WHAT'S INSIDE: **ORIGINAL RESEARCH • CASE STUDIES • COMMENTARY**

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Adherence to Guideline Recommendations in Patients with Thyroid Nodules

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ABSTRACT

Introduction. Thyroid nodules are common and fine-needle aspiration (FNA) biopsy is the standard of care for work-up to exclude thyroid cancer. In this study, we examined the discrepancy between daily practice and recommended diagnostic approach for management of thyroid nodules, based on history taking, laboratory, and imaging studies.

Methods. This was a retrospective chart review of 199 patients who had ultrasound-guided fine needle aspiration (UGFNA) performed at a Midwest academic medical center from January 2010 to December 2011. The quality measures were selected based on recommended clinical practice guidelines, including family history, history of neck radiation, neck symptoms, TSH test, and thyroid ultrasound.

Results. The majority of patients were Caucasian females. Family history of thyroid cancer and childhood neck radiation exposure were documented in 79 subjects (40%) and 76 subjects (38%), respectively. Neck symptoms were documented in most subjects, including dysphonia (56.8%), dysphagia (69.9%), and dyspnea (41.2%). Most subjects had a TSH measured and an ultrasound performed prior to biopsy (75% and 86%, respectively).

Conclusions. It appears there is a gap between current patient care and clinical practice guidelines for management of thyroid nodules. Clinical history and ultrasound features for risk stratification of UGFNA were lacking, which could reflect physicians' unfamiliarity with the guidelines. As thyroid nodules are common, enhancing knowledge of the current guidelines could improve appropriate work-up. Further studies are needed to identify factors associated with the poor compliance with clinical guidelines in management of thyroid nodules. *KS J Med 2017;10(1):1-2.*

INTRODUCTION

Thyroid nodules are very common with an estimated prevalence of 4 - 7% by palpation[1-3] and up to 30 - 60% based on autopsy studies.[3] Fine-needle aspiration (FNA) biopsy is the standard of care for work-up and exclusion of thyroid cancer. Around 5 - 15% of thyroid nodules are malignant, but the malignancy risk increases based on age, sex, history of head and neck radiation, and family history.[1,4] The incidence of thyroid cancer increased by 2.4 fold from 1973 to 2002[5], which is likely due to increasing use of ultrasound (US). Various practice guidelines for management of thyroid nodules have been published, including the most recent 2015 American Thyroid Association (ATA)[6] guideline. Clinical risk factors of malignancy include childhood radiation exposure, rapid growth of a nodule, hoarseness, vocal cord paralysis, dysphagia, or a family history of thyroid cancer or multiple endocrine neoplasia syndromes. Suspicious US features include hypoechogenicity, microcalcifications, taller than wide on transverse view, or infiltration of the surrounding tissue. ATA recommends FNA based on sizes and sonographic patterns, starting at 1 cm with intermediate to high suspicion patterns.

A serum thyroid-stimulating hormone (TSH) level should be obtained in all patients. If TSH is suppressed, a radionuclide thyroid scan (I-SCAN) should be obtained. FNA generally is not indicated for hyperfunctioning nodules due to low likelihood of malignancy.

In this study, we examined the discrepancy between daily practice and recommended diagnostic approach to thyroid nodules, based on history taking, laboratory, and imaging studies.

METHODS

Patients who underwent ultrasound-guided FNA (UGFNA) at our institution during January 1, 2010 to December 31, 2011 were retrospectively reviewed. The date range was chosen to begin following the revised ATA guideline published in 2009. We randomly selected 200 subjects and one patient was excluded due to duplicate records. Patients with previous history of thyroid cancer or thyroid surgery were excluded. The study protocol was approved by the local institutional review board. Data abstraction from the electronic medical record were entered in REDcap[7], including demographic information, relevant clinical history including family history of thyroid cancer, history of childhood neck radiation, neck symptoms, TSH values, suspicious ultrasound characteristics, and I-SCAN results. The quality measures were determined based on five categories: (1) documentation of family history of thyroid cancer, (2) documentation of history of childhood neck radiation, (3) documentation of neck symptoms including dysphonia, dysphagia, and dyspnea, (4) presence of TSH values prior to UGFNA, and (5) presence of thyroid US prior to UGFNA.

The ultrasound results were categorized according to nodules sizes, number of nodules, echogenicity, presence of microcalcification, presence of irregular margins, presence of suspicious cervical lymph nodes, and evidence of growth from previous US. All analyses were conducted using SAS statistical software, version 9.4 (SAS Institute, Inc., Cary, NC, USA).

RESULTS

There were 833 UGFNA cases performed at our institution during January 1, 2010 to December 31, 2011. The 199 randomly-selected patients represented 273 FNA cases. The study group consisted of 37 (18.6%) males and 162 (81.4%) females, with a mean age of 55 ± 14 years. Of these, 72.9% were Caucasian. Forty-four percent had hypertension, 18.6% had type 2 diabetes mellitus, and 13.6% had coronary artery disease.

Nearly 40% were questioned about family history of thyroid cancer and childhood neck radiation history. Neck symptoms were assessed for dysphonia, dysphagia, and dyspnea in 58%, 70%, and 39% of subjects, respectively (Table 1). TSH value was documented in 75%; 86% of patients had an ultrasound performed prior to biopsy. The ultrasound descriptions of 273 thyroid nodules are summarized in Table 2. None specified nodules which were taller than wide on transverse view. I-SCAN was performed in 10% of subjects.

Table 1. Findings of concordance quality measures.

Concordance Quality Measures	Documented (%)
Family History of Thyroid Cancer	79 (39.7)
Childhood Radiation Exposure	76 (38.2)
Symptoms of Dysphonia	113 (56.8)
Symptoms of Dysphagia	139 (69.9)
Symptoms of Dyspnea	82 (41.2)
Presence of TSH values prior to UGFNA	149 (74.9)
Presence of thyroid US prior to UGFNA	171 (85.9)

Table 2. Findings of ultrasound description of thyroid nodules.

Ultrasound Description	Number of Nodules (%)
Consistency (presence of solid, cystic, or mixed nodules)	135 (49.6)
Echogenicity	98 (36.0)
Presence or Absence of Microcalcification	52 (19.1)
Margin of Nodules	112 (41.1)
Cervical Lymphadenopathy	146 (53.7)
Evidence of Growth	80 (29.4)

Most FNA specimens were categorized as benign (81%). Indeterminate cytology, cytology suspicious for malignancy, and malignant cytology were found in 8%, 6%, and 1% of subjects, respectively. Surgery was performed on 78 subjects (29%), and 14 subjects (7%) were confirmed to have thyroid cancer.

DISCUSSION

The results showed that history-taking to identify clinical risk factors for thyroid cancer were lacking in more than 50% of patients. The majority of patients appropriately had TSH value and thyroid ultrasound performed prior to UGFNA as recommended by the guidelines. There was also significant discrepancy among sonographic description of thyroid nodules.

Tangpricha et al.[8] reported in 1999 that the American Association of Clinical Endocrinologists guidelines had not been implemented fully among patients that presented with thyroid nodules. They also found that endocrine referral increased the rate of FNA performance, and the use of I-SCAN seemed to be over utilized (90%).[8] The majority of our subjects were evaluated by primary care physicians and otolaryngologists, not endocrinologists. I-SCAN was performed less frequently in our study, which reflected a minority of patients with low TSH. Radionuclide studies have become less utilized at present time, most likely due to the evolution of thyroid ultrasound and increased availability of FNA.[9]

The retrospective chart review design limits the interpretation of the findings. Our study is limited to FNA cases from our institution and could underestimate the number of biopsies performed at an outside institution. In this current study, we examined the discrepancy between daily practice and recommended guidelines. In future studies, we plan to examine whether adherence to guidelines could impact early discovery of thyroid cancer.

A gap was revealed between current patient care and the recommended approach for management of thyroid nodules. Clinical history and US features for risk stratification of UGFNA were lacking, which could reflect physicians' unfamiliarity with clinical practice guidelines. As thyroid nodules are common, improvement of knowledge of the current guidelines would be beneficial.

ACKNOWLEDGMENTS

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Direct Primary Care in 2015: A Survey with Selected Comparisons to 2005 Survey Data

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ABSTRACT

Introduction. Direct primary care (DPC), a fee for membership type of practice, is an evolving innovative primary care delivery model. Little is known about current membership fees, insurance billing status, physician training, and patient panel size in DPC practices. This study aimed to obtain current data for these variables, as well as additional demographic and financial indicators, and relate the findings to the Healthy People 2020 goals. It was predicted that DPC practices would (1) submit fewer claims to insurance, (2) have decreased membership fees, (3) be primarily family medicine trained, and (4) have increased the projected patient panel size since 2005.

Methods. An electronic survey was sent to DPC practices (n = 65) requesting location, membership fees, projected patient panel size, insurance billing status, training, and other demographic and financial indicators. Data were aggregated, reported anonymously, and compared to two prior characterizations of DPC practices done in 2005.

