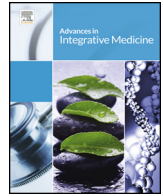




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# Integrative medicine case reports: A clinicians' guide to publication

Jon Wardle<sup>a,b,\*</sup>, Eric Rosen<sup>b</sup>

<sup>a</sup> Australian Research Centre in Complementary and Integrative Medicine, Faculty of Health, University of Technology Sydney, Australia

<sup>b</sup> Program for Integrative Medicine and Health Disparities, Department of Family Medicine, Boston Medical Center, School of Medicine, Boston University, United States

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### ABSTRACT

Case reports have been a valuable method of informing medical practice for as long as medicine has been practised. Many original observations, novel diagnostic and therapeutic approaches, unusual, new or uncommon diseases and complications of medical treatment were first identified and published as case reports. Despite their importance, and contemporary trends supporting their further use, publishing case reports can be a difficult task for many clinicians and researchers. Preparing a case report for publication can be both a professionally and personally rewarding endeavour for clinicians. This article describes practical and academic insights into writing a case report for publication.

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## 1. Introduction

Case reports have informed medical practice for as long as medicine has been practised. Derided by some, but adored by others, the published case report has had a long and chequered history in evidence-based medicine. In the age of the clinical trial and evidence-based practice, published case reports continue to capture and describe important scientific and clinical observations that may be missed or undetected in 'higher hierarchy' designs such as clinical trials. Additionally case reports can provide important patient-centred clinical insight that may inform the individualised nature of contemporary patient care. Case reports can generate hypotheses for future clinical studies, guide the personalisation of treatments in clinical practice, and (particularly useful in integrative medicine) help to evaluate systems-oriented approaches to healthcare [1].

## 2. Why case reports matter

History demonstrates the importance of published case reports in modern medicine. HIV was brought to the mainstream medical world's notice not through exhaustive epidemiological monitoring,

for example, but through publication of an influential case report of "extensively disseminated Kaposi's sarcoma in a young homosexual man" [2]. Case reports have also led to new advances in knowledge of existing diseases. Publication of a case of rabies encephalitis eight years after exposure defied previous accepted norms of rabies incubation (thought to be one to six months) and suggested the existence of a novel, slowly proliferating subtype previously rejected by neurologists [3]. New and novel treatments have also been identified through case reports – propranolol as a treatment for infantile haemangioma, for example, began as a case observation of nine children [4].

Case reports can also point to unknown risks or demonstrate regulatory or practice failures. Our understanding of the relationship between thalidomide and congenital abnormalities began with case reports [5]. In integrative medicine, case reports have often been focused on highlighting the risks in what is sometimes perceived by the public as a benign and harmless. The publication of a case report of accidental death from selenium overdose, for example, highlighted the risks associated with patient use of potentially safe nutritional therapeutics without clinician oversight or advice [6]. The uncovering of peripheral neuropathy due to undisclosed pyridoxine use, which confounded medical specialists treating a British woman for nearly ten years and was immediately resolved upon cessation of her supplements, highlighted the important clinical impact of not asking patients about their complementary medicine use (and as such probably reflects far worse on her attending physicians than her supplements) [7]. Case reports of missed diagnoses when complementary and integrative

\* Corresponding author at: Australian Research Centre in Complementary and Integrative Medicine, Faculty of Health, University of Technology Sydney, Australia. Tel.: +61 2 9514 4813.

E-mail address: [jon.wardle@uts.edu.au](mailto:jon.wardle@uts.edu.au) (J. Wardle).

practitioners ignore conventional medical treatment [8,9] have been used to highlight current regulatory, practical or training deficiencies in clinical practice.

Whilst these 'negative' case reports are essential for ensuring integrative medical care is delivered in a safe and effective manner, they do little to inform the evidence around clinical practice in a positive sense, nor add to the evidence base for new and potentially novel treatments. For this to occur, the onus is one the integrative medical community itself to engage in reporting both the notable failures and successes of integrative medical treatment. In doing so, the integrative medicine community benefits by developing increasing research capacity within the integrative medicine professions, as well developing a better understanding of specific integrative medicine interventions and techniques.

