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RESEARCH

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Lessons learned in allergy and immunology training: a survey analysis

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Abstract

Background: There is currently little Canadian data to assess how well traditional time-based residency training programs have prepared residents for careers in Clinical Immunology and Allergy (CIA). This study aims to identify the perceived preparedness of residents in various areas of practice upon the completion of a Canadian CIA residency training program.

Methods: In the summer of 2020, an electronic survey was sent to 2018 and 2019 graduates of Canadian CIA training programs by the Canadian Society of Allergy and Clinical Immunology (CSACI).

Results: Former residents felt well prepared in most Medical Expert areas. Residents felt less prepared for the intrinsic roles of Leader, Communicator, Collaborator, Health Advocate, Scholar, and Professional. The majority of the intrinsic competencies were learned through mentorship and on the job after finishing training.

Conclusions: Upon completion of training, Canadian CIA residents felt well prepared for many competencies, particularly in Medical Expert areas. Training programs may wish to focus on various intrinsic competencies in order to better prepare residents for transition to practice. Academic half-day was not identified as a primary learning centre for intrinsic competencies, suggesting that new teaching strategies may be required.

Keywords: Allergy and immunology, Transition to practice, Competence by Design, Traditional time-based training, Preparedness

Background

Clinical Immunology and Allergy (CIA) is a Royal College subspecialty. Individuals can enter a residency in CIA after completing a residency in either Internal Medicine or Pediatrics. There is currently little Canadian data to assess how well traditional time-based training programs have prepared residents for careers in CIA. It is possible that some CanMEDS competencies have not been adequately addressed during training. The CanMEDS framework includes the roles Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Scholar, and Professional [1]. Achieving proficiency in all of these competencies is necessary for residents to successfully transition to practice as independent physicians.

It is anticipated that most residents have adequate training in the Medical Expert CanMEDS role, which is centred on applying medical knowledge and clinical skills [1]. However, it is less clear if residency programs are training residents as well in the intrinsic CanMEDS roles—Communicator, Collaborator, Leader, Health Advocate, Scholar, and Professional.

The Communicator and Collaborator roles involve communicating and working effectively with everyone involved in a patient's care [1]. The Leader role includes the integration of clinical and administrative responsibilities, whereas the Health Advocate role focuses on improving patient health within the community, and the Professional role emphasizes the

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importance of doing so ethically [1]. Finally, the Scholar role involves life-long learning [1].

There is concern that some traditional programs do not adequately prepare residents for complete transition to practice. A previous study has shown that American surgical residents feel inadequately trained for the intrinsic roles in areas such as finances, negotiation of contracts, grant application, billing and reimbursement, physician wellness, and running a practice [2]. Most Program Directors in this department also agreed that current residents were under-trained in business and practice management [3].

One current strategy to address teaching intrinsic competencies is through didactic Academic Half-Day teaching. Many Canadian CIA programs participate in a nation-wide Distributed Academic Half-Day, while other programs run their own Academic Half-Day curriculum. Residents may also learn intrinsic competencies through mentorship, community-based rotations, and hospital-based rotations, amongst other sources.

In an attempt to better address the needs of future physicians, the Royal College has undertaken a major change in residency training with the implementation of Competence By Design (CBD). All Royal College training programs are transitioning to CBD, with CIA projected to transition for the 2021–2022 academic year. Some of the key goals of CBD are to "identify the competencies needed at all stages of training and practice" and to "adjust learning to individual needs and abilities." [4].

In the CBD model, stages of competency are outlined, one of which is transition to practice. The entrustable professional activities (EPAs) identified in this stage include management of complex patients, as well as managing a practice [5]. It is expected that this focus on transition to practice will help residents feel prepared for careers in CIA.

This study aims to identify the perceived preparedness of residents in various areas of practice upon the completion of a traditional Canadian CIA training program. The feedback from recent graduates should help identify the strengths, weaknesses, and possible gaps in the current CIA training programs prior to implementation of CBD, and could inform Program Directors on how best to adapt their programs to meet the needs of future trainees.

Methods

A short electronic survey was distributed through Opinio. It was anonymous, 15 questions long, and involved checklist, multiple choice, and open-ended questions (Additional file 1: Appendix A). The survey was sent to 2018 and 2019 graduates of Canadian CIA residency programs distributed by the Canadian Society of Allergy and Clinical Immunology (CSACI). Questions were designed to assess how well prepared physicians felt for various areas of practice and included questions pertaining to the CanMEDS roles. Respondents were able to comment on specific weaknesses and knowledge gaps, and were asked to identify where they learned specific competencies. Program Directors were encouraged to share the survey with their former residents and several reminder emails were sent out in order to maximize the response rate. The survey was open for approximately 1 month and respondents were only able to answer once.

