

## Position Statement on Resident Wellness

Ahmed Taher, MD\*†; Skye Crawford, MD‡; Josh Kocerginski, MD†‡; Niran Argintaru, MD\*†; Roxane Beaumont-Boileau, MD†§; Alexander Hart, MD\*†; Blair Bigham, MD, MSc†¶

### INTRODUCTION

Resident wellness has gained substantial awareness in recent years as an important dimension of residency training. A national resident survey completed in Canada in 2013 by the Resident Doctors of Canada (RDoC) found a significant physical and psychosocial burden due to residency training.<sup>1</sup> Emergency medicine residency programs encounter several unique wellness challenges that are distinct from other training programs. The Royal College of Physicians and Surgeons of Canada (RCPC) and the College of Family Physicians of Canada (CFPC) accreditation standards currently govern emergency medicine residency programs.<sup>2,3</sup> These institutions outline academic accreditation standards and delineate resident wellness standards that require attention.

The Canadian Association of Emergency Physicians (CAEP) Resident Section represents emergency medicine trainees across Canada. This CAEP Resident Section Position Statement serves as a foundation to discuss wellness challenges that affect emergency medicine resident physicians. It is to serve as a guide for emergency medicine residency programs to ensure resident wellness is approached in a sustainable, holistic, and evidence based manner beyond the minimum accreditation standards.

In this position statement, we highlight the high prevalence of burnout among emergency medicine resident physicians, and discuss the negative ramifications of burnout on the personal, professional, and psychosocial well being of resident physicians. We discuss a number of strategies that will enable emergency resident physicians and training programs to prevent and address symptoms of burnout. Next, we emphasize the importance of

resiliency training as a core component of the emergency medicine residency curriculum as well as the imperative for timely, appropriate, and confidential access to support services. We also outline the integral steps to building healthy physical and psychosocial work and training environments. Finally, we examine the emergency resident physician transition to practice and suggest sustainable models for growth and wellness.

There is increasing evidence of the toll of emergency residency on resident wellness. The following sections discuss different aspects of training that may mitigate these negative effects. Emergency residency curricular design and training oversight involves a multitude of stakeholders including residents, faculty, programs, governing bodies, hospitals, etc. A working group of stakeholders should review the evidence in light of our recommendations and set a national strategy for curricular incorporation of wellness. Moreover, this is especially salient in the time that residency programs transition into competency by design (CBD) curriculums.

### SECTION 1: THE TOLL OF EMERGENCY MEDICINE RESIDENCY. A PRIMER ON BURNOUT AND ITS DELETERIOUS EFFECTS

#### Background

Burnout consists of three dimensions: Emotional exhaustion, reduced sense of personal accomplishment, and depersonalization.<sup>4</sup> Other terms frequently used to describe burnout include cynicism, frustration, and lack of motivation.<sup>5</sup> It has gained substantial attention in the media and among residency programs over the last several years;

From the \*Division of Emergency Medicine, University of Toronto, Toronto, ON; †Canadian Association of Emergency Physicians, Ottawa, ON; ‡Department of Emergency Medicine, University of British Columbia, Vancouver, BC; §Département de médecine familiale et de médecine d'urgence, Université Laval, Quebec City, QC; and the ¶Division of Emergency Medicine, McMaster University, Hamilton, ON.

**Correspondence to:** Dr. Ahmed Taher, Division of Emergency Medicine, University of Toronto, Toronto, ON M5G 2C4; Email: ahmed.taher@mail.utoronto.ca

© Canadian Association of Emergency Physicians

CJEM 2018:1–14

DOI 10.1017/cem.2018.8



CAEP | ACMU

CJEM • JCMU

2018;0(0) 1

hundreds of papers on burnout have been published. Although burnout is not listed as a mental disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), it has been recognized as a 'state of vital exhaustion' in the World Health Organization International Classification of Diseases (ICD-10).<sup>6,7</sup>

### **Prevalence**

Burnout is prevalent among emergency medicine resident physicians and ample evidence supports that burnout negatively impacts the psychological, physical, and professional wellbeing of resident physicians. In RDoC's 2013 survey, more than eight out of ten respondents said work related fatigue impacted their physical health, and relationships.<sup>8</sup> Resident physicians encounter suffering and death daily. They are expected to perform complex functions at a high level, over long work hours, and in under-resourced settings. Burnout is especially relevant to emergency medicine resident physicians because of the particularly high acuity, heavy workload, and challenging patient populations.

Several studies have documented increased burnout rates in resident physicians.<sup>9,10</sup> A study by Martini et al. comparing different medical specialties found resident physicians to have an overall burnout rate of 50%, ranging from 27% for those in family practice, to 75% for those in obstetrics and gynecology.<sup>10</sup> A national survey of 1,701 U.S. resident physicians and fellows found them to have a mean burnout score of 50% compared to an employed population control group at 29.9%. Resident physicians were more likely to screen positive for depression, have higher levels of fatigue, and have lower quality of life scores.<sup>11</sup>

Increased burnout rates have also been documented in emergency medicine resident physicians.<sup>11,12</sup> A study published in 2014 by Kimo et al. assessed 218 emergency medicine residents working in eight U.S. training programs, and found them to have an extremely high overall burnout rate of 65%. Furthermore, 33% had high degrees of emotional exhaustion, 59% had high degrees of depersonalization, and 59% had a low sense of personal accomplishment.<sup>12</sup> A qualitative literature review on emergency staff physicians by Bragard et al. indicated moderate to high levels of burnout.<sup>13</sup> Moreover, emergency staff physicians in Turkey were found to score 71% on emotional exhaustion, 78% on depersonalization, and 28% on personal accomplishment.<sup>14</sup>

### **Factors Correlated With Burnout**

Many studies have attempted to explain what causes burnout in resident physicians, sometimes with inconsistent results.<sup>8</sup> Predictors of burnout can be categorized as either occupational factors related to the work environment or individual factors related to demographics and personality.

Occupational factors correlated with burnout include longer work hours as well as a quantitative work overload.<sup>15,16</sup> Workplace influences also include stressful relationships with supervisors, lack of timely feedback, and inadequate autonomy.<sup>16-18</sup>

Although less influential than occupational factors, individual factors play a role in burnout. For example, resident physicians with a high educational debt are more likely to experience burnout.<sup>9</sup> Furthermore, significant associations exist between burnout and degree of neuroticism, emotional exhaustion, a disorganized personality style.<sup>17,18</sup>

Protective factors that are negatively associated with burnout included satisfaction with balance between personal and professional life, relationship stability, and satisfaction with career life.<sup>16</sup> It is likely that social support, resilience, and effective coping mechanisms buffer resident physicians from burnout, but more research needs to be done to strengthen these associations. Ultimately, burnout is a complex phenomenon influenced by many known and unknown factors. It is an important experience that negatively affects emergency medicine resident physicians and patient care. It is therefore deserving of increased attention.

