International Journal of Community Medicine and Public Health
Das B et al. Int J Community Med Public Health. 2019 May;6(5):1886-1891
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20191467

Original Research Article

Delivery point immunization in tertiary care hospital in Eastern India and challenges

Bharati Das[1]*, Puspanjali Khuntia[2], Lucy Das[3], Jayashree Pattnaik[4]

[1]Department of Paediatrics, [2]Department of Obstetrics and Gynaecology, Post Partum Programme, SCB Medical College and Hospital, Cuttack, Odisha, India
[3]Department of Obstetrics and Gynaecology, [4]Health and Family Welfare Training Centre, SCB Medical College and Hospital, Cuttack, Odisha, India

Received: 14 March 2019
Revised: 29 March 2019
Accepted: 30 March 2019

***Correspondence:**
Dr. Bharati Das,
E-mail: bharathidas15@gmail.com

ABSTRACT

Background: Hepatitis B is a major public health problem. The efficiency of the vaccine decreases as the time period between the birth and first dose increases. "WHO recommends that all infants should receive their first dose of Hep B vaccine as soon as possible after birth, preferably within 24 hrs. In India the birth dose/ 0 dose coverage was 45% on 2015. Prior to initiation of "Delivery Point Immunization" the birth dose Hep B was 35%. During the course of this programme the challenges and problems faced has been addressed in this study.
Methods: It is a prospective observational study for a period of 15 months conducted by postpartum programme department in O&G department. It includes all the babies delivered in the department.
Results: After the integration of delivery point immunization with JSY (Janani Surakhya Yojana) programme, the 0 dose hep B coverage was 72%.The coverage of BCG and 0dose OPV remained 89.48%.The most modifiable cause due to which babies were not received 0 dose Hep B vaccine was due to ignorance 36.19% and babies not received due to SNCU (Sick Newborn Care Unit) admission was 36.06%.
Conclusions: Initiation of delivery point immunization has definitely increased the 0 dose hep B vaccine coverage. Integration with other maternal and child health programme had further increased the coverage. Though significant percentage of people know about the at birth immunization but are ignorant about the timing of 0 dose hep B vaccine.

Keywords: Vaccine, Hep B, Birth dose, Delivery point immunization

INTRODUCTION

Hep B is a major public health problem. Worldwide prevalence of HBsAg is 3-4%. Chronic hepatitis B remains the major cause of liver cirrhosis and liver cancer. It can be transferred to the newborn by vertical transmission as well as horizontal transmission.[1] The likelihood of chronic infection is highest if infected at birth (90%), 25-50% if infected between the age of 1-5 yrs, 5-10% if infected over the age of 5 yrs.[2,3] Similarly the efficiency of the vaccine decreases as the time period between the birth and first dose increases.[3] Vaccination reduces the likelihood of developing of HB infection 3.5 times in infants born to infected mother.[1] "WHO recommends that all infants should receive their 1st dose of hep B vaccine as soon as possible after birth preferably with in 24hrs".[4,5] Which includes the low endemic countries as well as to prevent early transmission. There has been reviews already published which summarizes what practices improve coverage of hepatitis B birth dose and what are important facilitators and barriers improving for the coverage.[6] In early 2011, global coverage of birth dose was still very low at 26%.[7] Hep B was introduced in routine immunization programme on 2011 with schedule

