



APOG Resident Research Training Objectives and Requirements

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INTRODUCTION

The Royal College of Physicians and Surgeons of Canada (RCPSC) objectives of training and specialty requirements that pertain specifically to research highlight the need to be able to critically appraise sources of medical information, in order to appropriately integrate new information into clinical practice and to be able to contribute to or collaborate in the development of new knowledge in the field of Obstetrics and Gynaecology. Specifically, the resident will be required to be familiar with the development, execution, data analysis, interpretation and presentation of a research project by *active* participation in at least one research project during residency training, to understand the basic principles of basic and applied clinical research, especially epidemiology and biostatistics, and to be able to critically appraise and summarize the literature on a given subject, and judge whether a research project or publication is sound, ethical, unbiased and clinically valuable. CanMEDS requires that completion of these objectives in each residency programme be formally evaluated using *In-Training Evaluation Reports (ITERs)* and *Final In-Training Evaluation Reports (FITERs)*.

The goal of developing these APOG Resident Research Training Objectives was to standardize minimum resident research requirements in Canada. This document was developed through collaboration and consensus by all members of the APOG Research Committee and endorsed by the APOG Board of Directors November 25, 2005. The Royal College of Physicians and Surgeons of Canada Specialty Committee in Obstetrics and Gynaecology suggests that the APOG Guidelines be used as a reference for all programs. The guidelines describe research requirements expected of all residents successfully completing residency training programs in Canada. The achievement of Level I is the standard requirement by a resident, while Level II may be achieved by some residents with interests in clinical, basic science or population health research. Time lines during residency to complete the different requirements are outlined (Table 1).

RESEARCH ROADMAP:

All Residents should meet the skills outlined in the CanMEDS Project. Specifically, at the completion of the Residency programme, the Resident will be able to:

STEP 1 (Development of Research Hypothesis, Protocol and Ethics Submission)

- Pose a research question (clinical, basic, population health, educational)
- Develop a proposal (protocol) to solve the research question (conduct an appropriate literature search based on the research question, identify, consult and collaborate with the appropriate content experts to conduct research, and propose a methodological approach to solve the question)
- Submit for Research Ethics Board (REB) approval

STEP 2 (Carry out the research outlined in the study proposal)

- Collect the data
- Analyze the results

STEP 3 (Presentation, dissemination and further research)

- Defend and disseminate the results of the research (presentation of a completed study)

- Identify areas for further research that flow from the results

OBSTETRICS & GYNECOLOGY RESIDENCY RESEARCH REQUIREMENTS:

Level I (Standard to be attained by ALL graduating residents to be indicated on the FITER)

This represents the standard requirement for all Canadian Residents in Obstetrics & Gynaecology, individual departments may have GREATER expectations during the course of the Residency Programme.

It is expected that a copy of this document will be placed in each residents file and that the check boxes (“” or “”) will allow for ongoing objective confirmation that a resident has achieved a given requirement. This will also allow feedback to be given to each resident in terms of their progress; ITER. Copies of all supporting documents (i.e. Ethics submission, manuscript, abstracts, etc.) should be included in the residents file.

*Be able to demonstrate that *all of the following* (“”) are met.

- Understand the basic principles of epidemiology and biostatistics (Table II) and be able to apply them in evaluating journal articles (Table III and IV)
 - Includes participating/presenting at Departmental Journal Club
- To complete local/national research methodology course(s) (e.g. “APOG Introduction to Research Course” (<http://www.apog.ca/EN/home/programs/research.aspx>) during the Residency Program.
- Complete the Interagency Advisory Panel (Tri-Council Policy Statement, TCPS) on Research Ethics Tutorial and provide a copy of the “Certificate of Completion” for Resident records. (CIHR/NSERC/SSHRC: “...to promote the ethical conduct of research involving human subjects course in Research Ethics” (English and French) (<http://www.pre.ethics.gc.ca/english/index.cfm>))
- Research Project Requirement:
 - Develop a Research Hypothesis, Protocol and Ethics Submission
 - Carry out the Study (collect the data and analyze)
 - *The two parts to the research project are to enable a resident to potentially start and finish different research projects. (Figure 1)

Carry out and complete research project(s) as per the CanMEDS expectations (Standard requirements to meet).

