



# Introduction

- Evidence-based medicine uses a hierarchy of evidence (Figure 1) which stratifies literature based on level of critical appraisal
- Case reports are influential in anesthesia medical literature, but are lower on the hierarchy in part because they lack a standardization framework
- Case Report (CARE) guidelines, introduced in 2013, consist of a 30-item checklist providing framework for publishing case reports (Figure 3)
- Little is known on how existing case reports in anesthesia score on the CARE guidelines and what their impact is on other sources of medical literature (ie: review articles, guidelines)

# Hypothesis & Objectives

- Evaluate the quality of case reports in anesthesia by their scores on CARE guidelines
- Investigate bibliometirc impact of case reports on published anesthesia literature
- Identify factors in case reports associated with high citation rates

### **Figure 1: Hierarchy of Evidence**



# Applying a Quality Lens to Case Reports in Anesthesia

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## Methods

- Knowledge Tools
- Knowledge Synthesis

- Anesthesiology and Anesthesia & Analgesia between 2007-2012, subject matter/content focused on clincal anesthesia and/or pain management by anesthesia providers, English-only case reports
- A total of 261 case reports were included Two reviewers independently scored each case
- report against CARE guidelines Inter-rater reliability assessed with Cohen's Kappa
- Web of Science used to identify citation frequency of each case report and publication type citing them
- Adverse events in case reports evaluated using Anesthesia Quality Institute (AQI) adverse events and near miss framework
- Relationship between AQI scores and citation frequency evaluated using X2 test

## Research

- Median CARE score for case reports 20.5/30
- Inter-rater reliability strong with Cohen's kappa of 0.74
- Median citation frequency for case reports was 4 per report, with 21% cited greater than 10 times
- Review articles and guidelines comprised 33% and
- 3% of all citations, respectively (Fig 2) 21% case reports discussed adverse event as per AQI framework
- Unanticipated difficult airway significant for high citation frequency with P=0.0082

### Figure 2: Volume of Case Reports Citation by Publication Type

Review Article Case Report/Case Series Letter to the Editor Animal/lab study Prospective Studies Editorial Retrospective Studies Randomized Controlled Trials Guidelines/Consensus Satement Abstract/Conference Proceedings 25



Inclusion criteria: case reports published in

|     |     |        |         |      | 639 |
|-----|-----|--------|---------|------|-----|
|     |     | 38     | 3       |      |     |
|     | 27  | 6      |         |      |     |
|     | 215 |        |         |      |     |
| 17  | 8   |        |         |      |     |
| 131 |     |        |         |      |     |
| 122 |     |        |         |      |     |
| 111 |     |        |         |      |     |
|     | Num | ber of | f Citat | ions |     |
| 200 | 300 | 400    | 500     | 600  | 700 |
|     |     |        |         |      |     |

| Торіс                  |     | Item Checklist item description  | Line/Page     |
|------------------------|-----|--|---------------|
| Title                  | 1   | The words "case report" should be in the title along with the area of focus                          |               |
| Key Words              | 2   | Four to seven key words—include "case report" as one of the key words                                |               |
| Abstract               | 3a  | Background: What does this case report add to the medical literature?                                |               |
|                        | 3b  | Case summary: chief complaint, diagnoses, interventions, and outcomes                                |               |
|                        | 3c  | Conclusion: What is the main "take-away" lesson from this case?                                      |               |
| Introduction           | 4   | The current standard of care and contributions of this case—with references (1-2 paragraphs)         |               |
| Timeline               | 5   | Information from this case report organized into a timeline (table or figure)                        |               |
| Patient Information    | 6a  | De-identified demographic and other patient or client specific information                           |               |
|                        | 6b  | Chief complaint—what prompted this visit?  |               |
|                        | 6C  | Relevant history including past interventions and outcomes   | <del></del>   |
| Physical Exam          | 7   | Relevant physical examination findings   |               |
| Diagnostic             | 8a  | Evaluations such as surveys, laboratory testing, imaging, etc.                                       |               |
| Assessment             | 8b  | Diagnostic reasoning including other diagnoses considered and challenges                             |               |
|                        | 8c  | Consider tables or figures linking assessment, diagnoses and interventions                           |               |
|                        | 8d  | Prognostic characteristics where applicable  |               |
| Interventions          | 9a  | Types such as life-style recommendations, treatments, medications, surgery                           |               |
|                        | 9b  | Intervention administration such as dosage, frequency and duration                                   |               |
|                        | 9c  | Note changes in intervention with explanation  |               |
|                        | 9d  | Other concurrent interventions   | ·             |
| Follow-up and          | 10a | Clinician assessment (and patient or client assessed outcomes when appropriate)                      | (1)           |
| Outcomes               | 10b | Important follow-up diagnostic evaluations   |               |
|                        | 10c | Assessment of intervention adherence and tolerability, including adverse events                      | 3 <del></del> |
| Discussion             | 11a | Strengths and limitations in your approach to this case  |               |
|                        | 11b | Specify how this case report informs practice or Clinical Practice Guidelines (CPG)                  |               |
|                        | 11c | How does this case report suggest a testable hypothesis?   |               |
|                        | 11d | Conclusions and rationale  |               |
| Patient Perspective    | 12  | When appropriate include the assessment of the patient or client on this episode of care             |               |
| nformed Consent        | 13  | Informed consent from the person who is the subject of this case report is required by most journals |               |
| Additional Information | 14  | Acknowledgement section; Competing Interests; IRB approval when required                             |               |

- medical literature
- guidelines

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Howick J, Chalmers I, Glasziou P, Greenhalgh T, Heneghan C, Liberati A, Moschetti I, Phillips B, and Thornton H. "The 2011 Oxford CEBM Levels of Evidence (Introductory Document)". Oxford Centre for Evidence-Based Medicine. <u>http://www.cebm.net/index.aspx?o=5653</u>

CARE Steering Committee, n.d. CARE Guidelines Checklist. [Online] Available at: http://www.care-statement.org/care-checklist.html[Accessed 26 Feb 2016].



# Discussion

Case reports had a high score on CARE guidelines Case reports cited often and by multiple sources of

Unanticipated difficult airway identified as independent factor for high citation frequency

# Conclusions

Given trend toward standardization in publishing in medical literature, our study demonstrates a quality improvement opportunity for case reports with CARE

Bibliometric impact of case reports significant as literature often citing them are at the top of the hierarchy of evidence

Despite criticism of case reports, they remain a valuable source of medical literature and education

### References

Albrecht J, Meves A, Bigby M. Case reports and case series from Lancet had significant impact on medical literature. Journal of Clinical Epidemiology. 2005