### 3. Building research capacity in integrative medicine

Scholarly writing, as done through publication of case reports, can offer valuable learning experiences for clinicians, offering insights into their own practice that result in improved clinical care for their patients [10]. The process of writing also obliges mental and practical discipline. The peer-review process undertaken in submitting a case-report may offer valuable feedback that provides insights to clinicians beyond their training or clinical practice experiences. Partaking in scholarly writing activity can also help develop the field of integrative medicine, by increasing the research capacity of the integrative medical field, which lags other fields in ability to fully engage with research activity [11]. Without clinician engagement in the research process, research is unlikely to accurately reflect the realities of clinical integrative medical practice; however, if clinicians do not engage with research critically, the fruits of their efforts are unlikely to be influential in an evidence-based paradigm [12].

For case reports to appropriately inform evidence-based practice, they must be presented in a scientifically rigorous manner. Just as good case studies can inform good medical practice, poor case studies can lead not only to rejection, but in some cases actively deny integration of beneficial treatments or allow the proliferation of non-beneficial treatments. Case reports of hepatotoxicity related to kava ingestion (*Piper myristicum*) which were used to support bans of the substance in numerous countries, for example, often failed to differentiate between solvent-base and aqueous-based extractions or negated to acknowledge the presence of other known hepatotoxic agents in kava combination products [13]. The result was premature removal from the market of an effective and safe therapy for a condition in which few other equally safe and effective therapies existed. As case reports form the lowest level of the evidence hierarchy, notable findings can often be used to argue for, and implement, larger studies evaluating these findings.

As such, case reports may have impact 'higher up the evidence chain'. Good case reports can inform larger studies, promote the uptake of effective novel therapies and offer clinical insights into rare or uncommon conditions. Poorly written case studies (for example, those that include confounders such as additional treatment – either by other parties or self-prescribed by the patient – which are undisclosed in the report), however, can lead clinicians and researchers down the proverbial 'garden path', expending valuable time on resources trying to replicate results that may be completely unachievable. For this reason, there have been recent attempts to develop quality assurance measures for case reporting, and these are being adopted by *Advances in Integrative Medicine*.

### 4. Standardisation of case report publication: the CARE guidelines

Although the case report itself is experiencing a renaissance in clinician and researcher support, lack of standardisation and multiple guidelines have led to case reports historically being of variable quality and clinical relevance, and have made it difficult for the findings of case reports to be effectively used as part of the foundation of evidence-based medicine [14,15]. To help facilitate the important role of case studies in informing evidence-base medicine, consensus-based clinical guidelines have been developed to address the important issue of standardisation of case reporting. Such guidelines have already been developed for other clinical research designs including clinical trials (CONSORT: CONSolidated Standards of Reporting Trials), observational studies (STROBE: STrengthening the Reporting of Observational studies in Epidemiology) and systematic reviews and meta-analyses (PRISMA: Preferred Reporting Items for Systematic reviews and Meta-Analyses).

These guidelines, the CARE (CASe REporting) guidelines [16], have been adopted by leading international journals, and provide a framework that supports transparency and accuracy in the publication of case reports and the reporting of information from clinical encounters. Like the guidelines for other clinical research designs mentioned previously, these guidelines now form the international standards for medical literature (further information can be found on the EQUATOR Network website: <http://www.equator-network.org/>). Not only does this standardisation result in case studies that are most likely to provide data that informs clinical practice guidelines and provide early signals of effectiveness, harms and costs, but standardisation can also mean that case reports from all journals utilising these guidelines can be analysed either individually or part of a much larger database of reports. *Advances in Integrative Medicine* also uses the CARE guidelines for case reporting. Details, including templates and examples of case reports using the CARE guidelines can be found on a dedicated website: <http://www.care-statement.org/>.