### **Negative Results of Burnout**

Multiple studies have documented detrimental effects of burnout on psychological, physical, and professional wellbeing. Burnout is associated with higher rates of depression, suicidal ideation, and substance abuse.<sup>19-23</sup> In one study, the prevalence of suicidal ideation among resident physicians was found to be 12% versus 20.5% in those who were experiencing burnout.<sup>21</sup> Moreover, a systematic review published in 2015 found resident physician depression rates to be as high as 43%.<sup>24</sup> Physical symptoms that have been linked to burnout include headaches, gastrointestinal upset, and insomnia.<sup>25</sup> Moreover, there are several potential mechanisms linking burnout with poor health including metabolic syndrome, sympathetic system activation, systemic inflammation, and poor health

behaviours.<sup>26</sup> In addition, resident physician burnout has been correlated with self-reported suboptimal patient care practice, greater self-reported clinical errors, and difficulty concentrating at work.<sup>17,27-29</sup> RDoC's 2013 survey found that 83% of resident physicians felt that work-related fatigue had an impact on their physical health, 80% on their relationships with family, 76% on their relationships with friends, and 70% felt that work-related fatigue had a negative impact on their mental health.<sup>1</sup>

### **Comparison to Other High Stake Professions**

Most existing research on burnout has focused on people-oriented professions such as teachers, social workers, mental health workers, nurses, medical students, residents and staff physicians. It is believed that occupations that address other's physical, psychological, intellectual, or emotional well-being lead to higher rates of workplace burnout.<sup>11,30,31</sup> Cordes and Dougherty presented a conceptual framework stating that 'high burnout' jobs are those with a high frequency of interactions, and the need to control emotions while interacting with the public.<sup>32</sup> While these workplace demands in people-oriented professions have been linked to burnout, this psychological construct was also demonstrated in other high stake professions including police officers, military workers, firefighters, and pilots.<sup>33-37</sup> For example, in a study assessing burnout among pilots, 32% were identified as having high levels of burnout, 52.8% had high exhaustion levels, and 72.5% exhibited high cynicism levels.<sup>37</sup>

### **Recommendations**

Given the increasing evidence of the toll of emergency residency on resident wellness, we recommend that:

1. A working group to be formed with all relevant stakeholders to address a national strategy for wellness curriculum design and implementation.

## **SECTION 2: RESILIENCY TRAINING. THE KEYS TO SUCCESS**

### **Background**

The prevalent nature of burnout among emergency resident physicians necessitates tangible actions to prevent and mitigate the negative implications. One principle method to combat burnout is to develop a system that

supports resiliency training and the development of resiliency skills. Resiliency is defined as "the ability to recover quickly, resist, and possibly even thrive in the face of direct/indirect traumatic events and adverse situations".<sup>38</sup> Over 28,000 Canadian Forces members have undergone resiliency training, resulting in reduced negative mental health effects.<sup>39</sup> Several dimensions of resiliency have also been delineated such as self-efficacy, self-control, ability to engage support and help, ability to learn from difficult situations, and persistence despite barriers to progress.<sup>40</sup>

### **Resiliency Curriculum**

Resiliency training is a skill that needs to be nurtured, practiced and modeled. Several studies have demonstrated promising effects of introducing resiliency training at different points during the training and career continuum. One study assessed the effects of a Stress Management and Resiliency Training program among staff physicians at a tertiary care medical center. It showed significant improvement in resiliency, perceived stress, anxiety, and overall quality of life at eight weeks using several validated scales.<sup>41</sup> Another study demonstrated junior resident physicians showing benefit to similar resiliency training programs.<sup>42</sup>

In response to the identified need for a structured resiliency training for resident physicians, RDoC partnered with the Canadian Forces and the Mental Health Commission of Canada to create a 3-pronged "Resiliency Curriculum" for resident physicians.<sup>43</sup> This training compliments current existing university post-graduate wellness programs as well as interventional services like counseling and psychotherapy. More importantly, it fulfills CanMEDS key competencies that ask residents to "demonstrate a commitment to physician health and well-being".<sup>44</sup>

The first prong of the RDoC Resiliency Curriculum is the mental health continuum; a sliding scale that recognizes the impacts of stress on a resident physician's life is constantly in flux. The continuum describes physical and emotional symptoms of stress from thriving functions ranging from low stress in a "green zone" to severe, debilitating functions with high stress levels in the "red zone." Resident physicians can be taught to self-monitor the impact of stress on their physical and emotional wellness and take actions depending on where they place themselves on the continuum. Such actions include saying no to new commitments, taking breaks, prioritizing rest and nutrition, reaching out to

friends, accessing mental health resources, taking formal time off, and seeking emergency care.

The second prong involves four practical Cognitive Behavior Therapy tools for building resiliency. The tools are:

- **Tactical breathing:** slow and deep breathing that stimulates parasympathetic mechanisms to improve focus on tasks.
- **Goal setting:** organizes overwhelming workloads into defined, manageable tasks.
- **Visualization:** allows residents to mentally rehearse complex tasks such as surgery or resuscitation, and has been shown to improve surgical performance.<sup>45</sup>
- **Positive self-talk:** encourages residents to challenge cognitive distortions, such as “catastrophizing” and “overgeneralizing” when their performance is poor.

The third prong involves focus and attention control training, where residents are taught about stress and performance, vigilance fatigue, and tunnel vision. These elements enable residents to identify key moments that require self-evaluation, to reset before higher stress levels, negative thoughts, and emotions affect well-being and performance.

Resiliency training prepares professionals at all career stages to better respond to stress, reduce burnout, and improve performance. Such training can be utilized to combat burnout among emergency medicine residents. The RDoC curriculum is one example of a preformed curriculum that may be utilized. However, a national working group with a multitude of stakeholders should explore the different options available for emergency residents.

### **Recommendations**

Given the negative effects of burnout on emergency resident physicians and the importance of resiliency training, we recommend that emergency programs:

2. Create a formal wellness curriculum as part of the emergency medicine residency program.
3. Adopt resiliency training such as the RDoC Resiliency Curriculum, as part of the formal wellness curriculum.
4. Empower resident physicians to champion resiliency training by identifying a resident wellness position and create incentives for resident physicians to champion these efforts.

## **SECTION 3: WHEN RESILIENCY ISN'T ENOUGH: ACCESS TO SUPPORT**

### **Background**

While emergency medicine residency programs can empower resident physicians through resiliency training, efforts must also be directed towards timely access to various types of supports. These supports include extensive preventative resources as well as timely and appropriate access to resources for resident physicians in crisis. Emergency medicine residency programs should recognize the unique challenges faced by emergency medicine trainees in crisis situations. Access to hospital, university and community-based resources should be readily available through a clearly available internal system to assist residents in crisis. Moreover, emergency medicine faculty and educators should become familiar with these challenges and how to assist resident physicians facing them.

The unique implications of emergency medicine work on resident wellness include a variety of factors highlighted previously.<sup>15-18</sup> Factors also include shift work, particularly with junior resident physicians adjusting to irregular scheduling,<sup>46-48</sup> acute care medicine, lack of patient follow-up, poor patient outcomes, personal safety concerns, and lack of consistent supervision. While many of these challenges can be addressed in wellness programming, crisis situations are of special concern.

### **Support Resources**

The CFPC and the RCPSC accreditation standards mandate that residency programs establish and maintain mechanisms for resident physicians to access services to manage stress and similar issues.<sup>2</sup> Emergency medicine residency programs must ensure that resident physicians are aware of these available services and how to access them. This may include resources offered through the university, postgraduate office, local hospitals and government resources.<sup>49</sup> Programs should ensure that resident physicians also have access to online and up to date wellness and stress-management resources. Programs should strive to facilitate resident access to these resources in addition to creating their own resources including: local university or community health center contacts for primary medical and mental health care, crisis lines for mental health, assistance for finding a family doctor, and post-graduate office resources for counseling. The CAEP

Resident Section has published an online resource database that includes resources by training program, as well as online regional and national resources.<sup>50</sup> This may be used as a starting point for emergency medicine residency programs.

