Sample Abstract

The impact of varying levels of implementation fidelity on resident perceptions of an assessment innovation

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Background/Objective: Medical education researchers regularly develop excellent, evidence-based innovations. Often, these innovations are implemented, yet fail. In our program, we witnessed varying levels of success with an assessment innovation. In this study we explored the reasons for varying levels of success with an innovation that was solidly grounded in evidence and theory.

Method: A multiple methods design was used. Using a grounded theory approach, we conducted focus groups with Family Medicine residents. Thirty-two 1st and 2nd year residents across 5 different teaching sites responded to a set of semi-structured questions. An "implementation fidelity" (the degree to which the innovation in action resembles the innovation in theory) inventory was also conducted, with data collected through quantitative analysis of use of the innovation at individual teaching sites.

Results: Many residents who participated in our focus groups perceived substantial problems with the assessment innovation, which stem predominantly from 1) technical issues with the web-based portfolio, and 2) varying levels of preceptor involvement. In some instances, where preceptors sounded highly involved, residents voiced satisfaction with the innovation. Value was seen for learning and for guided self-assessment in sites where implementation fidelity was highest. Sites where champions of the innovation could be identified showed highest implementation fidelity and highest degree of resident perception of learning benefits from the innovation. Frustration with technical clumsiness of the web-based interface was seen for all sites.

Conclusion: The results demonstrate the need for active preceptor involvement in any medical education innovation in order for the innovation to be effective. Learner-driven innovations will falter when preceptors do not take an active role in effective practice of innovations. Implementation fidelity was a constant factor in the success of the innovation.

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Writing effective abstracts

Carolyn Brown, ELS

ILLUSTRATIVE CASE

A resident is working on a research project comparing cytologic findings after surgery for various conditions, and she tabulates exciting interim results. She asks to discuss the results with her supervisor, who comments that they would make an excellent poster or oral presentation at the upcoming meeting of the Society of Obstetricians and Gynecologists of Canada (SOGC). The deadline for abstract submissions is in a week! The supervisor directs the resident to the website for the conference, which indicates that the conference accepts abstracts for research in progress. The website also provides a word count and some general guidelines for abstracts for the meeting. The countdown starts for the resident to provide a clear abstract that conveys the importance of her work and that (she hopes!) will be accepted for presentation at the meeting.

■ **Abstracts serve several important** functions that vary according to context. In a poster or oral presentation at a meeting, the abstract communicates the nature and significance of a research project in a compact fashion that is quick for other researchers to read and grasp. Through the presentations and the publication of the abstracts in a program or proceedings, researchers learn about current areas of investigation. Since some meetings accept abstracts of research in progress, meeting abstracts can also serve as preliminary reports. However, several studies have shown that only a portion of meeting abstracts—ranging from 34% to 52%—are followed by the publication of final results in the peer-reviewed literature.[1–5]

When an abstract accompanies a paper submitted to a journal, its function is somewhat different. Most definitions state that the abstract summarizes and condenses the research paper.[6–9] While technically correct, this narrow definition misses one of essential roles of the abstract in a journal publication, which is to help the reader decide whether to read the full paper. A reader looking for an answer to a clinical question or for current research in a particular area needs to glean sufficient information from the

CHAPTER OBJECTIVES

After reading this chapter, you should be able to:

- describe the requirements for abstracts for posters or presentations at meetings, and for abstracts for research papers and other types of publications (such as reviews);
- describe and apply an approach to writing abstracts for meetings and for publication;
- use checklists for what to include in an abstract;
- discuss styles of abstracts;
- make abstracts concise; and
- ensure abstracts can be readily found in electronic searches.

KEY TERMS

Abstract guidelines
Abstract headings
Background
Conclusion
Conference abstracts
CONSORT checklist
Descriptive abstracts
Electronic searches
IMRAD structure
Informative abstracts
Interim results
Introduction
Journal abstracts
Keywords
MeSH
Methods
Objectives
Results
Structured abstracts
Unstructured abstracts

abstract to decide whether it is worth the time in a busy schedule to find and read the paper.[7] The abstract should therefore be able to stand alone,[6] as the first—and, unfortunately, often the only—part of the paper most readers read, apart from the title and author list. There are even documented cases in which readers have made clinical decisions from abstracts (although they shouldn't have) because the full text was unavailable.[10]

In the electronic information age, the abstract is also a means for potential readers to find published articles. Electronic searches of abstracts contained in literature databases such as PubMed (MEDLINE), Web of Knowledge, and Scopus (to name a few) lead readers to articles that they might otherwise be unaware of. An abstract must therefore be written in a way that ensures that the paper is not missed in searches where it would be relevant.

From research to abstract

The best abstracts describe a well-designed and carefully conducted study that addresses an important and interesting problem. A good abstract captures the soundness and significance of a good study; it cannot salvage a poor one.

