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Can we identify medical students and residents at risk for attrition in general surgery and intervene before residents quit?

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Abstract

Many general surgery residents contemplate quitting residency at some time during their training. Once a surgery resident decides that general surgery will not provide the desired lifestyle, the chance of him completing his residency decreases significantly and quitting is inevitable. Residency programs must improve their ability to identify those residents contemplating quitting residencies and intervene. Intervention may be possible with early identification of medical students and residents at risk for attrition.

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Introduction

Many general surgery residents contemplate quitting residency at some time during training [1]. Once a surgery resident decides that general surgery will not provide the desired lifestyle, they are much less likely to complete their residency and quitting is inevitable [2]. If the current trend of attrition in surgery is to be curtained, residency programs must improve their ability to identify residents who may be contemplating quitting surgery in order to intervene [3]. Support systems are needed for residents including counseling and social support [3]. The current problem for Program Directors (PDs) is retention of current residents [2]. Finding those at risk during training is paramount before it is too late [4]. It is important for students pursuing a surgery residency to understand the demands and expectations before matriculating [4]. One institution described techniques to deal with stress and fatigue with crisis intervention but, it would be helpful to intervene before the crisis stage, at which point; residents are likely to quit [4].

Residency Program Directors (PD) and surgery faculty must be proactive about the retention of general surgery residents because many residents contemplate leaving surgery [1]. More female residents leave residency than male [1]. Moreover, they leave early -usually after the first year (PGY 1) [1]. Faculty need to be mindful of what is going on with the residents so that intervention is possible if problems are identified in a timely manner [4]. When a resident is discouraged to the point of leaving residency, it is hard to appreciate the value of continuing surgery training and most quit [4]. The most common reason residents quit general surgery is uncontrollable lifestyle [14]. Almost half of female residents leave after the first year [4]. Women also leave for other reasons like lack of role models and mentors, sexual discrimination and harassment and feeling unwanted in the surgical suite [4]. Early identification and intervention are critical to resolving these issues [4].

Identification of those at risk for attrition

Many risk factors for attrition have been identified in the literature and in our research [5-7]. They are categorized by medical student applicants for general surgery residencies (Table 1) and current general surgery residents (Table 2).Thematically, medical student categories center around lack of role models, faculty mentors and adequate career counseling for general surgery careers, lack of medical student understanding about a surgery career and adequate preparation for a surgery residency, discrimination and sexual harassment of females in surgery and personality traits not conducive to practicing surgery (Table 1).

Resident categories include lack of guidance from the residency program, lack of role models and mentors, personality and character traits not conducive to the practice of surgery, lack of accommodation for females, discrimination against females in surgery, lack of support programs, counseling, and crisis intervention and bullying and mistreatment of residents (Table 2).

Interventions to reduce risk of attrition

There have been several suggested interventions that may be helpful to medical students applying to general surgery residencies and current general surgery residents at risk for attrition.

Interventions for Medical Students

Better education of medical students about surgery residency expectations

Educating medical students about exactly what general surgery residency and practice entails is crucial [3]. Attrition early in residency suggests that the actual residency training was different from medical school expectations gained in medical school [8]. Program Directors (PD) and surgery faculty need to be more involved with medical students who express an interest in general surgery as a career [9]. It is important for students pursuing a general surgery residency to understand the demands and expectations of a surgery resident [4]. Limited exposure to surgery poorly prepares medical students for the actual life of a resident which leads to discouragement and increases the risk of attrition [9]. Students need more experiences with both inpatient and outpatient care, the operating room, postoperative management, emergency department, postoperative assessment, daily rounds and emergency surgery [9]. In a previous paper, medical students evaluating the surgery clerkship requested more case studies, more surgical experience, elective time, more postoperative management, more subspecialty surgery exposure and more technical skills training [5].