Results. Thirty-eight of 65 (59%) practices responded to the 2015 survey. The majority of respondents (84%) reported using an EMR, offering physician email access (82%), 24-hour access (76%), same day appointments (92%), and wholesale labs (74%). Few respondents offered inpatient care (16%), obstetrics (3%), or financial/insurance consultant services. Eighty-eight percent (88%) of practices reported annual individual adult membership rates between $500 and $1,499, decreased from 2005 where 81% reported greater than a $1,500 annual fee. The proportion of practices who submit bills to insurance decreased from 75% in 2005 to 11% in 2015. Fifty-six percent (56%) of practices reported projected patient panel size to be greater than 600, increased from 40% in 2005. Family medicine physicians represented 87% of respondents, markedly different from 2005 when 62 - 77% of DPC respondents were general internal medicine physicians.

Conclusions. Most DPC practices no longer submit to insurance and are family medicine trained. Compared with the previous sampling, DPC practices report decreased membership fees and increased projected panel size. These trends may signify the DPC movement's growth in application and scope. *KS J Med 2017;10(1):3-6.*

INTRODUCTION

Direct primary care (DPC), also known as "concierge medicine," has been increasing in popularity since the early 2000s.[1-3] The practice discipline is based on the premise that the development of a high quality patient-physician relationship is enhanced in an environment that provides unrestricted access, innovative and open communication, and increased face-to-face time. Patients pay a practice determined membership fee, at varying intervals ranging from monthly to annually, in exchange for a variety of included amenities and services which are intended to support this premise.[4] Patients are attracted to this model for the simplicity, and the quality of the relationship they potentially can build with their physicians.[1] The patient's preventive care becomes the primary focus. It follows that there should be a decreased disease burden, decreased utilization of acute care, inpatient, and specialist services, thus decreased health care cost. Decreased numbers of emergency department visits, as well as decreased inpatient admissions, can occur among Medicare beneficiaries utilizing a direct primary care model.[5]

In October 2014, the Centers for Medicare and Medicaid Services (CMS) dedicated $840 million in grant support for primary care innovation, one component of which was specified as initiatives developing and testing new payment and service delivery models.[6] This sizable commitment may aid in achieving the Healthy People 2020 goals of increased supply, access, and utilization of primary care services.[7] In an environment of high primary care burnout,[8] innovative models that promote greater balance between work and home-life, at similar levels of compensation, will become more needed to increase the supply of primary care physicians. Additional study in the DPC style of practice will facilitate further innovations toward these ends and will aid emerging physicians' choices of specialty and practice models. In 2005, previous researchers analyzed multiple components of DPC practices including the membership fees, insurance billing status, projected panel size, and specialty.[9,10] Little is known about the change in the aforementioned practice characteristics from 2005 to 2015. These specific points are relevant to understanding the growth and development of DPC. Therefore, this survey aimed to obtain these current data points, obtain additional demographic and financial indicators, and relate the findings to the Healthy People 2020 goals. It was predicted that DPC practices would (1) submit fewer claims to insurance, (2) have decreased membership fees, and (3) have increased the projected patient panel size since the last evaluation.

METHODS

Participants. This study was deemed "non-human subjects" research by the Institutional Review Board at the University of Kansas School of Medicine-Wichita. Potential practices to survey were identified using the Google™ search engine for the terms "direct primary care" and "concierge medicine." Practices that clearly self-identified with these labels were chosen from the top 100 search results. If no practice email was readily available on the website, a phone call was made to request participation and contact information. Additional participants were identified using snowball sampling, wherein respondents suggested other DPC practices to receive the survey.

Instruments. Data were collected using a survey instrument distributed via the Survey Monkey® online platform. The survey instrument was developed solely for this study, based on the intent to compare data to previous characterizations. Additional items were added to obtain practice demographics, financial characteristics, and to expand on the possible amenities offered as described below. The continuous variables included years in practice, the number of physicians in the practice, number of staff members, and membership fees. Physician salary, work hours, and patient panel size were collected using interval values. Physician salary and patient panel size were collected in current and projected forms, with 'projected' being defined as the desired end point for the practice, rather than a distinct time period. Discrete variables included state of practice, practice setting (rural or urban), residency training, acceptance of Medicare patients, size of practice, and the presence or absence of numerous services and amenities including: electronic medical record (EMR), patient portal, physician email access, social networking (i.e., Twitter, Facebook), financial or insurance patient consultant, 24-hour physician access, same day appointments, house calls, inpatient care, obstetric care, wholesale labs, wholesale medications, wholesale imaging, employer group contracts, and immunizations. Additionally, there were two free text fields for any additional comments, as well as for referral contact information for other DPC practices.

Procedures. Sixty-five practices were identified. They were sent an email containing a link to the online survey that requested their participation in the study. In the initial email, they were assured of anonymous data reporting. A reminder email was sent four weeks later. There was a subsequent four-week interval until data were collected for analysis.

Analysis. Data were collected and analyzed using the SAS software for Windows version 9.3 (Cary, NC). Descriptive statistics were presented as frequencies and proportions for categorical variables. A one-sided binomial proportion comparison was conducted using PROC FREQ. The 2015 data were compared to the corresponding 2005 proportions. Membership fees, reported as continuous variables, were aggregated into interval ranges allowing comparison to the prior studies. Data are presented as a percentage of respondents reporting.

RESULTS

2015 Survey Results

Practice demographics, physician salaries, and work hours. Of the 65 direct primary practices sent an invitation to participate in the survey, responses were received from 38 (59% response rate), representing 20 different states (Figure 1). The majority of respondents (74%) reported physicians spend fewer than 50 hours per week devoted to patient care and practice management (Table 1). Most (72%) reported projected physician incomes between $200,000 and $300,000, and half reported current physician incomes between $100,000 and $200,000 (Figure 2). Two-thirds (65%) of respondents reported their practice as urban, and one-third (35%) as rural. Sixty-one percent (61%) of respondents reported having transitioned from a traditional practice and 39% were de novo practices. Most (70%) respondents reported being in practice for one year or less, and reported having fewer than six employees (94%).

Practice amenities are presented in Figure 3. The majority of respondents (84%) reported using an EMR, offering physician email access (82%), 24-hour access (76%), same day appointments (92%), and wholesale labs (74%). Few respondents offered inpatient care (16%), obstetrics (3%), or financial/insurance consultant services (18%). Survey data regarding these points were not available from 2005 for full comparison.

Selected Comparisons to 2005

Specialties, membership fees, insurance billing, and projected panel size were compared between 2005 and 2015. The results are presented in Figure 4. In 2015, most respondents (87%) were family medicine physicians; 5% were internal medicine physicians, with the remainder from pediatrics or internal medicine/pediatrics. This was a statistically significant reduction from the 62 - 77% of DPC practices reported as internal medicine training in 2005 (p < 0.0001, compared to the 62% to be conservative). Second, the majority (88%) of respondents reported annual individual adult membership rates of $500 - $1,499, a significant increase from 2005 where 19% reported between $500 and $1,499 (p < 0.0001). Third, few practices (11%) reported submitting bills to insurance in 2015, a statistically significant decrease from the 75% in 2005 (p < 0.0001). Last, fifty-six percent (56%) of practices reported projected patient panel size ≥ 600 in 2015, a statically significant increase from 40% in 2005 (p = 0.0274).

DISCUSSION

DPC, once known as a model focused on providing care for the wealthy, appears to be undergoing a transformation into a model that is more accessible to the general population. Although 58% of the practices surveyed reported current physician patient panel sizes of fewer than 400 patients (Figure 2), a large number of this study's respondents reported being in practice for one year or less, and the intention to grow was present.

Table 1. Practice and physician characteristics from 2015 survey.

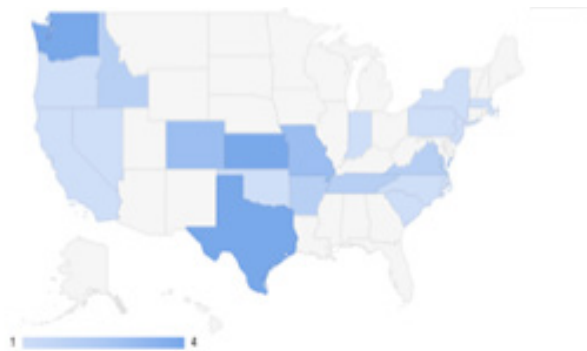| Average Weekly Work Hours	% of Respondents
< 40	26.3
41 - 50	47.4
51 - 60	15.8
61 - 70	5.3
71 - 80	2.6
Rural Vs Urban	
Rural	35.1
Urban	64.9
Transitioned DPC vs De Novo DPC	
De Novo DPC	38.9
Transitioned DPC	61.1
Number of Staff in Practice	
One	33.3
Two	19.4
Three	13.9
Four	11.1
Five	11.1
Six	5.6
> 20	5.6