- One retrospective study (i.e. chart review) **and** a case report (with review of the literature), or
- Two retrospective studies (different research questions), or
- One Prospective Study, or
- One meta-analysis of published data, or
- One basic science study, or
- One Randomized-Controlled Trial (RCT)
- Present at the Departments Annual Research Day *at least twice* during residency
 - May include presenting proposal/study outline or project in progress
 - At least one presentation would be a completed study

- Write up research findings for the research project(s) to the satisfaction of the research supervisor/post graduate education committee

Level II (superior level that can be attained by some residents to be indicated on the FITER).

This represents a superior level of research activity for Canadian Residents in Obstetrics & Gynecology).

*Be able to demonstrate that *all of the following* (“”) are met:
(As per Level I)

- Understand the basic principles of epidemiology and biostatistics (Table II) and be able to apply them in evaluating journal articles (Table III and IV)
 - Includes participating/presenting at Departmental Journal Club
- To complete local/national research methodology course(s) during the Residency Program.
- Complete a course in Research Ethics.
- Research Project Requirement:
 - Develop a Research Hypothesis, Protocol and Ethics Submission
 - Carry out the Study (collect the data and analyze)

Carry out and complete research project(s) as per the CanMEDS expectations (requirements to meet)

- Two retrospective studies (different research questions), or
- One Prospective Study, or
- One meta-analysis of published data, or
- One basic science study, or
- One Randomized-Controlled Trial (RCT)
- Present at the Departments Annual Research Day *at least twice* during residency
 - May include presenting proposal/study outline or project in progress
 - At least one presentation would be a completed study

And

- Present findings at National (e.g. SOGC, APOG) conference.
- Write up and submit (\pm publish) to a peer-reviewed journal
 - At least one piece of original research or one systematic review article

***The following are not requirements but should be noted on the ITER/FITER as *recognition of outstanding achievement in Research*.**

- Obtains and initiates a peer-reviewed grant-funded study.
- Presents findings at a peer-reviewed International conference.
- Award for Resident Research.
 - Local Obstetrics & Gynaecology Department adjudicated award for Research.

 - University, Provincial, National or International award for Research during residency that is adjudicated external to the Residents Department.

For the FITER (check those that apply):

- Completed all Obstetrics & Gynecology Research requirements
 - If student did not achieve all requirements as outlined, indicate any extenuating circumstances and recommendation of local Post Graduate or Research Committee.

- Level I or Level II
- Certificate of Completion of TCPS Research Ethics Tutorial
- Recognition of Outstanding Achievement in Research (as outlined).

Table 1. Time Lines during Residency (PGY1-5) to attain the different components:

- By the end of PGY1: Complete TCPS Research Ethics Tutorial and provide documentation for file.
- By the end of PGY2: Complete “Introduction to Research Course” or other acceptable research methodology course.
- By November of PGY2: identify a research mentor
- By December of PGY2: pose the research question in final format
- Annual Resident Research Day (PGY2 Year): have completed proposal outline and present at Resident Research Day for input/feedback.
- Mid PGY3: REB Submission
- By December PGY3: Start research study.
- End of PGY4: study completed.
- End of January PGY4 or PGY5: Abstract (Level II) for SOGC ACM
- By December PGY5: manuscript for Post Grad committee (Level I) or for submission to a journal (Level II)
- End of PGY5: understanding of epidemiology and biostatistics.

