

## **Information about the Critically Appraised Topic (CAT) Series**

The objective of the Doctor of Nursing Practice (DNP) program at George Mason University is to prepare graduates for the highest level of nursing practice. Emphasis is placed on evaluating and applying the evidence that supports practice, understanding and creating practice delivery systems based on patient outcomes, and assuming leadership roles in practice settings. Graduates of the program will be able to assume many roles in the health care system, including direct patient care, clinical nursing faculty, practice management, and policy development.

All DNP students take an evidence-based practice course titled Evidence Based Practice in Nursing and Healthcare (NURS 883). This hallmark course for the DNP program builds on knowledge of research methodologies to analyze the selection and evaluation of research underlying evidence based practice. Emphasis is placed on the translation of research in practice, the evaluation of practice and the improvement of the reliability of health care practice and outcomes.

The first assignment students complete is a Critically Appraised Topic (CAT). CATs are mini-systematic reviews and considered a snapshot of the literature on a topic of interest. Students critically appraise literature related to a focused clinical question and summarize the best available research evidence on the topic of interest. CATs conclude with clinical bottom lines for practitioners to quickly take away for consideration in practice.

The CATs published in MARS (Mason Archival Repository Service; [mars.gmu.edu](http://mars.gmu.edu)) are submitted by students after they have been reviewed, revised, and approved by their instructor. All CATs are current at the time of original publication but will not be updated over time.

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## **Are adult heterosexuals who are engaging in high risk sexual behaviors, less likely to receive the hepatitis B vaccine due to perceived psychosocial barriers?**

**Purpose:** Heterosexual adult patients attending STD clinics are at higher risk of contracting Hepatitis B, however this patient population has a low rate of HBV vaccination acceptance. In order to understand and increase the immunization rate, an examination of perceived barriers to acceptance of the HBV vaccine series is warranted.

**Appraised by:** Cathleen Scully

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**Question:** Are adult heterosexuals who are engaging in high risk sexual behaviors, less likely to receive the hepatitis B vaccine due to perceived psychosocial barriers?

**Search Strategies and Results:** Medline, Cinahl, and Web of knowledge databases were searched from 1994 to 2013 using MESH terms, "Hepatitis B Vaccines and Sexually Transmitted Diseases and Patient Acceptance of Health". Medline identified 10 articles. 3 articles were chosen as applicable. 7 articles were excluded; 1 was written in German, 1 article addressed HPV vaccination and did not cover barriers, 3 articles addressed populations other than heterosexual adults in STD clinics, 1 addressed HBV vaccine policy and the last article addressed effectiveness of HIV and STI prevention. Cinahl database identified 0 articles. Web of knowledge database identified 6 articles, 5 were duplicates from medline. The 6<sup>th</sup> article was not applicable since it only addressed acceptance, not barriers. Psych net database was searched using the terms "Hepatitis B Vaccinations and Sexually Transmitted Diseases and Adults". 3 articles were identified. All 3 were non applicable since they addressed the adolescent population.

### **Articles:**

1. Cox, A. D., Cox, D., Cyrier, R., Graham-Dotson, Y., & Zimet, G. D. (2012). Can self-prediction overcome barriers to hepatitis B vaccination? A randomized controlled trial. *Health Psychology, 31*(1), 97-105.
2. Samoff, E., Dunn, A., Vandevanter, N., Blank, S., & Weisfuse, I. B. (2004). Predictors of acceptance of hepatitis B vaccination in an urban sexually transmitted diseases clinic. *Sexually Transmitted Diseases, 31*(7), 415-420.
3. Zimet, G. D., Perkins, S. M., Winston, Y., & Kee, R. (2008). Predictors of first and second dose acceptance of hepatitis B vaccine among STD clinic patients. *International Journal of STD & AIDS, 19*, 246-250.

**Evidence:**

**Cox, et al.:** RCT with convenience sampling and randomized assignment. Sample size was 1175 adults recruited between December 2003 and April 2006. Comparison between a self-prediction intervention asking patients to predict future HBV vaccine acceptance vs. no intervention. The main outcome measure was subsequent vaccination behavior. Perceived barriers were measured prior to the intervention, to measure short term barriers to receiving HBV vaccine and long term health considerations. For patients not asked to form vaccination intentions on acceptance of HBV vaccine, vaccine acceptance was strongly influenced by both long-term health considerations including perceived vulnerability to HBV infection [OR = 1.55,  $p = .001$ ] and protective benefits of the vaccine [OR = 3.07,  $p < .001$ ]; and short-term barriers including perceived discomfort [OR = .676,  $p < .001$ ] and inconvenience [OR = .670,  $p < .002$ ]. For patients asked to form intentions the intervention did not significantly affect vaccination acceptance among low-barriers patients [OR = 0.90,  $p = .45$ ]. However, among high-barriers patients, the intervention significantly increased acceptance of the first vaccine dose [OR = 2.57,  $p < .001$ ].

