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FAMILY PHYSICIANS

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Burning Out Before
Completing Residency

ORIGINAL RESEARCH

Burnout & Depression in OFM Residents

OFM Residents &
Natural Family Planning

REVIEW ARTICLES

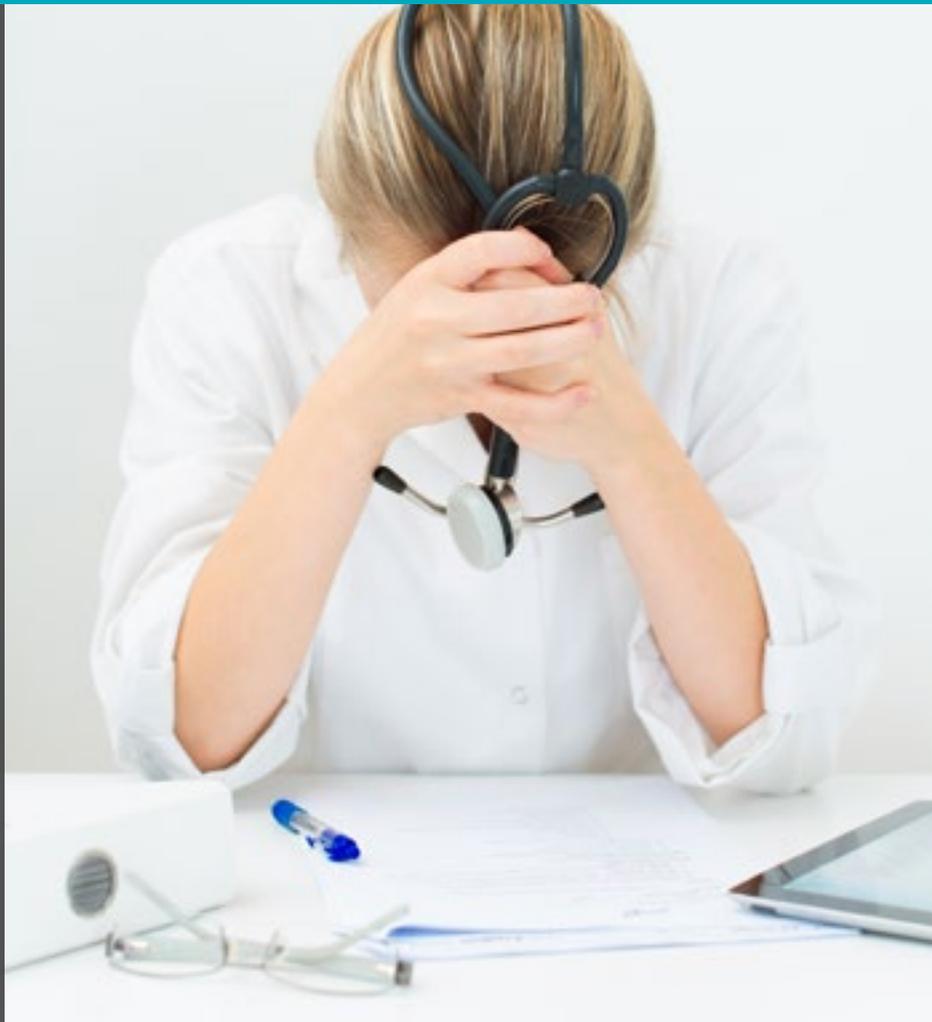
Constipation:
Osteopathic Consideration

Granulomatosis with Polyangiitis

Mandating a Simulation Component
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PATIENT EDUCATION HANDOUT

Constipation



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- » Current Management of the Menopausal Woman
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(with OMT treatment component)
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EDITOR'S MESSAGE

Burning Out Before Completing Residency & Other Issues to Ponder

Amy J. Keenum, DO, PharmD, Editor, Osteopathic Family Physician

In the current issue of *Osteopathic Family Physician*, two articles about residents are featured. One is about mandating a simulation component in residency training and the other looks into burnout and depression rates among residents. As simulation is now mandated for residency training in other disciplines of medicine e.g. surgery, the authors suggest that simulation should be mandatory in the training of osteopathic family physicians. The second article, while having a low response rate, concludes that osteopathic family medicine residents are generally burned out and have tendencies toward depression before they finish residency. What does that say about the way we go about our training and our work?

Recently while talking with a pediatric colleague on call, we discussed a phone conversation that had taken place with a parent about constipation and it occurred to me that this conversation rarely happens on the phone with or about adults. But in the office or the nursing home constipation is often a topic of conversation. Patients also talk about traveler's constipation though more is written about its famous opposite, traveler's diarrhea. This edition includes an article about constipation with a focus on osteopathic considerations.

An uncommon condition is featured in the article, Granulomatosis with Polyangiitis. It was taught in three courses in my osteopathic medical school but I have yet to see a case in my practice, though a friend's father did have it. The article includes an embedded case report to add interest.

The ins and outs of family planning are something all osteopathic family physicians need to know. All forms of contraception should be understood, including natural family planning, in order to have an intelligent conversation about contraception with your patients. This issue includes a review article on natural family planning, with the heads up that that failure rates of each method should be presented to patients.

NOW SEEKING

CLINICAL IMAGES



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This section showcases clinical images from the wards that cover essential concepts or subject matter to the primary care physician.

Each installment of "Clinical Images" comprises 1 or 2 medical images along with a brief synopsis of how the case presented along with 1-4 questions and approximately 1 page of education with reference to the image and questions.

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FROM THE PRESIDENT'S DESK



One Step Ahead: ACOFP Looking Out for Its Members

Kevin V. de Regnier, DO, FACOFP *dist.*

2015 - 2016 ACOFP President

CONCERNS ON POPULATION MANAGEMENT

Several months ago, I wrote about the passage of HR-2, *The Medicare Access and CHIP Reauthorization Act of 2015*, which repealed the deeply flawed Medicare sustainable growth rate formula.¹ In the months since the enactment of HR-2, the Center for Medicare and Medicaid Services, has been in dialog with physician organizations including the ACOFP regarding how to design the new payment systems authorized by the bill.

It is clear from both the MACRA law and the questions asked by CMS that the new payment systems being developed envisions family physicians and other primary care providers taking on significant responsibility for population management. Therein lies the rub; very few of us have had any training in population management. It certainly was not taught when I was in medical school or in residency. Population management has only recently been added to osteopathic medical school curriculum² and it still isn't part of the ACOFP family medicine residency standards.³

So what's a practicing family physician to do? Many of us are still struggling to implement electronic health records, keep up with CMS meaningful use requirements, make sure we submit our CMS Physician Quality Reporting data, see the volume of patients our employers expect, and provide the high quality care we know our patients deserve. One more thing on our plate is not what we were looking for.

What we need is a tool to help us integrate population management into our practices; to turn the hype of EHRs into reality. We need help learning how to adapt our practices to function in this new payment environment and we need to do it without breaking the bank or taking more time away from patient care.

THE ANSWER

The ACOFP has the answer. The good news; it may be FREE.

The ACOFP has partnered with Symphony Performance Health Analytics (SPHA) and the Consortium for Southeastern Hypertension Control (COSEHC) to provide our members with the tools and services they need to thrive in the coming payment environment.

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- Translate science to clinical application,
- Disseminate and implement evidence-based guidelines
- Develop partnerships with healthcare groups,
- Improve healthcare access,
- Develop population strategies
- Promote patient education and healthcare literacy⁴

COSEHC was the recipient of a CMS grant to provide the tools and assistance primary care practices need to effectively adopt and implement population health management. Both COSEHC and ACOFP had prior relationships with SPHA; ACOFP for our Quality Markers program and COSEHC for their own data analytics product.

QUALIFICATIONS

Under our new partnership, ANY ACOFP member who is NOT participating in a Medicare Shared Savings ACO or a Pioneer ACO is eligible to receive our ACOFP Quality Markers program AND practice transformation services from COSEHC at no charge. If you are in an office with other providers who are not ACOFP members, they can be included as well, as long as at least one ACOFP member is a part of the clinic staff and agrees to participate.

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If you would like to learn more about this opportunity to transform your practice and learn how to effectively use population management tools, visit the ACOFP website.

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ORIGINAL RESEARCH

Burnout, Depression, Non-Modifiable Factors, & Work Environment in Osteopathic Family Medicine Residents

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KEYWORDS:

Burnout

Resident Wellness

Work-Hour
Restrictions

Family Medicine

Osteopathic
Medicine

Depression

Objective: To improve the well-being of residents, several initiatives, including work-hour restrictions, have been implemented. The efficacy of these initiatives has not been widely studied. As such, the purpose of the current study was to evaluate burnout and depression in Osteopathic family medicine residents, examine non-modifiable factors influencing burnout, and assess the relationship of the work environment as it relates to burnout.

Methods: The current study used a cross-sectional study design and an anonymous, web-based survey to assess burnout and depression in Osteopathic family medicine residents. Residents received invitations to participate in the survey via e-mail. The survey was created specifically for the current study.

Results: In total, 316 Osteopathic family medicine residents completed the survey. Burnout was present in 69.0% of residents, and 87.9% met criteria for depression. Females were 1.8 times more likely than males to be burned out. No significant difference was found for overall burnout when examining, age, sexual orientation or relationship status. Residents who worked more than 80 hours per week had increased emotional exhaustion and decreased personal accomplishment. Finally, 23.0% of residents reported being very satisfied about balance between personal and professional life and 58.3% reported being very satisfied about family medicine as a career choice.

Conclusions: The current study suggested that Osteopathic family medicine residents experience high burnout and depression. These negative constituents of mental well-being still exist despite the changes instituted for work-hour restrictions. Additional research is needed to determine effective interventions for this ongoing problem.

INTRODUCTION

Within the past decade, changes have been made to residency training programs to reduce the number of hours worked per week.¹ These work-hour restrictions were implemented to improve the health and well-being of residents and to improve the quality of patient care.¹⁻⁴ Current standards for work hour restrictions are similar between Osteopathic and Allopathic residency programs.^{1,5-6}

After these policies were implemented, scarce research was conducted to examine the efficacy of these changes. From the studies that were conducted, a majority occurring within the first 3-4 years after the restrictions were implemented, a few trends started emerging. First, studies of Allopathic residency programs showed no change in patient mortality following the implementation of these policies in July 2003.^{1,7-9} Secondly, studies did not find a significant difference in burnout when comparing levels before and after the change in work-hour restrictions.^{7-8,10-12} However, one study suggested that, even though the standards for work hours changed according to the Accreditation Council for Graduate Medical Education & The American Osteopathic

Association, changes were not necessarily implemented.^{1,8-9} There appeared to be an underlying culture in which residents were not properly logging all the hours they worked to remain within the new restriction standards.¹ With the recent publicity and awareness regarding burnout, depression, dissatisfaction and suicide among today's physicians, it is evident that these issues are still plaguing the profession.¹²

Three factors are used to assess burnout: emotional exhaustion (EE), depersonalization (DP), and decreased sense of personal accomplishment (PA).^{9,11-16} Burnout has been associated with poor work performance, increased error rate, and decreased commitment.^{11,17} It has also been associated with increased health problems, substance abuse, suicidal ideation, and depression.¹⁰⁻¹¹ These factors can greatly affect health care, leading to increased medical errors that can affect patient morbidity and mortality.

With the rising rates of physician dissatisfaction and suicide, it has become evident that more research is needed to address this issue. Specifically, few studies have investigated family medicine or Osteopathic residency programs.¹⁰⁻¹¹ Therefore, the purpose of the current study was to evaluate burnout and depression in Osteopathic family medicine residents, examine non-modifiable factors influencing burnout, and assess the relationship of the work environment as it relates to burnout.