Better preparation of medical students before residency

An acting internship or "AI" allows a medical student to gain experience as a surgery intern in a general surgery residency. The "AI" functions exactly like an actual intern the duration of the rotation. The intern scrubs on cases, closes the operative incision, writes postoperative orders or enters orders electronically on the electronic medical record, sees consultations in the emergency department, the hospital floors, intensive care units and takes "first call" at night. Thus, the student is better able to see if he wants to be a surgery resident. Medical students usually serve as "AIs" at a location with a general surgery residency into which he might like to matriculate. The extra time spent in the "AI" not only helps students understand what is expected of them from a medical perspective but also might help them prepare for the psychological and lifestyle impacts of a surgical residency.

Better pre-matriculation screening and selection of medical students for surgery residency

Selecting residents is just part of the challenge of running a surgery residency (4). While medical student applicants must be academically acceptable, non-academic factors may be more important than academic ones [10]. Elimination of applicants at high risk for attrition from the applicant pool before the match is recommended [10]. When residents leave training programs, improving resident replacement with qualified physicians is imperative [10]. No medical student should matriculate into a surgery residency who is not willing to commit to the work, time and demands, both during residency and for a career beyond [4]. Most students (89%) select surgery as a career "because of the nature of surgical practice" [11]. Most residents (76%) quit because of lifestyle issues [11]. Grit is a character trait defined by passion and perseverance for long-term goals and may be a marker of attrition [10]. Low scores of grit have been associated with residents contemplating leaving residency [10].

Positive role models

Students respond well to positive resident and attending role models who students can look up to [12]. Students need successful private practice general surgeons to emulate. However, most private surgeons agreed that work limited their person-

al and family time. Only a small minority of general surgeons would not recommend surgery as a career specialty [13]. There are no underrepresented role models for minorities and this probably translates into minimal interest in general surgery from underrepresented minorities [14]. Gender specific role models are important for female medical students interested in general surgery [12].

Faculty mentors

Mentors in medical school are essential [14]. Mentors are usually faculty who teach medical students and residents and help them succeed. There is a need to portray our lives to residents and students as a sense of purpose in what surgeons do a commitment to high quality care, and professional satisfaction [3]. Residents in general surgery can be excellent educators and mentors and can influence the number of medical students pursuing a general surgery career [16]. Gender specific faculty mentors are critical for female medical students interested in surgery [15]. There are very few female general surgery mentors primarily because of the lack of female general surgeons. Female medical students have depended on both male and female mentors because of the so few number of female surgery mentors. While male mentors are important historically, female mentors have the advantage of experience with pregnancy, breastfeeding, pumping and child-raising that males would not have. More importantly if the female medical students can learn from a female mentor that being a female surgeon can fit into a family oriented lifestyle they maybe more likely to pursue surgery and have reduced attrition attributed to this important life area. Structured mentoring has been shown to reduce burnout [15].

Reduce discrimination against females

Many female medical students and female surgery residents believe that surgery discriminates against women, leading many women to feel out of place in the operating suite [14]. Much of this comes from lack of female role models and lack of a life outside the hospital [14]. This can be improved with more female general surgeons and more female role models and mentors. It is important to change the professional environment for women [17]. As more women matriculate into general surgery, the male dominated environment should change asfemale surgery residents are more compassionate and concerned with the feelings of others [18].

Exposure to private practice surgeons

Medical students need exposure to private practice general surgeons. The only real exposure to general surgery is often surgery residents who are tired, overworked and exhausted. Trainees often have less interaction with private practice general surgeons [13]. Private practice surgeons earn higher incomes, are usually very successful and satisfied with their profession [13].

Screening for personality types

An older 1984 paper suggests that some medical students may tolerate stress better than others and may make better surgery residents [19]. Many students interested in surgery have been described as “aggressive, self-confident, competitive, thick-skinned, and authoritarian [20]. They have less anxiety and are resistant to stress [20]. Personality may determine specialty choice-the desire to fix things and correct problems with immediate results has been thought to be desirable for surgery [20].

