Research, Manuscript Writing and Scientific Publication

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Editor-in-Chief

CJIC
The Canadian Journal of Infection Control
Revue canadienne de prévention des infections

ipac
Infection Prevention and Control Canada

pci
Prévention et contrôle des infections Canada
Why Conduct research or publish?

• To understand a phenomenon.

• To test existing theories or develop new theories on the basis of existing ones.

• Contribute in forming new knowledge or expand the existing knowledge base.

• It is also necessary for professional development.
Research process

Step 1: Determine a suitable research project
Step 2: Establish collaboration
Step 3: Write the research proposal
Step 4: Apply for funding
Step 5: Perform the study/Ethics
Step 6: Write your manuscript
Step 7: Publish your findings
Step 1: Determine a suitable research project

- infection prevention/control strategies
- healthcare-associated infections
- surveillance and outbreak management
- vaccine-preventable diseases
- infection control programs
- antimicrobial resistance
- hand hygiene
- transmission-based precautions
- personal protective equipment use
- cleaning and disinfection
- IPAC education/ IPAC program
- QI in IPAC
- emerging technologies
Step 2: Establish collaboration (if needed)
Step 3: Writing of a research proposal

- Novelty of the study/Importance
- Feasibility of the study/time frame
- Scope of the study
- Solid research methodology
- Availability of applicable assays

![Gantt chart]

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<th>Task</th>
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<th>December</th>
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<td>Literature review</td>
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<td>Questionnaire design</td>
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<td>Data presentation</td>
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<td>Completing study</td>
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Step 4: Apply for funding

**Internal** – Within your institution

**External** – Leverage collaboration with external partners

**Provincial/Federal**
- [Fonds de recherche du Québec](https://frqs.gouv.qc.ca/) (FRQS)
- Canada Foundation for Innovation (CFI)
- Canadian Institutes of Health Research (CIHR)
- Natural Science and Engineering Research (NSER)
- Social Sciences and Humanities Research (SSHRC)
- Genome Canada.
- Public Health Agency of Canada (PHAC)
- Natural Sciences and Engineering Research Council of Canada (NSERC)
- Networks of Centres of Excellence of Canada (NCE)
Step 5: Performing the study

- **Purpose of the study,**
- **Relevant background information,**
- **Requirements**

- **Research method** (qualitative quantitative)
- **Determine the definition of the information needed**
- **Determine measurement and scaling procedures**
- **Design a questionnaire**
- **Sampling process and sample size**
- **Plan of data analysis**

- **Interviews:** Asking people questions about their known information
- **Observations:** Collecting data without asking questions.
- **Questionnaires:** Ask questions among a group of people
- **Focus Groups:** Interviewing and observing a group of people
- **Literature review:**

- **Review your research plan**
- **Organize your finding and the information you have collected from Step 3.**
- **Create a rough draft of your finding, recommendations, and conclusion.**
- **Polish the rough draft into your final research finding.**
- **You will most likely revise the draft many times before the final product is ready for Step 5**

- **Formal Paper**
- **Manuscript**
- **Conference presentation**
Research ethics

- Ethical research must conform with the national and international accords and prescripts.

3 fundamental principles of research (respect, welface and justice)

Tri-Council Policy Statement Ethical Conduct for Research Involving Humans TCPS2 2018
Research Ethics therefore is:

1. A code of guidelines for morality in scientific research
2. Researchers must uphold the value and standards of knowledge construction

Ethical considerations come into play at 6 stages of research

1. Conceptualisation and design of the study (scientific merit, identify risks and ways to mitigate the risks, seeking ethical approval)

2. When participants are recruited (the process of informed consent, right to privacy)

3. During the intervention or procedure to which participants are subjected (management of risk)

4. In the release of results obtained (protection of confidentiality and anonymity/publication ethics)

5. After the release of results (ensure that participants and communities involved in the research benefit)
Unethical research conducts

- Deception (issues of full disclosure)
  - Withholding information about the aim of the study
  - Misleading participants about the risks inherent in participating in the study
- Plagiarism
- Conducting research that does not have a scientific base (ill-formed problem statement)
- Lack of objectivity and integrity in the design and conduct of research
  - Not identifying the methodological constraints of the study that determine the validity of the findings
  - Misinterpretation of results
  - Not providing details of theories and methods that might be relevant in the interpretation of research findings
- Fabrication or falsification of data
- Not following the appropriate ascription of authorship to a publication
- Not respecting the right to privacy
- Not respecting the right to anonymity and confidentiality
- Not respecting rights of vulnerable groups
- Not having due consideration for the environment or animals
### Step 6: Writing your manuscript for CJIC