for hep B birth dose as early as possible preferably with in 24 hrs for all institutional deliveries and 3 doses at 6, 10, 14 wk with DPT, OPV and at present instead of DPT given in pentavalent vaccine.[8] Despite WHO recommendation in 2014 out of 194 countries, only 96 (49%) offered hep B birth dose as a part of national immunization programme and <38% received within 24 hrs.[9] In 2015 India reached 86% coverage of hep B third dose, institutional delivery 88% but birth dose coverage of hep B was only 45% with large variation across the states.[10] By 2016, 7 of 11 countries had introduced universal hep B birth dose in South East Asia Region. The regional coverage had increased from 9% in 2011 to 34% in 2015. In 2015, around 197, 690 perinatal hepatitis B virus infection occurred. In which it was found in India (62%), Bangladesh (24%), and Myanmar (8%).[11] May-2016 WHA (World Health Assembly) endorsed WHO global strategy to eliminate viral hepatitis as public health problem by 2030, through combination of prevention and treatment. On June '2016- ITAG (Immunization Technical Advisory Group) recommend the target of HBsAg prevalence ≤1% among children of 5yrs of age for WHO SEAR by 2020 and India to set a national target of coverage of 0 dose hep B 90% by 2020.[12]

METHODS

It is a prospective observational study for 15 months, from March 2017 to May 2018. Done in postpartum programme of SCB Medical College, Cuttack, Odisha, India, covering the delivery point immunization in the O&G Department.

Inclusion criteria

Newborn babies delivered in O&G Dept and babies of the referred mother to the department for any postpartum complication.

Vaccinators

Were health worker (F) & (M), at times the LHV from postpartum programme and family planning training centre who were well versed with the immunization as well as cold chain maintenance**.**

Vaccine storage and delivery

Vaccines were supplied by the government regularly and were stored in the ILR of postpartum programme and family planning centre which are near the vicinity of the delivery point. The stock management done by the LHV in the postpartum programme. Vaccines were taken to the immunization point by the vaccine carriers.

Vaccines

For HBV monovalent multi dose vials (10 dose/vial), BCG (20 dose/vial) and OPV (20 dose/vial) were used. Hep B vaccine was given within 24 hrs of delivery. No contraindication for <2000 gm of birth weight. BCG & OPV was given within 14 days of delivery, auto disposable syringe were supplied for it. Sessions were conducted for 4 hrs. Open vial policy was maintained for HBV and OPV.

Immunization points

We had 2 immunization points, one Immunization session was conducted at delivery point (near labour room), exclusively for labour room babies. Another for in the babies in the O&G ward.

Documentation

Data collected are date of delivery, place, birth weight, order of delivery, immunization date, cause for baby not getting hep B vaccine within 24 hrs of delivery were also collected. Which were entered in the register, MCPCard (Maternal and Child Protection Card), in interim certificate. Separate registers were maintained for O&G ward and labour room for avoiding confusion. A Master register was maintained daily after the session at postpartum programme for administration purpose, monitoring, evaluation, situational analysis and policy making. Feedbacks by the vaccinators were also assessed. The attendants were usually ASHA and/ or family members. Interim certificate was provided for the baby from postpartum programme to the O&G Dept, includes the details of the baby which to be signed by staff nurse/ doctors of O&G dept. Which was countersigned by the vaccinator after immunization. Which is required to be submitted by the mother as a proof of at birth immunization. After which only the incentives was paid to the mother and ASHA.

Reporting

Monthly report of the details was send to the government through the format provided by the HMIS (Health management information system). Supportive supervision was done time to time by the team from Post-partum programme, O&G department.

RESULTS

Table 1 shows that BCG and 0 dose OPV coverage was remaining average 89.48%. 10.6% of newborn babies not received any vaccination. The status of 0 dose hep B coverage was 30% in March 2017, 56% in April 2017, subsequently the average remained 77-78%. Overall average was 72.19%.

From Table 2, the causes for babies not receiving 0 dose hep B vaccines were found. Which shows due to SNCU admission 837 (36.06%), Ignorance of hep B to be given within 24 hrs was 840 (36.19%), underweight 66 (2.8%), labour room 155 (6.67%), referral 56 (2.4%), holiday 268 (11.54%), no family members 17 (0.73%), mother's problem 56 (2.4%), baby's problem 0.90%. No MCP card in 6 cases only in month of February'17 and March'17.

Table 1: Delivery point immunization- at birth vaccination status.