Psychological assessment

Ninety-nine percent of medical students rank general surgery as the first or second most stressful medical specialty [20]. Linn suggests that some medical students may tolerate stress better than others and may make better surgery residents [19]. The World of Work Inventory Online (WOWI Online) multidisciplinary assessment has been used to determine a stable profile of surgeons and suitability for the surgical profession [2]. This has been shown to be a consistent, reproducible personality assessment which could useful in predicting success in a residency program and practice of surgery [2]. The question remains if it could be useful to predict success of matriculates to surgery residencies [2].

Interventions for General Surgery Residents

Guidance during the residency program

Surgery residents need guidance and supervision throughout residency training [4,21]. Residents are concerned about their performance [21]. They need to know what the residency program expects of them from the outset [4,22]. Today, house-staff surgeons have portfolios and know the milestone commensurate with their level of training [2]. They should receive progress reports, evaluations and feedback on their performance in addition to the yearly end of the year in-service examinations [22]. Learners must perform certain numbers of each procedures to be competent at that procedure. Excellent work must be encouraged [22]. Residency programs must follow work hour guidelines and restrictions and the workload must be commensurate with the work hours. Programs must keep research year residents in touch with the residency and the other residents because the research year is a common time to quit a general surgery residency. Residents in the research year feel detached from the rest of the program. Some clinical responsibilities, journal club, grand rounds, morbidity and mortality conference, and even residency social functions may keep research year residents in touch and reduce attrition that accompanies this year.

Mentors

General surgery faculty mentors help residents see their potential and encourage them in their career [1]. Residents need exposure to the private practice general surgeons for a broader view of the field of surgery individual success and satisfaction [14]. Factors associated with quitting included absence of a faculty mentor [9]. Initiating mentor/resident relationships early with incoming residents and refining those relationships are critical [15]. Regular meetings, career counseling, structured mentoring and easy accessibility to mentors are important [9,15]. Mentors need to be satisfied with the specialty so that they can be enthusiastic to residents [23]. Only female mentors can help female residents with the balance of professional life and pregnancy, raising children and motherhood [4,12, 15]. Female mentors help attract female medical students and help improve the outlook and productivity for future surgeons [15]. New interns need relationships and guidance from upper level residents [15]. When female general surgery mentors are unavailable, specialty and subspecialty female surgeons, anesthesiologists, OB/GYNs and family medicine/obstetricians may help fulfil the role. Underrepresented minority residents also need mentors, role models and respect to be successful [4,12].

Accommodations specific for female residents

Female residents in all specialties have children during residency training. Formal policies addressing pregnancy, maternity

leave, breastfeeding and pumping, and parenting are necessary [21,24]. Residency programs need formal policies for pregnancy with contingency plans when female residents cannot work and/or perform clinical duties such as complications of pregnancy and sick infants such as preterm deliveries [21, 24]. Plans for not overburdening other residents because of another resident's pregnancy are important [24]. Having such policies and plans will provide for greater happiness among everyone concerned [24].

The most common benefit for female surgery residents and practicing general surgeons is formal maternity leave [21]. Maternity leave is essential for female physicians in any specialty and at any level of training. While many female physicians have had children during medical school and residency, only 25% of women have their first children during surgery residencies [25]. Women must make more sacrifices during residences such as marriage and childbearing [21].Childcare is essential for female surgery residents who have children. On-site daycare is preferable but uncommon [3,13].

The Parent/Newborn Health Elective is a recently developed elective for new postpartum resident mothers at the University of Alabama Family Medicine Residency in Tuscaloosa, Alabama. The elective limits time off and allows the physician mother to return to work with minimal clinic responsibility but no hospital duties or call. Other programs may have similar programs.

Improving confidence

Progression of surgery residency training is dependent on the development of confidence [21]. Normally confidence increases with progression of residency training culminating with the ability of a senior or chief resident to function as a junior attending and ultimately to practice independently in the real world [21]. Residency program may improve factors that relate to low confidence [21]. Learning experiences improve surgical confidence [21]. Confidence is better in community programs, programs with fewer chief residents, and programs without fellowships [21]. Senior medical students in surgery improve their confidence during residency [21]. Decreased confidence is associated with the need to pursue further training in a fellowship [21]. Fellowship training probably narrows their surgical focus after training and reduces their spectrum of general surgery. Female surgery residents worry about their performance more than males and often this results in quitting residency [21].