### **Resident Physician Advocate**

Emergency medicine residency programs should identify a faculty member who will act as a resident physician advocate within the program. This should be a staff physician involved with the program who is able to offer resident physicians in crisis advice, resources, confidential support as well as advocate for them. A similar program has been initiated in multiple universities and academic centres.<sup>51,52</sup> The resident physician advocate should be a staff physician not directly involved with resident physician advancement to avoid conflicts of interest. This process is to supplement a clearly defined strategy of bringing resident concerns to program leadership.

### **Confidentiality**

All resources and supports should be offered in a confidential manner without impact on resident physician education, standing in the program or future employment. Emergency medicine residency programs should take all steps possible to avoid conflicts of interests in regards to resident physicians in crisis in order to facilitate resident physicians in crisis to seek help from the program. There is an understanding that patient safety reporting requirements may limit confidentiality as in the case of impaired physicians. These requirements include all physicians including resident physicians. Residents should understand patient safety reporting requirements that may limit confidentiality as in the case of impaired physicians.

### **Time Off**

Emergency medicine residency programs should maintain a clear policy on time off taken for personal reasons for resident physicians in crisis. This policy should include procedures for making-up time lost, remediation and missed educational opportunities. Emergency medicine residency programs must abide by provincial collective bargaining agreements as they relate to sick-leave, scheduling guidelines and access to supports.

### **Recommendations**

Given the importance of access to wellness supports, we recommend that emergency medicine residency programs:

5. Provide faculty development for faculty involved in educational activities that allow faculty to promote and support resident wellness including support for residents in crisis.
6. Establish and maintain mechanisms for resident physicians to access services to manage stress and similar issues.<sup>2</sup>
7. Make emergency resident physicians aware of the available wellness and support services. These may include local university, community health centre contacts for primary medical and mental health care, crisis lines for mental health, assistance in obtaining a family physician, post-graduate office resources for counseling, online resources for wellness and stress management, and the CAEP Resident Section Wellness Resources list.<sup>33</sup>
8. Clearly identify mechanisms by which residents can bring forward their concerns to program leadership.
9. Identify a faculty member who will act as a resident physician advocate within the emergency medicine program.
10. Ensure that wellness and crisis resources and supports are offered in a confidential manner without impact on resident physician education, standing in the program or future employment, and educate residents on mandatory reporting requirements.
11. Maintain a policy on time off for personal reasons and resident physicians in crisis that is inline with provincial collective bargaining agreements on sick leave.

## **SECTION 4: BUILDING HEALTHY WORK ENVIRONMENTS. A STRONG FOUNDATION FOR EMERGENCY MEDICINE RESIDENT WELLNESS**

### **Background**

The prevention of burnout coupled with access to resources for residents experiencing stress or crisis is part of a larger approach to emergency medicine resident

wellness that is dedicated to building healthy work environments. Building these healthy work environments is a multifaceted approach involving multiple stakeholders. Resident physicians are students, hospital employees, and work under provincial collective agreements. Their experiences are subject to national post-graduate accreditation standards, local university policies, and hospital policies, which are informed by research and advocacy through resident and staff physician groups. We take a holistic approach to building healthy environments by engaging stakeholders to optimize the resident physician experience by recognizing both physical and psychosocial environments.

### **Healthy Physical Environments**

#### **Fatigue Management**

Resident physician fatigue has received much attention in recent years primarily through research on duty hours. Emergency medicine training has two different experiential dimensions with regards to duty hours. The first being off service non-emergency medicine rotations, which are amenable to much of the duty hour discourse. The second is emergency medicine rotations, where the target of conversations has been regulating shift work.

**Duty hours** have been a contentious topic with much focus over the years. The landmark report “To Err is Human”<sup>53</sup> highlighted fatigue as a significant source of medical errors. A wide body of literature has supported this notion for a multitude of cognitive and task related errors across specialties with patient safety concerns at the forefront.<sup>54-64</sup> Long duty hours and sleep deprivation have been implicated in being detrimental to learning ability.<sup>65-69</sup> Long duty hours have also been implicated in a variety of resident physician wellness concerns including percutaneous injury or exposure to body fluids,<sup>70,71</sup> increased motor vehicle crashes,<sup>72,73</sup> increased alcohol and medication intake,<sup>74</sup> as well as mood disorders, and interference with relationships.<sup>60,75</sup>

Canadian resident physician duty hours are defined by negotiated contracts between eight Provincial House-staff Organizations (PHOs)<sup>76,77</sup> and several provincial stakeholders including ministries of health, universities, and academic hospitals.<sup>78</sup> There is no federal regulation and the accreditation bodies, the RCPSC, the CFPC, and Collège des médecins du Québec do not mandate or enforce specific limits. However, due to the increased body of work on resident physician wellness, there have been advances in

duty hour restrictions through multiple national advocacy initiatives including RDoC,<sup>79</sup> The National Steering Committee on Resident Duty Hours<sup>80</sup> and the Canadian Medical Association.<sup>81</sup> Recommendations of these three reports are found in Appendix 1. Currently, provincial restrictions are placed on consecutive hours of work as well as the frequency of call.<sup>78</sup> An optimum number of maximum hours is still unclear after different limitation strategies.<sup>82,83</sup> A major focus of Canadian advocacy positions has been a call for innovative and flexible approaches to duty hours, and more importantly to educate and provide fatigue management resources for residents. Large and commendable strides have been taken to improve duty hours and stakeholders should remain engaged as new evidence arises.

#### **Recommendations**

Given the continued national efforts in defining optimal duty hours, we recommend that emergency medicine residency programs:

12. Continue engaging provincial and national efforts to define optimal duty hours with a stronger focus on its implications on resident physician wellness.
13. Define a fatigue management section as part of the formal wellness curriculum.
14. Provide access to fatigue management resources, counseling and support.
15. Ensure access to safe alternatives to driving after night shift or long duty hours such as a place to rest onsite, or access to public transportation or taxi compensation.

**Shift work** constitutes the majority of emergency medicine residency program rotations. Shift work has inherent deleterious health effects. It is associated with metabolic syndrome,<sup>84,85</sup> work accidents, social relationship strife, colitis, depression, anxiety<sup>86</sup> and colorectal cancer risk.<sup>87</sup> It has also been associated with an increase of 40% in cardiovascular risk including coronary and cerebrovascular events.<sup>88,89</sup> A Canadian study has also found its relation to psychosomatic health problems including headaches, upset stomach, and difficulty falling asleep.<sup>90</sup> More recently there is now a well defined but under-recognized ‘Shift Work Disorder’ with various public health implications.<sup>91,92</sup>

Emergency resident physicians should receive training to mitigate the health repercussions of short and long-term shift work. These include sleep, nutrition

and exercise strategies, as well as effective coping strategies, and the deleterious effects of drugs and alcohol. The negative health and psychosocial effects of shift work should be addressed in the emergency medicine resident curriculum beyond the global “work life balance” adage. Moreover, autonomy should be given to residents where available as it pertains to self-scheduling and shift trades. Increased autonomy and flexibility around scheduling may empower residents and contribute to their wellness planning and activities. Finally, different shift work models such as ones including “casino shifts” may be explored.

