

Effect of an Electronic Order Set on Newborn Hepatitis B Immunization Rates

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Introduction

Hepatitis B is a highly infectious DNA virus transmitted through blood and bodily fluids via percutaneous or mucosal contact. HBV infection follows a course of either acute infection/clearance vs. chronic infection/carrier. Chronic infection occurs among **80%–90% of those infected during infancy** vs. <12% of those infected as an older child/adult.² Clinical manifestations of HBV infection range from asymptomatic infection to fulminant hepatitis. Long term complications include liver cirrhosis and malignancy. Newborns can acquire the virus via vertical transmission from an infected mother, or horizontal transmission from infected household members or other contacts. **Immunization is vital as there is no cure** or treatment for Hep B, thus prevention of morbidity and mortality is based on a strategy of **primary prevention**. Immunization serves to protect against mother-infant vertical transmission and household-infant horizontal transmission (from unknown carriers), ultimately reducing the total number of infectious carriers and impact of the disease. Starting in 1991 the United States adopted a strategy for universal hepatitis B immunization of infants.¹ More recent recommendations and updates include an article published by the CDC on January 12, 2018, entitled [“Prevention of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices \(ACIP\)”](#) in *MMWR Recommendations and Reports*. The most significant change made in the new recommendations is the following: **stable newborns weighing ≥2,000g with negative Hep B status mother should receive hepatitis B vaccine within 24 hours of birth.**¹ Prior to this (since 2005), the recommendation was to administer a birth dose of hepatitis B vaccine at *any time prior to hospital discharge*.³ The new recommendations also eliminated permissive language allowing a delay in administering the birth dose until after hospital discharge. Multiple professional organizations including ACIP (CDC), AAP, AAFP, and ACOG were all in agreement with the new recommendations.²



Methods

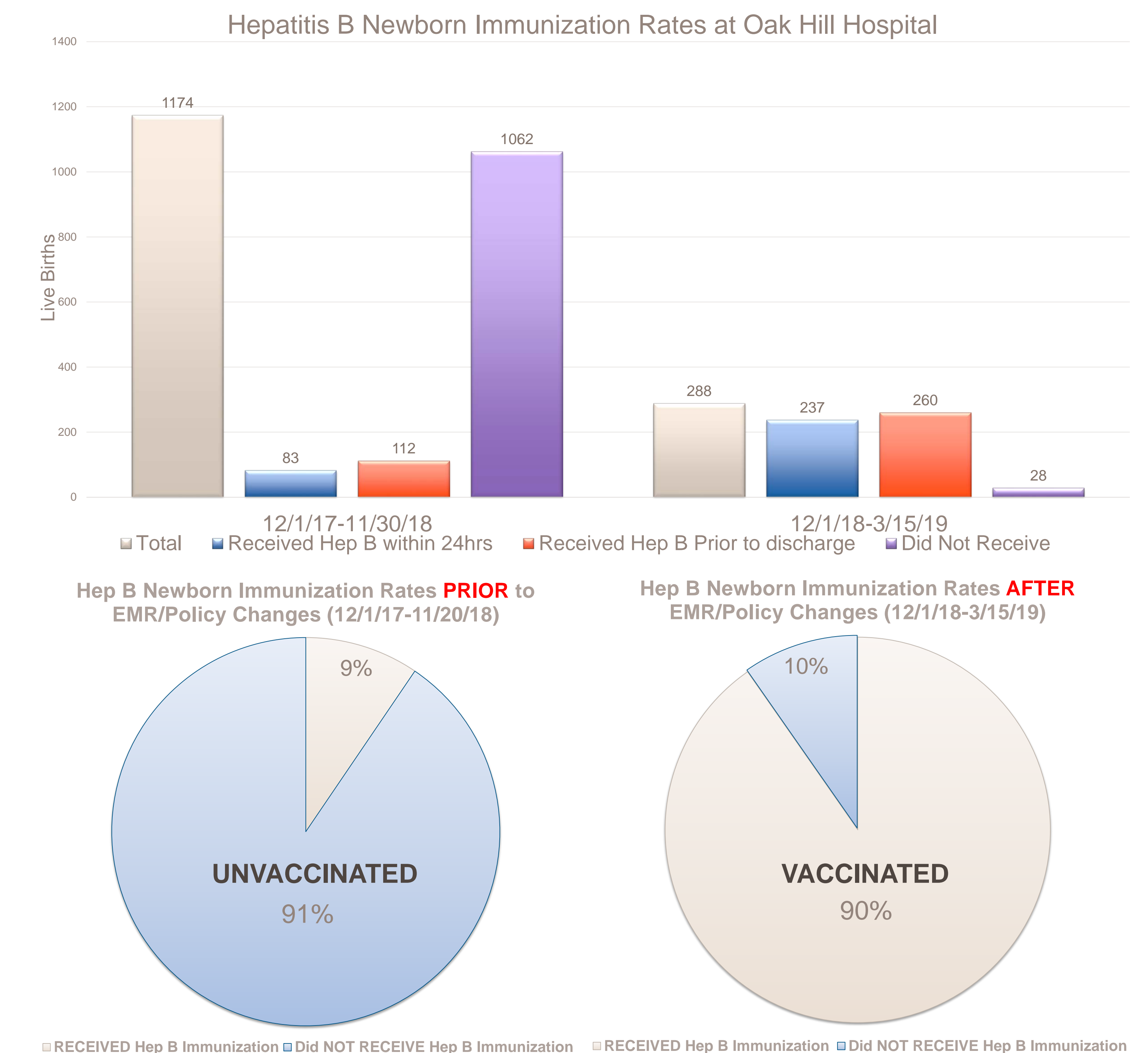
Coordinated with departmental and hospital leadership to alter the EMR *Newborn Order Set* to include a pre-checked order for Hepatitis B birth dose immunization in accordance with recent national recommendations. Also worked with OB departmental leadership and nursing staff to enact procedural changes for administration of vaccine and access to online database (Florida SHOTS) for proper documentation. Then compared Hep B immunization rates prior to and following EMR/policy changes.

Methods

Original Order Set

Altered/New Order Set

Results



Conclusion

Data shows that simple EMR admission order set modifications following national multi-specialty organizational recommendations made a dramatic difference in newborn hepatitis B immunization rates. At Oak Hill Hospital during the 14 week period following these changes immunization rates increased dramatically, progressing from 9% to 90% of newborns receiving immunization. While 90% immunization rate is superior to the national average of 71% (2016)², there is still room for improvement. Evaluation of reasons for unvaccinated or delayed vaccination cases may lead to further quality improvement strategies. This project serves as a clear example of how changing order sets can have a powerful effect on ordering practices and therefore allow rapid quality improvement.

References

1. "Prevention of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices (ACIP)". *MMWR Recommendations and Reports* (Vol.67, No.1). January 12, 2018; CDC.
2. "Hepatitis B: What Hospitals Need to Do to Protect Newborns". *How to prevent perinatal HBV transmission*. Immunization Action Coalition (IAC); March 2018. www.immunize.org/catg.d/S8045.pdf
3. AAP Recommends Newborn Hepatitis B Vaccine by 24 Hours of Age. Nora MacReady, August 28, 2017; Medscape. <https://www.medscape.com/viewarticle/884748>