Figure 1. States of responding practices. Darker color indicates higher number of responses in state.
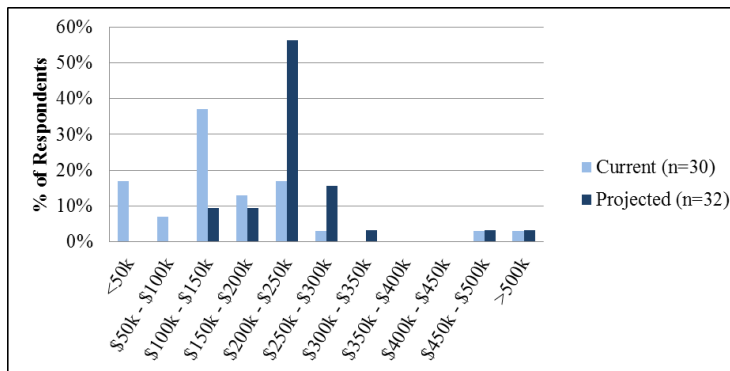

Figure 2. Current and projected incomes for DPC practices from 2015 survey results.
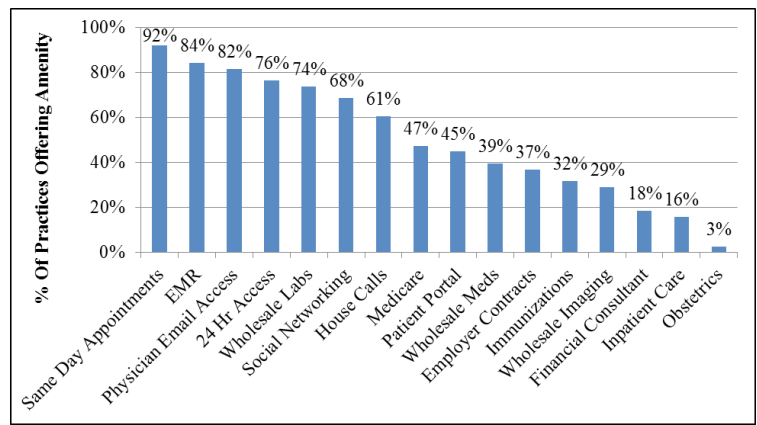

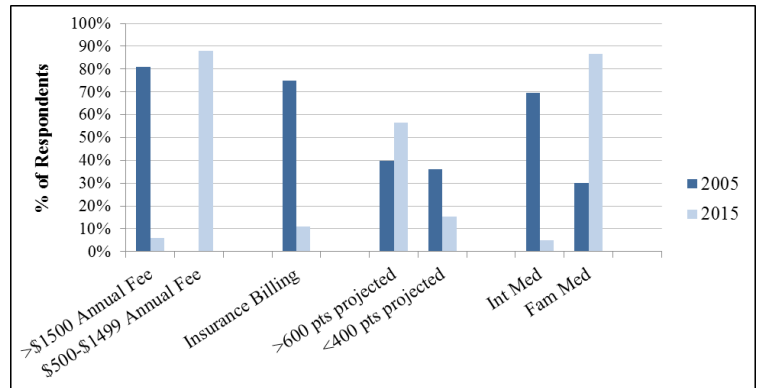Figure 3. Percent of practices reporting various amenities in 2015.

Figure 4. Selected comparisons to 2005 survey results. Note that no tests for statistical significance were used.

This assumption was based on the projected patient panel size, a number that reflects the eventual goals DPC providers have for their practice and community. Providing more affordable care to an increased number of patients than previously suggested expands the reach and impact that DPC may have on communities at large, compatible with the Healthy People 2020 goal of increasing patient access to primary care.

Additionally, as many as one-third of primary care physicians may have a high level of burnout, making the delivery of quality care highly dependent on physician and practice environment.[8,11] One identified factor of burnout is patient panel size.[8] The increase in projected patient panel size of DPC practices, though well below that of traditional practice models,[12] could suggest that DPC physicians are improving the balance between meeting needs of the community and their lifestyle. Additional factors addressed in this survey that are known to affect physician satisfaction and specialty choice include reduced paperwork[13] resulting from decreased insurance billing, and similar salaries and work hours compared to traditional primary care physicians.[14] Practicing in a model such as this may attract more emerging physicians to enter primary care, contributing to the Healthy People 2020 goal of increasing primary care supply.

Limitations. The shift in training of DPC physicians from mainly internal medicine (62 - 77%) in 2005 to family medicine (86%) is difficult to interpret and is a potential limitation of the study, questioning the sampling of practices and generalizability of the results. This study's result, however, is

representative of practices distinctly self-identifying as DPC. Dissatisfaction in primary care has led to a decrease in general practice internists,[15] with more graduating residents entering hospital or specialty medicine. This change was likely mirrored in DPC and may account for these findings. A more thorough evaluation of physician attitudes towards DPC is warranted, particularly comparing differences between the primary care specialties.

Another limitation of this survey involved the method of determining membership fees. Fee schedules were often complex and influenced by multiple factors including age of member, number of dependents, and employment status. However, our comparison was based on the average individual adult fee, which is consistent with prior studies. Further research to analyze the variety of fee schedules in DPC practices is merited.

Implications. Of the 38 respondents, only one provided obstetrical care, and six provided inpatient care. These results highlighted that DPC, though promoting preventive medicine, chronic disease management, and accessible acute care for minor illness, did not always provide comprehensive care. Collaboration with hospital networks, insurance providers, and specialty services is a necessity for high quality comprehensive healthcare. Research defining these relationships would help to understand the role of DPC better within the medical community at large. Furthermore, little is known about DPC within communities dominated by larger integrated systems, such as Intermountain Healthcare or Kaiser Permanente, that share many principles of DPC, including membership-based comprehensive, accessible, and patient-centered care. DPC potentially could function as a pathfinder and catalyst for change toward a higher level of healthcare integration and cooperation, especially in communities strongly rooted in fee-for-service systems. Research directed toward this question would be valuable.

CONCLUSIONS

Compared to 2005 survey data, membership fees for direct primary care have decreased significantly and projections of patient panel size have increased significantly, suggesting that the model is in motion towards more generalizable application. The rate of insurance billing has decreased significantly, and the model is now predominantly family medicine. DPC may serve as a viable model to support the primary care goals set by Healthy People 2020.

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An Evaluation of SmokeFree for Kansas Kids: An Intervention to Promote Tobacco Cessation in Pediatric Clinics

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ABSTRACT

Introduction. Smokefree for Kansas Kids is a program designed to train pediatric clinic staff to assess for tobacco exposure and provide brief smoking cessation interventions to caregivers and patients. The purpose of this study was to evaluate the impact of this program and improve future tobacco intervention efforts in pediatric clinics.

Methods. Eighty-six pediatric physicians and staff attended at least one of three training sessions. A random sample of pediatric medical records was selected pre-intervention (n = 49) and post-intervention (n = 150). Electronic medical records were reviewed to assess for documentation of tobacco use intervention implemented in the clinic.

Results. Of the 199 pediatric clinic visits reviewed, 197 met the study criteria. All but one visit documented an assessment of tobacco exposure. Among children exposed to tobacco (n = 42), providers were more likely to discuss tobacco use with caregivers post-intervention (35.7%) compared to pre-intervention (7.1%; p < 0.05). One in five caregivers in the post-intervention group were advised to quit (21.4%) compared to the pre-intervention group (7.1%). In the post-intervention group, 14.3% were referred to the state quitline compared to no referrals in the pre-intervention group. The difference in rates for providing advice and referral between pre-intervention and post-intervention were not statistically significant.

Conclusions. Implementation of the Smoke Free for Kansas Kids intervention was associated with modest improvements in clinic tobacco intervention efforts, but many patients still failed to receive optimal assessments or interventions. Additional efforts may be needed to enhance this program. *KS J Med 2017;10(1):7-11.*

INTRODUCTION

Tobacco use is the leading and most preventable cause of death and illness throughout the United States.[1] Smoking harms almost every single organ in the body. Despite the rates of decline in smoking throughout the years, nonsmokers remain exposed to tobacco smoke in homes, vehicles, and public places.[2, 3] Many of these nonsmokers are children. One out of five children live with someone who smokes in the household.[4] More than 50% of children between three and eleven years of age have detectable levels of tobacco-specific biomarkers due to secondhand smoke exposure.[4] Secondhand smoke exposure is associated with an increased prevalence of many negative health outcomes including severe asthma, upper respiratory symptoms and infections, ear infections, and increased risks for sudden infant death syndrome (SIDS).[3] One of the greatest risk factors for smoking initiation in youth is parental smoking.[5]

Pediatric clinic visits provide an opportunity to reduce secondhand smoke exposure for children. In fact, parents expect pediatricians to address smoking and the majority of them want information on smoking cessation.[6,7,8] However, secondhand smoke exposure is not assessed routinely in pediatric clinics.[9,10] Physicians, particularly pediatricians, often fail to record tobacco use information in the electronic medical record (EMR).[11] Use of EMRs can strengthen health care providers' abilities to identify and intervene on tobacco use,[11] and integration of tobacco exposure screening in health record documentation can improve rates significantly.[12,13] Therefore, training clinic staff to intervene with parents and documenting tobacco exposure is important in reducing children's secondhand smoke exposure.