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METHODS

SURVEY DISTRIBUTION

For the current study, a cross-sectional study design was used to assess burnout and depression in Osteopathic family medicine residents using an anonymous, web-based survey. In January 2015, the American College of Osteopathic Family Physicians (ACOF) was approached about helping with the distribution of our survey because it has a complete list of e-mails for all current Osteopathic family medicine residents and because residents must subscribe to ACOF. The ACOF was emailed with a prompt and link to the survey and asked to forward the e-mail to all Osteopathic family medicine residents. To avoid response bias, the phrase "personal and professional satisfaction" was used in the survey prompt instead of burnout and depression. Residents interested in participating in the survey were asked to click on a link that forwarded them to an informed consent page. After reading the linked page containing the informed consent and providing consent, the residents were taken to the survey questions. The local institutional review board and ethics committee approved all study procedures.

Because the above distribution method resulted in a poor response rate, we e-mailed the Osteopathic program directors directly and asked them to invite their residents to complete the study survey. When contacting the program directors, we emphasized that the survey would be anonymous, and results would not be seen by the resident's program director or anyone related to the program. The entire data collection period ran for a total of five months, during which time the residents could complete the survey.

As an additional incentive for all residents who completed the survey, residents were given the opportunity to be entered into a drawing. By providing their e-mail address through a secure website, they would be entered to win an Amazon gift card; 10 gift cards were available (2 for \$100, 4 for \$50, and 4 for \$25).

SURVEY MEASURES

The study survey consisted of 32 questions and took approximately 5-7 minutes to complete. All survey questions were required, however, respondents were allowed to put "refuse to answer" for any questions they did not feel comfortable answering. Basic demographic questions were included requesting information about gender, age, year in training, relationship status, the number of children and sexual orientation. The Maslach Burnout Inventory-Human Services Survey (MBI-HSS)¹³ was also included to quantify burnout in survey respondents. This scale assesses three specific variables to quantify burnout: EE (9 questions), elevated DP (5 questions) and decreased sense of PA (8 questions). These three variables were analyzed as both categorical and continuous variables. The MBI-HSS was graded on a 7-point scale with 1 being "never" and 7 being "every day," resulting in the following ranges: EE (0 to 63 points), DP (0 to 35 points), and PA (0 to 56 points). Arithmetic mean was used to find the average for each subscale using each resident's response to questions within that subscale. Categorical variables, based on a cut-off provided by the developer, were used to classify survey respondents as having low, moderate, or high on the burnout scale.¹³ For the current study, we created a burnout category which has been used and validated in previous studies.¹⁴⁻¹⁵ This included individuals with high EE or decreased the sense of PA, which allowed us to look more closely at the overall burnout rate.

The Patient Health Questionnaire (PHQ-9)¹⁸ was also included in the study survey to assess depression and severity of depression. Responses to this 9-question survey are scored on a scale of 0 for "not at all" to 3 for "nearly every day," with ranges from 0-27 points. The following cutoffs were used in the current study to classify depression: minimal (1-4 points), mild (5-9 points), moderate (10-14 points), moderately severe (15-19 points), and severe (20-27 points). We used categorical and continuous variables for our statistical and descriptive analyses. Responses to this part of the survey were not meant to diagnosis someone with "clinical depression," but rather to provide a quantitative measure of depression.

Questions were also included in the study survey to assess the resident's work environment. These questions, which used a Likert-like scale, included factors such as stress level at work and how the 80-hour work limit affected the resident's stress level and performance. We also included questions about on-call schedule, night/weekend schedule, work schedule, and sleeping habits. Finally, we included questions that asked residents about personal and professional life satisfaction. Specifically, using a Likert scale, residents were asked how satisfied they were with the balance between their personal and professional life and how satisfied they were with their choice of family medicine as a career.

STATISTICAL ANALYSIS

SPSS version 18.0 predictive analytic program (IBM, Chicago, IL) was used for all statistical analyses. Percentage, mean, confidence interval (CI), and standard deviation (SD) were reported when applicable. A χ^2 test of independence was performed to examine the relationship between burnout and gender, age, relationship status, sexual orientation, depression, on-call schedule, night/weekend schedule, work schedule, and sleeping habits. To further examine the subscales of burnout (EE, DP, and PA), either a 1-way analysis of variance in conjunction with Tukey posthoc comparisons or an independent samples t-test was used for comparisons between burnout subscales and gender, age, relationship status, sexual orientation, depression, on-call schedule, night/weekend schedule, work schedule, and sleeping habits. Cronbach α was used to examine the reliability of the scales used in the current study. A $p \leq .05$ was considered statistically significant.

RESULTS

RESIDENT CHARACTERISTICS

Approximately 1700 Osteopathic family medicine residents were e-mailed an invitation to complete the study survey. From this total, 316 residents responded to the survey, resulting in a response rate of 18.6%: 145 residents responded from the initial e-mail invitation sent by the ACOF, and 171 responded to the e-mail sent by the Osteopathic program directors. Table 1 (page 14) presents the demographic characteristics of the residents who responded to our survey. Approximately an equal number of male (45.9%) and female residents completed our survey, with a large percentage (87.3%) falling within the 26 to 35 years age group. We had a slightly higher number of first-year residents (38.3%) respond than second-year or third-year residents (30.4% and 31.3%). Further, 60.8% of residents were married or living as married, and the majority (64.6%) had no children. Finally, 6.0% of residents self-identified as lesbian / gay / bisexual / asexual.

TABLE 1:

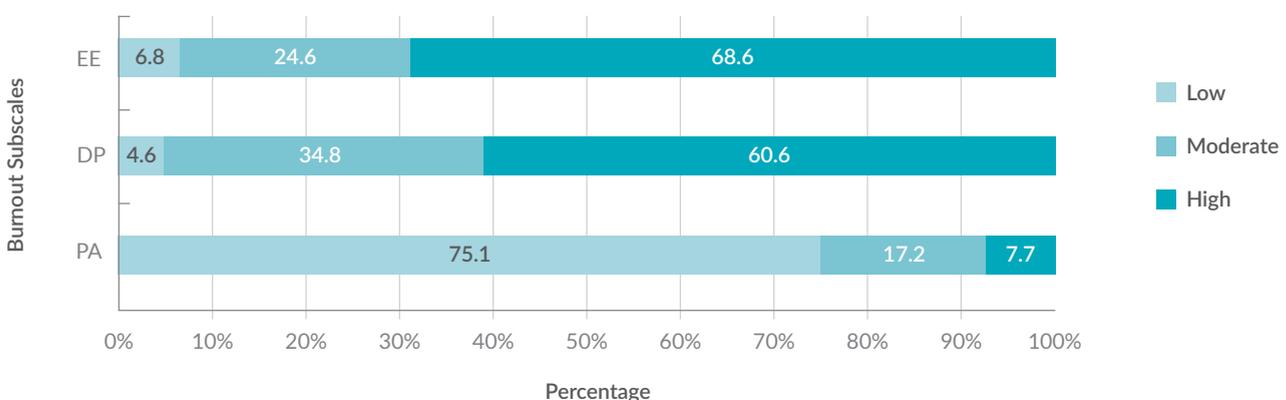
Characteristics of Osteopathic Family Medicine Residents (N=316)

DEMOGRAPHIC CHARACTERISTICS		No. (%)
Gender	Male	145 (45.9)
	Female	169 (53.5)
	NA ^a	2 (0.6)
Age, y	26 - 35	276 (87.3)
	36 - 45	21 (6.6)
	46 - 55	12 (3.8)
	Over 56	2 (0.6)
	NA ^a	3 (0.9)
Year in Training	OGME I	121 (38.3)
	OGME II	96 (30.4)
	OGME III	99 (31.3)
Relationship Status	Never Married	116 (36.7)
	Married / Living as Married	116 (36.7)
	Separated / Divorced	5 (1.6)
	NA ^a	3 (0.9)
Sexual Orientation	Heterosexual	292 (92.4)
	Lesbian/Gay/Bisexual/Asexual	19 (6.0)
	NA ^a	5 (1.6)

^a Refers to the number of residents who completed the survey but did not provide an answer to this specific question or responded "refuse to answer." Abbreviation: OGME, Osteopathic Graduate Medical Education.

FIGURE 1:

Frequency Distribution of the Burnout Subscales of Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA)



BURNOUT & DEPRESSION

Based on the MBI-HSS criteria, 218 (69.0%) of Osteopathic family medicine residents were burned out. Figure 1 displays the frequency distribution of the burnout subscales. Specifically, 192 residents (68.6%) had high EE, 171 (60.6%) had high DP, and 205 (75.1%) had a low sense of PA. Mean (SD) scores for EE (33.33 [11.67] points) and DP (15.66 [6.73] points) were both within the high range, and PA (43.52 [7.60] points) was in the low range.

In the current study, 240 residents (87.9%) met the PHQ-9 criteria for some level of depression. Specifically, 33 (12.1%) residents were not depressed, 125 (45.8%) had minimal depression, 61 (22.3%) had mild depression, 28 (10.3%) had moderate depression, 16 (5.9%) had moderately severe depression, and 10 (3.7%) had severe depression.

NON-MODIFIABLE FACTORS INFLUENCING BURNOUT

GENDER

When comparing burnout and gender, 90 (62.1%) males and 127 (75.1%) females met criteria for burnout. The odds of having burnout were 1.8 times greater for females than for males (95% CI, 1.14-2.99; p=.01). The mean (SD) EE in males (31.14 [11.91] points) was statistically different than in females (35.15 [11.19] points, t(277)=2.90, p=.004). The mean DP and PA were not significantly different for males and females (15.62 vs 15.68 points and 42.62 vs 44.29 points).

AGE & SEXUAL ORIENTATION

No statistically significant difference was found for burnout between the different age groups ($\chi^2(3, 311)=5.67, p=.13$) or based on sexual orientation ($\chi^2(1, 311)=0.02, p=.89$). Examination of the burnout subscales also found no statistical differences for age ($\chi^2(3, 277)=158.44, p=.43$ for EE; $\chi^2(3, 279)=95.68, p=.25$ for DP; $\chi^2(3, 270)=71.31, p=.98$ for PA) or sexual orientation ($\chi^2(1, 278)=39.66, p=.90$ for EE; $\chi^2(1, 280)=37.04, p=.15$ for DP; $\chi^2(1, 271)=24.49, p=.86$ for PA).

RELATIONSHIP STATUS

No statistically significant difference was found for overall burnout between the different relationship status groups ($\chi^2(2, 313)=3.17, p=.21$). Examination of the burnout subscales

found a statistical difference for EE ($F(2, 277)=6.01, p=.003$), DP ($F(2, 269)=4.77, p=.009$), and PA ($F(2, 275)=5.72, p=.004$). A post-hoc Tukey multiple comparisons test found those who were never married reported the highest DP, and those who were divorced or separated reported the lowest DP. Those who were married or living as married reported the highest PA, and those who were never married reported the lowest PA. Finally, those who were divorced or separated reported the highest EE, and those who were married or living as married reported the lowest EE.

DEPRESSION

When comparing burnout and level of depression, residents with higher levels of depression were more likely to have burnout than those who were not depressed ($\chi^2(5, 273)=64.17, p<.001$). Examination of the burnout subscales found a statistical difference for all three subscales: EE ($F(5, 261)=39.92, p<.001$), DP ($F(5, 261)=11.65, p<.001$), and PA ($F(5, 253)=6.54, p<.001$). A post-hoc Tukey multiple comparisons test found that those residents who had higher levels of depression reported more EE and DP and less PA.

WORK ENVIRONMENT & BURNOUT

When asked if the 80-hour work limit had improved their overall stress level, 65 residents (21.6%) indicated that they strongly agreed, 87 (28.9%) agreed, 102 (33.8%) were neutral, 31 (10.3%) disagreed, and 16 (5.3%) strongly disagreed. When asked if the 80-hour work limit had improved their overall work performance, 55 (18.3%) strongly agreed, 86 (28.6%) agreed, 111 (36.9%) were neutral, 33 (11.0%) disagreed, and 16 (5.3%) strongly disagreed.