**Appraisals:**

**Strength:** Sample size provided >99% power to detect a true self-prediction/control difference in first-dose uptake of 60/40% in the total sample with 99% power to detect an effect of this size among low-barriers patients and 90.4% power to detect an effect this size among high-barriers patients. Good internal consistency reliability of instruments used. Both patients and staff were blinded to the intervention, blind maintained by use of computer questionnaires.

**Weaknesses:** Convenience sample in a Midwestern city may limit external validity.

**Samoff, et al.:** Prospective research design. Sample size 194 adults 18 and older. Analysis of predictors including patients knowledge, attitudes, beliefs, social norms, intention and provider influence, on acceptance of Hepatitis B vaccination in adults attending STD clinics. A survey questionnaire was developed to assess predictors of acceptance of vaccination and was administered prior to the physician visit. After the visit patients were asked if they received the vaccine and reasons for acceptance or rejection. Significant predictors of vaccine acceptance were the clinicians recommendations (OR 0.21, 95% CI 0.06, 0.81)  $p=0.01$ , and level of concern about contracting HBV (OR 4.00, 95% CI 01.50, 10.63)  $p=0.0004$ .

**Appraisals:**

**Strength:** Design was appropriate to address research question. Data obtained addressed patient's knowledge of Hepatitis B, attitudes and beliefs about vaccinations, physician recommendations, intention to accept vaccination and predictors of the choice to accept vaccination.

**Weaknesses:** Lower level of evidence, level III. 1st study to examine perceived barriers of HBV vaccine in heterosexuals in STD clinics. Convenience sampling decreases the external validity and increases risk of selection bias. Authors excluded participants if data was missing or if only the pre interview was completed increasing the risk of a type II error. No measure of reliability was mentioned for the survey questionnaire used. The authors depended on self report of vaccination status without verifying the accuracy.

**Zimet, et al.:** Prospective research design. Sample size 431 adults. Analysis of predictors including attitudinal, behavioral, and pragmatic factors on acceptance of 1<sup>st</sup> and 2<sup>nd</sup> dose of Hepatitis B vaccination in adults attending STD clinics. A computer assisted self interview was used to assess predictors which was completed prior to the physician visit. Patients that accepted the 1<sup>st</sup> dose viewed vaccines as more beneficial (OR 2.34, 95% CI 1.70-3.21), were more worried about HBV infection (OR 1.44, 95% CI 1.17-1.77), had less fear of vaccines (OR 0.66, 95% CI 0.52-0.83), and greater odds of 3 or more children under their care (OR 2.25, 95% CI 1.32-3.85). Patients returning for the 2<sup>nd</sup> dose were more likely to have some college (OR 6.22, 95% CI 1.27-30.44), shorter travel time to clinic (OR 4.58, 95% CI 1.28-16.29), and lower odds of 3 or more kids (OR 0.10, 95% CI 0.01-0.75).

**Appraisals:**

**Strength:** Design was appropriate to address the research question. Both predictors of 1<sup>st</sup> and 2<sup>nd</sup> dose were evaluated using Hosmer and Lemeshow goodness of test fit, indicating the logistic regression model which did not deviate significantly from the data.

**Weaknesses:** Lower level of evidence, level III. Lower acceptance rate of the HBV vaccine than previous studies with same population. Convenience sampling decreases the external validity and selection bias. Scales included in the computer assisted self interview were measured as chronbachs alfa, <.80 indicating fair to poor internal consistency reliability of the instruments.

**Clinical Bottom Line:** Minimal research has been conducted on the acceptance of HBV vaccination in the heterosexual adult population with high risk of sexually transmitted diseases. Only 1 RCT and 2 cohort studies have been completed. Although all three studies show similar statistically significant psychosocial barriers to the HBV vaccine, currently there is insufficient evidence to change practice in regards to assessing barriers in this patient population. Further research is needed to address these barriers in order to increase vaccination rates.