### 5. Other discipline-specific guidelines

In addition to general publication guidelines, individual integrative medicine disciplines bring with them their own unique challenges. For example, in addition to general case reporting guidelines, it would be expected that acupuncture case reports also comply with the acupuncture-specific STRICTA publication guidelines, which detail acupuncture-specific requirements such as how to report acupuncture rationale, needling technique and practitioner background [17]. For this reason, in addition to the generic case reporting guidelines described in this article, it is encouraged that authors also familiarise themselves with and seek guidance from discipline-specific guidelines. These have been developed for (medical) acupuncture [18], Chinese medicine [19], chiropractic [20], herbal medicine [21], massage [22], naturopathic medicine [23], and pharmacy [24], among others.

### 6. What should be reported?

*Advances in Integrative Medicine* receives many case reports that do not comply with the guidelines above, and as such must reject the bulk of them before even sending out for review. Others have been sent for review, but have not been recommended for publication due to problems associated with not meeting these guidelines sufficiently. The high rejection rate for case reports by this journal, despite this journal's commitment to publication of notable case reports, served as the impetus for outlining requirements in this article, and the development of further criteria on our website. However, even when case reports do

comply with guidelines, space pressures continue to mean that only a few case studies will be able to be published each issue. *Advances in Integrative Medicine* is not a 'case report' journal (these do exist, usually in journals which require a fee for publication – such as *Clinical Case Reports*, *Journal of Medical Case Reports* or *BMJ Case Reports*), but a clinical research journal. As such, case reports should complement and augment the research articles published in the journal, and do not form the dominant content.

For this reason *Advances in Integrative Medicine* will only publish original and thought provoking case reports. This requires that the case report has sufficient educational value to serve as a novel learning activity for the reader. A case describing a standard treatment implemented in a manner that corresponds with established practice guidelines and elicits unforeseen results is not likely to serve as a sufficiently novel teaching moment for the clinicians who read *Advances in Integrative Medicine* (though such a report may be appropriate for publication elsewhere).

However, a patient who does not respond to conventional treatment, and has achieved success through a novel treatment agent or approach would offer significant insight that the reader may not be able to garner from other information sources. There are three main types of case reports: diagnosis-related, management-related, or case reports that include element of both diagnosis and management [25], but all types must have clear and concise take-home messages and teaching points. These could include (but are not limited to):

- common diseases presenting in uncommon ways;
- the management of novel or uncommon diseases;
- uncommon diseases masquerading as something more common;
- cases where the teaching point is based on error (and therefore highlights to the reader an cautionary tale);
- cases that result in re-thinking of established healthcare lore;
- unforeseen adverse or positive events or effects or cases that expand understanding of disease pathogenesis.

## 7. How should they be reported?

Clinicians who have invested considerable time and emotional energy into a clinical case may believe that readers want to know every precise and excruciating detail relating to their treatment. However, authors submitting to academic research journals should always remember to write for their readers, not for themselves. Messages should be written in a concise and straightforward, yet comprehensive and understandable manner. Although no official word limits exist, a full case report should run no longer than 2000–3000 words, and authors will be asked to condense their case report where appropriate. The CARE guidelines offer a template which authors can follow:

- **Title:** The title should include the words "case report" and describe the element of the report which is of greatest interest to the reader. This could be the presentation, the diagnosis, the intervention, the outcome or a test result.
- **Abstract:** In approximately 200 words the author should summarise: the rationale for the case report; presenting concerns of the patient; interventions; outcomes; and the main lessons to be learnt from the case report.
- **Keywords:** Up to five key words should be provided to help potential readers search for and find this case report.
- **Introduction:** The background and context of the case report should be summarised.
- **Presenting concerns:** Patient characteristics and their presenting concerns (with relevant details of past interventions) should be described.