Table II: Things to know for *Basic Principles of Epidemiology and Biostatistics*
(compiled by Phil Hahn, 2004)

1. Study Designs (Pros and Cons)
 - RCT
 - Cohort
 - Case-Control
 - Crossover Trial
 - Systematic Reviews/metaanalysis
2. Epidemiology Terminology
 - Prospective vs. Retrospective
 - Incidence and prevalence
 - Intention-to-treat
 - Bias and confounding
 - Blinding
 - Randomization vs. Random Sampling
3. Risk Statistics
 - Relative risk vs. Odds ratio
 - Absolute (Attributable) Risk
 - Number Needed to Treat (NNT)
4. P values and Confidence Intervals
5. Sample Size
 - Power
 - Type I error (False positive rate)
 - Type II error (False negative rate)
6. Diagnostic Test Statistics
 - Sensitivity/Specificity
 - Positive/Negative predictive values
 - Association between predictive values and prevalence
7. Type of Data
 - Continuous (measured with an instrument or scale)
 - Nominal (counts)
 - Ordinal (nominal data with an implied order)
8. How to choose correct statistic
 - Type of data
 - Number of groups
 - Unpaired or paired
9. Parametric vs. nonparametric statistics
 - Parametric: continuous data that is normally distributed
 - Nonparametric: data that is not normally distributed / nominal data
10. T test and ANOVA (vs.) Fisher's exact test and chi square test
11. Basic concepts of adjustment problems
 - Confounding variables

Table III: Tools for reviewing the literature.

1. G.H.Guyatt, D.L.Sackett, D.J.Cook. Users' Guides to the Medical Literature. II. How to Use an Article About Therapy or Prevention. A. Are the Results of the Study Valid? JAMA, 1993;270:2596-2601.
2. G.H.Guyatt, D.L.Sackett, D.J.Cook. Users' Guides to the Medical Literature. II. How to Use an Article About Therapy or Prevention. B. What Were the Results and Will They Help Me in Caring for My Patients? JAMA, 1994;271:59-63.
3. D.Moher, K.F.Schulz, D.G.Altman. The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomised trials. Lancet, 2001;357:1191-1194.

Table IV:

