TITLE: Capnography and/or Oximetry Monitoring of Patients Using Patient-Controlled Intravenous Opioids: Clinical and Cost-Effectiveness, Safety, and Guidelines

DATE: 22 May 2014

RESEARCH QUESTIONS

1. What is the clinical effectiveness and safety of using capnography and/or oximetry to monitor patients using patient-controlled intravenous opioid analgesia?

2. What is the cost-effectiveness of using capnography and/or oximetry to monitor patients using patient-controlled intravenous opioid analgesia?

3. What are the guidelines associated with the use of capnography and/or oximetry to monitor patients using patient-controlled intravenous opioid analgesia?

KEY MESSAGE

One evidence-based guideline was identified regarding the use of capnography and/or oximetry to monitor intravenous opioid analgesia; however, there was no specific mention of patient-controlled intravenous opioid analgesia in the recommendations.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, Issue 5), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI (Health Devices Gold), Canadian and major international health technology agencies, as well as a focused Internet search. No methodological filters were applied to limit retrieval by publication type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2009 and May 6, 2014. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

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RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, economic evaluations, and evidence-based guidelines.

One evidence-based guideline was identified regarding the use of capnography and/or oximetry to monitor intravenous opioid analgesia; however, there was no specific mention of patient-controlled intravenous opioid analgesia in the recommendations. No relevant health technology assessment reports, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, or economic evaluations were identified regarding the use of capnography and/or oximetry to monitor patients using patient-controlled intravenous opioid analgesia.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One evidence-based guideline\(^1\) was identified regarding the use of capnography and/or oximetry to monitor intravenous opioid analgesia; however, there was no specific mention of patient-controlled intravenous opioid analgesia in the final recommendations, only in the discussion of evidence included to form the guideline.

In the guideline from the American Society for Pain Management Nursing Guidelines on Monitoring for Opioid-Induced Sedation and Respiratory Depression\(^1\), the recommendations state that both pulse oximetry and capnography can be effective for monitoring the patient at high risk of respiratory depression and unintended advancing sedation. In addition, capnography can be a useful indicator of respiratory depression in the post-operative period in high risk patients.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies
No literature identified.

Economic Evaluations
No literature identified.

Guidelines and Recommendations

See: Use of Pulse Oximetry Monitoring, pages 142-143
Use of Capnography Monitoring, page 143
Recommendation Statements, Recommendations for Monitoring, #5 and 5B, page 144
PubMed: PM21893302

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APPENDIX – FURTHER INFORMATION:

Health Technology Assessment

Comparative Effectiveness of Devices Detecting Respiratory Depression


Non-Randomized Studies

Discussions Surrounding Capnography versus Oximetry

See: Conclusions
PubMed: PM23970443

Oximetry Monitoring Mentioned

PubMed: PM20006346

Clinical Practice Guidelines

Unclear Methodology

See: Section 7. Oxygen and Pulse Oximetry, pages 5-6

See: Section on Monitoring
  * Pulse Oximetry (SpO2) Monitoring Recommendations, page 9
  * Capnography (ETCO2) Monitoring Recommendations, page 10

Neuraxial Opioids

See: Ill. Detection of Respiratory Depression, pages 4-5

Additional References


Surveys

Continuous Electronic Monitoring, pages 18-21


Economic Discussion