Results

There were 18 respondents to the survey out of a possible 45 respondents (40% response rate). Two thirds of the respondents completed an Adult CIA program and one third completed a Pediatric CIA program. Most respondents (55.6%) had 3–5 residents in their training program in their final year, 38.9% had 1–2 residents, and 5.6% had more than 5. Most respondents (77.8%) completed their training in 2019 and 22.2% completed their training in 2018. Of the respondents, 72.2% reported their gender to be female and 27.8% reported their gender to be male.

The data showed that 77.8% of respondents currently practice in a community-based clinic, 27.8% practice in a community hospital, 33.3% practice in an academic centre, 11.1% are continuing training, and 11.1% are practicing in another environment (ex. private clinic). Half of the respondents reported being in programs that participated in the Distributed Academic Half-Day program, 44.4% did not, and 5.6% were unsure.

Note that if respondents indicated that they did not treat a condition listed under the Medical Expert role (ex. treating autoinflammatory disease), or did not require a specific intrinsic competency in their practice (ex. setting up a research lab), they were excluded from data surrounding that competency.

Medical expert

Most former residents felt well prepared to treat allergic rhinitis (94.4%), urticaria/angioedema (94.4%), venom allergies (77.8%), drug allergies (77.8%), asthma (61.1%), mast cell disorders (58.8%), eosinophilic disorders (55.6%), and atropic dermatitis (55.6%). Most graduates felt somewhat or not prepared to treat autoimmune diseases (94.1%), autoinflammatory disorders (88.2%), and inborn errors of immunity (72.2%) (Fig. 1).

Intrinsic competencies

Most former residents felt well prepared to obtain licensing (52.9%). Former residents felt somewhat or not prepared for the remaining competencies pertaining to

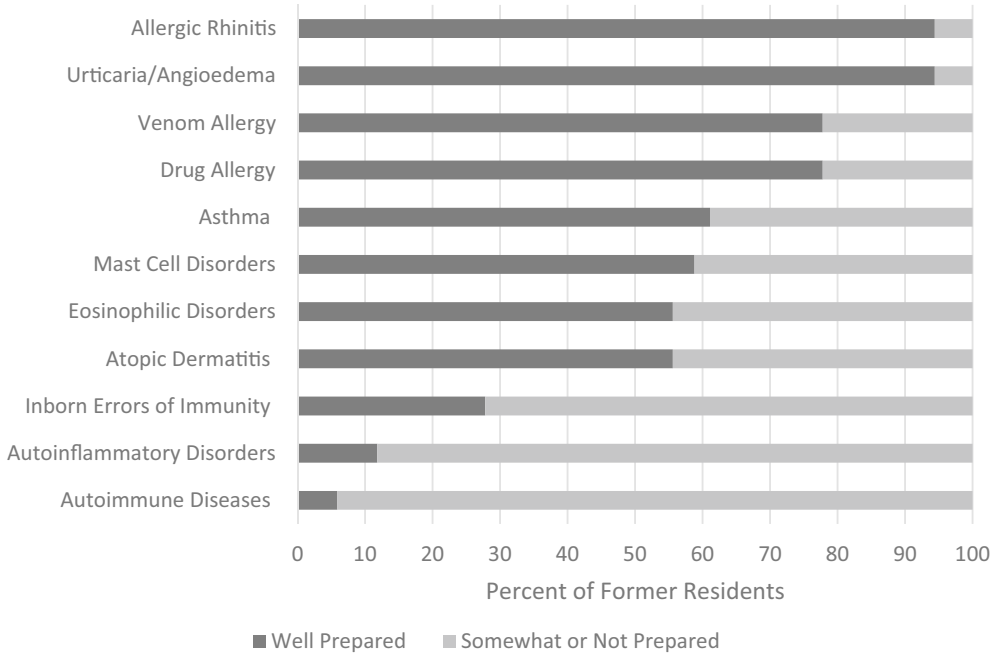

Fig. 1 Perceived preparedness of 2018 and 2019 Canadian CIA graduates for various aspects of the Medical Expert role

establishing and managing practice, such as hiring office staff, setting up a research lab, and providing virtual care. Seven former residents did not set up a research lab, five did not hire office staff, four did not obtain hospital privileges, and four did not obtain faculty appointment (Fig. 2).