Changing the culture of training programs

Surgery residencies must change the age-old culture of a male-dominated specialty. Training programs must address reports by female residents that they feel unwanted and unwelcome in the operating suite [4]. Negative attitudes toward female residents and surgeons must also be addressed [4]. Sexual harassment and sex discrimination of female residents cannot be tolerated [4]. Programs cannot tolerate bullying, belittlement, and mistreatment [1,18]. Residents subjects to these problems are probably more likely to quit surgery residencies.

Support programs, counseling, and crisis intervention

Support programs, counseling, and crisis intervention are important in every type of residency but are imperative in general surgery with the demands that are placed on residents. Individual therapy, marriage counseling, substance abuse counseling, and career counseling may be needed. Some residents report social support with spouses, family, friends and religious beliefs may help dealing with the stresses of residents; others may not have these luxuries and mechanisms to deal with discouragement, exhaustion and burnout [15]. Other residents report using exercise to deal with these stresses. Discouragement can be overwhelming to the point of quitting residency and then intervention may not be successful [4]. Residents experiencing stress and burnout may benefit from counseling before giving up [15,18].

Career counseling when quitting general surgery is inevitable

In many cases, issues leading to attrition can be mitigated, such as lack of confidence or questions about finding satisfaction in life as a surgeon [14,21]. In other instances, however, career counseling may necessary if quitting general surgery is inevitable, particularly if the individual has personality traits that are not conducive to the practice of surgery. Residents who do not prefer the long hours and physical demands of general surgery but like operating, for instance, may be better suited for a narrower scope of practice like a surgical subspecialty.

Frustration with the uncontrollable lifestyle and demands of surgery remains the number one reasons residents quit general surgery [3,4,11]. In our original study, some participants reported did not like operating and/or the operating suite [6,27]. It is hard to imagine matriculating into general surgery and then discovering that they do not like operating or the operating room [6,27]. This underscores the importance of early exposure to surgery and its environs in the education and training of prospective surgeons.

Educating medical students about the unique demands of general surgery residency and practice is crucial to ensure they are properly prepared for what life will be like in these positions [3,9]. Lack of adequate preparation in these areas leads to discouragement an increased risk for quitting [9]. Sometimes, an interest in long term relationships with patients such as emotional, social, and spiritual needs prompts residents to change specialties [6,27]. Physical demands such as call, night work, weekend and holiday call, emergencies and after-hours call make career changes necessary. A lack of grit or lack of passion and perseverance for long term goals may also contribute to career changes [10]. A resident may develop an interest in another surgical or medical specialty which may in turn prompt leaving general surgery. In rare situations, surgery residents leave medicine altogether and pursue a non-medical career [6,27].

Tables

Table 1: Identification of medical students matriculating into surgery at risk for attrition.

Lack of role models, mentors, and career counseling for surgery careers
Lack of surgery faculty involvement with student career planning in surgery [9]
Lack of female surgery role models and mentors [4,14]
Intention to practice medicine less than full time [27]
Not interested in a long residency [14]
Females matching into a surgery residency without accommodations for females [12]
Poor performance on the medical school general surgery clerkship [19]
Lack of medical student understanding aboutsurgery residency and practice
Lack of understanding of the demands and expectations of a surgery residency [3,4]
Lack of commitment to work, time and demands of a surgery residency and career [4]
Lack of interaction with current general surgery residents or recent graduates
Lack of exposure to the private practice of general surgery [14]
Desire for balance between career and personal life [12, 14]
Desire for control, autonomy and flexible schedules [12, 14]
Lack of medical student preparation for a surgery residency
Limited exposure to surgery, procedures, the operating room, postoperative care [9]
No acting internship, rotation or elective in surgery at a general surgery residency
Medical students who have not taken night, weekend and holiday call
Medical students who only shadowed or observed during a general surgery clerkship
Personality and Character Traits not Conducive to the Practice of Surgery
Students with a lack of confidence [21]
Students with poor management of stress [26]
Lack of grit or lack of passion and perseverance for long term goals [10]
Discrimination and sexual harassment of females in surgery
Feel out of place in the operating room [4,14]
Feel that surgery discriminates against women [4,14]
Sexual harassment of women in surgery [4,14]

Table 2: Identification of medical students matriculating into surgery at risk for attrition.