Month	Total delivery	Only live birth	BCG (%)	OPV (%)	HEP B(%)	Babies not received HEPB
9th March'17	1037	994	526 (52.91)	524 (52.91)	304(30.50)	222
April'17	704	678	564 (83.18)	566 (83.18)	380(56.04)	184
May'17	912	875	830 (94.85)	830 (94.85)	676(77.25)	154
June'17	746	704	734 (104.26)	734 (104.26)	595(84.50)	139
July'17	843	809	742 (91.71)	742 (91.71)	621(76.76)	121
August'17	1265	1231	1078 (87.57)	1078 (87.57)	893(72.54)	185
September'17	924	896	919 (102.56)	919 (102.56)	723(89.30)	196
October'17	1096	1070	926 (86.54)	926 (86.54)	729(68.13)	197
November'17	1024	987	944 (95.64)	944 (95.64)	787(83.36)	157
December'17	980	935	856 (91.55)	856 (91.55)	724(77.40)	132
January'18	847	813	739 (90.70)	739 (90.70)	610(75.03)	129
February'18	673	634	583 (91.95)	583 (91.95)	494(77.90)	89
March'18	951	914	829 (90.70)	829 (90.70)	679(74.20)	150
April'18	1021	971	914 (94.12)	914 (94.12)	766(78.88)	148
May'18	958	914	829 (90.70)	829 (90.70)	711(77.70)	118
Total	13,981	13,425	12,013 (89.48)	12,009 (89.48)	9692 (72.19)	2321 (17.28)

Table 2: Causes for babies not received 0 dose hepatitis B vaccine.

Month	SNCU	Ignorance	Under weight	Labour room	Referral	Holiday	No family members	Mother's problem	Baby's problem	No MCP card	Total
February'17	5	1	12		1		4		1	4	
March'17			6							2	
March'17	68	16	11	34	6	86	0	0	1	0	222
Apr'17	33	32	7	35	1	71	0	1	4	0	184
May'17	53	26	10	43	9	0	1	7	5	0	154
June'17	46	46	2	3	1	30	2	4	5	0	139
July'17	63	37	2	6	7	0	4	1	1	0	121
August'17	69	94	0	0	6	0	4	7	5	0	185
September'17	66	74	6	0	6	37	3	4	0	0	196
October'17	61	116	3	12	1	0	0	2	0	0	197
November'17	62	79	7	6	1	0	1	1	0	0	157
December'17	51	63	4	9	3	0	1	1	0	0	132
Janruary'18	60	56	1	3	4	0	1	4	0	0	129
February'18	43	35	3	0	3	0	0	5	0	0	89
March'18	41	60	2	0	6	27	0	11	0	0	150
April'18	69	48	7	3	0	17	0	4	0	0	148
May'18	52	58	1	1	2	0	0	4	0	0	118
N (%)	837 (36.06)	840 (36.19)	66 (2.84)	155 (6.67)	56 (2.4)	268 (11.54)	17 (0.73)	56 (2.4)	21 (0.90)	6	2321

Table 3: Birth dose coverage in South East Asia region (India).

Author	Year published	Country	Study design	Population	Coverage (%)
Alexander	2013	India	Hospital	High risk	85
Lahariya	2013	India	Community	General	10
Our study	2019 for publication	India	Hospital	General	71.2

Table 4: Barriers for hep B birth dose in South East Asia region (India).

Author	Year	Country	Study	Popula -tion	Reas 1	Reas 2	Reas 3	Reas 4	Reas 5	Reas 6	Reas 7
Alexander	2013	India	Hospital	High Risk	Birth outside						
Lahariya	2013	India	Community	Gen	Fear of vaccine wastage	HW Poor knowledge					
Our study	2019	India	Hospital	Gen	Ignorance	SNCU admission	Holiday effect	Labour room	Under weight	Referral and Mother's problem	Baby's problem