To reduce the adverse effects of smoking on children, a number of efforts have been undertaken to incorporate smoking cessation interventions into pediatric settings.[6,14] Kids Safe and Smokefree (KiSS),[15] Stop Tobacco Outreach Program,[16] and CEASE[17] are examples of pediatrician-parent interventions for tobacco cessation. These interventions involved advising parents to quit, referring them to quitlines, and following up after intervention. Importantly, KiSS and CEASE included office system changes to support delivery of tobacco treatment. Previous research found that, after receipt of training on tobacco treatment, providers' delivery of tobacco treatment decreased over time without "booster" trainings.[18] Office systems, including electronic medical record prompts, offer promise to support the delivery of tobacco treatment.[12,19]

KiSS was a multilevel intervention evaluated in a randomized trial.[8] The clinic-level intervention components included modifying the electronic health record screens to provide guideline-based tobacco intervention prompts to remind providers to ask about child secondhand smoke exposure, advise about the risks of secondhand smoke exposure, and refer smokers to cessation programs. This intervention was combined with telephone-based behavioral counseling. If shown to be effective, KiSS will provide a comprehensive model for addressing the issue of secondhand exposure to tobacco smoke in the pediatric population.[15]

The Stop Tobacco Outreach Program was a program to intervene with smoking parents of children admitted to the hospital for a respiratory illness.[16] This intervention integrated motivational interviewing, nicotine replacement therapy,

telephone counseling, and referral. At two-month follow-up, fewer parents reported smoking in homes or cars and there was a significant increase in attitudes ackowledging the harms of smoke exposure.

The CEASE intervention included routine screening for parental tobacco use, motivational messaging, nicotine patch/gum recommendations, and enrollment in free state quitlines.[10] In a recent study, this intervention was implemented and evaluated in 10 pediatric clinics and compared to 10 control pediatric clinics. Pediatric clinics that implemented CEASE had a higher rate of providing tobacco treatment counseling (42.5%) compared to control clinics (3.5%). The effect of the CEASE trainings and system-changes on tobacco treatment delivery were still evident one year post-intervention.[12] These results showed that programs such as CEASE can be implemented successfully in child health care settings.[12,17]

The Kansas Chapter of the American Academy of Pediatrics (KAAP) with the University of Kansas Medical Center (KUMC) Department of Pediatrics developed an intervention program based on CEASE[17] called Smokefree for Kansas Kids that was funded through the Kansas Health Foundation. This intervention program involved training clinic staff to conduct tobacco use assessments consistently, advise parents to quit, and provide referrals to the state tobacco quitline. It also modified the EMR to provide tools to enhance the evaluation of secondhand smoke exposure, the sources of this exposure, and prompt tobacco treatment. The aim of this study was to assess the effectiveness of the Smokefree for Kansas Kids program after the first year of implementation by evaluating the pre-intervention to post-intervention EMR documentation changes.

METHODS

Intervention. KAAP and KUMC worked together to develop the first year of the Smokefree for Kansas Kids intervention program. This program included three trainings in the first year. Training involved the introduction of the intervention program, explanation of the three steps to clinic-based tobacco intervention, training on motivational interviewing, information on KanQuit (the free tobacco quitline for the state of Kansas), and information on cessation medications.

Smokefree for Kansas Kids adopted the brief tobacco treatment method using Ask, Advise, Refer tobacco treatment components[20] based on the CEASE program that successfully has been implemented elsewhere.[17] The Ask component involved asking families at every health encounter about tobacco use and rules about smoking within the home and car (e.g., "Does your child live with anyone who uses tobacco?"). The Advise component involved giving families strong, clear, personalized advice. The trainings emphasized discussing the impact of smoking on finances as well as the health of the child and other members of the family. For example, "Quitting smoking is one of the most important things for your own health and your child's health. I can help you quit." The Refer component involved referring the family members who use tobacco to KanQuit and informing the family that each referral to KanQuit will be rewarded with a $40 gift card. Fax referrals were made through KanQuit and smokers were contacted once the referral form was received. For most callers, the program offered proactive counseling sessions and follow-up assistance.[21] The training also provided participants with detailed explanations of multiple smoking cessation medications, such as nicotine replacement, non-nicotine treatments, and combination medications. The trainings emphasized recording tobacco use in the child's electronic medical record and documenting smoke exposure on the problem list.

In addition to training in the Ask, Advise, and Refer components of tobacco treatment, clinic staff received brief training on motivational interviewing. Because counseling is more effective when it is delivered in a non-judgmental manner,[22] this training introduced brief counseling skills, such as asking open-ended questions and using feedback to confirm the meaning of what the caregivers are saying. Training also addressed expressing empathy and enhancing caregiver confidence to quit smoking. Training included the Elicit-Provide-Elicit process to increase interest in tobacco cessation information: Elicit: ask permission before providing information (e.g., "Would you like to learn more about…?"), Provide: provide feedback in a neutral manner (e.g., "What happens to some people is…"), Elicit: obtain the patient's interpretation and follow-up (e.g., "What do you make of this?").[22]

Three trainings were offered between September 2014 and April 2015. Each training session lasted for one hour. Eighty-six attendees attended at least one session of training.

Participants. Charts were selected for review based on dates of visits. Forty-nine patients were selected randomly for EMR analysis prior to the intervention (February - May 2014) and 150 were selected randomly for EMR analysis after the intervention (September 2014 - June 2015). The 150 post-intervention visits were selected in groups of 50; clinic visit dates were within the three months following each of the three clinic trainings. The evaluation period followed the initial training session because this training covered the brief tobacco treatment intervention and was designed to be immediately implemented by providers. The two additional trainings offered later in the year were designed to reinforce and expand on the skills learned. Therefore, visits following these trainings were sampled to ensure that the evaluation included any effects of these subsequent sessions. Inclusion criteria included pediatric patients aged from newborn to 17, seen in the KUMC pediatric clinic. Medical records included well child visits and office visits; visits where no progress notes were recorded in the text fields (e.g., for injections) were excluded.

For each chart reviewed, the following descriptors of the visit were recorded: patient's age, date of outpatient visit, visit type, and provider specialty. The charts were reviewed for tobacco exposure and evaluation of provided tobacco treatment. Whether tobacco use was mentioned in progress notes, whether tobacco exposure was included in the EMR problem list, whether smoking was addressed in written patient instructions, whether smokers were advised to quit, and whether fax referral forms to the quitline were present in the EMR were recorded. The study protocol was approved by the KUMC Institutional Review Board.

Measures. Data collected from each reviewed chart were entered into REDCap.[23] Tobacco exposure status was obtained from the social history in the EMR for each visit. The primary outcome was the change in the use of each component of the 3-step (Ask, Advise, and Refer) tobacco intervention for visits with tobacco exposed children. Information was collected on whether tobacco use was discussed during the office visit. "Ask" was defined as whether tobacco exposure was assessed. "Discussed" was defined as whether tobacco exposure was mentioned in the progress notes or included on the problem list of the EMR. "Advise" was defined as whether the provider documented advising the smoker to quit in the EMR. Therefore, the number of medical records that identified any advice to quit was recorded pre-intervention and post-intervention. "Refer" was defined as whether the clinician documented offering any method of follow-up counseling, referral to the state quitline, or prescription medications for smoking cessation.

Analyses. Descriptive statistics such as frequencies and percentages were calculated to determine tobacco treatment practices before and after the intervention. Comparisons were made between pre-intervention and post-intervention data regarding tobacco use assessment, discussion of tobacco exposure, advice to quit, and referral. Mid-P exact probability tests with one tail p-values were calculated for each component of Smoke Free for Kansas Kids, using openepi.com to determine whether there were statistically significant increases in tobacco treatment from pre- to post-intervention.

RESULTS

Figure 1 illustrates the pediatric samples for the project. Of the 199 pediatric visits identified, two visits were excluded, which were for injections. Of the remaining 197, 49 samples were pre-intervention charts and 148 were post-intervention charts. From the 49 pre-intervention charts, all patients were assessed for tobacco exposure. Fourteen of the 49 patients were exposed to tobacco and 35 patients were not exposed to tobacco. From the 148 post-intervention charts, one patient was not assessed for tobacco exposure, 28 patients were exposed to tobacco use, and 119 patients were not exposed to tobacco.

Table 1 provides the number and percentage of visits with documentation of the three components of the intervention: Ask, Advise, and Refer for the pre-intervention and post-intervention groups. The post-intervention group had higher rates of tobacco-related discussions (35.7%) in comparison to the pre-intervention group who had a rate of 7.1%. In addition, the post intervention group also received tobacco use counseling at a higher rate; 21.4% of adult caregivers who used tobacco were advised to quit and 14.3% were referred to the quitline in comparison to pre-intervention (7.1% for advice to quit and 0% for referral to quitline).
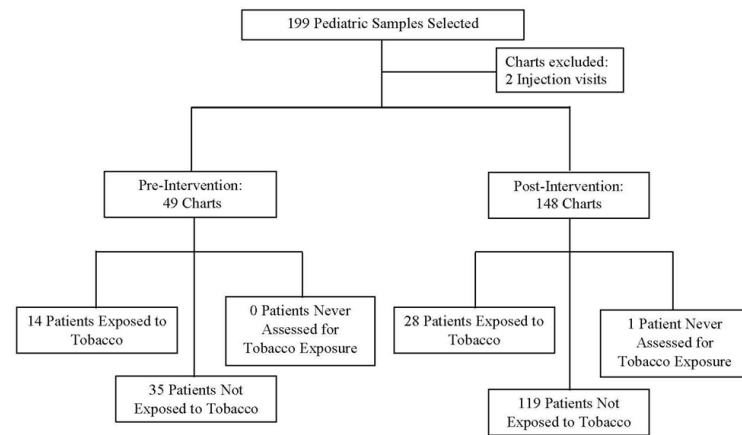

Figure 1. Sample for chart review and tobacco exposure status.