Lack of Guidancefrom the Residency Program
Lack of understanding of what the residency expects of them [4,22]
Worry over performance [21]
Residents taught work hour restrictions but workload is not commensurate with them
Surgery residents in programs that do not abide by work hour restrictions
No milestones, portfolios, feedback, evaluations, progress reports or encouragement [22]
Research year disconnected from other residents, clinical activities and hospital
Lack of Role Models and Mentors
No faculty mentor, role model, career counseling, or structured mentoring [9]
No female role models and mentors for female residents [4,12]
Lack of female surgeons to recruit female residents and attending staff
Lack of regular meetings and accessibility with mentors [15]
Lack of resident relationships with new interns [15]
Lack of perceived satisfaction of the specialty by mentors [23]
Lack of role models, mentors and respect for underrepresented minority residents [4,12]
Personality and Character Traits not Conducive to the Practice of Surgery
Frustration with the uncontrollable lifestyle and demands of surgery [3,4,11,29]
Feeling that life will be no better after residency
Do not like operating and/or the operating suite
Do not like correcting other surgeons' mistakes
Lack of confidence [21]
Poor management of stress [26]
Residents experiencing burnout [15]
Interest in long term relationships with patients (emotional, social, spiritual) [6]
Do not like night, weekend and holiday call, emergencies or after hours calls
Lack of grit or lack of passion and perseverance for long term goals [10]
Interest in another surgical or medical specialty
Lack of Accommodation for Females
Pregnant residents and those desiring to have children during residency [21,24]

No maternity leave and/or facilities for breastfeeding and pumping at work [21,24)]
No formal policies relating to pregnancy and call coverage [21,24]
Female surgery residents with young children [3,13]
Lack of availability of childcare [3,13]
Discrimination against Females in Surgery
Negative attitudes toward female residents and surgeons [4]
Sexual harassment and sex discrimination of female residents [4]
Female residents feeling unwanted and unwelcome in the operating suite [4]
Lack of Support Programs, Counseling, and Crisis Intervention
No social support with spouses, children, family, friends, religious beliefs [1]
No mechanisms to deal with resident discouragement, exhaustion, burnout
Discouragement to the point of quitting residency [4]
Bullying and Mistreatment
Resident who is the subject of bullying, belittlement and mistreatment [1,18]

Discussion

Identification of medical students applying for and matriculating into general surgery residencies and current general surgery residents at risk for attrition is often possible. With better education and preparation of medical students who want to pursue general surgery residencies and careers, it may be possible to reduce attrition later when they are residents. Prematriculation screening and selection [4], positive role models [12], faculty mentors [14], reduction of discrimination against females [14], exposure to private practice [13], screening for personality and character traits and psychological assessment may reduce the risk of attrition in medical students applying for surgery residencies [19,20].

Guidance during a surgery residency [21], mentors and role models [1], female specific accommodations [21,24], improving confidence [18], changing the culture of training programs [4] and support programs and counseling are important in reducing attrition for residents in training [15,26]. Career counseling is also important for those in whole quitting surgery residencies are inevitable [14,21].

With the dire shortage of general surgeons in this country, an opportunity existsto reduce attrition, attracting more interested medical students, and attracting females interested in general surgery. Subsequently, the residency must be made more attractive, to include the accommodation of female specific needs such as pregnancy, breastfeeding, childcare, etc [21,24]. Women remain the great opportunity for improving the numbers because we lose half of those who match.

The question remains that if most studies about residency attrition over time lists lifestyle as the number one reason that residents quit general surgery residencies, at what point do we intervene and make general surgery residencies better [1,3,4,8,9,12-15,18-20,24-26]?.

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