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| PICO (T) questions and Literature Research |
| Pain Management |
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**Introduction**

PACU is referred as Post-Anesthesia Care Unit where patients are admitted on temporary basis after any surgery is conducted. It is a vital department of hospitals and medical facilities.

**PICO (T) Questions**

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| **Components** (Daniel Koffman) | **PACU Characteristics** |
| P: Patient (age, gender, ethnicity, certain disorder)  **Clinical Question: How the patient age, gender, ethnicity, and disorder decide its reaction towards post operative care?** | The Post-Anesthesia Care Unit generally has adult patients above the age of 18 years. However, the unit is meant for both the genders but the female patients are largely at risk of pain and vomiting.  The patients in PACU may suffer from pre-operative factors of cardiovascular instability that may include severe cardiovascular diseases, recent cardiac arrest, placement of coronary artery stents, and severe pain or emergency surgery.  There are also intraoperative factors behind pain that may be encroachment of surgical procedure, severe pre-operative stress causing blood loss, fluid shift, hypotension, and pain. Certain post operative factors may also be the reason behind acute pain. These are hypotension, hypertension, tachycardia, bradyarrhythmias, bleeding, hypoxemia, and pain (Kelly et al, 2005).  The patient’s ethinicity in PACU is generally White British and South Asian. |
| I: Intervention/Indicator (disease/illness exposure, risk behavior, and predictive factor)  Clinical Question: How can the risk behaviors in PACU patients can be mitigated? | The PACU area is highly prone to transmission of Mycobacterium Tuberculosis. In addition to this the PACU environment is also at high risk of infectious diseases. This includes the patient exposing to both bloodborne and airborne pathogens.  Patients affected by these risk factors may show signs like coughing and blood contaminated saliva (Anesth, 1996).  The general risk behavior shown by most of the patients in PACU is emergence Delirium after general anesthesia. The prognostic factors that are visible in PACU patients after administering anesthesia are respiratory and cardiovascular complications, postoperative nausea and vomiting, and severe pain (Broussard, 2019). |
| C: Comparison/control (placebo in case of no disease, absence of risk factors, and prognostic factor B)  Clinical Question: Can the placebo be applied in presence of any risk factor? | A pacifier or placebo is generally given when the patients are at risk of sudden infant death syndrome (SIDS). Administering the pacifier before taking a nap and at bedtime may reduce the risk of SIDS. It is generally given to infants at the time when most needed that is when they are being fussy or want to sleep.  It is also administered to children between t he age of 1 and 9 with pre-B, common, or early pre-B cell and generally score better than the ones with mature B-cell or Burkitt leukemia (American Cancer Society). |
| O: Outcome (disease risk, accuracy of diagnosis, rate of occurrence of adverse outcome)  Clinical Question: Can the outcome of post operative be modified through any medication? | In PACU patients the accuracy of diagnosis can be measured through an air-test for detection of postoperative atelectasis. The indication of air-test may lead to an accurate, simple, inexpensive, and non-invasive method of detecting diagnosis of postoperative atelectasis.  An adverse event incident as post-operative risk is estimated to be 12% in public hospitals. After reviewing the record of the patients in which it was found that approximately 7.3% - 16.7% of surgical patients are expected to experience adverse events (Street et al, 2015).  The post-operative risk of disease is found to be high in elderly patients. But about 50% of the patients in post operative care unit are likely to experience high incidence of Delirium (Winter et al, 2015). They may show a risk behavior of disorientation, inappropriate behavior, incompatible communication, hallucinations, and psychomotor retardation (Lepouse, 2006). |
| T: Time (patient’s observation and intervention)  Clinical Question: Can the length of stay of patient be extended beyond 3 hours in any PACU setting? | The length of stay or observation of patients generally varies between 1 – 3 hours depending on the effectiveness of treatment and recovery of the patient. The common treatment in PACU patients is surgery. Now the factors such as type of surgery, patients’ reaction to surgery, and its medical history (Anesth, 1998). |

**Table 1: PICO (T) question table**

**Databases for Literature Research**

**Database I:** Hazardous Post Anesthesia Care Unit – Reality or Myth?

This research will take into account the exposure of the nurses in post operative care unit. This exposure study would be with regards to Sevoflurane used by nurses in recovery room. The air samples would be collected in sequence from the breathing space of nurses allotted duty in PACU. This will be done at the time of administering routine care to PACU patients with Sevoflurane.

The research will aim at identifying various chronic diseases in nurses due to the anesthetic waste gases. These waste gases are considered to be released in high proportion in PACU. Sevoflurane is a new halogen anesthetic agent. The samples would be collected in the working day shifts that were being assigned to patients being specifically treated with Sevoflurane. However, another agent Desfiurane can also be considered for this study (Government of Canada).

**Database II:** Responses to Surgical stress and role of preoperative glucocorticoids on post-anesthesia care unit recovery.

It is quite challenging to administer the postoperative course immediately after conducting surgical procedures. The severe risk factors such as postoperative pain, sedative/cognitive stress, dysfunctional, nausea, vomiting, circulatory and respiratory problems are often visible in postoperative care unit but there is less use of glucocortisoids. It is due to this factor that patients may not have immediate recovery. Hence, there is a scope of future research to analyze the role of post operative botheration and effect of glucocortisoids in PACU environment for quick recovery of the patient (UPMC).

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| **Database** | **Search Strategies** |
| Responses to Surgical stress and role of preoperative glucocorticoids on post-anesthesia care unit recovery. | 1. Identification of redundant literature.  2. Identifying measure of validity of the data.  3. Recognizing the role of research such that the literature search would be consistent.  4. Complete detailing of explanations and concepts.  5. Identifying any kind of inter-relation between the concepts.  6. Adopting a berry picking approach.  7. Outlining methods of overcoming barriers of the research.  8. The search process should be transparent.  9. Explanations must be done with proper rationales.  10. Assemblage of unbiased data.  11. Determine whether the intervention is effective or not (Finfgeld & Johnson, 2012). |

**Table 2 – Search Strategies for relevant Literature**

**Conclusion**

The report focuses on framing research questions following PICO(T) table format and its components. Based on these questions two databases were recognized out of which one has been shortlisted for conducting further research. In addition to that the literature research strategies were identified that will decide the approach for the research.

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