### *Recommendations*

Given the inherent health risks of shift work, we recommend that emergency medicine residency programs:

16. Instruct resident physicians on the principles of proper shiftwork structure, and adapting a healthy lifestyle associated with shift work as part of a formal wellness curriculum.
17. Permit residents to self-schedule emergency shifts where possible. If programs are scheduling residents, they should adhere to best practices for scheduling shift workers including ample notice, and flexibility of shift trades.

### *Hazard Management*

Physical hazards that resident physicians may encounter during their training and emergency medicine residency program responsibilities towards them are clearly defined in the RCPSC and CFPC Standards<sup>2,3</sup> found in Appendix 2. Our recommendations fall under two categories that are inline with the accreditation standards.

**Patient aggressive behavior** is an inadvertent hazard that is part in parcel of any emergency department, and in some circumstances it is directed towards trainees.<sup>93-95</sup> This behavior may arise from intoxicated and drug overdose patients, delirious patients, and patients with acute psychosis. It is an area that has been highlighted by resident physicians as an important concern<sup>96</sup> with perceptions ranging from being well prepared to unprepared in different departments.<sup>97</sup> Healthcare provider safety is under the purview of local hospitals for their employees. However, as highlighted in the accreditation standards, preparedness

and management of these situations necessitates a coordinated effort at the forefront of wellness education.

### *Recommendations*

Given that aggressive patients pose a physical risk to residents, emergency medicine residency programs should:

18. Educate residents on personal safety with aggressive patients, including de-escalation techniques, safe egress, and situational control as part of a formal wellness curriculum.
19. Ensure access to support and counseling resources in the event of personal safety concerns.
20. Ensure training of emergency medicine faculty to debrief with resident physicians post safety related incidents.
21. Ensure that educational sites have adequate resources (such as security personnel) to respond to aggressive patient threats.

**Hazardous exposures** including needlestick injuries were reported by three out of four resident physicians in one study, with fifteen percent of exposures being from HIV-positive patients. Only one third of these incidents were reported.<sup>98</sup> Recent Canadian studies have also shown healthcare workers in acute health care settings being at a 2-3 times higher rate of body fluids exposure.<sup>99</sup> Moreover, only half of healthcare workers undertake personal protective equipment removal correctly, and only a third perform hand hygiene appropriately after removal.<sup>100</sup> It is an area that needs continued attention and creation of an environment where reporting is supported and non-punitive.

### *Recommendations*

Given the risks of exposure to hazardous material in acute care settings, emergency medicine residency programs should:

22. Educate, routinely assess and refresh resident physicians on proper personal protective equipment donning, use, and removal as part of a formal wellness curriculum, along with policies and protocols associated with body fluid exposure.
23. Take pragmatic steps to create a non-punitive culture to reporting needlestick injuries and exposures with a clear process for follow up.

### **Healthy Psychosocial Environments**

A review of 100 studies internationally revealed that physicians frequently minimize and ignore signs of stress, fatigue, and burnout.<sup>101</sup> This review also suggests that this culture in medicine likely contributes to delayed access to mental health support. In RDoC's 2013 survey, three out of four experienced inter-specialty conflicts, over half experienced yelling, shaming, or condescending behavior and one in three experienced intimidation or bullying. Over a third took no steps to mitigate the situation due to fear of reprisal (21%) and belief it would not remedy situation (34.1%).<sup>1</sup> This culture is detrimental to learning and resident physician wellbeing.

The learning environment and culture encompasses the vital interactions between staff and resident physicians. There are inherent differences between staff and resident physicians, which create challenges in communication. These differences have been categorized into groups that pertain to each level that include goals and individual differences, communication and feedback, power and rivalry, support and collegiality, as well as role modeling and expertise.<sup>102</sup> Due to these factors and specifically the power differential, resident physicians may not speak up when they have differing opinions of ethical dilemmas in the work place.<sup>103</sup> In one study, three out of four residents and staff recalled an adverse patient event that was prevented because resident physician voiced their concerns.<sup>104</sup> It has also been shown that speaking up in an assertive and collaborative manner is a skill that can be effectively taught to resident physicians.<sup>105</sup> Although these studies did not take place in the emergency department, the results are applicable to off-service rotations, and collaborative conflict resolution skills are transferable to the emergency department setting. This is an essential element of resident education that needs to be succinctly addressed, and awareness shared with staff physicians.

### **Recommendations**

Given the psychosocial challenges that emergency medicine residents face, emergency medicine residency programs should:

24. Educate resident physicians on effective methods of personal and professional conflict resolution as part of a formal wellness curriculum.

25. Take pragmatic steps to create a culture that is open to reporting adverse interactions, an approach to mitigating them and seeking support for them.
26. Create effective mechanisms to manage issues of perceived lack of resident physician safety, intimidation, harassment and abuse in a timely and efficient manner.<sup>2</sup>
27. Educate resident physicians on effective means of addressing power differentials with more senior resident and staff physicians, especially in critical scenarios as part of a formal wellness curriculum.
28. Ensure continuing professional education for faculty to raise awareness of power differentials and conflict resolution, especially in critical scenarios.

## **SECTION 5: TRANSITION TO PRACTICE**

### **Background**

The transition from residency to practice is a period of significant stress. Canadian emergency medicine residency programs effectively prepare resident physicians for clinical responsibilities of staff physicians, but there is much heterogeneity in curricula to prepare them for the extra-clinical challenges of career transition. The development and implementation of a new emergency medicine curriculum as part of the RCPSC CBD transition is an opportunity to enhance transition to practice training.

The 2016 Collaborative Working Group (CWG) report on the future of emergency medicine in Canada describes that new emergency medicine graduates from both streams of training are adequately prepared to medically treat "patient zero".<sup>106</sup> Yet the transition from resident to staff physician is associated with challenges beyond providing excellent medical care. Decisions relating to career planning, finances, and personal wellness can be psychologically taxing on resident physicians studying for licensing exams. Teaching focused on expanded staff physician responsibilities (including bedside teaching, departmental management, and resource utilization) is heterogeneously taught in Canadian emergency medicine programs.<sup>107</sup> These competing demands should not come as a surprise after graduating, but need to be incorporated into the transition and preparation for becoming a staff physician. There is renewed emphasis on transition to practice preparation from the RCPSC CBD curriculum.<sup>108</sup>



### **Transitional Challenges**

Much of the published literature discussing the challenges of transitioning from residency to working as a staff emergency physician is anecdotal. These range from clinical cases demonstrating practice challenges<sup>109</sup> to advice of how to smoothly adapt to the new roles and responsibilities.<sup>110</sup> A 2015 survey of 48 American emergency medicine program directors described ten categories of advice for graduating residents. Their guidance focused on personal and financial wellbeing, developing a professional identity, and remaining compassionate and balanced in the face of stress.<sup>111</sup> Whether similar counseling was imparted, as part of a formal resident physician education was not addressed. These topics are not traditionally included in residency curricula. Currently, many resident physicians rely on informal discussion with staff physicians and mentors for specific recommendations.<sup>107</sup>

### **Career Counselling**

A survey of Canadian resident physicians demonstrates specific opportunities for addressing resident physician concerns as they approach the end of training.<sup>112</sup> One in ten resident physicians receive formal specialty-specific career training. More than one half describe career training as being part of the 'hidden curriculum', and almost one third received no career training at all. Not surprisingly, only 13% of Canadian resident physicians are satisfied with their program's career counseling resources. While these results are not specific to emergency medicine programs, they show a desire from residents for formal career development advice with specialty-specific guidance.