Table 1. Tobacco treatment pre- and post-intervention for patients exposed to tobacco smoke.

Action	Pre-intervention n = 14	Post-intervention n = 28	p-Value
Discussed Tobacco Use			
Tobacco exposure addressed in progress notes	1 (7.14%)	10 (35.71%)	0.027
Tobacco exposure addressed in problem list	1 (7.14%)	8 (28.57%)	0.064
"Advise" Component of SFKK			
Advised smokers to quit	1 (7.14%)	6 (21.43%)	0.142
"Refer" Component of SFKK			
Discussion of quitline, follow-up counseling, or smoking cessation medications	0 (0%)	4 (14.28%)	0.0915

DISCUSSION

This study demonstrated the feasibility of adopting intervention programs to reduce secondhand smoke exposure through implementation of an intervention program such as Smokefree for Kansas Kids. Before implementation of Smokefree for Kansas Kids, the rate of documented tobacco use and assessment and tobacco treatment was very low. After implementation, tobacco use assessment and documentation in the progress

notes and problem list by health care providers increased. While the rates for providing advice and referral appear higher post-intervention, the differences were not statistically significant. However, given the small sample size of tobacco-exposed patients included in this study, our findings provide preliminary evidence for the feasilbity of implementing clinic-based tobacco treatment intervention in Kansas pediatric clincs.

While our findings indicated that implementation of smoking cessation programs may be feasible, they also highlighted the need for further improvement in routinely assessing and treating tobacco use exposure within pediatric health care settings. Even after implementation of Smokefree for Kansas Kids, less than 50% of the pediatric visits with children exposed to tobacco smoke included documented tobacco assessment and treatment by the health care provider. Even though the rates increased between pre- and post-intervention, the numbers are low, especially with regard to tobacco treatment. In the second phase of Smokefree for Kansas Kids, we plan to provide additional trainings as well as implement EMR changes. Altering pediatric EMRs to include specific tobacco assessment and treatment questions could improve the rates of smoking assessment and treatment further.

This study was limited by reliance on restrospective chart reviews to evaluate tobacco assessment and treatment. Some aspects of important data may not have been available for research purposes. We assumed that tobacco exposure was assessed if the EMR showed an updated tobacco exposure status as of that visit. However, changes in EMR documentation does not necessarily indicate real changes in care occurred; it is possible that the trainings stimulated improved documentation, but rates of assessment, advice, and referral did not change from pre-intervention to post-intervention. On the other hand, discussions also may have occurred that were not documented in the EMR.

CONCLUSIONS

Our results showed that a pediatric clinic intervention including the Ask, Advise, and Refer tobacco treatment model, motivational interviewing, and training regarding quitlines and smoking cessation medications can be implemented in pediatric clinic settings. However, there is room for improvement based on the fact that no intervention was recorded for greater than half of patients exposed to secondhand smoke. These results were used to inform additional trainings and specific ideas for EMR changes for the second year of the Smoke Free for Kansas Kids project. Future studies and evaluations need to be conducted to establish how components of the intervention could be implemented and sustained successfully among physicians, nurse practitioners, nurses, and medical assistants in pediatric clinics to promote reduction of secondhand smoke exposure and smoking cessation among adult caregivers.

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Successes and Challenges of Optimal Trauma Care for Rural Family Physicians in Kansas

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ABSTRACT

Introduction. Kansas has a regionalized trauma system with formal mechanisms for review, however, increased communication with rural providers can uncover opportunities for system process improvement. Therefore, this qualitative study explored perceptions of family medicine physicians staffing emergency departments (ED) in rural areas, specifically to determine what is going well and what areas needed improvement in relation to the trauma system.

Methods. A focus group included Kansas rural family physicians recruited from a local symposium for family medicine physicians. Demographic information was collected via survey prior to the focus group session, which was audiotaped. Research team members read the transcription, identified themes, and grouped the findings into categories for analysis.

Results. Seven rural family medicine physicians participated in the focus group. The majority were male (71%) with the mean age 46.71 years. All saw patients in the ED and had treated injuries due to agriculture, falls, and motor vehicle collisions. Participants identified successes in the adoption and enforcement of standardized processes, specifically through level IV trauma center certification and staff requirements for Advanced Trauma Life Support training. Communication breakdown during patient discharge and skill maintenance were the most prevalent challenges.

Conclusions. Even with an established regionalized trauma system in the state of Kansas, there continues to be opportunities for improvement. The challenges acknowledged by focus group participants may not be identified through patient case reviews (if conducted), therefore tertiary centers should conduct system reviews with referring hospitals regularly to improve systemic concerns. *KS J Med 2017;10(1):12-16.*

INTRODUCTION

In 2015, traumatic injuries were the leading cause of death in the United States for children and adults aged 1 - 34 years.[1] In the United States, trauma care operates within regionalized systems, which are managed on a state-by-state basis. Regionalization is based on the idea that trauma patients who present to rural or smaller hospital facilities can be triaged, stabilized, then transferred to a tertiary facility for definitive care.[2] Within the regionalized systems, the American College of Surgeons (ACS) sets forth requirements for healthcare facilities to be classified as a level I, II, III, or IV trauma center.[3] Criteria are the most rigorous for a level I facility, which is typically a large, high-volume urban hospital and there is a stepwise progression through level IV, which is typically a lower-volume rural hospital.

Nearly one-sixth of Americans live in a rural area, with 46.7 million Americans living greater than one hour away from the closest level I or II trauma center.[4] Patient outcomes consistently have been shown to be worse when traumas occur in rural areas.[5-9] Challenges include the availability, training, and skills-maintenance obstacles of the local emergency teams[10] or long travel distances to larger trauma centers.[11,12] Kansas is a state in which rural trauma is particularly important, as more than 94% of Kansas' 105 counties are classified as either rural or frontier.[13] In 2014, seventy percent of all Kansas traffic trauma fatalities occurred in a rural area,[14] and approximately twenty-five Kansans require the care of a trauma center on any given day.[15] In 1999, the Kansas legislature passed a law mandating the development and implementation of a regionalized state trauma system, consisting of six regions,[16] with a state Advisory Committee on Trauma (ACT).[17] As of 2016, there were three level I trauma centers (two located in Wichita, one located in Kansas City), two level II trauma centers, five level III trauma centers, and thirty-three level IV trauma centers.[18]

Level IV trauma centers are often Emergency Departments (ED) in small rural hospitals and frequently are staffed by family medicine physicians.[19,20] A review of rural ED staffing in several states, including Kansas,[21] noted a variety of ED staffing models, including traditional rotations of local medical staff, hiring of part-time or full-time ED physicians, use of mid-level practitioners or resident physicians, non-local locum tenens providers, or a combination of the aforementioned models.[21-25] Moreover, rural EDs are less likely to utilize Emergency Medicine residency-trained/board-certified physicians than urban EDs.[23,26,27] Rural emergency care in Kansas historically has been provided by family physicians.[22]

Kansas has a regionalized trauma system, with formal mechanisms for review and feedback on patient cases. Discussion outside of the formal review process, however, can uncover opportunities for system process improvement. Thus, this qualitative study explored perceptions of family medicine physicians staffing EDs in rural areas, specifically to determine what is going well and what areas still need improvement in relation to a trauma system.

METHODS

<u>Participants.</u> Focus group participants were recruited from a local symposium for family medicine physicians in Kansas. Recruitment strategies included: 1) a letter to conference enrollees within two weeks prior to the symposium, and 2) inviting participants during the symposium announcements. Informed consent was obtained from each participant prior to beginning the focus group. A $20 gift card was given to each participant.

Materials and Methods. The focus group session was conducted by a trained facilitator, lasted approximately one hour, audiotaped, and professionally transcribed with all identifying information removed. The focus group discussion included two queries (what is going well and what needs improvement) in the specific areas of: pre-hospital care, rural hospital care, transfers to tertiary care, skills maintenance, and concerns regarding special populations (pediatric and geriatric). Suggestions were requested for research and/or education. Demographics were assessed via a survey and included questions concerning skill maintenance and commonly treated mechanism of injuries.

Data Analysis. Two independent reviewers analyzed focus group comments for qualitative data analysis. After individually reviewing transcripts, the reviewers discussed agreements and disagreements in success and challenge concepts and came to a consensus. Descriptive statistics were summarized using frequencies (percentages) and means (standard deviations). Statistical analyses were performed using SPSS for Windows, Version 20.0 (IBM, Armonk, NY).

