

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) 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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Do pre-op medical clearances by primary care physicians for outpatient elective surgeries decrease post-op admissions and improve patient outcomes?

Purpose: Long gone are the days of inpatient pre-operative admissions. Outpatient elective surgeries have increased in number and the focus has shifted to prepare the patient on an outpatient basis. Internal medicine practices are relied upon to provide medical clearance which is causing a lack in pre-operative visits. Therefore, patients are coming in the day of surgery without a medical clearance or proper history & physical which may potentially put them at risk preoperatively and/or post operatively.

Appraised by: Maria Obeid, RN

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Question: Do pre-op medical clearances by primary care physicians for outpatient elective surgeries decrease post-op admissions and improve patient outcomes?

Search Strategies and Results: EBSCO HOST search engine was used to search a) CINAHL, b) MEDLINE and WEBKNOWLEDGE databases. MESH TERMS used: “preoperative care AND internal medicine AND consultations”; “preoperative care AND internal medicine AND (history and physical” ; “preoperative care AND internal medicine AND outcomes”. There were a total of 67 hits using the key terms. After removal of duplicates (5) and unrelated articles (28), 31 articles remained which did not meet all MESH terms. 3 of these articles met the MESH terms and were reviewed.

Articles:

1. Wijeyesundera, D., Austin, P., Beattie, S., Hux, J., & Laupacis, A. (2010). Outcomes and processes of care related to preoperative medical consultations. *Archive Internal Medicine, 70*(15), 1365-1374. doi:10.1001/archinternmed.2010.204
2. Auerbach, A., Rasic, M., Sehgal, N., Ide, B., Stone, B., & Maselli, J. (2007). Opportunity missed medical consultation, resource use, and quality of care of patients undergoing major surgery. *Archive of Internal Medicine, 167*(21), 2338-2344.
3. Macpherson, D., & Lofgren, R. (1994). Outpatient internal medicine preoperative evaluation; a randomized clinical trial. *Medical Care, 32*(5), 498-507.

Evidence Retrieved:

Wijeyesundera, et al.: A Retrospective, cohort study using a population based administrative database. A sample size of 269,866 patients who underwent preoperative medical consultation prior to undergoing elective non-cardiac surgical procedures in Ontario, Canada between 1994-2004 was evaluated. The outcomes of interest were post-op

mortality, hospital stay and hospital acute stroke. Preoperative medical consult showed a significant but small risk in mortality & hospital stay. 38.8% of patients of the 269,866 underwent medical consultation prior to surgery. This showed that with the matched cohort this was associated with a 30 day increased mortality risk (RR1.16, 95% CI $p < .001$), 1 yr. mortality (1.08; 1.04-1.12, $p < .001$). Mean hospital stay was longer in the consultation arm (9.07 days vs. 8.39 days difference, 0.67 days 95% CI, 0.59-0.76; $p < .001$). In this population based cohort, preoperative medical consultation was associated with a significant, albeit small increase in mortality and hospital stay after major elective noncardiac surgery.

Appraisals:

Strength: Large sample size and several sensitive analyses were used. The adjustment of confounding factors were kept stable throughout the analysis.

Weaknesses: The study lacked sufficient detail for adequate risk adjustment to determine whether patients who were referred for a consultation had morbid illnesses and therefore were at an increased risk for adverse outcomes.

Auerbach, et al.: An observational cohort of pre-surgical patients in academic hospital. Data of 1282 adult (>18yrs) patients collected from the USFC Medical Center between May 1, 2004 & May 31, 2006. The purpose of the study was to determine whether medical consultations improved care in surgical patients. Records were randomly selected of patients who underwent colon, cardiac bypass, valve procedures, hip or knee arthroscopy, hysterectomy or vascular surgery. Results showed that patients that had a consultation had a higher likelihood of longer length of stay & higher costs. There was no effect on the quality of care. 117 (9.1%) of the 1282 patients underwent a preoperative consultation. These patients were similar in age, sex & race. They had an ASA score of 4 or higher (34.2% VS.5.6%; $p < .001$). They had longer length of stay (12.98% longer, 95% CI, 1.61%-25.61%) and higher adjusted costs (24.36% higher, 95% CI, 13.54%--36.34%)

Appraisals:

Strength: A large sample size was evaluated. A backward stepwise selection technique with manually entered variables was used. Multivariate models were implemented to determine associations between perioperative consultation, risk for complications after post-op day 2, total cost & length of stay. Items were selected based on an unadjusted association with the outcome of interest of $p < .05$ based on observed confounding with other independent variables or to maintain face validity of the model. The propensity score model had good discriminative power (c statistic, 0.79 & was not over fit to the data (Hosmer-Leneshow test $p = .60$).

Weaknesses: Patients did not receive consultations at random which could have attributed to a referral bias therefore, possibly skewing the results. A potential threat to external validity exists by using a convenience sample of single academic center.

Macpherson, et al.: Two arm parallel designed randomized clinical trial. Patients were randomized to outpatient internist pre-operative evaluation VS. Control group of patients. admitted for surgery without outpatient evaluation. This occurred in sequence using random muted blocks of size 2 and 4 to ensure balanced entry into the study. The objective was to see if an outpatient evaluation program would result in a decreased number of hospital bed days and decrease in other resource use. Sample size was 355 patients in a tertiary care teaching Veteran's Affair hospital in Pittsburg who were scheduled to undergo outpatient elective surgery. The findings showed that the length of stay was significantly reduced from 2.9 days in the inpatient arm to 1.6 days in the outpatient arm. ($p < 0.001$, 95% CI of the difference -0.8 to -1.8 days). Post-operative length of stay in the outpatient arm was slightly but not significantly longer than the inpatient arm. There were no significant differences in the total length of stay.

Appraisals:

Strength: High level of evidence, strong study design. The analysis was based on 80% power not to miss a 2-day difference either pre or postoperative length of stay with two sided alpha of 0.05. Variables showed to be normally distributed were compared using the student's *t*-test

Weaknesses: Conducted in a tertiary Veteran's Administration facility which could have affected the length of stay results.

Conclusion/Clinical Bottom line: There is still uncertainty as to whether or not patients would benefit from a pre-operative medical consultation prior to their elective surgery, as there is insufficient evidence. More randomized controlled trials are greatly needed to further investigate whether or not medical consultations are of benefit to surgical patients who are undergoing elective surgery. Until then, determination as to whether or not a medical clearance is required will need to be made by the individual surgeon.