DISCUSSION

This study shows that coverage of BCG & 0 OPV was 53% in March'17, following which it was remaining average 89.48%. The coverage of 0dose Hep B has been increased from 30-35% pre delivery point immunization to 55-56% initially, subsequently increased to average 72.19% from May'2017. We have very limited data from our country to compare. No study has been published before taking general population in hospital based study to find the barriers on implementing birth dose of Hep B. On 2017 from the WHO review on "Global compliance with hep-B vaccine birth dose and factors related to timely schedule" it has been found from the SEARO (South East Asia Regional Office) which includes 11 countries (Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, SriLanka, Thailand and Timor –Leste) only 7 countries having hep B birth dose in their immunization schedule. The coverage was <80% in two (Bhutan at 78% and India 44%), between 80-95% in one (Indonesia), and >95% in three (DPRK, Maldives and Thailand).[13] However our studies shows average of 72.19% in our hospital comparing with previous Indian studies (Table 3).

Among the babies not received 0 dose Hep B vaccine, from the causes it has been found that the most common barrier was ignorance of the family members which indirectly also reflects the ignorance of staffs and ASHA. The next cause was babies requiring SNCU admission which not a barrier. The 2nd barrier was due to holiday effect. Which got reduced from month of April'17 after joining of health and family planning staffs. Later months the babies not immunized due to holidays are due to local festive and involvement of the staffs in national pulse polio programme due to lack of enough staffs. We don't have any contraindication for immunizing babies of <2000 gm only premature babies less muscle mass has not been given. We too have many false contraindications which include (problem of the mother, problem of the babies) decided by the family. Apprehensions by the doctors in the labour room made false contraindication for the babies of critically ill mothers. There was media effect too as a barrier on immunization, though neonatal death was unrelated to immunization in incidence. For which the administration in O&G department stopped immunization in the 1st week of March'2017 for few days.

Regarding the barriers to implement the hep-B birth dose maximum studies were done in Western Pacific Region. The most common barrier was born at home followed by false contraindications, other aspects of health worker training, quality of outreach services. Lack of vaccine was mentioned in two hospitals. Besides this media report on adverse effect (Vietnam), low birth weight and prematurity (China), conflicting guidelines at hospital were also found. One study from Australia low endemic country showed for not timely delivery of birth dose was due to absence of specialist (obstetrician). Studies from New Guinea also found vaccination in weekends and lack of maternal knowledge along with other factors as barriers.[12] Comparing with previous hospital based study in India which included only high risk mothers they found outside delivery as the cause. However referral or outside delivery remained as 6th reason in our study. We didn't have any issues related to the vaccinators as a barrier which has been found another Indian which was community based (Table 4).[13]

Challenges faced

Initiation of at birth immunization was started at our centre on April 2012. Postpartum programme though being an integral part of O&G department, birth dose hep B was not satisfactory. Was remaining between 35-35% and was masked by the satisfactory coverage of BCG and 0 OPV vaccines. As our institute being prime tertiary care centre of the state with monthly nearing 1000 deliveries, our state health department took this matter seriously and planned for initiation of delivery point immunization. Before it non formal assessment of the infrastructure was done. Finally on dt 7.2.17, State Addl Director Child Health, Dy Director, Immunization and Surveillance, Medical Officer, WHO discussed with all staffs and decided delivery point immunization to be conducted everyday including Sunday and holidays by the team work of postpartum programme staff, Health & FW training centre staffs & Community Medicine staffs with proper coordination.