RESULTS

Seven rural family medicine physicians participated in the focus group. Of the seven participants, the majority were male (5/7, 71%) with the mean age 46.71 years (SD = 16.62). The majority (6/7, 86%) were confident in their ability to manage major trauma. However, half (4/7, 57%) were concerned with skills maintenance due to infrequent exposure. All the physicians reported having treated patients in the ED with injuries due to agriculture, falls, and motor vehicle collision.

Pre-Hospital Care. While discussing pre-hospital care, several participants expressed that advanced notification of incoming traumas, correct on-scene triage of patients, and air medical transport capability at the scene have led to improved trauma care. Several participants also mentioned they liked that the region has standardized triage notifications in place so that transport decisions automatically are made at the scene regarding whether transport will be made to the closest rural hospital or directly to a center with a higher trauma designation. The pre-hospital notification system of text messages implemented as part of attaining level IV trauma center certification resulted in improved delivery of trauma care for one participant's facility. Partnership with the Kansas Board of Emergency Medical Service (EMS) was reported as a positive factor, as this has resulted in assistance with emergency services protocol and process enhancement for many facilities.

Participants discussed areas within pre-hospital care that presented challenges, including lack of protocol consistency and training among EMS providers, as well as availability of EMS resources (EMTs/paramedics and ambulances). Frustration was expressed with lack of adequate pre-hospital notification when there is an incoming trauma, delayed notification about ambulance or staff availability, and the possibility of their facility being passed over inappropriately in favor of a larger facility. Several participants mentioned that many first-responders are volunteers, therefore, the level of training and familiarity with protocols vary.

Rural Hospital Care. Many commented on successes including improvements resulting from achieving level IV trauma center certification, specifically, quarterly inter-disciplinary meetings for case review and process improvement recommendations. Additional comments noted resource-focused communication (unavailability of key elements for trauma care, such as radiology or lab), efficient team assembly (text notification of an incoming trauma), correct pre-hospital triage (patients appropriately matched to the level of care that their facility is equipped to provide), and the use of telemedicine.

Challenges identified at rural hospitals included the need for appropriately skilled providers, administrative reluctance to put a hospital on diversion (when necessary), and skill maintenance.

Tertiary Care Transfer. As participants discussed transfers to tertiary care centers for definitive care, several participants felt well-supported by the larger hospitals and overall have good communication with the providers. Specifically, they mentioned consulting with tertiary hospital providers, even when transfer was not planned. A reported success was the utility of the 'one call system' for contacting level I trauma centers in the region, saying it is helpful when preparing a patient for transfer. Participants also appreciated follow-up on the care of their patients, such as daily reports or written documentation of discharge. Benefits of having specialty physicians visit and hold clinics at rural hospitals were reported, stating it helps the referring physician build a rapport and feel more comfortable when transferring patients to his/her care. The specialty physicians also provide significant help with post-discharge follow-up after a patient has been treated at a tertiary care center.

Discussion regarding challenges identified in transfers was predominantly centered on concerns surrounding communication with the tertiary trauma center. Participants expressed frustration over difficulty obtaining discharge summaries in a timely manner. Further, the length and structure of the summary were noted as being cumbersome for referring physicians to locate information easily such as discharge diagnosis and new medications. Rural providers' frustrations are compounded when the physician feels that he/she made an effort to provide the receiving facility with the patient's records in a timely manner but may not hear anything until the patient returns home for follow-up care. This lack of information causes frustration for the provider and patient. It was mentioned that sometimes tertiary care centers have case managers who keep the referring physician in the loop and help with communication, but this is not always the case.

Another challenge complicating patient transfers is strained relationships between the sending and receiving physicians. Several focus group members expressed they have been criticized or have perceived the receiving physician was being judgmental of the care provided

in the rural setting or the decision to transfer the patient. Participants stated there can be a perception that they are "dumping" their patient on receiving facilities, but they are trying to transport while stable. Sometimes the referring physician decides it is necessary to transfer a stable patient because he/she wants to get the patient to the definitive care facility (potentially several hours away) in case the patients' condition deteriorates. It was observed that this is likely due to a lack of understanding of the resources available to care for the trauma patient in the rural setting. Another patient transfer issue related to the patients' reluctance to leave their home community to go to a larger city for medical care. This can present challenges for the rural trauma provider who is trying to coordinate appropriate care of the patient.

Skill Maintenance/Continued Education. Reported successes in this area included facility-specific practices, such as conducting mass casualty drills, as well as having trauma surgeons from level I trauma centers in the state travel to their rural hospital to conduct training and review protocols with the rural healthcare team. Several participants reported that skills maintenance was a major challenge for them. One participant commented that it was helpful to have trauma surgeons come out once a year to go through rarely used procedures. Others mentioned that continued education was addressed in their institutions by implementing requirements for staff members/providers to participate regularly in advanced trainings such as Advanced Trauma Life Support (ATLS), Advanced Cardiac Life Support (ACLS), and Pediatric Advanced Life Support (PALS). Other participants cited attending and networking at meetings, webinars, and conferences as being helpful resources for continued education. Additionally, several participants expressed concern about having the opportunity to participate in the care of enough trauma patients to maintain their skills. Others voiced uncertainty as to which specific trauma training, ATLS or American Board of Emergency Medicine (ABEM) training/certification, is most appropriate for them as family medicine physicians who are providing trauma care in a rural setting.

Special Populations (Pediatric and Geriatric). During the focus group, participants were asked specifically about special trauma populations, including pediatric and geriatric patients. When discussing pediatric trauma patients, several participants voiced their lack of confidence with regards to skills in handling these patients, due to their rare occurrence. One participant put it simply, "They are terrifying." Another concern was consulting with specialists outside of the physician's trauma system. They are communicating with new providers that they do not have a relationship with and this can lead to a breakdown in communication.

Geriatric trauma patients present unique challenges; "They won't stop falling." The decision to transfer a geriatric trauma patient to a tertiary facility for advanced care can be complicated by end-of-life issues. A patient's wishes regarding end-of-life care can be dynamic and must be revisited with each hospital visit and carefully documented.

DISCUSSION

The purpose of this focus group was to explore perceptions of family medicine physicians staffing EDs in rural areas to determine what is going well and what areas still need improvement in relation to a trauma system.

In the area of pre-hospital care, improved triage protocols, timely notification of incoming trauma patients, and availability of air-ambulance transport from the scene for critical patients contributed significantly to improved rural trauma care delivery. However, many providers experience significant pre-hospital care challenges, particularly related to EMS provider level of training and availability of ambulances and first-responders. These challenges, including providing quality pre-hospital trauma care in a rural setting, are well-documented in the literature. Many EMS providers are volunteers with full-time jobs and families, and the rural EMS provider may not have ample exposure to trauma patients for adequate skills maintenance and familiarity with protocols.[5,11,28] Potential solutions to these challenges include making additional human resources available to dispatch (e.g., law enforcement and fire department personnel). In addition, providing rural personnel with engaged medical oversight to answer questions and help hone skills can effectively maintain skill performance.[11]

With regards to what happens within the rural hospital, systematic improvements were reported widely among participants whose facilities had undergone standardization criteria for level IV certification.[3] Additional positive factors were continuing education (interdisciplinary patient case reviews) and improved communication (both resource availability and efficient team assembly). While the use of telemedicine was discussed only briefly during the focus group, it has been explored in rural trauma literature. The expansion of telemedicine initially was expected to occur rapidly, however, challenges related to funding and state licensing are attributed to its lackluster growth.[29,30] The use of telemedicine in rural trauma care holds great potential and may be used in the future to aid rural hospitals in providing optimal evaluation, treatment, and transfer of trauma patients.[31]

Issues surrounding transferring patients to a tertiary facility provoked the most discussion among focus group participants, and experiences varied. Good communication with providers at tertiary care facilities and specialists traveling to rural hospitals were cited as positives, as was the 'one call system' for contacting level I trauma centers in the region. Areas identified for improvement included the timely receipt of concise discharge instructions, updates while the patient is hospitalized, and communication (free of criticism or judgment) between the sending and receiving physicians. Rae et al.[32] described a highly successful system used by Harborview Medical Center in Seattle, Washington, to provide timely patient information to referring hospitals. The system, called U-link, is managed by the level I trauma center and

designed to allow authorized individuals from the referring hospital to have HIPAA-compliant access to a trauma patient's records for the purpose of improved post-discharge follow-up and provider education. Implementation of a similar system locally would require investigation regarding cost and risk to patient privacy, but could provide substantial benefit to referring physicians.