Table 2 summarizes survey responses about work environment factors, including on-call schedule, night/weekend schedule, work schedule, and sleeping habits. In general, 73.5% of Osteopathic family medicine residents were on call less than five days per month, and 69.7% worked nights/weekends less than five days per month. For work schedule, 58.3% reported working between 60-80 hours. For sleeping habits, 78.6% slept between 6-8 hours a night.

ON-CALL SCHEDULE

No statistically significant difference was found between burnout and the different on-call schedule groups ($\chi^2(3, 309)=1.46, p=.69$). Examination of the burnout subscales found a statistical difference for EE ($F(3, 274)=3.47, p=.02$), but no difference for DP ($F(3, 276)=0.98, p=.40$) or PA ($F(3, 268)=0.30, p=.83$). Post-hoc comparisons found that residents who were on call for more than 16 days per month had the highest EE.

NIGHT/WEEKEND SCHEDULE

No statistically significant difference was found between burnout and the different night/weekend schedule groups ($\chi^2(3, 310)=2.52, p=.47$). Examination of the burnout subscales also found no statistical differences ($F(3, 274)=1.14, p=.35$ for EE; $F(3, 276)=1.52, p=.21$ for DP; $F(3, 268)=1.41, p=.24$ for PA).

WORK SCHEDULE

No statistically significant difference was found between burnout and the different work schedule groups ($\chi^2(3, 312)=3.15, p=.37$).

TABLE 2:

Work Environment Factors in Osteopathic Family Medicine Residents (N=316)

WORK ENVIRONMENT FACTOR		No. (%)
On-call Schedule (per month), d	< 5	227 (73.5)
	5 - 10	74 (23.9)
	11 - 15	7 (2.3)
	> 16	1 (0.3)
Night / Weekend Schedule (per month), d	< 5	216 (69.7)
	5 - 10	86 (27.7)
	11 - 15	6 (1.9)
	> 16	2 (0.6)
Work Schedule (average per week), h	> 80	12 (3.8)
	60 - 80	182 (58.3)
	40 - 59	113 (36.2)
	20 - 39	5 (1.6)
Sleep Habits (average per night), h	> 8	7 (2.2)
	7 - 8	120 (38.5)
	6 - 7	125 (40.1)
	5 - 6	48 (15.4)
	< 5	12 (3.8)

Examination of the burnout subscales found a statistical difference for EE ($F(3, 276)=4.40, p=.005$) and PA ($F(3, 269)=2.60, p=.05$), but not for DP ($F(3, 278)=1.69, p=.17$). Post-hoc comparisons found that residents who worked more than 80 hours per week had the highest EE, and those who worked between 40-59 hours had the lowest EE. Residents who worked 60-80 hours a week had the highest PA, and those who worked 20-39 hours a week had the lowest PA.

SLEEPING HABITS

No statistically significant difference was found between burnout and the different sleeping habits groups ($\chi^2(4, 312)=7.41, p=.12$). Examination of the burnout subscales found a statistical difference for EE ($F(4, 275)=5.83, p<.001$), but no differences for DP ($F(4, 277)=1.95, p=.10$) or PA ($F(4, 268)=0.41, p=.80$). Post-hoc comparisons found that residents who slept less than five hours per night had the highest EE, and those who slept more than eight hours had the lowest EE.

PERSONAL AND PROFESSIONAL LIFE SATISFACTION

For survey questions about balance between personal and professional life, 70 (23.0%) reported being very satisfied, 127 (41.6%) reported being somewhat satisfied, 24 (7.9%) reported feeling neutral, 60 (19.7%) reported being somewhat dissatisfied, and 24 (7.9%) reported being very dissatisfied. For survey questions about career satisfaction, 176 residents (58.3%) reported being very satisfied, 70 (26.2%) reported being somewhat satisfied, 15 (5.0%) reported being ambivalent, 23 (7.6%) reported being somewhat dissatisfied, and 9 (3.0%) reported being very dissatisfied.

RELIABILITY OF THE SCALES

A Cronbach α correlation coefficient was used to assess the internal consistency of the scales. For the MBI-HSS, the Cronbach α for the burnout score was 0.93. The Cronbach α for the three burnout subscales was 0.92 for EE, 0.82 for DP, and 0.82 for PA. The PHQ-9 had a Cronbach α of 0.90.

DISCUSSION

The purpose of the current study was to evaluate burnout and depression in Osteopathic family medicine residents, examine non-modifiable factors influencing burnout, and assess the relationship of the work environment as it relates to burnout. To our knowledge, since changes were implemented for work-hour restrictions, no studies have examined Osteopathic family medicine resident burnout. Therefore, results of the current study may provide additional information about the consequences of those changes and how they have impacted Osteopathic family medicine residents and, as such, the patients that they care for.

In the current study, 69.0% of Osteopathic family medicine residents met the MBI-HSS criteria for burnout. For the burnout subscales, 68.6% of residents had high EE, 60.6% had high DP, and 75.1% had a low sense of PA. Previous research has suggested that overall burnout rates in all resident specialties range from 27%-75%.^{2-4,10} Martini et al¹⁹ found that the overall rate of burnout was 27% in family medicine residents. Results of the current study suggested current Osteopathic family medicine residents had a higher rate of burnout than residents in previous studies. Given that this is the first study specifically targeting Osteopathic family medicine residents more studies are needed to solidify the actual rates of burnout in this population.

Several factors may explain our higher burnout results. For example, current residents may have increased time constraints from work-hour restrictions because they are required to perform the same amount of work in less time. As a result, work not completed during work hours may be expected to be done on the resident's own time, causing increased pressure and stress.

Additionally, current residency programs may be enforcing standards for work hours and other restrictions, whereas previous research seemed to indicate these standards were not being followed.⁸ Therefore, enforcement of these standards could be contributing to the increased burnout we observed because residents may be precluded from some events or educational opportunities (such as performing time-sensitive procedures or missing interesting cases) due to work-hour or other time restrictions.

When comparing burnout results with the non-modifiable factors of gender, age, sexual orientation, and relationship status, some interesting results emerged. Gender significantly impacted burnout and all three burnout subscales. Female residents were 1.8 times more likely to be burned out compared with male residents. Other studies have shown mixed results regarding burnout and gender, but there is no current consensus.¹⁰⁻¹¹ When comparing burnout with age and sexual orientation, we found no significant differences. The sexual orientation finding contradicts previous research, which suggests that sexual minorities are at increased risk of burnout due to minority stress.²⁰ Finally, for relationship status, we found no differences for burnout, but there were significant differences for the burnout subscales. Specifically, residents who were never married had the highest DP and the lowest PA. Residents who were married or living as married had the highest PA and the lowest EE, and those who were divorced or separated reported the lowest DP and the highest EE. Research is mixed about the role of relationship status and burnout.¹⁰⁻¹¹ More research is needed to elucidate the potential differences.

When evaluating depression in the Osteopathic family medicine residents of the current study, 87.9% of residents met criteria for some level of depression, and 3.7% were classified as having severe depression. Our analyses found a higher rate of burnout in those residents who were depressed, and comparisons with the burnout subscales were also statistically significant. These results are comparable to a study examining Osteopathic medical students that found 77.7% of students met criteria for some level of depression, and 2.4% had severe depression.²¹

When comparing burnout with the work environment, we found no statistical differences. However, when comparing the burnout subscales with the work environment, some interesting trends emerged. For on-call schedule, residents with the highest number of on-call days had the highest degree of EE. Residents who worked more than 80 hours per week also had the highest EE, while those working 40-59 hours had the lowest. Personal accomplishment was highest in residents who worked 20-39 hours a week and lowest in those who worked 60-80 hours. Finally, for sleeping habits, residents who slept more had lower EE. This finding was consistent with previous research that showed decreased sleep was related to high burnout in both medical students and residents.^{1,22}

The current study had several limitations, including response bias, unacceptability bias, and selection bias. Residents who were unhappy may have been more responsive and motivated to return our study survey, despite our efforts to minimize these response biases. Therefore, the survey responses from participating residents may not represent the overall Osteopathic family medicine population. Residents who did not respond to our survey may have had either higher or lower burnout rates compared with those who did respond. Because depression and burnout are viewed in a negative light, those residents who did respond to our survey may not have been completely honest when answering survey questions due to feelings of embarrassment. This unacceptability may have been especially problematic for those residents who are familiar with the tools used to screen patients for depression. As our study design was cross-sectional, inferences about the progression of mental health during medical education may be limited.

Future research is needed to further elucidate several important factors. First, studies should examine why Osteopathic family medicine residents appear to have higher rates of burnout than residents in previous research, and what specific factors may be contributing to these higher rates. Further research is also needed to better examine the role that non-modifiable factors play in regard to burnout and how specific interventions may be needed to target individual subgroups of the population. Finally, more research is needed in regards to the new work environment that our residents are functioning within and how this environment is impacting current residents' well-being.

CONCLUSIONS

Results from the current study suggested that factors, including non-modifiable factors and work environment, may impact burnout in Osteopathic family medicine residents. As our findings suggest and despite mandated work-hour restrictions, burnout and depression still seem to be a prevailing issue experienced by today's residents. With the rising rates of physician dissatisfaction and suicide, it becomes imperative to discover ways of combating this serious issue.

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ORIGINAL RESEARCH

Osteopathic Family Medicine Residents' Knowledge, Views, & Management of Natural Family Planning

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KEYWORDS:

Natural Family Planning

Osteopathic Medical Education

Fertility Awareness

Abstract: Very few studies have been conducted to examine osteopathic family medicine residents' views on natural family planning (NFP). This study surveyed osteopathic family medicine residents to better understand their knowledge, views, and education of the topic. The study also examined residents' thoughts on incorporating NFP into their future practice. The survey demonstrates that few residents discuss NFP with patients, yet a majority is interested in learning about the topic and possibly incorporating it into their future practice. Female osteopathic family medicine residents were found to be significantly more interested in learning about and incorporating NFP into their practice. Despite the interest in NFP by residents, very little time has been devoted to NFP education in medical school and residency.

INTRODUCTION

Osteopathic medicine is a holistic approach to medicine that takes into account a patient's physical, emotional, and spiritual needs.¹ These needs are important for physicians to consider when managing women's health, as many women have religious and philosophical ideas that shape their viewpoints on conception and family planning. Some women are unable to use hormonal contraception due to medical reasons, while others are opposed to using hormones for personal or religious reasons, resulting in many women and their partners considering natural family planning (NFP). However, a majority of physicians are not familiar with a holistic approach to women's health that includes natural family planning as a potential option during contraceptive counseling.²⁻⁵ Studies show that physicians need to increase their awareness and knowledge of NFP in order to better communicate with patients on the topic.^{2-4,6} Although not all osteopathic physicians may find NFP as a favorable option for patients, it is important that all physicians are knowledgeable on the subject and able to discuss it with patients that are interested.

To better educate physicians on NFP, the discussion needs to begin at both the medical school and residency training levels. Unfortunately, only a quarter of family medicine residency programs include NFP in their curriculum⁶ while medical school typically dedicates less than one hour to the education of NFP.⁵ It is no surprise then that younger physicians are less likely to be informed of NFP and are less likely to incorporate it into their medical practice, as compared to older physicians.²

The purpose of this study is to evaluate osteopathic family medicine residents' training on NFP, both in medical school and

residency. It will aim to better understand osteopathic family medicine residents' views, perceptions, and management of NFP.

For this study, NFP has been defined as a form of fertility awareness that looks at physical signs or symptoms to identify fertile periods within a woman's menstrual cycle. Pregnancy is avoided by abstaining from intercourse during these fertile days. On the other hand, a woman who wishes to conceive can use the identification of her fertile period to try to achieve pregnancy.^{7,8} The methods of NFP included within this study are basal body temperature charting, calendar calculations, cervical mucus monitoring, lactational amenorrhea, or a combination of the above.