In a select-all-that-apply question, respondents indicated where they learned specific intrinsic competencies. Former residents indicated that they learned 13 competencies primarily on the job after finishing the program, 5 procedures primarily or equally through mentorship, and 1 through another source. Community rotations, hospital rotations, and academic half-day were not indicated as primary learning centres. However, residents indicated that community rotations were helpful in a written response question. Former

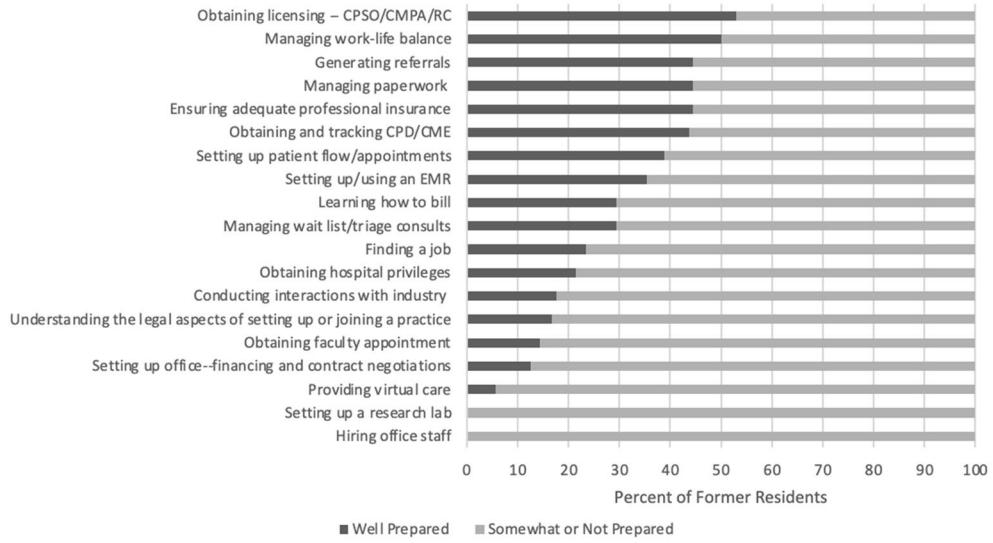

Fig. 2 Perceived preparedness of 2018 and 2019 Canadian CIA graduates for various aspects of intrinsic roles

residents indicated being surprised about "the effort and time needed to generate a strong referral base" and suggested program teaching have a greater focus on the administrative aspects of practice in order to improve training.

Discussion

Our study showed that Canadian CIA recent graduates felt well prepared for many Medical Expert competencies. Areas where residents felt particularly well prepared (over 70% respondents indicating well prepared) included managing allergic rhinitis, urticaria/angioedema, venom allergies, and drug allergies. Areas where residents felt less prepared (over 70% somewhat or not prepared) included managing autoinflammatory disorders, autoimmune diseases, and inborn errors of immunity. This suggests that the Immunology component of CIA programs may need to be amplified, which may be centre dependent.

Overall, residents felt less prepared for intrinsic competencies. No intrinsic competencies had over 70% of respondents feeling well prepared. Areas where residents felt the most unprepared (over 85% somewhat or not prepared) included hiring office staff, setting up a research lab, providing virtual care, setting up office, and obtaining faculty appointment. Programs may wish to provide learning experiences that better meet these competencies, such as an office management rotation, a project with a non-for-profit organization, or more community rotations.

Former residents stated that they learned the majority of the intrinsic competencies on the job after finishing training and through mentorship. Residents indicated that they were least likely to learn intrinsic competencies through Academic Half-Day, indicating didactic sessions may not be the best way to teach these competencies. Allowing residents to practice these skills and integrate them into their own practice style may be more beneficial.

There were some areas that several (3 or more) residents indicated that they did not participate in. These areas included hiring office staff, obtaining hospital privileges, obtaining faculty appointment, and setting up a research lab. However, more residents (61%) set up a research lab than expected. This high percentage may indicate that CIA is a field that lends itself to doing lab research and that the training programs may be accepting residents who are predisposed to doing research and/or are preparing and encouraging them to do research. It may also reflect that residents that went on to do research may have been more likely to answer our survey rather than ones who did not. Further study into which intrinsic roles recent graduates find most useful in the first years of practice may help training programs prioritize which areas to focus on during training.

Limitations to the study include the 40% response rate. One possible contributing factor was that this survey was distributed during the COVID-19 pandemic. During this time, physicians were inundated with many emails and surveys which may have affected their willingness to respond to our survey. As in all survey studies, it is possible that respondents were not reflective of the full group. Another potential limitation was that no data was collected regarding the location of the training programs of the respondents. This was done to ensure the anonymity of the respondents was maintained, as many of the training programs are small.