In preparing a **conference abstract** for the SOGC meeting, our gynecology resident goes back to her original research question. What does the study set out to show? How does it do that? Which interim data are relevant to her hypothesis?[11] Finally, why is the research important? What has she learned from it? All other data or outcomes of the research, no matter how interesting, should be set aside.

Once she has collated from her notes the material that answers these questions, the resident checks the guidelines for abstract submissions on the conference website.[12] Such guidelines may include a word limit, **abstract headings**, a list of acceptable acronyms and other abbreviations, information on whether tables and figures can be included with the abstract submission,[6,9] and so on. Not all conferences accept **interim results**; if you are planning to present a preliminary report, be sure to check the guidelines before submitting.

Many beginning researchers do not realize that **abstract guidelines** are strict and should be followed to the letter. Exceeding the word count by even one word, for example, can result in rejection or truncation of the abstract.[12] Use the word count function in word processing software to determine the length of the abstract. It is also a good idea to read abstracts from previous meetings[9] to get a sense of the required content and style.

Most guidelines state that the abstract should summarize the research study following the **IMRAD structure** of a research manuscript: Introduction, Methods, Results, and Discussion.[6,9,11,12] This can apply even when the actual headings are not required.

The **introduction** supplies the research question or study objective as well as background explaining why the question was studied. (In some styles, **background** and **objectives** are broken out separately.[12]) No more than two or three sentences should be used to cover this section.

The **methods** should clearly indicate the study design, instrument (e.g., survey), laboratory technique, assignment or allocation of human or animal subjects, intervention, and outcomes measured.

The **results** should provide data for the outcomes that address the research question. All results should be supported with appropriate descriptive statistics (e.g., mean difference between groups; odds ratio), a measure of precision of the estimate (e.g., 95% confidence interval), and a clear indication of whether the result is statistically significant.[11] However, it may not be possible to provide such statistics for interim results.

If the meeting guidelines allow results to be presented in a table or graph, this is often an efficient way to summarize findings. Again, tables or graphs should include results for the relevant outcomes only; unless the study had few subjects, a table or graph should not include all data.

The **conclusion** should answer the research question and, as appropriate, explain the importance of the findings in the larger research context. Caution should be exercised in reaching conclusions; these should not go beyond the original research question.

The relevance of the research should be clearly conveyed in the abstract, as this is an important opportunity for the researcher to communicate his or her findings to the conference committee. The conference committee judges the abstracts submitted to determine which will be accepted for the meeting. Reviewers on the committee usually assess abstracts on several factors, including the purpose of the research, its methodological rigour, the inclusion of all elements, and the relevance of the study to the discipline in general and to the conference specifically. Clarity of presentation may also be scored. Reviewers may recommend whether abstracts should be accepted for a poster presentation or an oral presentation (the latter is usually more prestigious), or rejected.

To ensure that your abstract is clear and conveys its message, apply all of the usual rules of good writing (see ch. 29):

- Prefer the active voice.[6]
- Use strong, simple verbs, such as "to determine," "studied," "found," "treated."
- Use linking words such as "however," "also," "yet," "furthermore."
- Avoid needless phrases such as "We concluded that …"[6]
- Use terms consistently.
- Write in the past tense[8] (except for background about the research question, which may be in the present tense).
- Avoid acronyms and other abbreviations, as they create a difficult-to-read "alphabet soup."[6,12,13]
- If you do use acronyms and other abbreviations, use only well-established ones if possible (do not coin new ones) or those specified in the conference submission guidelines.
- Define acronyms and other abbreviations the first time they are used (some conference submission guidelines allow exceptions such as HIV and DNA).[6]

You may find that, in an effort to include all important points, you have exceeded the word limit in the first draft of your abstract. The next step is to trim it down. Start by finding ways to say the same thing more succinctly. Examine phrases to see if the meaning would be conveyed just as well if the phrase were dropped. Then, if need be, focus the abstract. Is the research question clearly stated, and are all subsequent items tied back to that question? Is there any extraneous information that does not add to the conclusion?

THE CASE REVISITED

The resident writes an abstract, following the submission guidelines carefully, and being sure to include all information relevant to her research question in the IMRAD structure. She submits the abstract by the deadline, and hears from the selection committee a month later. She has been selected to make an oral presentation! A few months later, the big day arrives. She triple-checks her PowerPoint file and boards a bus to the conference. The conference presentation goes very well. Back at her university, she meets with her supervisor, who encourages her to complete her study and write a paper as soon as possible. That means a challenging month ahead, as she tabulates final data and writes the paper. It's almost ready to submit to the *Journal of Obstetrics and Gynaecology Canada*, when she remembers she needs to add the abstract. She opens the abstract she submitted to the conference, selects it, and hits "copy." Fortunately, just as she is about to switch files and hit "paste," she takes a moment to read it over. She realizes her abstract doesn't follow the same structure as the other abstracts she has read in *JOGC*. And the information is now out of date. In fact, in her paper she has changed the conclusion.