### **Mental Framework**

In transition psychology, transition is defined as a process of change in which individuals experience a personal awareness of discontinuity in their life space, forcing them to develop new behavioral responses to cope with a new situation.<sup>113</sup> Emergency resident physicians are acutely aware of the evolution in their environment and job responsibility that accompanies completion of their training. The transition model is described in organizational psychology literature as having four phases: 1) Preparation; 2) Encounter; 3) Adjustment; and 4) Stabilization.<sup>114</sup> Psychological studies support that with increased exposure through the preparation phase

(like residency), there is decreased mental stress through the subsequent three stages. Interviews with 14 new staff physicians from a variety of specialties reflect this model.<sup>113</sup> Residency aims to prepare trainees for a career as a staff physician. The discrepancy between the resident physician experience of a task and the staff physician perception of the same task determines the degree of mental stress and discomfort through the adjustment phase of the transitional model. A structured curriculum addressing challenges associated with transition to practice will ease the stress and improve wellbeing of graduating residents.

### **Focus on the Future**

There is currently heterogeneity in formal and informal transition to practice preparation across Canada.<sup>107</sup> Some emergency medicine residency programs have dedicated longitudinal curriculums. Others rely on a hidden curriculum, with advice being passed along through non-structured conversation between resident and staff physicians.

We recognize a need for the development of a structured set of objectives meant to teach and evaluate emergency medicine resident physicians' preparedness for a transition to practice. Areas of focus should expand beyond clinical aptitude. Formal career counseling, burnout prevention strategies, and clinician-as-teachers and managers are suggested themes which should be included.

The new RCPSC CBD curriculum includes a dedicated final year in residency for transition to practice.<sup>108</sup> The CAEP Resident Section looks forward to the competencies included in this year. Given the lack of emergency medicine-specific research on this transitional phase, there will be ample opportunity for further studies as CBD is incorporated into Canadian residency curricula.

### **Recommendations**

Given the inherent challenges of transition to practice, emergency medicine residency programs should:

29. Provide access to career and financial counseling and support services.
30. Educate resident physicians on the non-medical aspects of transition to practice as part of a formal wellness curriculum.
31. Provide formal mentorship opportunities to facilitate the transition to practice process.

## **SUMMARY OF RECOMMENDATIONS**

Given the increasing evidence of the toll of emergency residency on resident wellness, we recommend that emergency residency programs:

1. Form a working group with all relevant stakeholders to address a national strategy for wellness curriculum design and implementation.
2. Create a formal wellness curriculum as part of the emergency medicine residency program.
3. Adopt resiliency training such as the RDoC Resiliency Curriculum, as part of the formal wellness curriculum.
4. Empower resident physicians to champion resiliency training by identifying a resident wellness position and create incentives for resident physicians to champion these efforts.
5. Provide faculty development for faculty involved in educational activities that allow faculty to promote and support resident wellness including support for residents in crisis.
6. Establish and maintain mechanisms for resident physicians to access services to manage stress and similar issues.<sup>2</sup>
7. Make emergency resident physicians aware of the available wellness and support services. These may include local university, community health centre contacts for primary medical and mental health care, crisis lines for mental health, assistance in obtaining a family physician, post-graduate office resources for counseling, online resources for wellness and stress management, and the CAEP Resident Section Wellness Resources list.<sup>14</sup>
8. Identify mechanisms by which residents can bring forward their concerns to program leadership.
9. Identify a faculty member with expertise in resident wellness to act as a resident physician advocate within the emergency medicine program.
10. Ensure that wellness and crisis resources and supports are offered in a confidential manner without impact on resident physician education, standing in the program or future employment and educate residents on mandatory reporting requirements.
11. Maintain a policy on time off for personal reasons and resident physicians in crisis that is in line with provincial collective bargaining agreements on sick leave.
12. Continue engaging provincial and national efforts to define optimal duty hours with a stronger focus on its implications on resident physician wellness.
13. Define a fatigue management section as part of the formal wellness curriculum.
14. Provide access to fatigue management resources, counseling and support.
15. Ensure access to safe alternatives to driving after night shift or long duty hours such as a place to rest onsite, or access to public transportation or taxi compensation.
16. Instruct resident physicians on the principles of proper shiftwork structure, and adapting a healthy lifestyle associated with shift work as part of a formal wellness curriculum.
17. Permit residents to self-schedule emergency shifts where possible. If programs are scheduling residents, they should adhere to best practices for scheduling shift workers including ample notice, and flexibility of shift trades.
18. Educate residents on personal safety with aggressive patients, including de-escalation techniques, safe egress, and situational control as part of a formal wellness curriculum.
19. Ensure access to support and counseling resources in the event of personal safety concerns.
20. Ensure training of emergency medicine faculty to debrief with resident physicians post safety related incidents.
21. Ensure that educational sites have adequate resources (such as security personnel) to respond to aggressive patient threats.
22. Educate, routinely assess and refresh resident physicians on proper personal protective equipment donning, use, and removal as part of a formal wellness curriculum, along with policies and protocols associated with body fluid exposure.
23. Take pragmatic steps to create a non-punitive culture to reporting needlestick injuries and exposures with a clear process for follow up.
24. Educate resident physicians on effective methods of personal and professional conflict resolution as part of a formal wellness curriculum.

25. Create a just culture that is open and responsive to reporting adverse interactions, and implement a safety management system to investigate root causes and promote system-level changes.
26. Create effective mechanisms to manage issues of perceived lack of resident physician safety, intimidation, harassment and abuse in a timely and efficient manner.<sup>2</sup>
27. Educate resident physicians on effective means of addressing power differentials with more senior resident and staff physicians, especially in critical scenarios as part of a formal wellness curriculum.
28. Ensure continuing professional education for faculty to raise awareness of power differentials and conflict resolution, especially in critical scenarios.
29. Provide access to career and financial counseling and support services.
30. Educate resident physicians on the non-medical aspects of transition to practice as part of a formal wellness curriculum.
31. Provide formal mentorship opportunities to facilitate the transition to practice process.

### NEXT STEPS

This position statement is intended to drive forward a national emergency resident physician wellness agenda. Moreover, it represents a minimum standard of wellness attributes that emergency residency programs should work towards beyond accreditation standards. A wide collective of national stakeholders from residency programs and accreditation bodies should create a working group to address current program structures and curricula to meet the identified deficits and to create a formal national wellness curriculum.

### CONCLUSION

Emergency medicine residency training has a high toll on resident physician wellness. Key attributes of training programs have been identified to mitigate these risks. Training programs must enable sustainable methods to advance towards meeting these benchmarks.