Challenges in 1st 2 months

- Despite lack of staff the vaccinating staffs in postpartum programme department had to follow the order of implementing 0 dose hep B immediately by the verbal order of the team. To start with birth dose HEP B was given at bedside, moving in the whole department to locate the babies likely present which was very inconvenient. Babies were again brought to well baby clinic of postpartum programme, on Monday, Wednesday, Friday on routine immunization days to receive 0 OPV and BCG in which possibilities of double dose of 0 dose Hep B was there.
- Despite being a National Programme staff nurses in some of the wards in O&G department did not allow the baby for immunization due to apprehension of adverse event following immunization.
- As there was national breaking news regarding newborn deaths in ICU in some of the hospital. Department of O&G wanted the babies to be checked before immunization, though immunization was given by senior experienced staffs. Considering the scenario, daily bedside round was made by the Paediatric Department by the staffs posted in SNCU of O&G Ward.
- Due to lack of awareness by the staffs in O&G dept and as well as the relatives and ASHA it was noticed the unavailability of MCP Card (Maternal & Child Protection Card) some times. As documentation of immunization was also important to avoid repeat immunization and to avoid confusion by the relatives with Vit K injection as immunization.
- After missing issue of a newborn in the O&G department, senior faculties decided and departmental policy was made that all the at birth vaccines to be given in the department. Same time also Chief District Medical Officer again made an order for so. Following which room was allotted and necessary requirement for immunization session was made.

After 2 months of analysis, it was found that though the birth dose of hep B was found to be increasing was not satisfactory. We looked into it to find out possible modifiable cause which were 1) Lack of knowledge among the staff nurses, faculties, ASHA, relatives in the O&G dept regarding the immunization of birth dose hepB vaccine within 24 hrs though they were aware of at birth vaccines. 2) Quite significant no of babies in the labour room were not allowed for vaccination due to apprehension by the staffs of labour room due to some critical condition of the mother not the babies. 3) Sunday & holidays were not covered though decided by the government. 4) As till that point of time only staffs from postpartum programme were covering delivery point immunization along with additional routine immunization on Mon, Wed, Fri, Pulse Polio programme, VIT A programme and monthly reporting works they were unable to cover on holidays. 5) ASHAs were more keen on receiving JSY incentives and giving immunization at their local point according to their decision without the knowledge of the parents. This is due to ignorance and strong belief on ASHA being their local person.

Interventions taken

Combined discussion by postpartum staffs, O&G dept senior faculties & hospital management was done, O& G senior faculties determined to convince their staffs and were expecting improvement next 2-3 months.

- Though there was great hindrance from the labour room staffs, by combined efforts of the team, finally the labour room staffs agreed for delivery point immunization after clarifications of their queries.
- As the labour room staff nurses were not well versed with the cold chain maintenance of the vaccine, they had been given the responsibility of only vitamin K injection in the labour room after birth which was also a national policy and immunization staffs were kept uninvolved in vitamin K injection.
- With repeated intimation from the district health administration, Health & FW training staffs agreed for joining the programme on holidays. Govt had allowed them to take holiday in any working days. However the Community Medicine staffs did not join the programme.
- The Health & FW department of state government also noticed that, though there was increased institutional delivery following JSY (Janani Surakhya Yojana) there was not increased in at birth hep B vaccine correspondingly. Order was made to integrate JSY and delivery point immunization by releasing JSY incentives to mother and ASHA only after completion of at birth immunization.
- Interim certificate provision was also made for the newborn baby which was filled by the O&G staffs (staff nurse/doctor) regarding details of the baby registration, date & time of birth, sex, birth weight etc. This was counter signed by the vaccinator and was submitted at JSY counter with other requirements for receiving JSY incentives.
- The interim certificate was also useful in documenting vaccination when there was delay /non availability of MCP card for immunization.
- For all these awareness was created by putting standing order in the form of big posters and flex banners at the entrance gate of O&G ward, labour room, OT, OPD, antenatal clinic, antenatal ward, post natal ward, high risk ward, cabin, near the lifts. At the same time personal interaction was made with the staff nurses, doctors, mothers, relatives, and ASHAs by the postpartum staffs. Following which time to time verbal assessment was also done by staffs of postpartum programme, O&G dept and the Government for the progress.