METHODS

A cross-sectional questionnaire-based study was approved by the institutional review board of A.T. Still University in Kirksville, Missouri. The study surveyed osteopathic family medicine residents on their knowledge, views, and management of NFP. The survey contained a total of 22 multiple-choice questions. There were four demographic questions asking about age, gender, year of residency, and marital status. Two questions asked about participants' personal use of NFP. Another 12 questions were dedicated to resident's knowledge and practice management of NFP. The last four questions inquired about NFP education in medical school and residency. Two of the questions and answer choices regarding resident's management of NFP were used with permission by Dr. Joseph Stanford from his study titled "Physicians' Knowledge and Practices Regarding Natural Family Planning" from *Obstetrics and Gynecology* 1999; 94:672-678.

An electronic survey was developed using the online software SurveyMonkey. In the spring of 2014, an email was sent to all osteopathic family medicine residents that are members of the American College of Osteopathic Family Physicians (ACOF) inviting them to participate in the survey. To keep the survey as

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anonymous as possible, the email was sent with assistance from the ACOFP. The email contained a web link to the online survey. The survey was sent to approximately 1400 individuals and was available online for four weeks. Participation in the study was completely voluntary. All results were anonymous, with no personal identifiers or email addresses linked to survey answers. As an incentive to increase participation in the questionnaire, participants had the opportunity to enter to win a \$50.00 gift certificate to Amazon. Purchase of the gift card was self-funded. One randomly selected individual received the gift card.

Statistical analysis was performed using SAS software version 9.3. Analysis included chi-square tests of independence and Fisher's exact tests. P values less than 0.05 were considered statistically significant. Key comparisons were made between family medicine residents of different genders, age groups, marital status, and year in residency.

RESULTS

DEMOGRAPHICS

The survey was sent to approximately 1400 individuals, of whom, 172 responded (approximately 12%). Table 1 shows the demographic characteristics of participants.

PERSONAL USE OF NFP

When it came to the personal use of NFP, 76% of participants did not currently use NFP, while 13% did currently use some form of NFP (compared to the national average of 1.1%⁹) and 11% replied that it was not applicable. Marital status was found to be significantly associated with personal use of NFP ($P=0.03$). Married family medicine residents were almost three times more likely to use NFP than their non-married counterparts.

The responses were slightly different when participants were asked if they had ever used NFP. Sixty-eight percent had never used NFP, 23% had used NFP in the past (compared to the national average of 21%⁹), and 9% responded not applicable. Again marital status and past use of NFP were statistically significant ($P=0.008$). Family medicine residents who have used NFP in the past were 1.5 times more likely to be married.

KNOWLEDGE AND MANAGEMENT OF NFP

When asked how familiar osteopathic family medicine residents were with NFP, 56% responded somewhat familiar, 34% stated they were knowledgeable, and 10% stated not at all familiar. Second and third year residents were significantly more likely to be knowledgeable in NFP than their first year counterparts ($P=0.03$). As the year of residency increased, fewer residents indicated not being familiar with NFP.

Residents were also asked how comfortable they would feel discussing the possible use of NFP for contraception with a patient. Half (49%) of the responders stated "somewhat comfortable." Twenty percent stated "very comfortable," 17% responded "very uncomfortable," and 14% were neutral. It was found that married family medicine residents were significantly ($P=0.0185$) more comfortable discussing the possible use of NFP for contraception than their non-married counterparts. Nearly 30% of married residents were "very comfortable" versus only 8% of non-married resi-

TABLE 1:

Demographic Characteristics of Osteopathic Family Medicine Residents (n = 172)

DEMOGRAPHIC CHARACTERISTICS		No. (%)
Gender	Male	38
	Female	62
Age	20 - 25	1
	26 - 30	56
	31 - 35	30
	36 - 40	6.5
	41 - 45	3
	46 +	3.5
Relationship Status	Married	57
	Single	34
	Co-habiting	7
	Divorced	2
	Widowed	0
Year in Residency	First	25
	Second	34
	Third	36
	Fourth	5

dents. It was also found that the more familiar a resident is with NFP, the more comfortable he/she is discussing the subject with patients ($P<0.001$).

When asked if a patient had ever asked them about NFP, a majority (67%) of family medicine residents responded "no." However, there was a statistical significance ($P=0.01$) between the year in residency and answer to this question. The further along a resident was in training, the more likely a resident was to have had a patient inquire about NFP. It was also found that residents between the ages of 31-35 were 1.6 times more likely to have had a patient ask them about NFP than those residents aged 26-30 ($P=0.04$).

When family medicine residents were asked how effective they believe NFP is for contraception compared to other forms of birth control, 45% thought significantly less effective, 39% stated somewhat less effective, 15% stated similarly effective, and 1% responded more effective. Interestingly, when asked how effective they thought NFP was for achieving pregnancy, 56% of family medicine residents responded somewhat effective, 43% stated very effectively, and 1% stated not at all effective.

Two of the survey questions were used with permission from Stanford.³ The first question asked residents if they ever mention NFP when providing contraceptive management, with a majority (47%) of residents responding “never.” Another 23% mention NFP, but with reservations. Twenty-seven percent of residents stated they mention NFP as a viable option to selected patients while 3% mention it as a viable option to all of their patients. When asked about providing advice on achieving pregnancy, interestingly, about one-third (36%) of residents mention NFP as a viable option for selected patients and another 27% mention it as a viable option for all patients. Only 25% never mention NFP as an option, and another 12% mention it with reservations. Female family medicine residents were found to be 2.8 times more likely ($P=0.002$) to mention NFP as an option for achieving pregnancy than male residents.

When it came to plans for incorporating NFP into their future practice, 44% osteopathic family medicine residents were unsure at this time. Another 40% stated they planned to incorporate NFP while 16% stated they had no plans of using it. Female residents were 1.5 times more likely to incorporate NFP into their future practices than male residents ($P=0.03$).

A majority (67%) of residents report that their residency clinic does not have any literature or pamphlets on NFP available to hand out to patients while only 7% stated literature was available. Another 26% of residents were unsure. Again, a majority (78%) of family medicine residents are not familiar with any organizations or instructors of NFP. While 20% are somewhat familiar, and 2% are very familiar. When asked if they would refer a patient interested in NFP to an organization or instructor, 30% of residents stated “yes.” Another 25% stated “maybe” and 4% stated “no.” Forty-two percent of family medicine residents responded they would not know where to refer a patient who was interested in NFP.

MEDICAL SCHOOL & RESIDENCY EDUCATION ON NFP

A majority (56%) of participants stated that less than one hour of their osteopathic medical education was spent discussing NFP. Another 27% stated no time was spent on NFP education while 16% stated between 1-5 hours were spent, and 1% had over 5 hours of their medical education devoted to NFP.

When asked how much time was devoted to their residency training to NFP, 45% of residents responded none. Of those residents in this study that did report some education on NFP, 37% stated they received less than one hour, 16% stated between 1-5 hours, and 2% responded greater than 5 hours.

A little over half (58%) of participants stated that some of their family medicine residency program faculty were familiar with NFP. Another 14% of residents stated none of their faculty was familiar with NFP while 12% responded their entire faculty was familiar. Approximately 15% of residents did not know how familiar their teaching faculty was with NFP.

Interestingly, 45% of participants would like to see their family medicine residency program include NFP in its women’s health curriculum for all residents. Thirty-three percent stated that they would “maybe” want to have NFP included in their residency curriculum, and 11% would like to see it included only for those residents interested in the subject. Another 10% did not want NFP in-

cluded at all in their residency curriculum. There was a significant relationship ($P=0.04$) between female gender and those desiring NFP curriculum in their residency program. Female participants were 1.7 times more likely to desire that NFP curriculum is included for everyone in their family medicine residency program.

DISCUSSION

Very few studies have examined family medicine residents’ knowledge and management of NFP. To the best of our knowledge, this is the first research that investigated osteopathic family medicine residents’ opinions, knowledge, and education of NFP. Similar to studies performed by Choi and Stanford, this study showed that a majority of resident physicians do not believe that NFP is an effective form of contraception compared to other methods of birth control.^{2,3}

The percentage of osteopathic family medicine residents in this study who discussed NFP as a contraceptive option with patients was similar to that found in a Canadian study by Choi,² but was fewer than that found by Stanford.³ And when it came to discussing NFP as a way to achieve pregnancy, similar results were seen in this study compared to that by Choi.² The similar results between this study and that of Choi may be attributed to the fact that both included resident physicians, whereas the study by Stanford did not. Interestingly, in this study female residents were 2.8 times more likely to mention NFP as an option for achieving pregnancy than male counterparts.

This study has demonstrated that osteopathic family medicine residents have little education or training in NFP. Eighty-three percent of residents stated they had either no training or less than one hour of training in medical school, confirming what had previously been reported by Fehrig.⁵ Again, another 45% stated they had no training on NFP in residency, which is even higher than the 25% reported by Duane.⁶ It is interesting that little time is devoted to NFP education, yet almost half of residents in this study would like to see NFP incorporated into their curriculum, with female residents showing an even greater interest.

This study further confirms the importance of NFP education by demonstrating that the more familiar a resident is with NFP, the more comfortable he or she feels discussing the topic with patients. If more education time could be devoted to NFP, it is likely that family medicine residents would be more comfortable with the topic, and thus, more likely to bring it up in conversation with patients. This study also shows that a large number of osteopathic family medicine residents plan to incorporate or are considering incorporating NFP into their future practice. With a majority of residents potentially counseling women on NFP in the future, it is crucial that residency programs incorporate it into their curriculum. To help increase education on NFP, residents need to become more aware of organizations in their area that can teach patients, as well as provide literature to those that are interested. In this study, 42% of residents did not know where to refer a patient who was interested in NFP, which is even higher than the 25% reported by Stanford.³ All osteopathic family medicine residents practicing women’s health should be able to address the basics of NFP and know where to refer their patients who desire more information on the subject. Future education of residents should involve the basics of fertility awareness methods, evidence of the efficacy of

these methods, and the physiology behind them. Education could also include further instruction by certified practitioners and teachers of the different NFP methods.

A weakness of this study was that it only involved a small percentage (12%) of osteopathic family medicine residents, and may not reflect the true majority of residents' views. Those residents that did choose to respond to the survey may have done so because of a bias or personal interest in the subject. After all, this study had a larger number of people who admitted to using or having used NFP compared to the national average. In this study, 13% of responders were currently using NFP and another 26% had used it at some point in the past. Again, these values are higher than the national average as reported in the 2006-2008 National Survey of Family Growth, in which 1.1% of U.S. women were currently using fertility based methods and another 21% had used it at some point.⁹ Another limitation of the study may involve the majority of responders being female (62%). Female family medicine residents may have been more interested in the subject of the questionnaire, and thus, more likely to respond to it. Again, leaving the results of this questionnaire possibly biased towards female residents' views.

Future investigations could involve obtaining greater participation, by including both osteopathic family medicine residents and osteopathic obstetrics and gynecology (Ob-Gyn) residents in the study. It would also be interesting to survey participants on their religious preferences, as done in the study by Lawrence,⁴ to see if residents' religious background impacts their knowledge and views of NFP.

CONCLUSION

Only a small proportion of family medicine residents in this study discuss NFP with patients, yet many resident physicians, especially female residents, are interested in the topic. This study demonstrates that little osteopathic training is dedicated to NFP education. Osteopathic medical schools and family medicine residency programs should consider including NFP in their curriculum to not only meet the needs of their resident physicians but also to continue to fulfill the osteopathic approach to holistic medicine.

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DISCLOSURE STATEMENT:

Robert Schneider, DO, FAAFP is a Natural Family Planning Medical Consultant with Creighton Model FertilityCare System. His wife, Susan Schneider, BA is a Practitioner with Creighton Model FertilityCare System.