From paper to abstract

Despite their obvious importance, **journal abstracts** are far too often unclear and incomplete.[2,6,14–16] Sometimes this is because the main effort is focused on the paper, and the abstract is written hurriedly, as an afterthought. Sometimes it is because a previous meeting abstract has not been updated. Sometimes the problem is a lack of understanding of the abstract's function, or a lack of objective standards for published abstracts—two issues that many journal editors and research organizations have tried to address.[10,17,18]

The best approach is to write the abstract last, working from the completed paper. Any previous version should be either set aside or substantially revised. This means that time and effort must be devoted to the abstract: It should not be forgotten until just before the deadline![12]

Most journals include instructions for the abstract—word limit, structure, headings, and so on—in their instructions for authors. Be sure to consult these before starting to write or revise. For styles of abstracts that may be specified in instructions for authors, see the next section.

Beginning researchers often make the mistake of trying to boil down their entire manuscript into the abstract. In the case of our gynecology resident, she may have presented data from different categories of patients, from different tissues, and so on. In experiments involving humans, the data can be complicated, relating to several arms of the study, side effects, and patient drop-outs. An abstract cannot present every detail of a complex manuscript. You should also be aware that, although tables and charts may be accepted in conference abstracts, they do not appear in abstracts for published papers.

Which details should be included? Again, return to your primary research question and focus on the data that answer the question.

Several journals and research groups have made specific recommendations to ensure that relevant data are not missed or omitted from published abstracts. Table 27.1 shows a checklist from the CONSORT group[10] for the data to include in an abstract of a randomized controlled trial. The aim of this checklist is to provide specific instructions about key elements of a trial that should be included in the abstract. The authors argue that, without a minimum of key information, it is difficult to assess the validity and applicability of a trial.

This checklist may not fit the abstract style specified by your target journal in its instructions to authors, in terms of headings and order of elements. However, it is a useful adjunct to the journal instructions to ensure the information is included, even if it is under a different heading or in a different order.

Table 27.2 provides the abstract headings required by the *Annals of Internal Medicine* for original research, cost-effectiveness studies, and systematic reviews (including meta-analyses). These headings were first recommended in 1987–1990 by proponents of evidence-based medicine to facilitate peer review, help clinical readers find articles that are scientifically sound and applicable, and allow more precise electronic literature searches.[18] For manuscripts destined for journals that do not use these headings, the list simply provides another useful checklist for information to include in abstracts of the types of manuscripts covered.

Table 27.1: CONSORT checklist for abstracts for randomized controlled trials[17]

Title*	Identification of the study as randomized
Authors	Contact details for the corresponding author
Trial design	Description of the trial design (e.g. parallel, cluster, non-inferiority)
Methods	
Participants	Eligibility criteria for participants and the settings where the data were collected
Interventions	Interventions intended for each group
Objectives	Specific objective or hypothesis
Outcome	Clearly defined primary outcome for this report
Randomization	How participants were allocated to interventions
Blinding (masking)	Whether or not participants, care givers, and those assessing the outcomes were blinded to group assignment
Results	
Numbers randomized	Number of participants randomized to each group
Recruitment	Trial status
Numbers analyzed	Number of participants analysed in each group
Outcomes	For the primary outcome, a result for each group and the estimated effect size and its precision
Harms	Important adverse events or side effects
Conclusions	General interpretation of the results
Trial registration†	Registration number and name of trial register
Funding†	Source of funding

*Although they appear in the CONSORT checklist, the title and authors are not usually included in abstracts for conferences or journals.
†While CONSORT recommends that these items be included in the abstract, many journals publish them with the author affiliations or acknowledgements. Check the style of the journal.

■ **Table 27.2: *Annals of Internal Medicine* headings for abstracts for three manuscript types[19]**

Original research	
	Background
	Objective
	Design
	Setting
	Patients
	Intervention (if any)
	Measurements
	Results
	Limitations
	Conclusions
	If the study is a randomized controlled trial, list where the trial is registered and the trial's unique registration number at the end of the abstract.
Cost-effectiveness studies	
	Background
	Objective
	Design
	Data sources
	Target population
	Time horizon
	Perspective
	Interventions
	Outcome measures
	Results of base-case analysis
	Results of sensitivity analysis
	Limitations
	Conclusions
Systematic reviews, including meta-analyses	
	Background
	Purpose
	Data sources
	Study selection
	Data extraction
	Data synthesis
	Limitations
	Conclusions

Types of abstracts

Before writing the abstract for a paper, ascertain the type of abstract and the format from the journal's instructions for authors. The following outlines some of the considerations in preparing abstracts of specific types.

Structured and unstructured abstracts. Abstracts for research papers may be **unstructured** (consisting of one continuous paragraph) or **structured** (using bolded or italicized headings that break the text into sections).[6] See examples in Appendix 27.1.