**Keywords:** wellness, postgraduate medical education, residency, residents

**Conflicts of interest:** None declared.

### SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit <https://doi.org/10.1017/cem.2018.8>

### REFERENCES

1. Resident Doctors of Canada. Canadian Association of Internes and Residents Annual Member Survey; 2013. <http://residentdoctors.ca/wp-content/uploads/2015/08/Key-Findings-2013-National-Resident-Survey.pdf> (accessed December 16, 2016).
2. Royal College of Physicians and Surgeons of Canada. Accreditation of Residency Programs. General Standards Applicable to the University and Affiliated Sites - A Standards; 2011. <http://www.royalcollege.ca/rcsite/education-strategy-accreditation/pgme-training-programs/accreditation-residency-programs-e> (accessed December 10, 2016).
3. Royal College of Physicians and Surgeons of Canada. Accreditation of Residency Programs. Specific Standards of Accreditation for Residency Programs in Emergency Medicine; 2008. [http://www.royalcollege.ca/rc/faces/oracle/webcenter/portalapp/pages/viewDocument.jspx?document\\_id=TZTEST3RCPCED000759&\\_afLoop=21281619943636266&\\_afWindowMode=0&\\_afWindowId=w4vpqg9s6\\_1-!%40%40%3F\\_afWindowId%3Dw4vpqg9s6\\_1%26document\\_id%3DTZTEST3RCPCED000759%26\\_afLoop%3D21281619943636266%26\\_afWindowMode%3D0%26\\_adf.ctrl-state%3Dw4vpqg9s6\\_17](http://www.royalcollege.ca/rc/faces/oracle/webcenter/portalapp/pages/viewDocument.jspx?document_id=TZTEST3RCPCED000759&_afLoop=21281619943636266&_afWindowMode=0&_afWindowId=w4vpqg9s6_1-!%40%40%3F_afWindowId%3Dw4vpqg9s6_1%26document_id%3DTZTEST3RCPCED000759%26_afLoop%3D21281619943636266%26_afWindowMode%3D0%26_adf.ctrl-state%3Dw4vpqg9s6_17) (accessed December 8, 2016).
4. Maslach C, Jackson SE. The measurement of experienced burnout. *J Org Behav* 1981;2(2):99-113.
5. Mariné A, Serra C, Ruotsalainen JH, Verbeek JH. Preventing occupational stress in healthcare workers. *Cochrane Database Syst Rev* 2006;4:CD002892.
6. Association AP. *DSM 5*. American Psychiatric Association; 2013.
7. Organization WH. International statistical classification of diseases and related health problems. 2009.
8. Dyrbye L, Shanafelt T. A narrative review on burnout experienced by medical students and residents. *Med Educ* 2016;50(1):132-49.
9. West CP, Shanafelt TD, Kolars JC. Quality of life, burnout, educational debt, and medical knowledge among internal medicine residents. *JAMA* 2011;306(9):952-60.
10. Martini S, Arfken CL, Churchill MA, Balon R. Burnout comparison among residents in different medical specialties. *Acad Psychol* 2004;28(3):240-2.
11. Dyrbye LN, West CP, Satele D, et al. Burnout among US medical students, residents, and early career physicians relative to the general US population. *Acad Med* 2014;89(3):443-51.
12. Kimo Takayasu J, Ramoska EA, Clark TR, et al. Factors associated with burnout during emergency medicine residency. *Acad Emerg Med* 2014;21(9):1031-5.
13. Bragard I, Dupuis G, Fleet R. Quality of work life, burnout, and stress in emergency department physicians: a qualitative review. *European Journal of Emergency Medicine* 2015;22(4):227-234.

14. Schooley B, Hikmet N, Tarcan M, Yorgancioglu G. Comparing Burnout Across Emergency Physicians, Nurses, Technicians, and Health Information Technicians Working for the Same Organization. *Med* 2016;95(10):e2856.
15. Prins JT, Gazendam-Donofrio SM, Tubben BJ, Van Der Heijden FM, Van De Wiel H, Hoekstra-Weebers JE. Burnout in medical residents: a review. *Med Educ* 2007; 41(8):788-800.
16. Golub JS, Weiss PS, Ramesh AK, Ossoff RH, Johns MM III. Burnout in residents of otolaryngology-head and neck surgery: a national inquiry into the health of residency training. *Acad Med* 2007;82(6):596-601.
17. Prins J, Van Der Heijden F, Hoekstra-Weebers J, et al. Burnout, engagement and resident physicians' self-reported errors. *Psychol Health Med* 2009;14(6):654-66.
18. Ripp J, Babyatsky M, Fallar R, et al. The incidence and predictors of job burnout in first-year internal medicine residents: a five-institution study. *Acad Med* 2011;86(10):1304-10.
19. Martin F, Poyen D, Boudierlique E, et al. Depression and burnout in hospital health care professionals. *Int J Occup Environ Health* 1997;3(3):204-9.
20. Sobowale K, Zhou AN, Fan J, Liu N, Sherer R. Depression and suicidal ideation in medical students in China: a call for wellness curricula. *Int J Med Educ* 2014;5:31.
21. van der Heijden F, Dillingh G, Bakker A, Prins J. Suicidal thoughts among medical residents with burnout. *Arch Suicide Res* 2008;12(4):344-6.
22. Cohen JS, Leung Y, Fahey M, et al. The happy docs study: a Canadian Association of Internes and Residents well-being survey examining resident physician health and satisfaction within and outside of residency training in Canada. *BMC Res Notes* 2008;1:105.
23. Ahola K, Honkonen T, Pirkola S, et al. Alcohol dependence in relation to burnout among the Finnish working population. *Addiction* 2006;101(10):1438-43.
24. Mata DA, Ramos MA, Bansal N, et al. Prevalence of depression and depressive symptoms among resident physicians: a systematic review and meta-analysis. *JAMA* 2015;314(22):2373-83.
25. Felton J. Burnout as a clinical entity—its importance in health care workers. *Occup Med* 1998;48(4):237-50.
26. Melamed S, Shirom A, Toker S, Berliner S, Shapira I. Burnout and risk of cardiovascular disease: evidence, possible causal paths, and promising research directions. *Psychol Bull* 2006;132(3):327.
27. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med* 2002;136(5):358-67.
28. Baldwin P, Dodd M, Wrate R. Young doctors' health—I. How do working conditions affect attitudes, health and performance? *Soc Sci Med* 1997;45(1):35-40.
29. Fahrenkopf AM, Sectish TC, Barger LK, et al. Rates of medication errors among depressed and burnt out residents: prospective cohort study. *BMJ* 2008;336(7642):488-91.
30. Brotheridge CM, Grandey AA. Emotional labor and burnout: Comparing two perspectives of "people work". *J Voc Behav* 2002;60(1):17-39.
31. Morse G, Salyers MP, Rollins AL, Monroe-DeVita M, Pfahler C. Burnout in mental health services: A review of the problem and its remediation. *Adm Policy Ment Health* 2012;39(5):341-52.
32. Cordes CL, Dougherty TW. A review and an integration of research on job burnout. *Acad Manag Rev* 1993;18(4):621-56.
33. Wilcox VL. Burnout in military personnel. In *Military Psychiatry: Preparing in Peace for War*, (ed Jones FD). Washington, DC: Government Printing Office; 2000: 31-49.
34. Murphy SA, Beaton RD, Pike KC, Cain KC. Firefighters and paramedics: years of service, job aspirations, and burnout. *AAOHN J* 1994;42(11):534-40.
35. Shantz MC. Effect of Work Related Stress on Firefighter/Paramedic. Eastern Michigan University School of Fire Staff and Command; 2002. <https://ffc.wildapricot.org/Resources/Documents/Resources/Effect%20of%20Work%20Related%20Stress%20on%20the%20Firefighter%20Paramedic.pdf> (accessed December 10, 2016).
36. Monteiro JK, Abs D, Labres ID, Maus D, Pioner T. Firefighters: Psychopathology and working conditions. *Estud Psicol (Campinas)* 2013;30(3):437-44.
37. Fanjoy RO, Harriman SL, DeMik RJ. Individual and environmental predictors of burnout among regional airline pilots. *Int J Appl Aviation Stud* 2010;10(1):15.
38. Government of Canada. National Defence and the Canadian Armed Forces. The Institutionalization of Resilience; 2016. <http://www.forces.gc.ca/en/caf-community-health-services-r2mr-career/index.page> (accessed December 8, 2016).
39. National Defence and the Canadian Armed Forces. The Military Mental Health Continuum Model; 2016. <http://www.forces.gc.ca/en/caf-community-health-services-r2mr-deployment/mental-health-continuum-model.page> (accessed December 22, 2016).
40. Howe A, Smajdor A, Stöckl A. Towards an understanding of resilience and its relevance to medical training. *Med Educ* 2012;46(4):349-56.
41. Sood A, Prasad K, Schroeder D, Varkey P. Stress management and resilience training among Department of Medicine faculty: a pilot randomized clinical trial. *J Gen Intern Med* 2011;26(8):858-61.
42. Goldhagen BE, Kingsolver K, Stinnett SS, Rosdahl JA. Stress and burnout in residents: impact of mindfulness-based resilience training. *Adv Med Educ Pract* 2015;6:525-32.
43. Resident Doctors of Canada. Resiliency; 2014. <http://residentdoctors.ca/wellness/resiliency/> (accessed January 20, 2017).
44. Frank J, Snell L, Sherbino J. *The draft CanMEDS 2015 physician competency framework—series IV*. Ottawa: The Royal College of Physicians and Surgeons of Canada; 2014.
45. Louridas M, Bonrath E, Sinclair D, Dedy N, Grantcharov T. Randomized clinical trial to evaluate mental practice in enhancing advanced laparoscopic surgical performance. *Brit J Surg* 2015;102(1):37-44.
46. Tür FÇ, Toker İ, Şaşmaz CT, Hacı S, Türe B. Occupational stress experienced by residents and faculty physicians on night shifts. *Scand J Trauma Resusc Emerg Med* 2016;24:34.
47. Smith-Coggins R, Broderick KB, Marco CA. Night shifts in emergency medicine: the American Board of Emergency