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REVIEW ARTICLE

Constipation: A Review with Osteopathic Consideration

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KEYWORDS:

Constipation

Laxative

Osteopathic
Manipulation

Abstract: Constipation, though usually not associated with life-threatening disease, is a common condition that impairs quality of life. Patients describe a variety of symptoms associated with a diagnosis of constipation. Primary constipation may be related to dysfunction of the pelvic floor, anorectal structures or colonic motility while secondary constipation may be related to medications or other etiologies. A complete history and physical examination, including digital rectal examination, will clarify the diagnosis in most cases. Patients with alarming symptoms may require further evaluation with endoscopy. The primary goal is for relief of symptoms with regular bowel movements. Fiber, increased physical activity and laxatives have all been shown to improve functional constipation. Osteopathic manipulative therapy in patients with chronic constipation may reduce symptoms, colonic transit time and the need for laxatives.

INTRODUCTION

"A halt has come; the bowels have failed in their function; the power to pass out faecal matter is lost or overcome from some cause."¹ - *Andrew Taylor Still*

Constipation is a common gastrointestinal complaint in family medicine.² Up to 28 percent of American adults meet criteria for constipation at some time in their lives.^{3,4} Among adults, constipation is more commonly associated with nonwhite ethnicity, lower socioeconomic status and older age.^{4,5} Constipation is diagnosed in three percent of all children presenting to a pediatrician and accounts for up to 25 percent of referrals to pediatric gastroenterologists.⁶ In children, constipation is more likely in males or in association with autism and cerebral palsy.⁶ Constipation can both decrease the quality of life and increase health care use and costs.^{7,8,9,10}

DEFINITION

Although physicians usually regard constipation as infrequent bowel movements, patients may describe a broader set of symptoms, including hard stools, straining, abdominal discomfort or bloating.^{11,12} The 2006 Rome III criteria can aid in the diagnosis of functional constipation in adults (*Table 1*).¹³ To meet this criterion, symptoms must be present for the past three months with symptoms onset at least six months before diagnosis.

In children, constipation may be defined as the presence of two or more of the following criteria in the prior one to two months: two or fewer defecations in the toilet each week, at least one episode of fecal incontinence each week, history of retentive posturing or excessive volitional stool retention, history of painful or hard bowel movements, presence of a large fecal mass in the rectum or history of large diameter stools that may obstruct the toilet.^{6,10}

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ETIOLOGY

"This [current definition of constipation] amounts to very little to an osteopath who well knows the effects of constipation, such as hard feces which are very difficult to expel from the bowels and he mentally asks the question, what is wrong with the machine?"¹ - *Andrew Taylor Still*

Constipation can be classified by primary and secondary causes. The American Gastroenterological Association (AGA) divides primary causes into three categories: normal transit, slow transit and anorectal dysfunction.⁷ Normal transit constipation, the most common type of primary constipation, presents with normal anorectal function and normal stool movement through the colon. Patients with slow transit constipation also have normal anorectal function but prolonged transit of stool through the colon due to reduced or uncoordinated colonic activity. Defecatory disorders result from abnormal anorectal function, usually due to structural abnormalities or impaired relaxation or contraction of the pelvic floor or external anal sphincter.

Secondary constipation may be due to endocrine, myopathic, neurologic, structural, psychological and medication-related causes (*Table 2, page 24*).^{8,12,14}

EVALUATION

The evaluation of a patient with constipation should include a history and physical examination. Patients with "alarm" or "red flag" symptoms may require further diagnostic testing.^{8,15} Alarm signs and symptoms include acute onset of symptoms, abdominal pain, unintentional weight loss, rectal bleeding or heme-occult positive stools and iron deficiency anemia.^{8,12} Figure 1 (*page 24*) demonstrates an algorithm for the initial evaluation of chronic constipation.^{8,12,14,15,16}

HISTORY

A specific history should be elicited, including the current bowel pattern, associated symptoms (such as weight loss or pain) and bowel regimen. Caregivers of pediatric patients should be asked

TABLE 1:

Adapted from Rome III Diagnostic Criteria for Functional Constipation¹³

Two or more of the following are present in at least 25% of defecations:
<ul style="list-style-type: none"> • Straining • Lumpy or hard stools • Sensation of incomplete evacuation • Sensation of anorectal obstruction/blockage • Manual maneuvers to facilitate passage of stool (digital evacuation, support of the pelvic floor) • Fewer than three bowel movements weekly
Loose stools rarely occur without the use of laxatives
Criteria for irritable bowel syndrome (IBS) are not met

about age at time of meconium passage, growth and development as well as general wellbeing and significant life events at time of onset of constipation.^{6,17} Inquiries regarding stool caliber may be helpful. Excessive straining and the need for perineal or vaginal pressure or direct digital evacuation of stools suggests a defecatory disorder.⁸ Using a validated symptom questionnaire or patient-reported outcome scale, such as the National Institutes of Health PROMIS Gastrointestinal Symptom Scale, offers an efficient way to gather data in a busy clinical setting.¹⁸

A record of over-the-counter and prescription medications should be obtained. When possible, medications that have constipation as a side effect (i.e., opiates, anticholinergics, calcium channel blockers) should be discontinued.^{8,12,14}

PHYSICAL

The physical examination should assess for diseases to which constipation is secondary. In addition to examination for clinical signs of anemia or malignancy, the AGA recommends a digital rectal examination that includes assessment of pelvic floor motion during simulated evacuation in adult patients.⁸ Anal fissures or thrombosed hemorrhoids may cause pain that precipitates or is secondary to chronic constipation. The absence of an anal "wink" or contraction in response to gently stroking the perianal skin may indicate sacral nerve pathology. The presence or absence of fecal impaction and resting sphincter tone should be noted and the anterior wall checked for a rectocele. When the patient is asked to strain and try to push out the finger, the anal sphincter should relax and the perineum should descend less than 3.5 cm.¹⁹ Rectal examinations should be limited in pediatric patients as they have been shown to limit utility in this population.¹⁷⁻²⁰

ENDOSCOPY

A structural evaluation of the colon with endoscopy is indicated for patients age >50 years without prior screening for colorectal cancer, abrupt onset of symptoms, heme-occult positive stools, iron deficiency anemia, rectal bleeding or prolapse and weight loss.²¹

OTHER DIAGNOSTIC TESTING

Further clinical evaluation should consider the possibility of secondary constipation. In the absence of other symptoms and signs in adults, the AGA recommends only a complete blood count. Unless other clinical features warrant otherwise, metabolic tests such as thyroid stimulating hormone, serum glucose, creatinine and calcium are not recommended for chronic constipation.⁸ Plain abdominal films are not routinely recommended in adult or pediatric patients with constipation.^{10,22} Patients with alarming symptoms or who fail to respond to laxatives should be referred to a gastroenterologist.

TREATMENT

NONPHARMACOLOGIC

Initial treatment of constipation begins with non-pharmacologic therapies. While increased fluid intake is often recommended as a first-line therapy, there is no evidence that increased fluid intake reduces constipation, unless signs of dehydration are present.²³ The National Health and Nutritional Examination Survey (NHANES) reports increased physical activity to be associated with decreased constipation.²⁴ Low physical activity may increase risk of constipation by two fold.⁹

Increasing fiber intake by 5 grams/day weekly to a target of 20 to 35 grams daily decreases colonic transit time and increases stool bulk in adults.²⁵ Soluble fiber such as psyllium appears to be superior to insoluble fiber or placebo in decreasing stool transit time and improving consistency.^{26,27,28} Patients should be cautioned a side effect of increased fiber intake might be increased flatulence. While several studies suggest increased fiber improves constipation in children, there is no consensus as to daily-recommended amount.^{29,30}

PHARMACOLOGIC

ADULTS

Table 3 (page 25) describes pharmacologic regimens available for treatment of constipation in adults. Osmotic laxatives appear to have long-term efficacy. Osmotic agents increase fluid into the intestinal lumen of the gastrointestinal tract. One commonly used osmotic agent, polyethylene glycol (PEG), showed greater efficacy with fewer electrolyte abnormalities compared to other agents in adults.^{2,8,31}

Lactulose is an indigestible carbohydrate agent that may improve stool frequency.^{34,35,36} A Cochrane Database review showed lactulose to be inferior to PEG in reducing constipation symptoms in adults.³⁷

Stimulant laxatives increase colonic peristalsis and intestinal motility. Stimulant laxatives improve frequency and consistency compared to placebo in adults.³⁸

Lubiprostone (Amitiza) and linaclotide (Linzess) both increase intestinal chloride secretion. Both improve stool frequency and decrease abdominal discomfort and bloating in chronic idiopathic constipation compared to placebo.^{39,40} Lubiprostone is also approved for opioid-associated constipation.

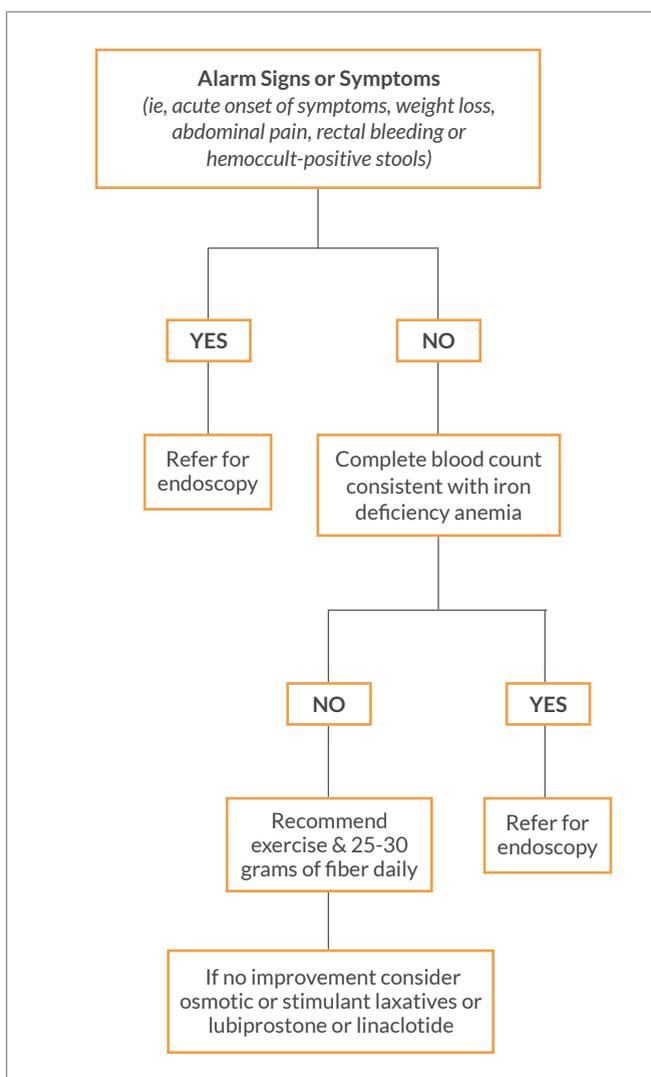
TABLE 2:

Secondary causes of constipation in children and adults^{8,12,14}

ENDOCRINE	MYOPATHIC	NEUROLOGIC	STRUCTURAL	PSYCHOLOGICAL	MEDICATIONS
Diabetes Mellitus	Scleroderma	Cerebrovascular Disease	Anal Fissures	Anxiety	Opiates
Hypothyroidism	Amyloidosis	Multiple Sclerosis	Hemorrhoids	Depression	Calcium channel blockers
Hyperparathyroidism	Myotonic Dystrophy	Parkinsons' Disease	Colonic Stricture		Iron
Hypercalcemia		Spinal cord injury	IBS		Aluminum or calcium antacids
		Hirschsprung's Disease	Rectal Prolapse		
		Cognitive impairment	Malignancy		
			Immobility		

FIGURE 1:

Initial evaluation of chronic constipation^{8,12,14,15,16}



CHILDREN

In children with constipation, a Cochrane Database review showed PEG to be superior to placebo, lactulose and milk of magnesia, while causing fewer side effects than other agents.³² A Cochrane Database review showed no randomized controlled data demonstrating efficacy of stimulant laxatives for the treatment of chronic constipation in children.^{32,40}

OSTEOPATHIC CONSIDERATIONS IN CONSTIPATION

Several small studies investigating the efficacy of osteopathic manipulation (OMT) in the treatment of chronic constipation showed reduction in constipation symptoms, laxative use, colonic transit time, and overall improvement in quality of life scores.^{43,43} Multiple case reports have shown significant improvement in postoperative ileus^{45,46,47,48} with partially standardized OMT. A recent retrospective study showed a significant decrease in length of hospitalization in the manipulation treatment group.⁴⁴

Treatment techniques in each study include mobilization of thoracolumbar spine and sacro-pelvic areas.^{43,44} Visceral treatments in studies vary but include treatment of the ileocecal valve, colon, and celiac, superior mesenteric and inferior mesenteric ganglia.⁴⁴ Treatment of the psoas muscle is also a commonly described treatment.⁴¹ Some reports include cranial manipulation.^{43,44} The average reported length of treatment time is 30 to 40 minutes.