Most abstract structures are based on IMRAD, with some variations. The heading scheme for abstracts in *Annals of Internal Medicine* (Table 27.2) has the most headings of any system currently in use.[19] Many journals require structured abstracts for certain types of manuscripts (research papers, reviews), and unstructured abstracts for other types (editorials, brief reports). When writing a structured abstract with many headings, it is acceptable to write in point form (except that the Results and Discussion often require full sentences), whereas unstructured abstracts should be written in full sentences.

Even if an abstract is unstructured, the text should include all the elements of the IMRAD structure, in the appropriate order. For research paper abstracts, an appropriate checklist such as CONSORT is a valuable tool.

Informative vs descriptive abstracts. Abstract styles can also be categorized as informative or descriptive (sometimes called *indicative*).[7] Most abstracts, especially for research papers, are informative, providing the information on the study design, methods, results, and conclusion in the IMRAD structure, or following one of the alternative heading structures. However, there are certain contexts in which it makes more sense to indicate the article's scope, the principal subjects discussed, and how the topics will be addressed in the article, providing an overview of the paper.[7] This type of abstract is called "descriptive." Descriptive abstracts are used mainly for traditional review articles that present a literature search with clinical conclusions. See examples in Appendix 27.1.

Abstracts for systematic reviews and case reports. Many recent review papers are systematic reviews, in which data from systematically identified and selected research papers are extracted and may even be pooled and analyzed together in a meta-analysis. (See ch. 15.) In this case, an informative abstract provides the methodology and the analysis results. See the heading scheme for systematic reviews in *Annals of Internal Medicine* (Table 27.2) for a good checklist to follow in preparing abstracts for such papers. See examples in Appendix 27.1.

Another type of research paper often prepared by trainees is the case report or case series. Again, the abstract content and style differs. The abstract may be shorter than for original research, and some journals do not include abstracts with such papers at all. If required, the abstract should include the following:[12]

- objective
- case summary or case presentation (include patient details)
- discussion (omitted by some journals)
- conclusions

For case series, criteria for the selection of cases, and the number of cases thus selected, should also be indicated. See examples in Appendix 27.1.

Considerations in writing or revising abstracts

Electronic retrieval

To find research papers, researchers search abstracts in electronic databases such as PubMed, Web of Knowledge, and Scopus. Although the best-known databases have professional indexers who apply indexing terms to each abstract, there is a delay in applying terms, and not all databases and search engines (e.g., Google) are indexed. Hence, some publishers now recommend "optimizing" abstracts so that **electronic searches** will find them easily.[20] It is worthwhile to consider which terms a researcher would use to search for articles in the pertinent research area, and ensure that those terms appear in the abstract. For example, our resident's abstract should contain terms about cytologic findings ("cytology") in tissue samples from uterine hyperplasia ("uterus," "hyperplasia"), including malignant cells ("uterine cancer" or "uterine neoplasms").

In medical literature, ensure as well that the relevant medical subject headings (**MeSH**) appear in the abstract (see ch. 7). This can be awkward if the researcher has used a non-MeSH term throughout the research: for example, if the paper refers to Stein-Leventhal syndrome, but the MeSH term for the same entity is polycystic ovary syndrome. In this case, the best course would be to use the MeSH term in the paper; if this is not possible, however, it is good practice to include the MeSH term in brackets after the first mention in the abstract, i.e., "patients with Stein-Leventhal syndrome (polycystic ovary syndrome)." This ensures that savvy searchers, who use MeSH terms, will find the paper.[a]

Keywords

Some journals ask researchers to submit a few **keywords** with their abstract. The usefulness of these keywords is questionable, as abstract databases such as MEDLINE (PubMed) are professionally indexed and do not use author-supplied keywords at all. However, if researchers are asked to supply keywords, they should select three to five terms that capture the broad subject areas of the research, either from a list of keywords supplied by the journal, or from MeSH if the journal does not have a list.

Short versions of abstracts

Some journals request, in addition, an even shorter "abstract" of two or three sentences to appear in the table of contents. Read some of the journal's tables of contents to get a feel for style and elements covered.

Remember to revise

Journal editors often complain that abstracts do not reflect the paper: sometimes information in the abstract differs from the manuscript or does not appear in the manuscript at all. Studies have found high rates of inconsistent data and conclusions between published papers and their abstracts, even in major medical journals.[21–23] This is mainly because researchers simply forget to revise the abstract along with the manuscript.

While the best practice is to write the abstract after finalizing the paper, there may be unanticipated changes to a manuscript before submission but after the abstract is written. If so, the abstract should be verified and revised to ensure it is consistent with the paper, as the focus may have changed during revision. After peer review, the paper may be revised, and, again, the abstract should be verified and revised as well. The final abstract should match the paper not only in terms of data accuracy, but also in terms of its conclusions and tone. For example, if the paper reaches a tentative conclusion in a narrow area, the abstract should not state the conclusion firmly or extend the conclusion beyond what was concluded in the paper.

a For more about MeSH, see www.nlm.nih.gov/mesh.