#### Types of articles

<table>
<thead>
<tr>
<th>Type of Article</th>
<th>Abstract Format</th>
<th>Text Format</th>
<th>Tables and Figures</th>
<th>References</th>
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<tbody>
<tr>
<td>Original research</td>
<td>Structured abstract (max. 300 words), text (max. 3,000 words), tables and figures (max. 5 combined), and references (max. 40)</td>
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<tr>
<td>Concise report</td>
<td>Narrative abstract (max. 100 words), text (max. 1,200 words), tables or figures (max. 2 combined), and references (max. 10)</td>
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<td>Review article</td>
<td>Structured abstract (max. 300 words), text (max. 3,000 words), tables and figures (max. 5 combined), and references (max. 40)</td>
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<td>Outbreak investigation</td>
<td>Narrative abstract (max. 200 words), text (max. 2,000 words), tables or figures (max. 3 combined), and references (max. 20)</td>
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<td>Quality Improvement</td>
<td>Structured abstract (max. 300 words), text (max. 2,500 words), tables and figures (max. 4 combined), and references (max. 40)</td>
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<td>IPAC Practice</td>
<td>Narrative abstract (max. 100 words), text (max. 1,200 words), tables or figures (max. 2 combined), and references whenever appropriate (max. 10)</td>
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<td>Emerging technologies</td>
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<td>Letter to the editor</td>
<td>Text (max. 900 words), tables or figures (max. 2 combined), and references (max. 10)</td>
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Preparing your manuscript

- Read instructions to authors
- Cover letter (why should your manuscript be accepted)
  - Title page
  - Abstract
  - Full article formatting
  - Referencing
Writing your manuscript
Write backward

Write in the following order:
• Figures and Tables (Results)
• Discussion & Conclusion
• Methods
• Introduction
• Abstract
• Title
Title page

- Title
- Authors and affiliation
- Corresponding author
- Key words
- Acknowledgement
- Conflict of interest

**Remember** your title is what attracts the reader’s attention
Abstract

• Summary of the entire work (mini-paper)
• May be structural or non-structural

• Should include a brief summary of the main manuscript text;
  - Background
  - Methods
  - Results
  - Conclusion

• Adhere to word limit
Introduction

- Draw attention of the audience
- State the problem
- What is known in the field
- Identify gaps in knowledge
- State your research question
- Why is your research necessary
- Aim

- No sub-headings
- Avoid plagiarism
- Include references

INTRODUCTION

Healthcare-associated infections (HAIs), defined as infections acquired during the provision of care and not present or incubating prior to care are common in long-term care homes (LTCHs). These infections may cause outbreaks which may lead to morbidity or mortality [1]. A robust infection surveillance system, involving data collection, analysis and reporting, can help reduce HAIs by identifying cases early in order to plan timely interventions to reduce or prevent the transmission of infectious agents [2]. Such a system can also improve the understanding of the burden of infections and help assess if interventions are working. Surveillance programs are a key component of an infection prevention and control (IPAC) program and Ontario LTCHs are required to have IPAC programs that involve monitoring infections in residents [3].

Improved support for surveillance programs in LTCHs is currently needed. Following an IPAC needs assessment survey conducted in 2019, LTCHs identified surveillance as the second most common area in need of improvement in their organizations and surveillance was the second most common area that participants required further training in [4]. This study assesses the need for simplified surveillance tools for use in LTC settings. The COVID-19 pandemic has also highlighted the need for robust IPAC practices in LTC settings, including the need for reliable surveillance programs to ensure timely identification of
Methods

1. Participants/population
   - Recruitment, screening, inclusion & exclusion criteria
   (demonstrate good research ethics)

2. Study design
   - Location, timeline,
   - Assessments/interventions
   - Outcome variables

3. Statistical analysis
   - Samples size and power estimate
   - Tests, hypothesis and significance level

Your methodology must be explained clearly such that it could be reproduced by someone with similar expertise in your field.
Results

• State your findings clearly
• Results have to be chronological
• Avoid mitigation of results
• Do not interpret results
• Figures/Tables (cite all figures and tables)
  ❖ Demonstrate good research ethics:
    ➢ No deception
    ➢ No fabrication
    ➢ No exaggeration

Past tense for experiments you have conducted
Discussion

Did your research answer the question/hypothesis?
• Discuss your results in relation to previous knowledge in the field
• Explain possible discrepancies
• Highlight the strength of your research
• State any weaknesses or limitations
• Avoid speculations
Conclusion

State clearly the IPAC/public health significance of your major finding

- Convey the larger implications of your study
- Introduce possible new ways of thinking about the research problem (opportunity for future research).

"take-home" message in the form of a strong, succinct statement that you want readers to remember about your study”

This project was successful in trialing a toolkit in a LTC corporation and using feedback gathered by multiple methods to create a revised and improved toolkit for the broader LTC sector. This toolkit can be used to collect, analyze and use standardized infection surveillance data in LTCHs in order to improve IPAC practices and reduce HAIs. Future work can include determining if the use of the surveillance toolkit led to interventions that resulted in the reduction of HAIs in residents and an assessment of sustainability and long-term IPAC lead satisfaction with the toolkit. The COVID-19 pandemic has highlighted the need for robust surveillance systems in LTCHs and the need for tools to support adherence to IPAC best practices is growing.
Acknowledgment

- Acknowledge those who contributed to your work but who do not qualify for authorship
- State their contribution(s)
- Avoid personal acknowledgment e.g., spouse, boyfriend, girlfriend etc
Step 7: Publish your findings

Before submission

• Review guidelines for Authors
• Ensure citations in text match references
• Review re Syntax and Grammar
• Have all authors review, provide feedback and sign off

PREPARING YOUR MANUSCRIPT

Title Page
Complete the Title Page (full title of your manuscript, running title, key words, author affiliations; contact information for corresponding author, acknowledgements, and conflict of interest disclosure) and submit as a separate attachment.