While these studies suggest a role for OMT in the management of constipation, additional research is needed to optimize specific treatment recommendations. Until then, it may be prudent to follow the wisdom of founder A.T. Still, "I have given the student a general rule of procedure in cases of constipation, with the expectation that he will use some intellectual skill as he proceeds." ¹

TABLE 3:

Treatment of chronic constipation in adults ^{25,26,27,28,29,34,35,36,37,39,48,49}

MEDICATION	DOSE	POTENTIAL ADVERSE REACTIONS
Fiber	25-30 mg daily	Potential adverse reactions
Stool Softeners	Variable	Bloating, increased flatulence
Osmotic Laxatives (<i>PEG, lactulose, sorbitol, magnesium hydroxide, sodium biphosphate</i>)	Begin with lowest dose and titrate to response or maximal dose	Diarrhea, electrolyte abnormalities
Stimulant Laxatives (<i>bisacodyl, glycerin suppository, senna</i>)	Variable	Abdominal pain, cramping
Lubiprostone	24 mcg twice daily	Diarrhea, nausea
Linaclootide	24 mcg twice daily	Diarrhea

RECOMMENDATIONS

Daily fiber intake of 25 to 30 grams is associated with reduced risk of constipation. SOR A.

Polyethylene glycol has superior long-term efficacy compared to lactulose and stimulant laxatives for constipation in children and adults. SOR A.

Colonoscopy is indicated for patients with constipation who are aged >50 years without prior screening for colorectal cancer or who have abrupt onset of symptoms, heme-occult positive stools, iron deficiency anemia, rectal bleeding or prolapse and weight loss. SOR B.

Osteopathic manipulation may reduce symptoms of constipation. SOR C.

SOR = *Strength of Recommendation*

Strength of Recommendation Taxonomy⁴⁹

Grade	Basis of recommendation
A	Consistent, good-quality patient-oriented evidence
B	Inconsistent or limited-quality patient-oriented evidence
C	Consensus, disease-oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening

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REVIEW ARTICLE

Granulomatosis with Polyangiitis

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KEYWORDS:

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Hemoptysis

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Abstract: Wegner's Granulomatosis, now known as Granulomatosis with Polyangiitis, is a fairly uncommon vasculitis with varying presentations. Patients may present with ongoing sinusitis unresponsive to common treatments, or patients may present in respiratory distress and failure. The treatment of GPA has progressed so that now patients are able to survive this small and medium vessel vasculitis.

INTRODUCTION

Granulomatosis with polyangiitis (GPA), previously known as Wegner's granulomatosis, is a form of vasculitis affecting typically small to medium-sized blood vessels. Diagnosis of this form of vasculitis is difficult due to the nonspecific presentation of symptoms. The incidence of GPA is rare, occurring in 10-20 per million per year.¹ The patient described in this case of GPA is a 67 year-old Caucasian male who presented to the hospital after worsening upper respiratory symptoms and several episodes of hemoptysis. This case deteriorated quickly, showing the serious nature of Granulomatosis with polyangiitis and the need for a work-up in cases of prolonged and unimproved sinusitis.

BACKGROUND

GPA is a subset of vasculitis affecting several body systems. In GPA there is granulomatous inflammation involving the respiratory tract, as well as necrotizing vasculitis affecting capillaries, venules, arterioles, and arteries. As such, GPA is considered a vasculitis affecting primarily small and medium vessels. The renal system is commonly involved, leading to glomerulonephritis.

While GPA can occur in any age group, the peak-affected range is 40 to 60 years. It is rare to diagnose GPA in children. The incidence of GPA is 10-20 cases per million per year, and is less common in Japanese and African American individuals.¹ Both men and women are affected equally. Research is currently being performed regarding the genetic nature of the disease, yet there is no present evidence showing a hereditary link among GPA sufferers.

GPA has an autoimmune basis, though the genetic basis of the disease has not been fully explained. About 90 percent of people

with GPA contain an abnormal immune protein named anti-neutrophil cytoplasmic antibody (ANCA) in their bloodstream. These abnormal proteins attach to normal human proteins, leading to an inflammatory reaction. In patients with GPA, the ANCA proteins typically attack human protein proteinase 3 (PR3).² Other individuals have expressed an ANCA that attacks the myeloperoxidase (MPO) protein. Currently research is being performed regarding the expression of these ANCA proteins in patients with GPA. The presence of a form of the HLA-DPB1 gene has been proven to be the greatest risk factor in developing GPA, but there are other genes involved that have not been described.^{3,4} Theories exist that state a mixture of both genetic predisposal and environmental factors are related to the expression of GPA, complicating the ability to predict who will develop Granulomatosis with polyangiitis.

CLINICAL PRESENTATION

The onset of GPA can be slowly progressive or rapid and severe. When first presenting to their physician, patients with GPA will likely describe feelings of malaise, night sweats, weight loss, and fever. These initial symptoms are related to a general immune reaction. As the vasculitis becomes more severe, patient complaints will become more localized. The most common sites of inflammation are the upper respiratory tract and kidneys, presenting as nasal congestion, nosebleeds, cough, difficulty breathing, hematuria, and secondary hypertension.⁶ In most cases of GPA, rhinitis is the first sign of GPA. In a prior case presentation by Shafiei et al, a 42-year-old male is described as having two years of chronic sinusitis.⁷ In this particular case, a chest X-ray incidentally found a lung nodule. This patient was in the process of planning for biopsy when he became acutely ill with leukocytosis, arthralgias, and mouth ulcers. After a thorough work-up, the patient was found to have a positive c-ANCA and diagnosed with GPA. Another case presentation describes a 69-year-old female with chronic sinusitis who eventually developed a parotid abscess that was detected on a CT scan, and a thorough work-up was initiated due to the

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inability to explain the cause of the abscess.⁸ Therefore, patients may present differently in varying stages of GPA.

The nose is a commonly involved area of inflammation in GPA. Approximately 90% of patients initially present with complaints of cold symptoms and sinusitis that fail to respond to the typical therapies.⁹ General nasal congestion is a common and often overlooked sign of GPA. Patients with GPA may also develop a “saddle-nose deformity” due to collapse of the nasal septum. Severe inflammation of the vessels within the nasal tissue can lead to a perforation of the septum, causing a sunken in appearance. Nosebleeds occur after the vessels within the nasal mucosa have been irritated and inflamed. These nosebleeds may start intermittently as mild bleeding episodes, then become more serious as the vasculitis progresses.⁶

Another common area of ANCA attack in GPA is the kidney, causing elevated creatinine and decreased glomerular filtration rate (GFR). This form of kidney injury is classified as rapidly progressive glomerulonephritis (RPGN) type 3, occurring from the coalescence of ANCA proteins and a pauci-immune reaction.⁶ The presence of RPGN is characterized by hematuria, red blood cell casts seen on urinalysis, and proteinuria frequently exceeding 3g. Persons with this condition also commonly display secondary hypertension and edema due to failure of the kidneys to filter. Often, even after treatment, patients develop chronic kidney disease.

Other areas of the body that may be affected by GPA include the ears, oral cavity, eyes, pulmonary system, joints, skin, and nervous system. When involving the ears and oral cavity, patients often present with conductive hearing loss, gingivitis, and mouth ulcerations. Once ANCA proteins have infiltrated the lungs, the clinical signs and symptoms become more severe. Patients can have infiltrates, pulmonary nodules, cavitary lesions, and hemoptysis.¹⁰ In GPA the heart, gastrointestinal tract, and brain are rarely involved.⁶

DIAGNOSIS

The key to the diagnosis of GPA is early recognition. A thorough history and physical examination will alert the physician to initial suspicions of GPA. In a patient with prolonged symptoms of sinusitis not responding to traditional treatment, testing for anti-neutrophil cytoplasmic antibodies (c-ANCA) will assist in diagnosis. This test, however, does not solidify a diagnosis and a negative test does not totally negate the possibility of GPA. A more specific c-ANCA in GPA is that which reacts with the enzyme proteinase-3.^{2,11}

Since GPA can affect multiple organ systems, it is important to detect the extent of organ involvement. Routine laboratory testing, including a chemistry panel and CBC, will show possible renal damage or anemia related to hemoptysis. Urinalysis will show the presence of hematuria, proteinuria, or red cell casts. A chest X-ray must be done to evaluate the pulmonary system, and often CT scanning will be necessary to characterize nodules or infiltrates. The sinuses are also best evaluated with CT scanning if there is suspicion of nasal mucosa damage.

When a patient presents with kidney injury or cutaneous vasculitis, a tissue biopsy may be obtained. Histopathological investigation will show granulomatous inflammation as well as necrosis in a crescentic pattern.^{6,9} Specific staining will be performed to rule out the presence of anti-glomerular basement membrane

antibodies, eliminating the diagnosis of Goodpasture's syndrome. Upper respiratory tract tissue biopsies are often non-diagnostic, therefore not recommended. Renal or pulmonary biopsy is the diagnostic test of choice for confirmation of GPA, however renal biopsy is typically more plausible with less risk for the patient.¹⁰

The American College of Rheumatology accepted classification criteria for GPA in 1990; such criteria is intended for inclusion in randomized trials, rather than diagnosis. A patient meets criteria for GPA when having two or more positive findings. These criteria include nasal/oral inflammation with ulcers/nasal discharge, abnormal chest x-ray with nodules/infiltrates/cavities, microhematuria or red cell casts on urinalysis, and biopsy showing granulomatous inflammation in the arterial wall or perivascular area. The Chapel Hill Consensus Conference in 1992 created another system for GPA diagnosis, stating that the diagnosis of GPA must include a granulomatous inflammation involving the respiratory tract and vasculitis of small to medium-sized vessels.¹²

CASE REPORT

PRESENTATION

A relatively healthy 66-year-old male presented to the emergency room in respiratory distress, complaining of upper respiratory symptoms with intermittent chills and subjective fever for approximately one week. The patient stated that his symptoms had been getting progressively worse, and he did not feel better after completing a course of amoxicillin prescribed by his primary care physician for acute sinusitis. He also reported recent shortness of breath worse with minimal exertion, which he had never experienced prior to the past few days. The patient denied chest pain, orthopnea, or dizziness. He also denied any nausea, vomiting, diarrhea, constipation, or urinary symptoms. The patient's wife stated that the recent episodes of thick, purulent sputum often tinged with blood as well as the onset of hemoptysis are what brought them into the emergency room. He had never had episodes of hemoptysis before, and denied frequent nosebleeds. She denied any recent travel and could not report any known sick contacts. Upon arrival to the ER, the patient had a respiratory rate of 40 and an oxygen saturation of 74% on room air.