CASE POSTSCRIPT

The resident writes a 300-word abstract for her manuscript, a case-control study showing that a significantly higher percentage of surgical samples from a certain benign condition (uterine hyperplasia) contain malignant cells than samples from other benign conditions. She receives constructive peer reviews and revises the manuscript and the abstract accordingly. The paper is accepted and appears a few months later in *JOGC*.

Through this process, the resident has demonstrated she can:

- Read and follow the guidelines on the conference website and the instructions for authors on the journal website for word limit, style of abstract (structured versus unstructured, informative versus indicative), and other requirements.
- Focus on the research question, and data that answer it, in preparing a meeting abstract, the paper, and the abstract for publication.
- Use a checklist as a guide to ensure she has included all the needed elements for the abstract.
- Substantially revise the meeting abstract to accompany the subsequent manuscript, ensuring the abstract is succinct, focused, and consistent with the paper.
- Ensure the abstract contains words that will be searched by researchers retrieving papers in the area.

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EXERCISES

1. Choose abstracts from published randomized controlled trials (see examples in Appendix 27.1 or search for recent articles in your area in PubMed). Analyze these according to the CONSORT extension for abstracts. Are any elements missing? How did the researcher organize the elements? Is each abstract clear, readable, and complete?

2. Have a friend choose a good research paper from your field and remove the abstract. Read the paper and write the abstract. Compare your abstract with the author's. Does your version have any omissions or oversights? Does the author's ?

SUMMARY CHECKLIST

- ❑ Consider where you will be submitting an abstract of your work. Assemble any information you will need about the required structure, word count, etc. Review abstracts that have previously been accepted to guide your composition.
- ❑ Consider the target audience of your abstract. What will they know about this type of study? What will they care about? What results should you emphasize?
- ❑ Construct your abstract carefully using best practices.
- ❑ Send your abstract to your team, supervisors and colleagues for review. Revise and repeat.
- ❑ Select key words.
- ❑ Submit.

APPENDIX 27.1: ABSTRACT EXAMPLES

UNSTRUCTURED INFORMATIVE ABSTRACT

Soy and the exercise-induced inflammatory response in postmenopausal women[a]
Beavers KM, Serra MC, Beavers DP, Cooke MB, Willoughby DS

Aging is associated with increasing inflammation and oxidative stress in the body, both of which can have negative health effects. Successful attenuation of such processes with dietary countermeasures has major public health implications. Soy foods, as a source of high-quality protein and isoflavones, may improve such indices, although the effects in healthy postmenopausal women are not well delineated. A single-blind, randomized controlled trial was conducted in 31 postmenopausal women who were assigned to consume 3 servings of soy (n = 16) or dairy (n = 15) milk per day for 4 weeks. Parameters of systemic inflammation (tumor necrosis factor-α (TNF-α), interleukin-1β (IL-1β), and interleukin-6 (IL-6)) and the oxidative defense system (superoxide dismutase (SOD), glutathione peroxidase, cyclooxygenase-2) were measured post supplementation, before and after an eccentric exercise bout performed to elicit an inflammatory response. A significant group-by-time effect for plasma TNF-α was observed ($p = 0.02$), with values in the dairy group increased post supplementation and then decreasing into the postexercise period. Additionally, significant time effects were observed for plasma SOD ($p < 0.0001$) and IL-6 ($p < 0.0001$) in the postexercise period. Overall results from our study do not support the notion that 4 weeks of daily soy milk ingestion can attenuate systemic elevations in markers of inflammation or oxidative defense. However, data do suggest that the downhill-running protocol utilized in this study can be effective in altering systemic markers of inflammation and oxidative defense enzyme activity, and that the ingestion of soy may help prevent fluctuations in plasma TNF-α.

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STRUCTURED INFORMATIVE ABSTRACT

Long-term effects of dihydrotestosterone treatment on prostate growth in healthy, middle-aged men without prostate disease: a randomized, placebo-controlled trial[b]
Idan A, Griffiths KA, Harwood T, Seibel MJ, Turner L, Conway AJ, et al.

Background: Benign prostatic hypertrophy increases with age and can result in substantially decreased quality of life for older men. Surgery is often required to control symptoms. It has been hypothesized that long-term administration of a nonamplifiable pure androgen might decrease prostate growth, thereby decreasing or delaying the need for surgical intervention.

Objective: To test the hypothesis that dihydrotestosterone (DHT), a nonamplifiable and nonaromatizable pure androgen, reduces late-life prostate growth in middle-aged men.

Design: Randomized, placebo-controlled, parallel-group trial. (Australian New Zealand Clinical Trials Registry number: ACTRN12605000358640)

Setting: Ambulatory care research center.

Participants: Healthy men (n = 114) older than 50 years without known prostate disease.

Intervention: Transdermal DHT (70 mg) or placebo gel daily for 2 years.