Future research could look at formulating a Transition to Practice (TTP) rotation, such as has been created by Dalhousie University [6]. It may be beneficial for faculty to participate in more Continuing Professional Development (CPD) activities in relation to intrinsic roles. This participation may lead to increased faculty comfort in these areas and thus a better integration of intrinsic role teaching in various formats. This study also provides a baseline for future research to assess the impact of CBD implementation on preparedness for practice in these areas.

Finally, although this study was specific to CIA we feel the survey format used may also be of benefit in other specialties that are largely outpatient/community focused.

Conclusions

Current traditional time-based Canadian CIA training programs are preparing residents for most Medical Expert competencies. Conversely, more focus should be put onto teaching intrinsic competencies during training in order to better prepare residents for transition to practice. Specifically, integration of intrinsic competencies could be useful in informal settings such as a TTP rotation.

Abbreviations

CBD: Competence By Design; CIA: Clinical Immunology and Allergy; CPD: Continuing Professional Development; CSACI: Canadian Society of Allergy and Clinical Immunology; EPA: Entrustable Professional Activity; TTP: Transition to practice.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s13223-022-00649-3.

Additional file 1. Appendix.

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Authors' contributions
All authors were involved in the preparation and analysis of the survey. CC was the major contributor in writing the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials
All data generated or analysed during this study are included in this published article.

Declarations

Ethics approval and consent to participate
Ethics approval was waived due to the nature of the study: a quality assurance questionnaire.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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Appendices

Appendix A

Transition to Practice: Lessons Learned in Allergy and Immunology Training

Now that you have completed your allergy training, we would like to know how prepared you felt to practice in Allergy / Immunology.

Which program did you complete?

Adult Clinical Immunology and Allergy

Pediatric Clinical Immunology and Allergy

How many residents were there in your training program in your final year?

1-2

3-5

More than 5

When did you complete your training?

2018

2019

What is your gender?

Male

Female

Gender diverse

Prefer not to say

What type of practice are you currently working in? Check all that apply.

Community-based clinic

Community hospital

Academic Centre

Research

Continuing training

Not working

Other

Was your training program part of the Distributed Academic Half-Day program?

Yes

No

Unsure

How well prepared do you feel you were for managing the following clinical areas:

Clinical Area	Not prepared	Somewhat Prepared	Well prepared	I don't treat this
Allergic Rhinitis				
Asthma				
Urticaria/Angioedema				
Atopic dermatitis				
Eosinophilic disorders				
Mast cell disorders				
Drug allergy				
Venom allergy				
Inborn errors of immunity				
Autoimmune diseases				
Autoinflammatory disorders				

If there is any other clinical area that is pertinent to you, please insert and describe your readiness for it here.

How well prepared do you feel you were for the following procedures:

Procedure	Not prepared	Somewhat Prepared	Well prepared	I don't do this procedure
Setting up office – financing and contract negotiations				
Finding a job				
Hiring office staff				
Obtaining hospital privileges				
Obtaining faculty appointment				
Setting up a research lab				
Obtaining licensing – CPSO/CMPA/RC				
Obtaining and tracking CPD/CME				
Understanding the legal aspects of setting up or joining a practice				

Setting up / using an EMR				
Setting up patient flow/ appointments				
Managing wait list/ triage consults				
Learning how to bill				
Conducting interactions with industry				
Managing paperwork				
Managing work-life balance				
Ensuring adequate professional insurance				
Providing virtual care				
Generating Referrals				

If there is any other procedure that is pertinent to you, please insert and describe your readiness for it here.

Where did you learn each procedure? Check all that apply.

Procedure	Mentorship	Hospital rotations	Community Rotations	Academic half-day	On the job after finishing the program	Other
Setting up office – financing and contract negotiations						
Finding a job						
Hiring office staff						
Obtaining hospital privileges						
Obtaining faculty appointment						
Setting up a research lab						
Obtaining licensing – CPSO/CMPA/RC						

Obtaining and tracking CPD/CME						
Understanding the legal aspects of setting up or joining a practice						
Setting up / using an EMR						
Setting up patient flow/ appointments						
Managing wait list/ triage consults						
Learning how to bill						
Conducting interactions with industry						
Managing paperwork						
Managing work-life balance						

Ensuring adequate professional insurance						
Providing virtual care						
Generating Referrals						

If there is any other procedure that is pertinent to you, please insert and describe where you learned it here.

Is there anything during your training that you felt particularly helped prepare you for practice?

Is there anything that surprised you about starting practice?

Is there anything that you feel could have improved your training?