HISTORY

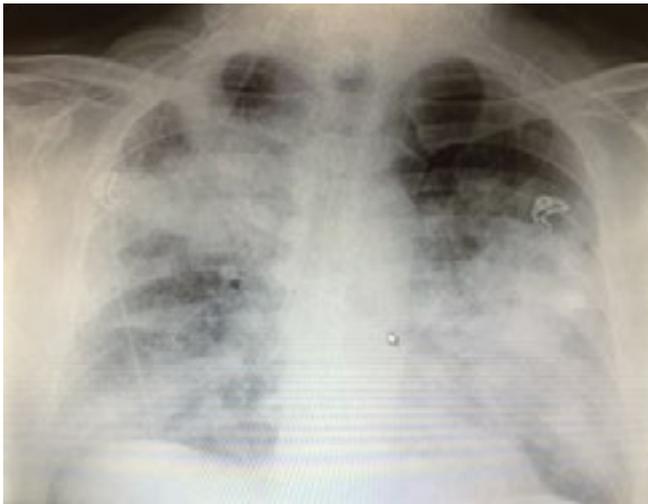
The patient's medical history was only significant for lower extremity DVT, for which he was started on Xarelto approximately one month prior to his illness. He denied any other medical history and was taking no other medications or supplements. Many years ago the patient had hemorrhoid cauterization, but there was no other surgical history. The patient's wife reported no family history of cardiac or pulmonary disease. She stated that the patient was never a smoker or drug-user, and only occasionally drank alcohol at social events. At that time the patient was a school bus driver, and had worked in a shipyard as a welder many years ago.

LABORATORY/IMAGING

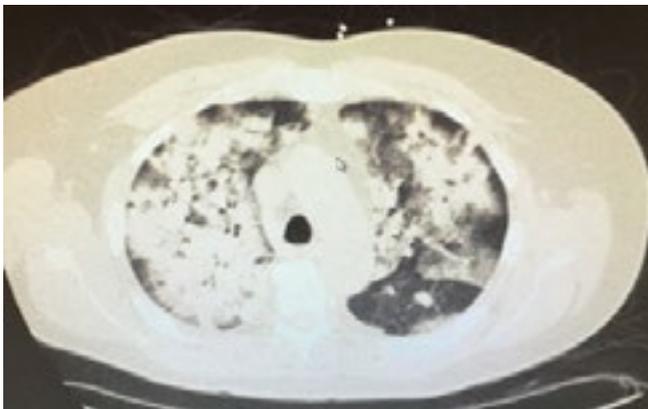
Laboratory studies revealed an elevated BUN (50) and creatinine (4.2), as well as a hemoglobin and hematocrit of 8.2 and 24.5, respectively. The patient's estimated GFR at that time was 15. Blood work done as an outpatient three months prior to this event was completely normal with a creatinine of 0.85 and hemoglobin of 13.2. Cardiac enzymes and flu testing were negative. Fecal occult blood was positive. EKG showed sinus tachycardia without other

FIGURE A:

Chest x-ray showing diffuse infiltrates bilaterally.

**FIGURE B:**

CTA of chest showing diffuse bilateral infiltrates and consolidation. No evidence of new pulmonary embolism.

**FIGURE C:**

A temporary tracheostomy was placed



abnormalities, and chest x-ray showed diffuse infiltrates bilaterally (Figure A). At the time of admission, a CTA of the chest was pending. Shortly after admission, the patient received two units of packed red blood cells due to continued hemoptysis and rectal bleeding. A follow-up CBC performed two hours after transfusion showed that his hemoglobin had dropped to 6.7. The CTA of the chest showed diffuse bilateral infiltrates and consolidation, without evidence of new pulmonary embolism (Figure B). A more extensive work-up, including ANCA, myeloperoxidase, proteinase-3, legionella Ag, anti-GBM, and HIV testing, was pending at the time of transfer to a tertiary care center.

DIAGNOSIS

When initially evaluated, the patient was diagnosed with severe community acquired pneumonia, acute kidney injury, and anemia secondary to gastrointestinal bleed. After his symptoms and clinical picture worsened, he was diagnosed with Adult Respiratory Distress Disorder. The patient was intubated on the second day of hospitalization due to ARDS, then transferred to a tertiary care center. After his transfer, the work-up returned and showed a positive c-ANCA as well as severely elevated levels of proteinase-3. These test results combined with the patient's clinical case led to the diagnosis of GPA. While at the tertiary care center, the patient's BUN and Cr continued to rise, but his hemoglobin and hematocrit stabilized shortly after transfer.

TREATMENT

Initially the patient was placed on IV solumedrol as well as antibiotics to cover for community-acquired pneumonia. He was intubated on the second day of admission due to worsening respiratory status, and his PEEP was maximally titrated with a FiO₂ of 100%. Blood transfusions were continued as needed to account for acute blood loss. Once the patient was transferred, he was placed on continuous dialysis. Plasmapheresis was performed, and the patient was started on a treatment regimen of Cytoxan and prednisone. The patient received the IV dosing of Cytoxan, performed at two-week increments. Plans were made for a long-term prednisone taper. A temporary tracheostomy was also placed due to the need for long-term mechanical ventilation (Figure C). The patient was placed on Atovaquone daily at bedtime for PCP (pneumocystis pneumonia) prophylaxis.

FOLLOW-UP

After presenting with his life-endangering symptoms, the patient received rapid treatment that was able to reverse many of the signs of GPA. Six months after initial presentation, the patient was off dialysis and on a prednisone taper. He had no further respiratory conditions requiring intubation, and his tracheostomy was removed. He will be followed closely, including checking routine chest X-rays and blood work.

TREATMENT

Goals in treating Granulomatosis with polyangiitis include treating the symptoms and manifestations of the condition, while also diminishing toxicities of treatment agents. The drug of choice in treating GPA is cyclophosphamide, and its efficacy is improved when combined with corticosteroids. Approximately 90% of those with GPA respond well to cyclophosphamide, and about 75% undergo complete remission.¹³ The combination of

cyclophosphamide and prednisone dosed at 1 mg/kg/day is used to induce remission in GPA. Cyclophosphamide may be given orally at a daily dose of 2 mg/kg/day, or pulsed intravenously at a dose of 15 mg/kg every 2 weeks for the first 3 treatments, then every 3 weeks for a total of 6 pulsed doses.¹⁴ While studies have shown that there are less adverse effects with the pulsed dosing, research is limited regarding which treatment option is most efficacious in inducing long-lasting remission.

Hemorrhagic cystitis is the most common toxic effect of cyclophosphamide, affecting 15-43% of patients using the oral regimen. The use of oral or intravenous Mesna with IV cyclophosphamide has been proven to limit the risk of hemorrhagic cystitis. Mesna is dosed at 20% of the IV cyclophosphamide dose divided over three equal doses, given 15-30 minutes prior to treatment and then at 4 and 8-hour intervals after treatment. When given orally, Mesna is given at 40% of the cyclophosphamide dose again in three equal doses. The oral dose of mesna is given two hours prior to treatment with cyclophosphamide, then again at 4 and 8 hours post-treatment.¹⁵

Other side effects of cyclophosphamide include bladder cancer, increased risk of malignancy, infertility, cytopenia, and infection due to cyclophosphamide-induced leukopenia. Due to all of the possible toxicities, frequent urinalyses should be performed while getting treatment and then throughout a patient's life as the risks of malignancy continue post-treatment. Complete blood counts should be monitored every 1-2 weeks during cyclophosphamide treatment, monitoring for leukopenia.^{5,14}

An alternative treatment, rituximab with high-dose corticosteroids, was introduced and approved by the FDA in 2011. Infusions of rituximab lead to a 6-month depletion of circulating B cells, sparing plasma and pre-B cells. This process has been studied as a way to decrease the production of ANCA proteins.¹⁶ Research exploring the use of rituximab for long-term maintenance therapy has shown positive outcomes, but trials are still ongoing. The adverse effects of rituximab include mucocutaneous reactions, cytopenia, malignancy, and increased opportunistic infections. One of the most serious reported opportunistic infections is progressive multifocal leukoencephalopathy (PML) caused by the JC virus. All of these risks must be taken into account when choosing a treatment regimen.

In cases of severe renal involvement with GPA, plasma exchange has been used to preserve renal function with the goal of avoiding dialysis.⁵ Patients with a creatinine greater than 5.8 mg/dL benefited from plasma exchange in a multicenter European trial. Though there is evidence of improved renal function, studies have not shown overall improved survival or relapse rates with plasma exchange.

After the induction of remission, GPA requires at least 18 months of maintenance therapy. The agents used in maintenance therapy are azathioprine, methotrexate, and leflunomide.⁵ Prior to the use of these agents, oral cyclophosphamide had been used with significant levels of toxicity. While being treated with these medications, patients should also receive a tapered dose of 10 mg/day of prednisone. Research is ongoing regarding the efficacy of Trimethoprim-Sulfamethoxazole when added to a maintenance therapy regimen.¹⁶

PROGNOSIS

In patients with GPA who have been treated with cyclophosphamide and corticosteroids, the 5-year survival rate is greater than 80%.⁸ While a large portion of patients with GPA who receive cyclophosphamide and corticosteroids experience remission, 30-50% of patients with an initial response to treatment will have at least one relapse of the condition. Factors that may predispose patients to relapse include advanced age, treatment with >10g of cyclophosphamide in the first 6 months, maintained high doses of prednisone, ANCA status, and organ involvement. Renal involvement at initial diagnosis leads to a higher likelihood of deterioration.¹² These relapses may present with symptoms similar to the initial manifestation of the condition, but they may also appear with new features. Therefore, it is important for patients with a known history of GPA to maintain their medical awareness and to report any new or unusual symptoms to their physician.

DISCUSSION

GPA can be a fatal disease if not recognized in time for appropriate management. The current incidence of GPA in the United States is three cases per 100,000.¹ It is estimated that the incidence of GPA may actually be higher than is currently reported due to the vague nature of the disease. Early symptoms of the condition vary among patients, making the diagnosis difficult. GPA may initially present with slowly progressive symptoms or severe and life-threatening organ failure, as shown in the presented clinical case. While this condition is rare, it must be considered in ongoing cases of sinusitis and other vague symptoms that do not respond to typical treatment.

Identification of cytoplasmic-ANCA proteins in patients with suspected cases of GPA is key in diagnosis. ANCA proteins that target human proteinase-3 are highly specific for diagnosis.⁴ Research on the genetics behind GPA is ongoing, and in the future it may be more plausible to screen for conditions such as GPA. Though these blood tests are highly specific for detecting GPA, the physician has to first include GPA in the differential diagnosis and then include these tests in a work-up.

Once a work-up has been initiated, patients must be kept for close follow-up. Patients can develop symptoms slowly, or they can present with life-threatening conditions. The patient presented had initial complaints of sinus congestion with discharge and general fatigue that were not alarming symptoms when evaluated in an outpatient setting, and at that point did not ignite an elaborate work-up. This patient's case represents the dangers of GPA, exemplifying a seemingly insidious presentation of the condition. However, this case also shows the treatable nature of GPA. Whether diagnosed early or late in the course of the condition, treatment is generally successful in inducing remission of Granulomatosis with polyangiitis. The mainstay of treatment is cyclophosphamide and prednisone, but ongoing research is evaluating the other pharmacologic options that may be used to cure this condition.

Once treatment has been initiated in patients with GPA, patients and physicians must be vigilant for any medication toxicities. Patients need to be diligent in receiving treatment, and when remission is induced, they must be educated on the risk of relapse. Teaching a patient with GPA what to look for as far as signs of

relapse is difficult because GPA can present differently among patients and with each presentation. Therefore, patients and physicians should have open lines of communication and discuss any abnormalities. Blood counts and screenings for malignancy also have to be monitored thoroughly throughout a patient's life due to medication long-term complications.