Measurements: Prostate volume was measured by ultrasonography; bone mineral density (BMD) and body composition were measured by dual-energy x-ray absorptiometry; and blood samples and questionnaires were collected every 6 months, with data analyzed by mixed-model analysis for repeated measures.

Results: Over 24 months, there was an increase in total (29% [95% CI, 23% to 34%]) and central (75% [CI, 64% to 86%]; $P < 0.01$) prostate volume and serum prostate-specific antigen level (15% [CI, 6% to 24%]) with time on study, but DHT had no effect ($P > 0.2$). Dihydrotestosterone treatment decreased spinal BMD (1.4% [CI, 0.6% to 2.3%]; $P < 0.001$) at 24 months but not hip BMD ($P > 0.2$) and increased serum aminoterminal propeptide of type I procollagen in the second year of the study compared with placebo. Dihydrotestosterone increased serum DHT levels and its metabolites (5α-androstane-3β,17β-diol and 5α-androstane-3β,17β-diol) and suppressed serum testosterone, estradiol, luteinizing hormone, and follicle-stimulating hormone levels. Dihydrotestosterone increased hemoglobin levels (7% [CI,

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5% to 9%]), serum creatinine levels (9% [CI, 5% to 11%]), and lean mass (2.4% [CI, 1.6% to 3.1%) but decreased fat mass (5.2% [CI, 2.6% to 7.7%]) (P <0.001 for all). Protocol-specific discontinuations due to DHT were asymptomatic increased hematocrit (n = 8), which resolved after stopping treatment, and increased prostate-specific antigen levels (n = 3; none with prostate cancer) in the DHT group. No serious adverse effects due to DHT occurred.

Limitation: Negative findings on prostate growth cannot exclude adverse effects on the natural history of prostate cancer.

Conclusion: Dihydrotestosterone treatment for 24 months has no beneficial or adverse effect on prostate growth but causes a decrease in spinal but not hip BMD. These findings have important implications for the wider use of nonsteroidal pure androgens in older men.

Primary funding source: BHR Pharma.

Ann Intern Med. 2010;153(10):621–32.

DESCRIPTIVE ABSTRACTS

Meningococcal serogroup C conjugate vaccination in Canada: How far have we progressed? How far do we have to go?[c]

White CP, Scott J

Since routine meningococcal C conjugate vaccination was introduced into Canada in 2002, there have been a large regional variation in the routine programs, changes to the timing of the infant series in some provinces, and wide differences in catch-up programs. As immunization is viewed as a provincial responsibility, less attention has been paid to determining national coverage rates and the direct and indirect effects of the widely varying provincial/territorial vaccination programs on the nation as a whole. Canada's disjointed regional immunization campaigns leave the population at risk of disease for an extended length of time. The United Kingdom has proven that with a pro-active approach to planning, coordination, and implementation of a national immunization program, excellent long-term control of invasive meningococcal disease in a large population could be achieved in as little as one year. A summation of the current meningococcal immunization strategies used in Canada and an estimate of overall vaccine coverage of children and youth is provided.

Can J Public Health. 2010;101(1):12–14

Origami in outer membrane mimetics: correlating the first detailed images of refolded VDAC with over 20 years of biochemical data[d]

Summers WAT, Court DA

Mitochondrial porin forms an aqueous pore in the outer membrane, through which selective passage of small metabolites and ions occurs, thereby regulating both mitochondrial function and cellular respiration. Investigations of the structure and function of porin have been performed with whole mitochondria, membrane vesicles, artificial membranes, and in detergent solutions, resulting in numerous models of porin structure. The mechanisms by which this protein functions are undoubtedly linked to its structure, which remained elusive until 2008, with reports of 3 high-resolution structures of this voltage-dependent, anion-selective channel (VDAC). The barrel structure is relatively simple yet unique: it is arranged as 19 anti-parallel β-strands, with β-strands 1 and 19 aligned parallel to each other to close the barrel. The N-terminal helical component is located within the lumen of the channel, although its precise structure and location in the lumen varies. With the basic barrel structure in hand, the data obtained in attempts to model the structure and understand porin over the past 20 years can be re-evaluated. Herein, using the mammalian VDAC structures as templates, the amassed electrophysiological and biochemical information has been reassessed with respect to the functional mechanisms of VDAC activity, with a focus on voltage-dependent gating.

Biochem Cell Biol. 2010;88(3):425–38

SYSTEMATIC REVIEW

Dietary interventions for fecal occult blood test screening: systematic review of the literature[e]

Konrad G

Objective: To determine whether dietary restrictions enhance the specificity of guaiac-based fecal occult blood tests (FOBTs) when screening for colorectal cancer.

Data sources: PubMed–MEDLINE, the Cumulative Index to Nursing and Allied Health Literature, and Cochrane databases were searched.

Study selection. English-language case series, cohort studies, randomized controlled trials (RCTs), and meta-analyses were selected. Studies that did not include dietary manipulation or the use of guaiac-based FOBTs available in North America were excluded.

