

Investigation of Perinatal Hepatitis B Virus Infections among Marshall Islanders Living in Washington County, Arkansas, 2003-2005

Gayle Fischer, MD, MPH
Epidemic Intelligence Service
Division of Viral Hepatitis, Epidemiology Branch
Centers for Disease Control and Prevention

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Background

- Increase in perinatal hepatitis B virus (HBV) infections
 - 4 cases 2003-2004 (3 Marshallese infants)
 - 0 cases previous 5 years



The Republic of the Marshall Islands (RMI)

- >1200 Islands in north Pacific Ocean
- Population ~60,000
- Unrestricted work and travel in US
- HBsAg seroprevalence >8%



Washington County, Arkansas

- Northwest Arkansas
- Population ~180,000
- ~8,000 Marshall Islanders



Objectives

- Evaluate prenatal care and perinatal infection screening
- Evaluate post-exposure prophylaxis (PEP) practices
- Determine factors associated with perinatal HBV infections



Methods: Prenatal Care and Perinatal Infection Screening for Marshallese and Non-Marshallese, 2003-2005

- Hospital records from 2 main hospitals
 - Maternal and infant records
 - All Marshallese births and sample of non-Marshallese births (4:1)



Characteristics among Marshallese and Non-Marshallese Women, 2003-2005

	Marshallese women n=396* (mean)	Non-Marshallese women n=104 (mean)	p-value
Maternal age (years)	25.3	28.1	<0.01
No. of pregnancies	3.0	2.2	<0.01

*Records for 11 women were unavailable



Prenatal Care and HBsAg Screening of Women, 2003-2005

	Marshallese women n=396 #(%)	Non-Marshallese women n=104 #(%)	p-value
No prenatal care	133(34)	2(2)	<0.01
Health insurance	223(56)	89(86)	<0.01
No prenatal care	46/223(21)	1/89(1)	<0.01
HBsAg screen before admit	226(57)	95(91)	<0.01
HBsAg screen before discharge	354(89)	98(94)	0.14
Births to HBsAg+ women	41(10)	0(0)	<0.01



Maternal Screening for Other Perinatal Infections, 2003-2005

	Marshallese women n=396 #(%)	Non- Marshallese women n=104 #(%)	p-value
Screen before or after admit			
Syphilis infection	335(85)	96(92)	0.04
Rubella susceptibility	301(76)	96(92)	<0.01
Group B strep infection	183(46)	80(77)	<0.01
HIV infection	346(87)	93(89)	0.57



Maternal Screening Results for Other Perinatal Infections, 2003-2005

	Marshallese women #(%)	Non- Marshallese women #(%)	p-value
GBS+/#screened	38/183(21)	18/80(23)	0.75
HIV+/#screened	2/346(0.6)	0/93(0)	0.46
Syphilis+/#screened	28/335(8)	1/96(1)	0.01
Rubella-sus/#screened	84/301(28)	9/96(9)	<0.01



Methods: PEP and Factors Associated with Infection for Infants of HBsAg+ Women, 2003-2005

- Infant hospital records
 - Receipt of PEP
- Case management records
 - Vaccination status
 - Results of infant post-vaccination testing



PEP, Testing and Outcomes for Infants Born to HBsAg+ Women, 2003-2005

	Marshallese infants n=41 #(%)	Non- Marshallese infants n=15 #(%)	p- value
HBIG <24h after birth	36(88)	13(87)	0.91
Hepatitis B vaccine <24h after birth	41(100)	15(100)	0.99
Post-immunization testing	23(56)	8(53)	0.85
HBV-infected (HBsAg+)	4/23(17)	1/8(13)	0.75



Comparison of Infected vs. Uninfected Infants Born to HBsAg+ Women, 2003-2005

	Infected infants n=5 ¹ # (%)	Uninfected infants n=26 ² # (%)	p-value
HBIG >24h after birth	3(60)	2(8)	0.01
Maternal status incorrectly recorded	1		
Maternal HBsAg unknown on admit	2		

¹Includes 4 Marshallese infants and 1 non-Marshallese infant

²Includes 19 Marshallese infants and 7 non-Marshallese infants



Conclusions

- Marshallese less likely to have prenatal care and pre-admission HBsAg testing
- Marshallese and non-Marshallese infants of HBsAg+ women equally likely to receive HBIG and vaccine <24h after birth
- ~50% of infants born to HBsAg+ women received post-immunization testing



Conclusions

- Perinatal HBV infection attack rates similar
 - Higher prevalence of HBsAg+ women among Marshallese
- National PEP failure rate ~2%
 - Observed attack rates were higher, but within published PEP failure rates
 - Unable to assess other factors (maternal HBeAg)
- Infection associated with infants receiving HBIG >24h after birth



Recommendations and Future Considerations

- Address barriers to prenatal care among Marshallese
- Improve maternal HBsAg screening
- Include original prenatal lab results in maternal and infant hospital records
- Improve infant post-immunization testing
- Conduct ongoing surveillance
- Future considerations: evaluate biologic factors (HBeAg status)



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*Co-authors