CONCLUSION

Granulomatosis with polyangiitis is often difficult to recognize due to varying signs and symptoms. While the incidence is low, GPA must remain on the differential for patients with sinusitis and other medical complaints not responsive to classic treatment plans. There are proven treatment regimens developed for GPA with satisfactory rates of remission, though these patients must be followed throughout their lives due to the possibility of relapse and medication toxicity.

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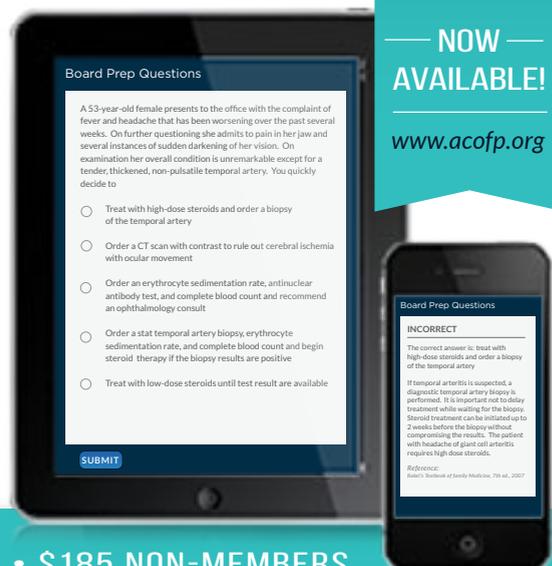
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REVIEW ARTICLE

Mandating a Simulation Component to Osteopathic Family Medicine Training

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KEYWORDS:

Simulation Medicine

Osteopathic Family Medicine

Graduate Medical Education

Family Medicine

Abstract: Osteopathic Family Medicine has evolved throughout time. With the advent of new technology and new educational training methods, Graduate Osteopathic Family Medicine Education could benefit from mandating a Simulation component in their training of residents. Simulation is an ACGME Residency Requirements for General Surgery, Anesthesia, Emergency Medicine, Pediatrics, and Gastroenterology fellowship. This article seeks to show why the American College of Osteopathic Family Physicians should mandate a simulation curriculum for their residency. This simulation training component can be used in a variety of ways, including procedural training, or a simulation curriculum involving weekly simulated scenarios and debriefing sessions. Research has shown that simulation is a vital means of learning and improving medical education.

INTRODUCTION

Simulation training has proven to be instrumental to the successful training of professionals in high stress occupations. Osteopathic Family Medicine training is a high stress environment, where a resident is exposed to patient safety risks daily. Simulation in Graduate Medical Education (GME) has increased, and research is actively being done to show its benefits. A simulation component to Osteopathic Family Medicine should be implemented to ensure we are teaching our residents in the optimal learning environment. This article seeks to detail why a simulation component should be mandated for Osteopathic Family Medicine training. The simulation component can vary from program to program based on need and assessment of each individual institution. The simulation component can be a simulated case involving a trainee and a standardized patient, a mannequin with a debriefing session, or it can be a simulation curriculum.

Research shows that adult learners incorporate knowledge by different methods than younger learners. People with advanced degrees are often good at “single loop learning,” which has included problem solving and memorization.¹ In order for adult learning to occur, people must reflect critically on their own behavior.¹ This type of learning is known as “double loop learning” and can be achieved in a simulated environment. The reflective nature of adult learning can be achieved during a simulated case’s debriefing session, where the trainee can reflect on the specific scenario. It can also be seen after a family medicine resident is observed during a simulated procedure. These types of self-evaluation are a critical component to adult learning.

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SIMULATION

COMMUNICATION SKILLS

Studies show that in the U.S., 29% of malpractice claims are due to missed diagnoses.² A Simulation Based Medical Education (SBME) curriculum can provide a training environment that encourages patient safety. It allows the family medicine resident to practice in a nonjudgmental training environment that encourages communication and professionalism among all members of the medical team. Other medical professionals can train together and discuss with other members of the team if they agree on the diagnosis or treatment for the patient. The trainee is one part of the whole medical team that is all equally important to avoid possibly fatal medical errors. Sixty percent of medication errors are caused by mistakes in interpersonal communication.³ With these frightening statistics, it is important to train our osteopathic family medicine residents in communication skills that can be improved with simulation training.

Simulation scenarios can help improve trainees’ interprofessional and interpersonal communication skills. The lack of communication (by physicians) can hurt the quality of care, drive up costs, and increase the risk of lawsuits.⁴ With the implementation of the Delivery System Reform Incentive Program (DSRIP) in New York in 2016, physicians will be judged on the quality of their service. Clinics where physicians train will have to teach their residents the importance of proper communication with their patients. These communication skills can be improved upon in a simulated setting.

Medical educators have an obligation to provide optimal treatment and to ensure patients’ safety and well-being.⁵ A mandated simulation curriculum can ensure that proper communication is taught and procedures are done appropriately before a real life patient is at risk.

CONVERSATIONS

CRITICAL CONVERSATIONS

According to the authors of “Critical Conversations, Tools for Talking when Stakes are High,” these conversations occur when there are opposing opinions, strong emotions, and high stress.⁶ These conversations happen to osteopathic family medicine interns and residents frequently in the clinical setting. The way to deal with these conversations can be learned and mastered in a simulated setting. Many medical surveys have shown that medical professionals have witnessed members of their team taking shortcuts, exhibiting incompetence, or breaking rules.⁶ In a simulated scenario, a resident can be exposed to one of these scenarios and can see how they acted in the video debriefing session. They can then reflect on their behavior.

CRUCIAL CONVERSATIONS

“Dialogue Heals, the Seven Crucial Conversations for the Healthcare Professional,” states that most patient errors can be avoided by learning to communicate well.⁷ The authors suggest that the crucial conversations for the healthcare professional (need) to master are: broken rules, lack of support, mistakes, incompetence, poor teamwork, disrespect, and micromanagement.⁷ These are all areas that osteopathic family medicine residents encounter daily. All of these crucial conversations can be reenacted in a simulated setting where the resident can learn what to do when faced with these situations in the clinical setting. They can become familiar with these topics and learn how to face them head on. Medical educators can benefit by proving that their family medicine residents have been through a simulation curriculum before graduation.

TRAINING TOOL

Simulation can also be used to teach and test cultural competence. Cultural competence for non-traditional family structures is important in modern society.⁸ Certain populations require extra attention to mental health needs.⁸ According to Dr. Cianciaruso, in “Culturally competent care for nontraditional family structures,” physicians need to be informed about and sensitive to [the] special concerns⁹ of different patient populations. Simulated scenarios where family medicine residents encounter diverse populations could be developed to train physicians on different populations, and assess for further needs training.

Simulation in GME has been used frequently to test how a family medicine resident accurately performs a specific procedure. There are many types of medical simulators, ranging in price from ones a faculty member can make at little costs, to manikins that cost over a million dollars. The simulators range from engaging task trainers to full body, computer driven manikins.⁹ Procedures can be practiced and observed by attending physicians in a simulated environment before patients are at risk. The Accreditation Council for Graduate Medical Education (ACGME) requires that General Surgery Residents master simulated procedures before a patient is exposed to these procedures. A checklist can be used during the debriefing process and can serve as a reminder and an evaluation tool to the resident and faculty member. This checklist can be used during the debriefing session to reflect each trainee's hospital protocol for each procedure.

MEDICAL EDUCATION

In a study by Shanks et al. most respondents felt that simulators should be used to learn, refine and acquire (technical) and procedural skills.¹⁰ New research has shown that graduate medical trainees can obtain desired skills in a controlled simulated environment.¹¹ Simulation in medical education has become more advanced throughout the years, and has encompassed more specialties.

The American Heart Association has used simulators to test students in Advanced Cardiac Life Support (ACLS) and Basic Life Support (BLS) for years. Residents trained on simulators were more likely to adhere to [ACLS] protocol than those who received standard training for cardiac arrest patients.¹² A simulation curriculum can be used as a tool to assess medical knowledge on specific disease states.¹² According to Okuda et al., multiple studies have demonstrated the effectiveness of simulation in the teaching of basic science, clinical knowledge, procedural skills, teamwork and communication (in the) Graduate Medical Education (GME) level.¹²

By adding a mandated simulation component to Osteopathic Family Medicine; medical educators can identify impaired trainees and provide a module for remediation. According to the ACGME 2011 Duty Hour Standards, there must be an honest and accurate reporting of all elements of resident training and patient care.¹⁴ Simulation can be part of this training element for osteopathic family medicine. According to the AOA traits of professionalism, physicians must demonstrate competence, commitment to improving patient care, leadership, ethical practice, and accountability.¹⁵ All of these traits can be taught and in a simulated environment.

With the Single Accreditation System for the AOA/ACGME, now is the best opportunity for Osteopathic Family Medicine programs to mandate a simulation component to their standards of residency. According to Ogden et al, in Graduate Medical Education, a comprehensive simulation program should become as natural to medical education as teaching rounds and morning report.¹⁶ A simulation curriculum would provide a tool that the osteopathic family medicine community can use to ensure resident's master communication, procedural and professionalism skills.

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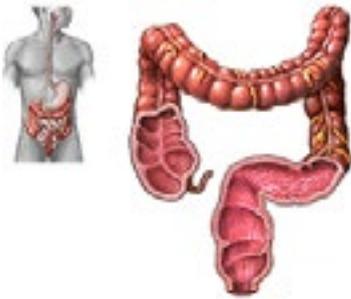
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CONSTIPATION

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Constipation is difficulty having a bowel movement or when you have fewer bowel movements than usual. The stool can be hard, dry, and sometimes painful to pass. You may also have stomach pain, fullness, bloating, the feeling of rectal pressure, and the need to strain. Common causes of constipation include a diet low in fiber, not drinking enough water, lack of exercise, changes in lifestyle or routine, emotional stress, inadequate sleep, pregnancy, age, ignoring the urge to have a bowel movement, certain medications (e.g. pain medications), and medical conditions.

PREVENTIVE MEASURES INCLUDE:

- Eat three well-balanced meals each day. Do not miss any meals.
- Gradually increase the amount of high-fiber foods in your diet. A diet with enough fiber (i.e. about 20 to 35 grams each day), helps form soft and bulky stool. Good sources of high-fiber include beans, whole-grain breads, rice, and bran cereals along with fresh fruits and vegetables such as Brussels sprouts, cabbage, and carrots.
- Limit the amount of milk or cheese products, highly refined and processed foods in the diet.
- Drink six to eight (8-ounce) glasses of water each day.
- Exercise regularly. Weight bearing exercises, such as walking, three or more times each week is helpful.
- Minimize stress in your life. Go for a short walk when you feel stress increasing.
- Go to sleep at a regular time each night. Make sure you get enough sleep.
- Respond right away to the urge to have a bowel movement. Do not ignore the urge.
- Consider reviewing your medications with your physician for ones that can make constipation worse.
- You should only use laxatives as needed for treating constipation and if approved by your doctor.
- Prunes or prune juice is often useful in maintaining regular bowel function.
- If you have any medical conditions, ask your doctor whether they predispose you to constipation and what can be done.

MEDICAL CARE & TREATMENT OPTIONS:

If you have any questions about constipation, please contact your Osteopathic Family Physician. Your physician can diagnose constipation with a thorough history and physical exam along with appropriate tests. Management includes the right treatment plan and regular visits with your doctor. Your family doctor will help you choose which treatment(s) will work best for you. In case of any emergency, you should call your doctor or 911 right away.

SOURCE(S): American Family Physician, Constipation. Gov, Medscape, & Up-To-Date.

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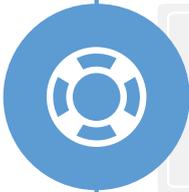
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