- Medicine longitudinal study of emergency physicians. *J Emerg Med* 2014;47(3):372-8.
48. Thorpy M. Understanding and diagnosing shift work disorder. *Postgrad Med* 2011;123(5):96-105.
  49. Government of Canada. Employee Assistance Program. 2016, <http://www.hc-sc.gc.ca/ewh-semt/occup-travail/empl/eap-pae-eng.php> (accessed December 8, 2016).
  50. Canadian Association of Emergency Physicians Resident Section. Wellness Resources. 2017, <http://caep.ca/membership/emergency-resident-wellness/wellness-resources> (accessed February 1, 2017).
  51. McMaster University, Department of Internal Medicine. Resident Ombudsman. [https://fhs.mcmaster.ca/medicine/residency/message\\_omb.htm](https://fhs.mcmaster.ca/medicine/residency/message_omb.htm). (accessed December 8, 2016).
  52. Dalhousie University. Ombudsman. <https://medicine.dal.ca/departments/core-units/postgraduate/calendar/general-information/ombudsperson.html> (accessed December 8, 2016).
  53. Kohn LT, Corrigan JM, Donaldson MS. *To Err Is Human: Building A Safer Health System*, Vol. 6. Washington, DC: National Academies Press; 2000.
  54. Johns M. *Resident duty hours—Enhancing sleep, supervision and safety*. Washington, DC: National Academies Press; 2009.
  55. Jagsi R, Kitch BT, Weinstein DF, Campbell EG, Hutter M, Weissman JS. Residents report on adverse events and their causes. *Arch Intern Med* 2005;165(22):2607-13.
  56. Landrigan CP, Rothschild JM, Cronin JW, et al. Effect of reducing interns' work hours on serious medical errors in intensive care units. *N Engl J Med* 2004;351(18):1838-48.
  57. Friedman RC, Bigger JT, Kornfeld DS. The intern and sleep loss. *N Engl J Med* 1971;285(4):201-3.
  58. Taffinder N, McManus I, Gul Y, Russell R, Darzi A. Effect of sleep deprivation on surgeons' dexterity on laparoscopy simulator. *Lancet* 1998;352(9135):1191.
  59. Eastridge BJ, Hamilton EC, O'Keefe GE, et al. Effect of sleep deprivation on the performance of simulated laparoscopic surgical skill. *Amer J Surg* 2003;186(2):169-74.
  60. Fletcher KE, Underwood W, Davis SQ, Mangrulkar RS, McMahon LF, Saint S. Effects of work hour reduction on residents' lives: a systematic review. *JAMA* 2005;294(9):1088-100.
  61. Stucky ER, Dresselhaus TR, Dollarhide A, et al. Intern to attending: assessing stress among physicians. *Acad Med* 2009;84(2):251-7.
  62. Dimitris KD, Taylor BC, Fankhauser RA. Resident work-week regulations: historical review and modern perspectives. *J Surg Educ* 2008;65(4):290-6.
  63. Feddock CA, Hoellein AR, Wilson JF, Caudill TS, Griffith CH. Do pressure and fatigue influence resident job performance? *Med Teach* 2007;29(5):495-7.
  64. McLay J, Ross S. Medication errors caused by junior doctors. *BMJ*. 2008;336(7642):456.
  65. Barger LK, Ayas NT, Cade BE, et al. Impact of extended-duration shifts on medical errors, adverse events, and attentional failures. *PLoS Med* 2006;3(12):e487.
  66. Robbins J, Gottlieb F. Sleep deprivation and cognitive testing in internal medicine house staff. *West J Med* 1990;152(1):82.
  67. Jacques C, Lynch JC, Samkoff JS. The effects of sleep loss on cognitive performance of resident physicians. *J Fam Pract* 1990;30(2):223-30.
  68. Huber R, Ghilardi MF, Massimini M, Tononi G. Local sleep and learning. *Nature* 2004;430(6995):78-81.
  69. Stickgold R, James L, Hobson JA. Visual discrimination learning requires sleep after training. *Nature Neurosci* 2000;3(12):1237-8.
  70. Parks DK, Yetman RJ, McNeese MC, Bureau K, Smolensky MH. Day-night pattern in accidental exposures to blood-borne pathogens among medical students and residents. *Chronobiol Int* 2000;17(1):61-70.
  71. Ayas NT, Barger LK, Cade BE, et al. Extended work duration and the risk of self-reported percutaneous injuries in interns. *JAMA* 2006;296(9):1055-62.
  72. Barger LK, Cade BE, Ayas NT, et al. Extended work shifts and the risk of motor vehicle crashes among interns. *N Engl J Med* 2005;352(2):125-34.
  73. Lockley SW, Barger LK, Ayas NT, Rothschild JM, Czeisler CA, Landrigan CP. Effects of health care provider work hours and sleep deprivation on safety and performance. *Jt Comm J Qual Patient Saf* 2007;33(Supplement 1):7-18.
  74. Baldwin D Jr, Daugherty SR. Sleep deprivation and fatigue in residency training: results of a national survey of first- and second-year residents. *Sleep* 2004;27(2):217-23.
  75. Curet MJ. Resident work hour restrictions: where are we now? *J Amer Coll Surg* 2008;207(5):767-76.
  76. Resident Doctors of Canada. Our Provincial Partners. 2016, <http://residentdoctors.ca/about/our-provincial-partners/> (accessed December 11, 2016).
  77. Fédération des médecins du Québec. 2017, <http://www.fmqc.ca/en> (accessed December 14, 2016).
  78. Temple J. Resident duty hours around the globe: where are we now. *BMC Med Educ* 2014;14(Suppl 1):S8.
  79. Resident Doctors of Canada. Canadian Patient and Physician Safety and Wellbeing: Resident Duty Hours; 2012. <http://residentdoctors.ca/wellness/fatigue-risk-management/> (accessed October 27, 2016).
  80. National Steering Committee on Resident Duty Hours. Fatigue, Risk & Excellence: Towards a Pan-Canadian Consensus on Resident Duty Hours; 2013. [http://www.residentdutyhours.ca/documents/fatigue\\_risk\\_and\\_excellence.pdf](http://www.residentdutyhours.ca/documents/fatigue_risk_and_excellence.pdf) (accessed October 27, 2016).
  81. Canadian Medical Association. CMA Policy: Management of Physician Fatigue; 2014. <https://residentdoctors.ca/wp-content/uploads/2017/08/PD14-09.pdf> (accessed October 27, 2016).
  82. Hamadani FT, Deckelbaum D, Sauve A, Khwaja K, Razek T, Fata P. Abolishment of 24-hour continuous medical call duty in Quebec: a quality of life survey of general surgical residents following implementation of the new work-hour restrictions. *J Surg Educ* 2013;70(3):296-303.
  83. Ahmed N, Devitt KS, Keshet I, et al. A systematic review of the effects of resident duty hour restrictions in surgery: impact on resident wellness, training, and patient outcomes. *Ann Surg* 2014;259(6):1041-53.
  84. De Bacquer D, Van Risseghem M, Clays E, Kittel F, De Backer G, Braeckman L. Rotating shift work and the metabolic syndrome: a prospective study. *Int J Epidemiol* 2009;38(3):848-54.

