data, <50% recorded BD vaccination history
  - 8% conducted outreach for home births
- Community factors and barriers of timely BD
  - Low knowledge of HepB disease and BD vaccination

Odds ratios (OR) and 95% confidence intervals (95% CI) of health facility factors affecting timely hepatitis B birth dose (hepB TBD) vaccination coverage, Papua New Guinea, 2014.

Factors	Low hepB TBD coverage (<30%)			High hepB TBD coverage (≥30%)			OR (95% CI)
	Yes	Total	%	Yes	Total	%	
Training and supervision							
Received training for BD	8	31	26%	8	28	29%	1.2 (0.31–4.2)
Received supervision for BD	2	31	6%	10	28	36%	8.1 (1.4–81)*
Knowledge of hepatitis B infection							
Complications of infection (correctly answered ≥2/5)	20	32	63%	20	29	69%	1.3 (0.41–4.4)
Knows mother-to-child transmission routes	15	31	48%	15	28	54%	1.2 (0.39–3.9)
Knows timing of TBD	28	32	88%	28	29	97%	4.0 (0.36–200)
HepB birth dose practice							
Charge fee for a normal delivery	14	29	48%	11	26	42%	0.79 (0.24–2.6)
Facility give hepB BD	24	32	75%	28	29	97%	9.3 (1.1–430)*
Facility give delayed hepB BD	20	28	71%	19	26	73%	1.1 (0.28–4.3)
Policy for BD	12	27	44%	13	27	48%	1.2 (0.35–3.9)
Guidelines/protocols for BD	18	29	62%	16	27	59%	0.89 (0.27–3.0)
Designated person for hepB BD administration	4	32	13%	13	29	45%	5.7 (1.4–27)*
Staff available to vaccinate on weekends	10	29	34%	22	29	76%	6.0 (1.7–22)*
Vaccine management							
Temperature monitoring ≥once per day	13	25	52%	16	23	70%	2.1 (0.56–8.2)
Vaccine in stock in good condition	15	21	71%	19	21	90%	3.8 (0.55–42)
HepB BD outreach services							
Health volunteers in the catchment area	8	30	27%	11	24	46%	2.3 (0.65–8.5)
Volunteers inform facilities of pregnancies	3	10	30%	7	14	50%	2.3 (0.33–19)
Volunteers inform facilities of new births	5	10	50%	8	15	53%	1.1 (0.17–7.5)
Inform mothers of hepB BD during antenatal care	11	28	39%	23	25	92%	18 (3.1–170)*
Assist with home deliveries	8	32	25%	9	27	33%	1.5 (0.42–5.4)
Bring hepB to vaccinate home births	0	26	0%	5	24	21%	(p = 0.040)*
Vaccinate home births with hepB BD at home	2	31	6%	5	25	20%	3.6 (0.52–41)
Mothers bring home births to facilities for hepB BD	25	32	78%	27	28	96%	7.6 (0.85–350)
Ask volunteers to inform mothers of hepB BD	5	10	50%	12	19	63%	1.7 (0.28–11)

* $p < 0.05$.

Conclusion from BD improvement project in WPR

Efforts need to be stressed for improving BD coverage:

1) Improve vaccine delivery for facility births
   - Strengthen EPI and health care workers education, training and supervision
   - Improve vaccine management and data management in health facilities

2) Improve vaccine delivery for home births
   - Strengthen community outreach vaccination services and collaborations between health facilities and communities
   - Improve knowledge and capacity of VHVs
   - Enhance the educational function of antenatal care
   - Consider out of cold chain introduction

3) Increase community awareness and demand for the birth dose

   Educate on HepB disease and vaccination focusing on pregnant women and community members

Thank you!