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“Changes in Practice: Evidence Based Nursing Revealed”

Gloria Spencer, RN, MSPHN

Sr. Nursing Instructor
Nursing Education Department

PACU Staff Nurses

Yolanda Ayson, MSN, RN
Maria Aguda, BSN, CPAN
Imelda Laxa, RN, BSN, BC

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**Determination of Analgesia
Effectiveness Using the “Ice Test
Method” in Adult Patients Receiving
Epidural Infusions in the Post
Anesthesia Care Unit**

Members of the EB-RUN Team



Yolanda Ayson, RN, BSN, MSN
Imelda Laxa RN, BSN, BC
Cecilia Nesmith, RN, CPAN
Evelyn Acosta, RN, BSN, CPAN
Arlene Lastimoso, RN, BSN, CPAN
Claire Zimmerman, RN, BSN
Lourdes Maningat, RN, BSN, CCRN
Erlie Sutedja, RN,
Maria Aguda, RN, BSN, CPAN
Emma Morales, RN

Mentor – Gloria Spencer, RN, MSPHN

Objectives

- **Identify the Evidence-Based project in the MDACC PACU**
- **Describe the Determination of Analgesia effectiveness using the “Ice Test Method” in adult patients receiving epidural infusion in the PACU.**

History of Epidural Management in Post Anesthesia Care Unit

- **The Acute Pain Team**
- **Challenges in the Post Anesthesia Care Unit (PACU)**
- **We had a Patient Practice to Improve**
- **Was it within our scope of practice?**
- **What was the evidence out there?**

Preliminary Assessment

Epidural Record: January 2009

- Total patients' charts reviewed for sensory block using ice method = 39
- Documented sensory block = 24
- Undocumented sensory block = 15

Questionnaire: Unit Level

- When the patient comes out of OR in pain with an epidural infusion, what would you do first?
- Arrange the following according to priority level

Level of Priority	1	2	3	4	1=Highest 4=Lowest
Call Pain Service	0% (0)	5% (5)	40% (8)	35% (7)	3
Sensory Block with Ice Test	20% (4)	35% (7)	35% (7)	10% (2)	*2
Give Epidural Bolus	65% (13)	25% (5)	10% (2)	0% (0)	1
Non-pharmaceutical measures	15% (3)	15% (3)	15% (3)	55% (11)	4

PROBLEM IDENTIFICATION

- **Difficulty determining the reliability of sensory block or dermatome level**
- **Untimely management and delay of patients' pain relief**
- **Level of knowledge in assessing sensory block or dermatome level**

THE EVIDENCE- BASED PICO QUESTION

- **Does cold stimulation using the ice method to check the sensory block provide reliable estimation in determining the effectiveness of epidural analgesia?**

SYSTEMATIC REVIEW OF LITERATURE

- An electronic search method was undertaken using PubMed, CINAHL, and Science Direct databases. A combined search approach was undertaken to ensure that any potentially relevant literature would not be missed. All possible key search terms, related links, and selected subheadings were exploded.
- *Keywords:* Sensory block, ice test, epidural, cold sensation, dermatomal assessment, post anesthesia care
- Identification of Best Practices

PURPOSE

- **Standardize the use of ice as a means of testing sensory block on patients with epidural analgesia.**
- **Educate nurses and further improve nursing care in the teaching of sensory block test using ice to assess the effectiveness of epidural analgesia in the immediate postoperative period.**
- **Improve communication of patients' adequate or inadequate pain relief among interdisciplinary teams.**

RESULTS OF FINDINGS

- **Seven out of the twelve studies have used multiple variables, such as analgesia medications and pinprick; hot and cold method; and alcohol swab method, therefore exclusion criteria was applied.**
- **Five of the studies supported the independent and the outcome variables; cold stimulation by using “ice method to check the sensory block” provides “reliable estimation in determining the effectiveness of epidural analgesia”.**

**Galvin, E. M., Niehof, S., Medina, H. J.,
Zijlstra, F. J., Bommel, J. V., &
Verbrugge, S. J. (2006)**

- **The specificity, sensitivity, positive, and predictive values for assessing the success or failure of blockades is comparable with cold or ice stimulation in assessing the level of analgesia.**
- **Highest combined values of sensitivity and specificity predicted a successful block ($P = 0.004$)**

Shah, J., Ayorinde, B., T., Rowbotham, D. J., & Buggy, D. J. (2000)

- **Pain and cold sensations are transmitted via the anterolateral sensory pathways, while light touch is transmitted via the dorsal columns of the spinal cord.**
- **Cold sensation reproduces cold receptor at sensory levels therefore reliable method in assessing blockades**
- **Frequency distribution of the dermatome differences showed 96.6% of the comparisons lay between +1 and -1 dermatomes**

Minville, V., Gendre, A., Hirsch, J., Silva, S., Bourdet, B., Barbero, C., Fourcade, O., Samii, K., & Bouaziz, H. (2009)

- The level of epidural blocked can be detected by the level of loss to sensation.**
- Spread and density of the block can be assessed by the loss of sensation to cold touch in epidural analgesia**

Bestas, A., Erhan, O., Okuducu, M., Avci, I., & Yasar, M. (2007)

- **Ice testing is non-invasive and painless method as compared to pinprick.**
- **Pinprick, touch, and cold sensation presented different dermatome levels**
- **Combined pinprick and cold sensation resulted greater dermatome level**
- **Using cold sensation to test dermatome level is greater than the dermatome level of touch stimulation alone**

Curatolo, M., Kaufmann, R., Petersen-Felix, S., Arendt-Nielsen, L., Scaramozzio, P., & Zbinden, A. (1999)

- **The intensity of postoperative pain decreases with increasing spread of epidural analgesia as assessed by cold test**
- **The level of analgesia and cold sensation were more cephalad than the level of analgesia for both spinal & epidural anesthesia**
- **Each subject has different dermatome levels for the ice sensory method tested for both spinal and epidural anesthesia**

CONCLUSION

- **Cold sensation using ice method provided valid evidence in relation to pain management and efficacy of epidural analgesia.**
- **These consist of the assessment and estimation of dermatome level, choice of local anesthesia, and spread of analgesia or density.**
- **The ice method is reliable, effective, less invasive, inexpensive, practical, and safe.**
- **Using ice method as an indicator to test and estimate the sensory block is perhaps the best alternative and modality in monitoring the pain in perianesthesia setting.**

PRACTICE CHANGE

- **Development of “Pain Champion Nurses” in the unit level**
- **Expansion of knowledge – Epidural Workshop and Program**
- **The nurses at PACU have incorporated sensory block assessment using ice test as a standard practice in adult patient receiving epidural analgesia.**
- **The Epidural Workshop and Program includes didactics and hands on training; a three-day rotation with the Acute Pain Team of the institution**
- **Yearly competency check off. The Pain Champion nurses’ served as mentors and educators for the PACU unit and advocates for epidural analgesia.**

What We Have Learned

- **Proper assessment of dermatome block is vital in the safe and effective analgesia therapy. If an epidural is working safely and effectively in the immediate postoperative care, then the chances of epidural continuing to work for the patient is increased.**
- **Piloting and trialing the “ice method” to assess sensory block may benefit the institution as a whole. Thus, enhanced the communication between the front line nurses and acute pain team will improve pain management, increase patient satisfaction, and promote recovery time.**

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