85. Karlsson B, Knutsson A, Lindahl B. Is there an association between shift work and having a metabolic syndrome? Results from a population based study of 27 485 people. *Occup Environ Med* 2001;58(11):747-52.
86. Costa G. The impact of shift and night work on health. *Appl Ergon* 1996;27(1):9-16.
87. Schernhammer ES, Laden F, Speizer FE, et al. Night-shift work and risk of colorectal cancer in the nurses' health study. *J Natl Cancer Inst* 2003;95(11):825-8.
88. Bøggild H, Knutsson A. Shift work, risk factors and cardiovascular disease. *Scand J Work Environ Health* 1999;25(2):85-99.
89. Vyas MV, Garg AX, Iansavichus AV, et al. Shift work and vascular events: systematic review and meta-analysis. *BMJ* 2012;345:e4800.
90. Jamal M. Burnout, stress and health of employees on non-standard work schedules: a study of Canadian workers. *Stress and Health* 2004;20(3):113-9.
91. Wright KP, Bogan RK, Wyatt JK. Shift work and the assessment and management of shift work disorder (SWD). *Sleep Med Rev* 2013;17(1):41-54.
92. Culpepper L. The social and economic burden of shift-work disorder. *J Fam Pract* 2010;59(1):S3.
93. Crilly J, Chaboyer W, Creedy D. Violence towards emergency department nurses by patients. *Accid Emerg Nurs* 2004;12(2):67-73.
94. Pane GA, Winiarski AM, Salness KA. Aggression directed toward emergency department staff at a university teaching hospital. *Ann Emerg Med* 1991;20(3):283-6.
95. Foust D, Rhee KJ. The incidence of battery in an urban emergency department. *Ann Emerg Med* 1993;22(3):583-5.
96. Anglin D, Kyriacou DN, Hutson HR. Residents' perspectives on violence and personal safety in the emergency department. *Ann Emerg Med* 1994;23(5):1082-4.
97. Wyatt J, Watt M. Violence towards junior doctors in accident and emergency departments. *J Accid Emerg Med* 1995;12(1):40-2.
98. Heald AE, Ransohoff DF. Needlestick injuries among resident physicians. *J Gen Intern Med* 1990;5(5):389-93.
99. Alamgir H, Cvitkovich Y, Astrakianakis G, Yu S, Yassi A. Needlestick and other potential blood and body fluid exposures among health care workers in British Columbia, Canada. *Amer J Infect Control* 2008;36(1):12-21.
100. Mitchell R, Roth V, Gravel D, et al. Are health care workers protected? An observational study of selection and removal of personal protective equipment in Canadian acute care hospitals. *Amer J Infect Control* 2013;41(3):240-4.
101. Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. *Lancet* 2009;374(9702):1714-21.
102. Sinai J, Tiberius RG, De Groot J, Brunet A, Voore P. Developing a training program to improve supervisor-resident relationships, step 1: defining the types of issues. *Teach Learn Med* 2001;13(2):80-5.
103. Shreves JG, Moss AH. Residents' ethical disagreements with attending physicians: an unrecognized problem. *Acad Med* 1996;71(10):1103-5.
104. Belyansky I, Martin TR, Prabhu AS, et al. Poor resident-attending intraoperative communication may compromise patient safety. *J Surg Res* 2011;171(2):386-94.
105. Pian-Smith M, Simon R, Minehart RD, et al. Teaching residents the two-challenge rule: a simulation-based approach to improve education and patient safety. *Simul Healthc* 2008;4(2):84-91.
106. The Collaborative Working Group on the Future of Emergency Medicine in Canada. Executive Summary. Emergency Medicine Training & Practice in Canada; 2016. [http://caep.ca/sites/caep.ca/files/caep/CWG/cwg0001\\_cwg-em\\_report\\_-\\_executive\\_summary\\_-\\_english\\_-\\_singles\\_-\\_web.pdf](http://caep.ca/sites/caep.ca/files/caep/CWG/cwg0001_cwg-em_report_-_executive_summary_-_english_-_singles_-_web.pdf) (accessed December 10, 2016).
107. Koczerginski J. Presentation at the National Chief Resident Meeting (held at the Canadian Association of Emergency Physicians Conference in Quebec City, QC); 2016.
108. Royal College of Physicians and Surgeons of Canada. Competence by Design; 2016. <http://www.royalcollege.ca/rcsite/cbd/competence-by-design-cbd-e> (accessed December 2016).
109. Shouldice E. Transition to practice. *CJEM* 2009;11(4):397-8.
110. Ruffling R. Top Ten planning issues when finishing your residency. <https://www.emra.org/resources/life-as-an-ep/personal-finance-tips/top-ten-planning-issues-when-finishing-your-residency/> (accessed December 2016).
111. Hayden SR, King EM. Preparing for the Transition to Practice: A Compilation of Advice from Program Directors to Residency Graduates. *J Emerg Med* 2015;49(6):937-41.
112. Resident Doctors of Canada Resident Doctors of Canada Scorecard: Career Counseling in Canadian Residency Training Programs; 2014. <http://residentdoctors.ca/wp-content/uploads/2015/08/Scorecard-Career-Counseling.pdf> (accessed December 2016).
113. Westerman M, Teunissen PW, van der Vleuten CP, et al. Understanding the transition from resident to attending physician: A transdisciplinary, qualitative study. *Acad Med* 2010;85(12):1914-9.
114. Nicholson N. A theory of work role transitions. *Admin Sci Quart* 1984: 172-91.