Reporting

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e Reproduced with kind permission of the College of Family Physicians of Canada.

Synthesis: Ten case series, 5 cohort studies, 4 RCTs, and 1 meta-analysis were critically appraised. All studies used Hemoccult, Hemoccult II, or Hemoccult SENSA tests. Data from case series involving challenge diets showed no increase in positive FOBT results from high-peroxidase vegetables, but results varied with red-meat challenges depending on the amount of meat consumed and the test used. Case series, cohort studies, and RCTs comparing FOBT results during restricted versus unrestricted diets consistently showed no differences in positive FOBT results.

Conclusion: Most of the evidence evaluating the effect of dietary restrictions on FOBT results is dated and of suboptimal quality. However, 4 RCTs and a meta-analysis of these data do not support dietary restrictions when screening for colorectal cancer. Because patient adherence can be an issue with FOBTs, and dietary restrictions can affect adherence in some populations, it is reasonable to abandon these recommendations without fear of substantially affecting specificity.

Can Fam Physician. 2010;56(3):229–38

CASE REPORT

The diagnostic and therapeutic approach of a primary bilateral leiomyoma of the ovaries: a case report and a literature review[f]

van Esch EM, van Wijngaarden SE, Schaafsma HE, Smeets MJ, Rhemrev JP

Introduction: A primary fibroid (leiomyoma) arising from both ovaries is rare and can be difficult to diagnose as a result of the low incidence and its indistinctive presentation. A literature review on the diagnostic and therapeutic approach of this rare benign tumour is presented. We describe a case of bilateral primary ovarian fibroid with an unusual presentation to illustrate our recommendations for treatment.

Case presentation: A 37-year-old woman was admitted with symptoms of acute severe abdominal pain. She had a history of faint abdominal discomfort. Due to the acute deterioration of the abdominal pain a diagnostic laparoscopy was performed. A tumour arising from both ovaries was seen and a biopsy was taken in order to decide on further therapy. Histology showed a fibroid for which excision by a second laparoscopic intervention was planned. Due to excessive adhesions conversion to laparotomy was necessary.

Conclusion: We recommend that in the case of an abnormal adnexal mass, particularly in women who want to preserve their fertility, frozen section histology be performed laparoscopically. A frozen section diagnostic procedure, instead of a regular biopsy, seems to be a useful tool during an elective diagnostic laparoscopic procedure in order to prevent potential morbidity as a result of possible future laparoscopy or even laparotomy. Previous laparoscopic procedures can cause massive adhesions that could impede a subsequent laparoscopic approach.

Arch Gynecol Obstet. 2010;283(6):1369–71

CASE SERIES

Urological complications of laparoscopic inguinal hernia repair: a case series[g]

Kocot A, Gerharz EW, Riedmiller H

Objectives: To illustrate urological complications of laparoscopic inguinal hernia repair and discuss their management.

Patients: Between April 2002 and February 2004, four men (aged 38–63 years) were treated for serious complications 2 days to 11 years after unilateral (1 patient) or bilateral (3 patients) laparoscopic inguinal hernioplasty.

Results: In all cases (extra and intraperitoneal bladder injury, purulent urocystitis due to mesh-erosion of the bladder, secondary retroperitoneal fibrosis) open revision with complete drainage of the urinary tract was chosen as an efficacious therapeutic strategy.

Conclusions: Awareness of rare complications of laparoscopic inguinal hernia repair may lead to early diagnosis and appropriate management.

Hernia. 2010 Jul 4. [Epub ahead of print]

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APPENDIX 27.2: APPLYING CHECKLISTS TO ABSTRACTS

EXAMPLE 1

Health promotion program: a resident well-being study. *Iowa Orthop J* 2009;29:83–7.[h]
Watson DT, Long WJ, Yen D, Pichora DR

Background: Surgical training places unique stresses on residents that can lead to decreased levels of presenteeism. We hypothesized that presenteeism levels could be positively influenced by improving workplace hygiene.

Methods: A cohort of surgical residents was asked to complete the Stanford Presenteeism Scale: Health Status and Employee Productivity (SPS-6) questionnaire before, and one year after the implementation of a workplace health promotion program.

Results: Twenty-six of thirty-three residents responded to the initial survey and reported a mean SPS-6 score of 17.3 ± 4.5, well below population normative value of 24 ± 3 ($p < 0.0001$). At one-year post intervention 25 of 32 residents responded, reporting a mean SPS-6 score of 18.3 ± 4.6. The mean SPS-6 score improved by 1.2 ± 3.8 ($p = 0.35$). Subgroup analysis showed a trend toward improved SPS-6 in those who participated in the health promotion program ($p = 0.15$) and a significant difference when junior residents were compared to seniors ($p = 0.034$). Overall, results were limited by our small sample size.