Limitations of the study

The coverage of vaccines from February'17 to March'17 was not accurate, as the babies were taken by the ASHA or other family members to other parallel immunization point at the Community Medicine Dept and at postpartum programme in our institute as well as to their local immunization points due lack of departmental policy of compulsion of getting immunization in the department itself and no restriction of babies taking outside the department. From 9th march onwards till date babies were not allowed outside and had become mandatory to receive the delivery point immunization. The absolute number of babies immunized does not reflect exclusively the babies delivered at our centre. As our institute being a tertiary care centre we get post-delivery referrals too with various possibilities immunization status of the babies. No provision was there for immunization of the babies in the absence of family members or ASHA. The average of 10% of babies not receiving any at birth vaccine is not known as many newborns babies were referred to other SNCUs due to lack of availability of the beds and the total death occurring in the SNCU during this period was only 165 (1.22%) of total delivery.

CONCLUSION

Initiation of delivery point immunization had definitely increased the coverage of 0 dose hep B vaccination. The decision of integration of at birth immunization with JSY incentives by the government had further increased the outcome. Though many people know about at birth immunization but significant percentage of them are ignorant about the timing of 0 dose hep-B vaccine. So, necessary initiatives and interventions are required to be created for the hospital staffs specially for the nurses and the relatives. Increase in vaccinator staffs may reduce the holiday effects on 0 dose hep B vaccination.

ACKNOWLEDGEMENTS

Would likely acknowledge our vaccinators, the health workers, the LHVs of both postpartum programme and Health and Family Welfare Training centre, our dealing Assistant and Attendants for their contribution.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. WHO Hepatitis –B Vaccine. WHO Position Paper, Weekly Epidemiological Record, 2009,84(40):405-20.
2. Hepatitis–B virus infection: epidemiology & vaccination. Epidemiologic Rev. 2006,28(1):112-25.
3. Preventing mother-to- child transmission of Hepatitis–B: Operational field guidelines for delivery of the birth dose of hepatitis –B vaccine. Manila, World Health Organization, WHO Regional Office for the Western Pacific, 2006.
4. Resolution WHA 63.18: Viral Hepatitis. In sixty third World health Assembly, Geneva, 2010. Geneva, World Health Organization,1986.
5. WHO press releases, achieving measles and Hepatitis –B targets requires redoubling of efforts. In sixtieth session of the Regional Committee for the Western Pacific, China, Hong Kong SAR, World Health Organization, 2009.
6. Practices to improve coverage of Hepatitis B birth dose vaccine. WHO/IVB/12.11 – 2012.
7. WHO Immunization Practices Advisory Committee meeting 12-13, April 2011: Report and Recommendations. Geneva, World Health Organization, 2011: 1-17.
8. Verma R, Khanna P, Prinja S, Rajput M, Chawla S, Bairwa M. Hep –B vaccine in national immunization schedule: A preventive step in India. J Human Vaccines. 2011;7(12):1387-8.
9. WHO-2015– Preventing Perinatal Hepatitis –B virus Transmission. A guide for introducing and strengthening Hep-B birthdose vaccination. www.who.int/immunization/documents
10. Hepatitis B birth dose vaccination in India. WHO-Country office for India. World Hepatitis Day 2016. Available at: www.searo.who.int/mediacentre/ events. Accessed on 3 February 2019.
11. Childs L, Roesel S, Tohme RA. Status and Progress of hepatitis B control through vaccination in the South-East-Asia REGION, 1992-2015. Vaccine. 2018;36(1):6-14.
12. WHO/ Global health sector strategy on Viral Hepatitis 2016-20. Available at: https://apps.who .int/bitstream/handle Accessed on 3 February 2019.
13. Global compliance with Hep- B vaccine birth dose and factors related to timely schedule. Review. 2017. Available at: www.who.int/sage/meetings/ 2017/october/presentations. Accessed on 3 February 2019.

Cite this article as: Das B, Khuntia P, Das L, Pattnaik J. Delivery point immunization in tertiary care hospital in Eastern India and challenges. Int J Community Med Public Health 2019;6:1886-91.