Format
Authors should follow the ICMJE Recommendations (formerly “The Uniform Requirements for the Preparation of Manuscripts” by the ICMJE) following format: single column text, double-spaced, left justified, 1” margin, standard Times New Roman, Calibri, etc), size 12 (tables and text), and all pages numbered. Unit measurement should be in a metric format. Abbreviations must be spelled out and presented in parentheses after first appearance in the text of manuscript (not in abstract).

Title
Title should capture the essence of the manuscript and be concise (max. 100 characters)

Abstract
- Background: brief background and study purpose
- Methods: study participants, settings, measurements, analytical methods
- Results: effect size, statistical and clinical significance
- Conclusions: principal findings and conclusions

Introduction
- Provide context, background and what the study will add to the literature/body of subject area.

Methods
- Research involving humans should include information on ethical conduct
- Selection and description of participants (if applicable)
- Study design
- Primary and secondary outcome measures
- Statistics
- No results should be presented in Methods

Results
- Do not repeat data from tables and figures in text, instead state the most relevant and important findings
- Provide all findings for primary and secondary outcomes
- Extra material should be provided in an appendix
- Provide numerical results as derivatives but also as absolute numbers. State statistical significance where appropriate.

Discussion
- State new findings and how they add to the existing body of knowledge
Submission
Submit through our Editorial Manager

Have the following files ready

1. Cover letter
2. Manuscript
3. All figures in one file (with titles)
4. All tables in one file (with titles & footnotes)
5. Publication Agreement
6. Any supplemental files
What happen after submission

- Automatic submission acknowledgement
- Editor-in-chief reviews and makes a decision where to reject or accept to move forward
- 2 reviewers are invited to review
- Double-blind review
  - Editorial board members are blinded to the authors identities
  - Authors do not know the identities of the reviewers
Review and Editorial Process

Scrubtiny by others who are experts in the same field.

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<tr>
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<th>Editor</th>
<th>Reviewer</th>
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Reviewers provide feedback on the suitability of the paper.

- Validity
- Quality
- Significance
- Originality
Possible decisions

- Accept
- Reject
- Revise

Manuscripts sent back to authors to address reviewers comments and resubmit with a rebuttal

Carefully study the comments and prepare a detailed response
After acceptance

- Submitted to publisher for copyediting
- Proof send to authors again for final review
- Verification that publication agreement was signed by all authors.
A novel approach for the disinfection of portable medical equipment with ultraviolet light

Fusil Ibrahimov, MPH, Nicole Shun, MPH, Susan Roman, MD, Sarah Simmons, DPh, Danielle James, and Kari Velasquez, BS

Abstract: The disinfection of portable medical equipment (PME) is a significant challenge in healthcare settings, raising the potential for transmission of healthcare-associated infections (HAI). A portable decontamination unit (PDU) has been developed using UV reflective material that enables rapid disinfection of medical equipment with minimal interaction. The aim of this study was to evaluate the efficacy of the PDU for decontaminating medical equipment in a healthcare setting.

Methods: A cohort study was conducted in a hospital setting, involving medical equipment used in patient care areas. The equipment was subjected to simulated contamination with a standardized pathogen load, and then cleaned and disinfected using the PDU. The equipment was then subjected to UV light exposure, and the pathogen load on the equipment was assessed before and after disinfection.

Results: The PDU was able to achieve a reduction in the pathogen load on the medical equipment, with a significant decrease in the number of viable pathogens. The results demonstrated the effectiveness of the PDU in reducing the risk of transmission of healthcare-associated infections.

Conclusions: The PDU offers a novel approach for the disinfection of portable medical equipment, providing a practical solution for reducing the risk of transmission of healthcare-associated infections. Further research is needed to evaluate the long-term effectiveness of the PDU in clinical settings.

Keywords: Portable decontamination unit (PDU), medical equipment, UV disinfection, healthcare-associated infections (HAI), patient care areas.
Publication speed (timeline)

Publication Process in days

- Acknowledgement
- Triage & solicitation of reviewers
- Peer review
- Authors revision
- Editorial review
- Proof review by authors
- Publication
Ethical issues in publication

- **Scientific misconduct**
  - Falsification of results

- **Publication misconduct**
  - Plagiarism
  - Fraud
  - Duplicate submission
  - Duplicate publication
  - Lack of acknowledgement of prior research and researchers
  - Inappropriate identification of all co-authors
  - Conflict of interest
Indexation of CJIC

INDEXATION
The CJIC is indexed in the following databases

Scopus®
INTERNATIONAL
1.374 (2021-2022)
EBSCO
ESJI
ProQuest

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4. ERIC. ...
5. IEEE Xplore. ...
6. ScienceDirect. ...
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8. JSTOR.
Thank you for your attention