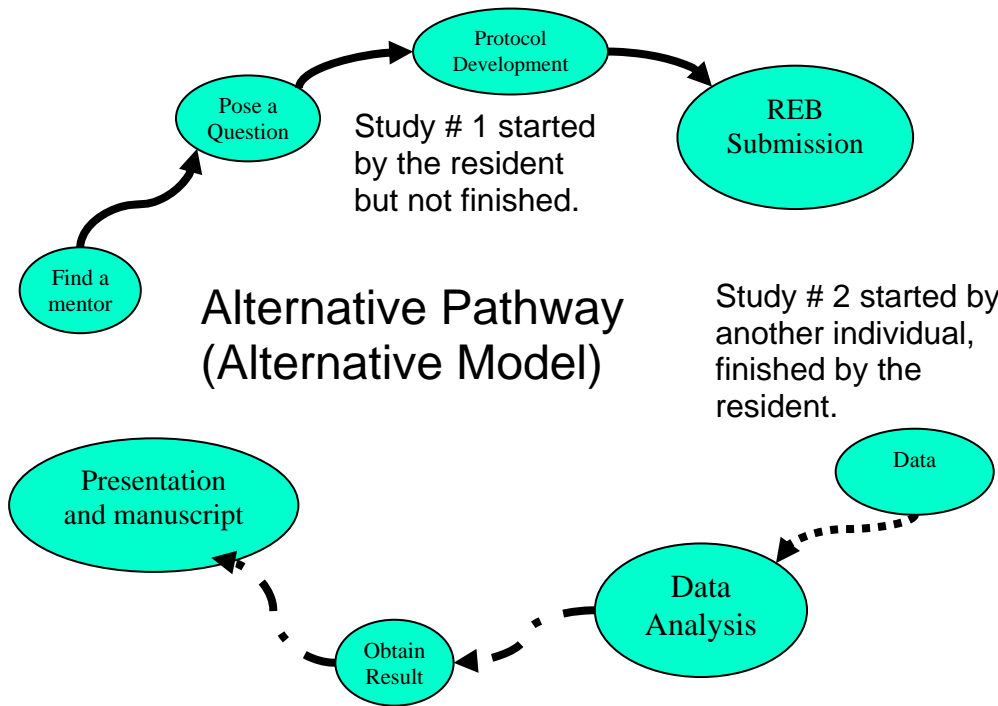
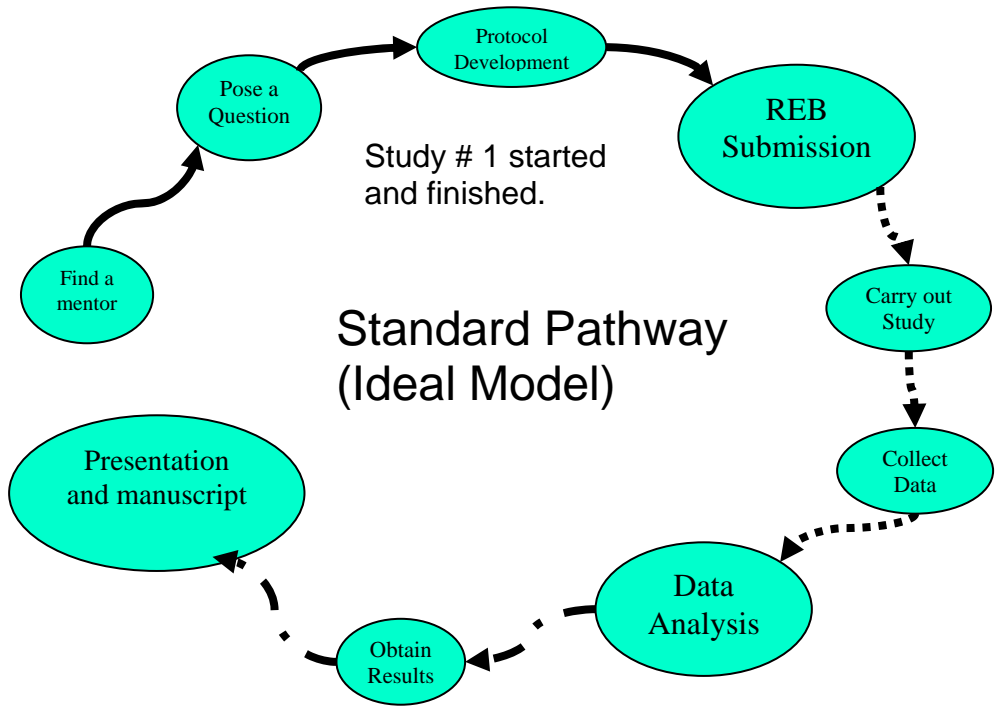
Recommended References:

1. D.Rennie, G.Guyatt. Users' Guides: Essentials of Evidence-Based Clinical Practice (Book + CD ROM). Published by the American Medical Association. ISBN 1579471919.
2. D.Rennie, G.Guyatt. Users' Guides: Manual for Evidence-Based Clinical Practice (Book + CD ROM). Published by the American Medical Association. ISBN 1579471749.
3. PDQ Statistics 3rd Edition, 2002, B.C.Decker Publishing. ISBN 1550092073.
4. PDQ Epidemiology 2nd Edition, 1999, B.C.Decker Publishing. ISBN 1550090771.

Recommended Websites:

1. Users' Guides Interactive Website (accessible to anyone whose University has a subscription to *JAMA* and/or *Archives* journals and for a limited time to individuals who purchased the Users' Guides textbook. <http://ugi.usersguides.org/UGI/default.asp>
2. Queen's University Department of Obstetrics & Gynecology Website (includes information on *Research for Residents*, *Research Education*, *Research Road Map for Residents*, *Introduction to Research Course*, *REB submission*, *Funding Process*, *Clinical Trial Registration* and *Funding Agencies*). <http://meds.queensu.ca/medicine/obgyn/index.htm>
3. APOG Introduction to Research Course information (dates, links). <http://www.apog.ca/English/Programandcourses/researchcourse.asp>
(contact Phil Hahn: hahnnp@post.queensu.ca)

Figure 1. The Standard Pathway and the Alternative Pathway of the Research Project.



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