- **Clinical findings:** The medical, family and psychosocial history including the lifestyle and genetic information; other pertinent co-morbidities and interventions (which includes self-care) and the physical examination and any relevant pathology testing should be described.
- **Timeline:** A timeline that includes specific dates and times (in relation to the care described) should be provided as a table, figure or graphic.
- **Diagnostic focus and assessment:** This section should provide, where available, an assessment of the diagnostic methods (which includes, but is not limited to, pathology testing, imaging, validated questionnaires, referral diagnostic information), as well as diagnostic challenges (such as limited ability to complete evaluation); differential diagnosis and diagnostic reasoning and prognostic characteristics (such as staging in oncology).
- **Therapeutic focus and assessment:** This section should describe the types of interventions (such as pharmacologic, lifestyle, physical, self-care) and administration and intensity of the intervention (including dosage, frequency, duration, strength). Where unregistered product formulations are used (i.e. nutritional supplements), specific formulation details should be provided.
- **Follow-up and outcomes:** This section should describe the clinical course of the case including all follow-up visits as well as any intervention modification, interruption or discontinuation (with reasons), as well as adherence to the intervention (and how this was assessed), and any adverse or unanticipated events. Patient-reported outcomes, clinician-assessed and reported outcomes and important positive and negative results should be described.
- **Discussion:** The discussion should describe the strengths and limitations of the case report, including case management and the literature related to this case report. The rationale for any conclusions such as potential causation and the way the case may be generalised to a larger population should also be described. The main findings of the case report and any 'take home' messages should be discussed in this section.
- **References:** Authors must search for and cite published case reports that are relevant to the case they are presenting. Excessive referencing should be avoided, with no more than 15 references (unless there is an extensive literature review) generally recommended.

Ideally, an additional section on the patient perspective of treatment, in the form of a narrative, should be provided. The patient must provide their informed consent for the publication of a case report relating to their treatment. All patient data should be de-identified, and any relevant ethics clearances or approvals granted. *Advances in Integrative Medicine* will not consider case reports where there are ethical concerns (for example, deliberate denial of treatment with established effectiveness by the practitioner in favour of therapies with an equivocal evidence base – use of novel therapies in cases where established treatment has been ineffective is acceptable). Any competing interests should be identified. All submissions should be accompanied by a CARE checklist (<http://www.care-statement.org/care-checklist.html>). Authors should also reference this article (for submissions to *Advances in Integrative Medicine*) or a similar 'how to write a case report' article based on CARE guidelines to demonstrate and acknowledge that they have considered and complied with CARE guidelines in the development of their case report. Any clinical evaluation tools used in the case report should be validated, and where appropriate the article demonstrating this validation should be cited.

## 8. Writing style

Special care should be taken when writing to ensure the manuscript is written in an academic or scholarly tone, which may differ from phrases encountered in daily clinical practice. For example, phrases such as “on examination”, “presents with” or “of note” should be removed. Clinical signs are either present or absent, not positive or negative. Journalistic turns of phrase or literary prose may seem to a lay person to improve readability and flair, but are usually poorly received in academic peer-review. It should also be remembered that *Advances in Integrative Medicine* is an international journal, and that for a majority of the integrative medicine clinical and research community English is not their native language. Time-poor and over-burdened clinicians and researchers for whom English is their first language will also appreciate a more simplified writing style. In all, empty prose should be avoided, and the results and findings described as succinctly as possible. Whilst scientific language somewhat lacks aesthetic or poetic beauty, it more than makes up for in the effectiveness in which it disseminates complex information.

## 9. Summary

Patient case reports are valuable resources of information that can lead to advances in research and clinical practice and improved patient outcomes. However, it should also be noted that journey from conceptualisation to publication is not always a smooth one. Rejection can be a likely outcome for many first-time authors submitting a case report. Care should be taken not to be discouraged by such rejection. Do not abandon a project after a first rejection, and persist. A case report rejected by one journal may be warmly welcomed by another, simply due to differing journal focus, and authors can reduce the incidence of rejection by ensuring their case report aligns with the publication focus with the specific journal they choose to submit to. The process of conceptualising, writing and submitting a case report can appear daunting to both aspiring and long-established clinician researchers, but can be rewarding both professionally and personally, and is an endeavour that is sure to provide significant benefit to others.

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