Skills maintenance/continued education topics identified as being positive included required ATLS/ACLS/PALS education for staff, as well as trauma surgeons traveling from tertiary care centers to rural facilities to train trauma teams. McCrum et al.[33] observed that while adherence to ATLS guidelines in trauma care is tied to improved patient outcomes, the reality is that often ATLS protocol is not followed in the rural trauma setting for a variety of reasons, including lack of availability of ATLS training and infrequency with which rural providers are able to practice trauma skills. Some hospitals represented by the focus group are addressing this issue, as participants reported all staff are now required to be ATLS certified. However, trauma volume at rural hospitals is often insufficient for skills maintenance which remains a concern. The use of simulation modules provides rural personnel with opportunities to maintain skills.[34] In addition, focused and directed educational programs that emphasize skill practice can improve skill performance.[35]

Participants discussed issues pertaining to the care of special trauma populations. Pediatric patient concerns included lack of comfort in caring for critically ill children, inadequate exposure to pediatric trauma patients for skills maintenance, and the need to work with specialists with whom the physician may not be familiar. Limited exposure to pediatric patients is a common barrier to ED providers staying current on knowledge, as the majority does not have access to pediatric-specific emergency training. Curran et al.[36] recommended the use of a web-based knowledge exchange focused on pediatric emergency care to help rural providers access current research and increase communication with other providers of pediatric emergency care. Communication is particularly important in pediatric trauma care, specifically between the rural facility and tertiary care facility. Chwals et al.[37] noted approximately 91% of computerized tomography (CT) scans performed at a rural hospital are repeated once the patient reaches the larger definitive care facility, subjecting the young patient to increased radiation.

Issues raised by participants with regards to geriatric trauma patients included the need for end-of-life discussions and the frequency with which elderly patients experience falls. The literature reveals the complexity of trauma care related to the geriatric population, including challenges with adequate assessment of severity of injuries (particularly head injuries),[38] management of age-related co-morbidities, and corresponding timing of transfer to a tertiary care facility.[39] The subject of trauma and the elderly will gain attention in the coming years, as the US Centers for Disease Control and Prevention predicts there will be twice as many elderly people (aged 65 and older) alive in the year 2050 as there were in 2010.[40]

Limitations. The results of this focus group discussion may not represent all rural hospitals providing emergency and trauma care due to the small number of participants (seven), the recruitment strategy (family medicine physicians attending local symposium), and all physicians providing care in Kansas. Due to the diverse background of rural providers, praises or concerns mentioned by an individual participant may not be shared by other providers.

CONCLUSION

Even though regionalized trauma centers are established in the state of Kansas with quality review and process improvement in place, there continues to be opportunities for improvement within the system. Positives were adoption and enforcement of standardized processes through level IV trauma center certification and staff requirements for ATLS training. Communication breakdown (in terms of patient discharge information) and skill maintenance were the most prevalent challenges noted. These issues specifically may not be identified through inter-facility patient case reviews (if conducted), thus tertiary centers should conduct system reviews with referring hospitals regularly to address regional systemic concerns.

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CASE REPORT

Longitudinally Extensive Spinal Neurosarcoid from the Brainstem to T3 - T4

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INTRODUCTION

Neurosarcoidosis affects approximately 5% of patients with sarcoidosis.[1] The majority of patients present with neurologic symptoms due to involvement of the meninges, hypothalamus, pituitary gland, or cranial nerves.[2] Spinal cord involvement, or spinal sarcoid, is relatively rare and when present, is usually restricted to one or two spinal cord segments. Inflammatory extension of the spinal cord beyond three vertebral lengths is termed longitudinally extensive transverse myelitis (LETM). LETM is a rare feature of various autoimmune, infectious, metabolic, and vascular derangements. Most often, it is associated with neuromyelitis optica. Other specific conditions that have been known to cause LETM include sarcoidosis, systemic lupus erythematosus, B12 deficiency, syphilis, and spinal cord infarction.[3] We present a patient with neurosarcoidosis causing minimal neurologic symptoms and LETM.

CASE REPORT

A 34-year-old African American male, with no past medical history, presented for progressing neck pain with numbness and weakness in the upper extremities. Symptoms were first noticed after smoking K2, a synthetic cannabis. On examination, the patient demonstrated an even distribution of weakness noted to be 4/5 in the upper and lower extremities bilaterally with normal tone. He also had bilateral numbness and tingling in the upper extremities with numbness of the upper back upon light touch down to the cervical and thoracic spine. No sensory loss below the thoracic spine or in the lower extremities was noted. Deep tendon reflex testing demonstrated hyperreflexia in the upper and lower extremities.

Cranial nerves 2 to 12 were intact. Babinski sign was negative.

Magnetic resonance imaging (MRI) of the brain showed no focal defects. MRI of the cervical spine revealed a T2 and T2 short-tau inversion recovery (STIR), hyperintense, expansile lesion extending from the medulla to approximately T3 to T4 (Figure 1). In addition, contrast-enhanced MRI images showed an expansile, enhancing intramedullary lesion extending from C3 to C6, with the most extensive portion measuring 9 mm in diameter (Figure 2). The patent's angiotensin converting enzyme level was slightly elevated at 70 units/L (normal 12 - 68 units/L). Cerebrospinal fluid (CSF) analysis failed to show signs of infection, with a white blood cell count of 4 per cmm, elevated protein of 51 mg/dL (normal 15 - 45) and elevated glucose level of 75 mg/dL (normal 40 - 70). Cytology was negative. No oligoclonal bands were observed in the CSF and the neuromyelitis optica antibody was negative. ESR, ANA, Anti-DNA, HIV, cryptococcus antigens, and syphilis titers were also negative. B12 levels were not assessed at this time as it was determined that the clinical picture did not fit that of subacute combined degeneration of the spinal cord.

A CT of the chest demonstrated a conspicuous right hilar lymph node, but no perilymphatic nodules suggestive of sarcoidosis. Additionally, the patient did not present with any pulmonary symptoms. The patient ultimately was treated with 4 mg IV dexamethasone for eight days followed by a 12-day oral steroid taper (starting with 40 mg) and gradually regained strength in his hands and lower extremities.
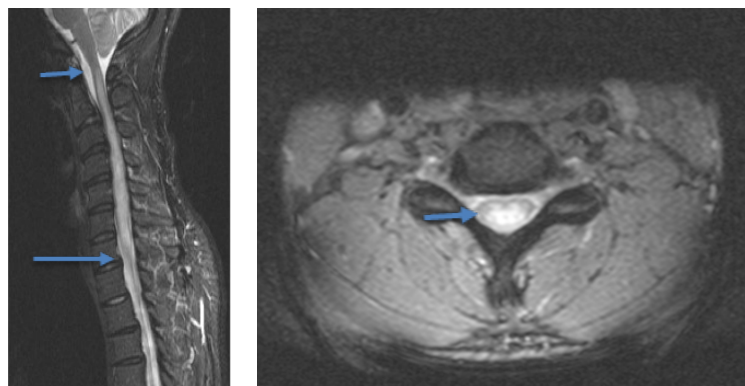

Figure 1. Sagittal and axial T2 STIR images demonstrates hyperintense signal in the spinal cord from the medulla to C7 (arrows).

Figure 2. T1 post contrast sagittal demonstrates an enhancing expansile lesion in the spinal cord from C3 to C6 (arrow).

Nine months after the initial presentation, the patient presented with upper respiratory symptoms, back pain, and upper extremity numbness. On physical examination, there was mild reduction in proprioception and vibration in all distal extremities. The patient exhibited normal tone and strength in upper and lower extremities with no reduction in fine motor function. Deep tendon reflexes were +2 in the upper extremities with a slight decrease in triceps reflex relative to the others and a positive Babinski response on the left and right. Cranial nerves 2 to 12 were intact.

Repeat MRI showed improvement of the abnormal spinal cord signal, but persistent patchy post contrast enhancement in the cervical cord. A chest X-ray was remarkable for an ill-defined right upper lung zone nodular opacity seen on the posteroanterior view. A subsequent CT of the chest again showed right hilar lymphadenopathy with the largest right hilar lymph node measuring 2.5 cm x 1.8 cm (previously measured at 2.0 cm x 1.5 cm during the patient's first presentation) and right lung consolidations and tree-in-bud opacities suggestive of an acute infection (Figure 3 A and B). Given the increase in lymphadenopathy, the patient subsequently was evaluated for pulmonary sarcoidosis with a transbronchial biopsy, which revealed a non-caseating granuloma, suggesting a diagnosis of the inflammatory disease. The patient originally was treated with antibiotics for his upper respiratory symptoms and discharged given his vast improvement. However, following the biopsy results, the patient was prescribed a course of prednisone (40 mg for 4 - 6 weeks) with close follow-up. Since that time the patient has presented to the hospital several times with well-controlled lung symptoms, but no neurological symptoms (Figure 3C).
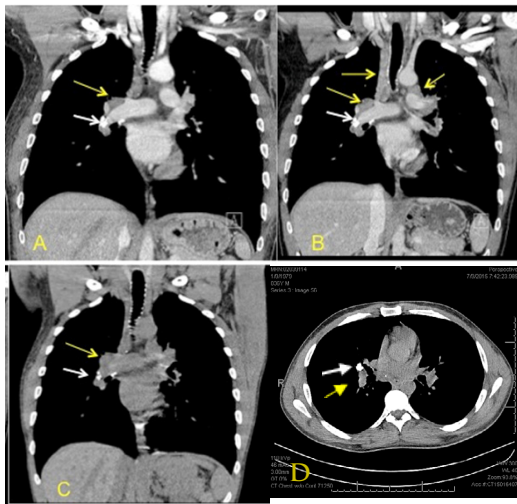

Figure 3. A) Coronal CT chest with contrast in 2013 demonstrated conspicuous right paratracheal and hilar lymph nodes. B) A 2014 scan demonstrated increased size of the right paratracheal and hilar lymph nodes (yellow arrows). C) Coronal CT chest without contrast in 2015 demonstrated slight increased size of the right hilar lymph nodes. D) Axial CT chest without in 2015 demonstrated calcified lymph nodes and right hilar lymphadenopathy. (White arrows point to calcified granulomas, indicative of a remote infection.) Endobronchial bronchoscopy fine needle aspiration in 2014 demonstrated noncaseating granulomas.