Conclusions: Presenteeism scores for surgical residents at our institution are well below population values. Use of validated tools such as the SPS-6 may allow for more objective analysis and decision making when planning for resident education and workload.

Presenteeism: the ability while on the job to produce quality work at maximum productivity.
Decreased presenteeism: a state of decreased productivity and below-normal work quality related to health/workplace distracters.)

Iowa Orthop J. 2009;29:83–7.

CONSORT checklist analysis of this sample abstract

- **Trial design.** Can be inferred; qualitative study with questionnaire before and after intervention. From results, it is unclear whether all survey respondents participated in the intervention.
- **Participants.** Thirty-three residents.
- **Interventions.** Workplace health promotion program; little information on what this involved.
- **Objectives.** Hypothesis clear: improved workplace hygiene could improve presenteeism (which is defined).
- **Outcome.** Primary outcome seems to be change in score on SPS-6, but this is not stated explicitly.
- **Randomization.** Not applicable.
- **Blinding.** Not applicable.
- **Numbers randomized.** Not applicable.
- **Recruitment.** Not applicable.
- **Numbers analyzed.** Number that responded to survey given.
- **Outcomes.** (1) Initial SPS-6 score was significantly lower than normal; (2) the intervention resulted in limited, non-significant improvement in SPS-6 scores; (3) a subgroup change in score showed slightly better but still non-significant improvement; (4) significant difference between junior and senior residents. For each result, the effect size, precision (±) and statistical significance are given.
- **Problems with outcomes.** (1) A subgroup analysis seems to suggest not all participants underwent the intervention, and this does not make sense as the methods indicate testing improvement after intervention, presumably in all participants. (2) "A trend toward improved SPS-6" implies an indication of improvement, but the result is not statistically significant and should not be represented as meaningful. (3) It is unclear what is meant by "a significant difference when junior residents were compared to seniors"—junior residents considered as a subgroup had a significant difference before and after the intervention? Junior residents had a significantly different score from senior residents? Which group showed improvement?
- **Harms.** None presented; qualitative study. Does not state the lack of harm explicitly.
- **Conclusions.** Presenteeism values for this group are low. This is the only significant result. Fails to state that other results were not significant and that the results are therefore negative. Discusses use of validated survey tool; however, this was not an objective of the study.

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EXAMPLE 2

Gender preferences in the choice of a pediatric dental residency program.
da Fonseca MA, Stiers ML

The goal of this study was to investigate whether men and women applying for graduate training in pediatric dentistry placed different emphasis on the same factors and program characteristics upon making their final ranking decision. A questionnaire was mailed to the first-year resident class in the United States in 2005 containing both multiple-choice and open-ended questions covering six sections: 1) candidate's background, 2) the application process, 3) program characteristics, 4) nonclinical factors, 5) clinical factors, and 6) the interview process. In sections three through six, respondents ranked factors and characteristics from "not important" or "no influence" to "critical." The response rate was 69.2 percent (180/260), with approximately 57.8 percent females (104/180) and 61.4 percent non-Hispanic white respondents (110/180). Statistically significant differences between genders were as follows: 1) men were older (29.4 years versus 28.1, $p < 0.05$); 2) men applied to more programs (9.9 vs. 8.1, $p < 0.05$); 3) women preferred programs affiliated with their own dental school ($p = 0.046$); 4) women preferred university-based programs ($p = 0.049$); 5) women preferred programs that offered a high amount of patient care under general anesthesia ($p = 0.040$); and 6) women placed more importance on the salary/stipend amount offered by the programs ($p = 0.045$).

J Dent Educ. 2009;73(9):1102–6.[i]

***Annals of Internal Medicine* checklist analysis of this example abstract**

- **Background.** Does not explain background to study. Is there a concern that more men than women (or vice versa) are applying for certain types of graduate training in pediatric dentistry?
- **Objective.** Clearly stated in first sentence: gender differences in factors and program characteristics in making ranking decisions.
- **Design.** Can be inferred: qualitative study with questionnaire.
- **Setting.** Clear that this is a country-wide survey (United States in 2005).
- **Patients.** Participants were all first-year residents in pediatric dentistry.
- **Intervention.** Survey, with detailed explanation of questions, their format and the ranking system.
- **Measurements.** Not stated, presumably scores on the survey.
- **Results.** Response rate and absolute number of respondents indicated. The ethnic background of the respondents is given, which was not an objective of the study and seems to be irrelevant. Consistent with the objective, only statistically significant differences between gender groups are reported. Actual mean rankings are not given; statistical significance is given. Measure of variability is not applicable, as this is a survey of the entire population, not just a sample.
- **Limitations.** Not stated. Does the ethnic group response rate result mean the survey results should not be generalized to all ethnic groups?
- **Conclusions.** No conclusions are stated. The authors may have thought that these were clear from the results, but there should be a statement about gender differences and their practical significance. This would have followed from the background, which is also missing. The authors may have wished to comment on the borderline statistical significance of some of the results.