Who are we looking for?

IDENTIFYING CHARACTERISTICS OF APPLICANTS TO ANESTHESIOLOGY PROGRAMS IN CANADA
Proposal prepared by

Sai Fai Bosco Law, MD (R1)
Greg Peachey, MD, FRCPC
Objective

- Present proposal for study to examine characteristics of applicants who match to anesthesia
- Facilitate discussion to refine methodology of proposed study
Outline

1. Background
2. Purpose of study
3. Methods
4. Analysis
5. Potential Limitations
6. Future Directions
Background
Residency Matching in Canada

- 3126 Medical School Graduates
- 1752 Prior Year Applicants

- 32 Disciplines
- 17 Medical Faculties
Residency Matching in Canada

3126 Medical School Graduates
1752 Prior Year Applicants

32 Disciplines
17 Medical Faculties
Residency Matching in Canada

1. Application submission
   - Centralised submission of portfolio

2. Program review of applications
   - Programs assess applications and offers interviews

3. Interviews
   - Programs reassess applicants

4. Rank Order List
   - Program ROL
   - Applicants ROL
Residency Matching in Canada

[Diagram showing the process of residency matching with applicants and programs filtering through a funnel to the residency match result.]

Applicants ROLs
Program ROLs
Residency Match

carms
Canadian Resident Matching Service
Residency Matching in Canada

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Evaluation of Applicants for Interviews

- Use of subjective and objective measures
- Information available to programs in standardised CaRMS application package
  - Medical School Transcripts
  - Personal letter
  - Letters of Reference
  - Medical Student Performance Record
  - Location and specialty of electives
  - Curriculum vitae
  - Personal statements
  - Publications
  - Research experience, work experience, extra-curricular experience
Residency Matching in Canada

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Anesthesiology In Canada
2014-2015 Match Statistics

- 2847 Canadian Medical Graduates
- 202 Applicants to Anesthesia
- 137 Anesthesia: First Choice Discipline
- 100 Matched Applicants
Applicants to Anesthesiology Residencies in Canada

- Applicants to Anesthesia
- Available Position
- 1st Choice Discipline
Anesthesiology In Canada

Percentage of Successful Applicants

2010 2011 2012 2013 2014
Evaluation of Applicants: US Experience

- Similar process: National Resident Matching Service
- Post-match program director survey (75 Anesthesiology PDs)
  - USMLE Step 1 scores
  - Required clerkship grades
  - USMLE Step 2 Clinical Knowledge scores
  - Grades in senior electives in specialty
  - Recommendation letters

- PDs value objective scores above other aspects of applications
Problems with Residency Matching in Canada

- Lack of objective measures in Canada
  - Pass/Fail Scoring System
  - No standardised examinations
- Lack of consistency and clarity in admission criteria
  - No standardisation in admission criteria
- Source of frustration
  - Program directors and evaluators
  - Graduating medical students
Goal of Study
Study Objective

Provide clarity and transparency to the selection process for Canadian postgraduate anesthesiology programs

- Comparing characteristics of those that match to anesthesiology with those who match to alternate specialties/ unmatched
  - Comparing characteristics of those who match to first choice anesthesiology programs to those who match to second or lower choice programs
Methodology
Study Design

- Retrospective case-control study

Primary Objective

- Applicants to at least one anesthesiology residency

Secondary Objective

- Applicants matching to anesthesiology programs
- Applicants not matching to anesthesiology residency
- Applicants matched to first choice residency program
- Applicants matched to second or lower choice program
Study Population

- Canadian Medical Graduates will are applying to at least one Canadian Anesthesiology Residency program in the 2015-2016 CaRMS cycle
Study Population

- Canadian Medical Graduates will are applying to at least one Canadian Anesthesiology Residency program in the 2015-2016 CaRMS cycle

- Sample population
  - Convenient sampling
  - Those applicants who apply to the McMaster University Anesthesiology residency program in 2015-2016 cycle
  - ~100 applications out of ~200 total Canadian applicants to anesthesiology programs
Study Population

- **Inclusion Criteria**
  - Graduated from a Canadian medical school
  - Applied to enroll in the CaRMS 2015-2016 first iteration match cycle
  - Submitted an application to the McMaster Anesthesiology residency program
  - Consented to participate in the study
  - Ability to communicate in English

- **Exclusion Criteria**
  - Withdrawal from CaRMS Match
  - Withdrawal from application to McMaster Anesthesiology Program
"Intervention"

- Selection factors to be examined:
  - Number of anesthesia electives
  - Quality of letters of reference
  - Quality of the personal statement
  - Interview scores
  - Number of peer-reviewed publications
  - Number of postgraduate research degrees
  - Number of issues identified on the Medical Student Performance Record (leaves of absence, formal remediation received, disciplinary action)
Outcomes

- **Main target outcome:**
  - Matching to a Canadian anesthesiology residency
- **Secondary target outcome**
  - Matching to the first choice anesthesiology program
Study Design

- Applicants contacted via email for consent to be contacted for the purposes of the study
- Data pertinent to selection factors extracted from file once consented
- Follow-up after CaRMS match occurs to identify:
  - Whether matched to Anesthesiology program
  - Whether matched to first choice program
Analysis
Statistical Considerations

- Multiple logistical regression on 7 variables
  - $p < 0.05$
  - Rank list of statistically significant variables determined by odds ratio
- No ad hoc sample size analysis
  - Power analysis post hoc
Potential Limitations
Sources for Bias

- Selection bias
  - Convenience sample
    - Applicants to McMaster may not be reflective of the study population
  - Group who do not consent
    - Less confidence with application (less likely to match)

- Reporting bias
  - Lost at follow up may be different than the general population
    - Those who do not match to an anesthesiology program may be more likely to not respond

- Observer bias
  - Scoring of subjective data according McMaster evaluation process
Ethical Considerations

- Residency matching stressful time for graduates
- Potential for perception of coercion
Proposed solutions:

- Ensure separation of study with admission process
- De-identification of personal information
Ethical Considerations

- Ensure separation of study with admission process
  - Principal investigators not involved in admission process (file review / interview)
  - Applicants ensured consent to study not affect standing with program
  - Applicants’ files not accessed for study purposes prior to conclusion of match
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Match Day

Consent

Follow-up Data extraction
Ethical Considerations

- De-identification of personal information
  - Files de-identified and tracked with only CARMS application number
  - Participants asked to identify themselves only via application number at follow up
  - List of email addresses and email correspondence for follow-up handled by research assistant not involved in data extraction
Future Directions
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- First step in delineating factors contributing to the success of applicants to anesthesiology residencies in Canada
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- Selection process surrogate for predictors of success in residency
  - Comparing admission characteristics of “successful” or “problematic” residents during training
Future Directions

- New methods of distinguishing applicants
  - Objective scores
  - Personality testing
  - Emotional intelligence measurement
Questions and Discussions