DISCUSSION

While most cases of sarcoidosis present with pulmonary symptoms, neurological manifestations of the disease are the presenting signs in more than half of the cases of neurosarcoidosis.[4] Our case was similar to previously reported studies of neurosarcoidosis where the patient presented with neurological symptoms prior to a diagnosis of sarcoidosis or the manifestation of pulmonary symptoms. It was only after a remission of the patient's initial neurologic symptoms with reappearance nine months later that pulmonary symptoms were first reported. With transbronchial biopsy proven sarcoid, along with the imaging studies, a diagnosis of neurosarcoidosis was made. Spinal cord sarcoidosis may present without systemic signs and isolated neurosarcoidosis eventually may present with classic pulmonary involvement as shown here making the initial diagnosis and treatment difficult.[5]

Neurological symptoms secondary to sarcoidosis are thought to be caused by disruption of the blood-brain barrier by disease related inflammatory factors, which subsequently allow for granulomatous infiltrate into neural tissues.[6] While neurosarcoidosis can present as hypothalamic dysfunction, meningitis, and encephalopathy, the most common manifestation in current literature suggests cranial nerve involvement with a predilection for the facial nerve. This patient presented with upper and lower extremity paresis, as well as sensory defects reflecting diffuse spinal cord involvement with a normal brain MRI. These findings, along with a previously reported case study in which neurosarcoidosis presented with symptoms similar to demyelinating disorders[7], may suggest an even broader paradigm of clinical presentations than previously thought.

Characteristic imaging findings in cases of neurosarcoidosis are highly variable. Previously reported findings include dural and leptomeningeal enhancement with spread to the Virchow-Robin spaces, T2 hyperintense signaling, and cranial nerve involvement.[8] Although most MRI findings are non-specific, Gullapalli and Phillips[9] reported a sensitivity of brain MRI of 82 - 97% compared to sensitivities of 82% for chest radiography, 50 - 80% for CSF abnormalities (the most common being mononuclear pleocytosis along with hypoglycorrhachia, elevated opening pressure, and elevated total protein levels) and 50% for CSF angiotensin-converting enzyme levels, making MRI one of the best non-invasive tools for neurosarcoid diagnosis once other causes of the lesion have been ruled out. In one study, spinal lesions were reported in just 8% of patients with neurosarcoidosis, 50% of which also had intracranial manifestations of the disease.[10] In most cases of spinal sarcoid, cervical cord findings extend one to two segments with very few reported cases of LETM.[11] Interestingly, our case revealed diffuse cord involvement with both severe edema resulting in spinal canal narrowing and an increase in STIR and T2 signal from the brain stem to the thoracic spine at T3 to T4 without intracranial lesions.

CONCLUSION

In summary, we presented an atypical case of neurosarcoidosis with extensive spinal cord involvement, followed by pulmonary manifestations nine months later, with favorable outcome to steroid therapy. Data on the radiographic and MRI findings of neurosarcoidosis as well the clinical manifestations of the disease vary greatly. As imaging improves and additional case reports are reviewed, more apt recognition of this disease process may be achieved. This is clinically significant because while most symptoms undergo a relapsing and remitting course, current literature suggests early treatment with corticosteroids or other immunosuppressive drugs provides the most favorable outcomes.[12]

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![CASE REPORT]

Primary Cutaneous Nocardiosis in a Patient Taking Adalimumab Therapy for Crohn's Disease

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INTRODUCTION

The introduction of biologic immunomodulators, in particular antibodies targeted against tumor necrosis factor alpha (TNF-alpha), has revolutionized treatment of Crohn's disease. However, this comes at the expense of a higher risk for opportunistic infections due to a generalized immunosuppressive effect. Bacterial and opportunistic infections are well-known complications of anti-TNF agents.[1,2] Nocardia has been reported rarely among patients on anti-TNF agents.[3]

TNF plays a role in the clearance of norcardia in animal models.[4] Immunosuppression, anti-TNF treatment in particular, may favor growth and dissemination of nocardia. Pulmonary and cutaneous nocardiosis has been reported in Crohn's disease patients on infliximab.[5,6] Nocardiosis has been reported with adalimumab therapy in rheumatoid arthritis patients.[7,8] Our search did not reveal any cases of nocardiosis while on adalimumab therapy in Crohn's disease patients.

Crohn's disease patients receiving biologic agents, in particular, tumor necrosis factor (TNF)-alpha inhibitors are immunosuppressed and are prone to develop opportunistic infections. We report a rare case of primary cutaneous nocardiosis in an immunocompromised patient on chronic anti-TNF for underlying severe Crohn's disease.

CASE REPORT

A 36-year-old Caucasian gentleman with a history of Crohn's disease treated with adalimumab presented with a cellulitis-like rash on his forehead (Figure 1). Five weeks previously, he had struck his forehead on a construction pole, sustaining a laceration which required sutures. On presenta-tion, he had developed purulent discharge from the laceration site, and he was started on doxycycline. After completing antibiotic treatment, he was seen by a dermatologist due to persistent rash and a punch biopsy was taken from the area.

Figure 1. Cellulitis-like rash with draining and crusting.

Histological examination of the biopsy showed granulomatous inflammation thought to be related to a foreign body. The lesion worsened with increasing pain, pruritus, erythema, and development of a furuncle with drainage of yellow purulent material. A swab was sent for aerobic culture which grew coagulase negative staphylococci. Viral and fungal cultures from this lesion were negative.

Over the next several weeks, the lesion continued to worsen, growing in size and becoming more painful. The adalimumab therapy was stopped and pyoderma gangrenosum was considered due to the patient's underlying Crohn's disease. The patient subsequently was admitted due to uncontrolled pain, and progression of his forehead lesion. A comprehensive work-up for human immunodeficiency virus, syphilis, tuberculosis, hepatitis, antinuclear antibody, rheumatoid factor, anti-cyclic citrullinated peptide, and serum protein electrophoresis were negative. Blood (bacterial and fungal), urine, and sputum cultures were negative. Chest x-ray was negative. With IV antibiotics, there was some improvement in the forehead rash and the patient was discharged on oral antibiotics. He also was started on dapsone and clobetasol for treatment of pyoderma gangrenosum. One week later, cultures from his biopsy grew Nocardia arthritidis (Figure 2). He was started on trimethoprim-sulfamethoxazole daily with follow-up with an infectious disease specialist. His rash improved significantly after a few weeks of treatment.
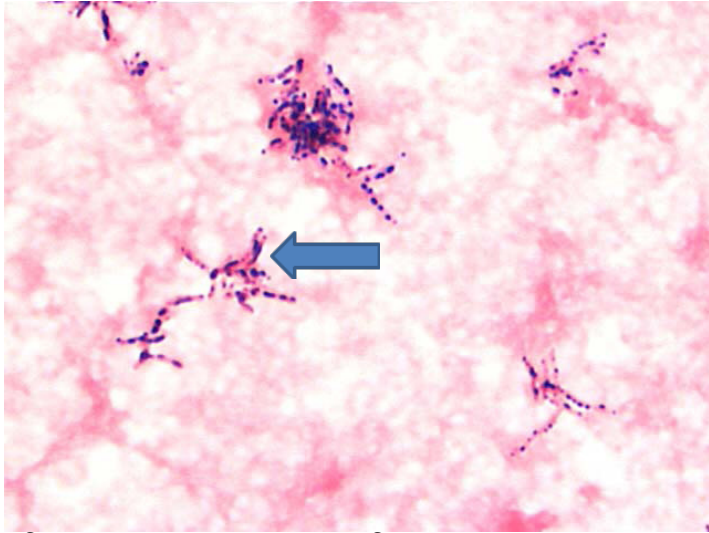
Figure 2. Nocardia asteroids staining and culture.

DISCUSSION

Human nocardiosis is caused by nocardia species which is an ubiquitous soil inhabiting bacteria and considered an opportunistic pathogen.[8] It can affect the skin and classically disseminate to involve the lungs and brain. It is a difficult infection to treat and carries high mortality if disseminated.[9] Nocardiosis has been well known to affect AIDS patients, transplant recipients, and long term corticosteroid treated individuals. Now, it is being recognized increasingly in immunosuppressed patients on anti-TNF agents. Previous use of corticosteroids has been identified as a risk factor, as noted in our case, and was present in more than 50% of cases in earlier studies.[10]

Early diagnosis is essential and norcardia should be considered in the differential diagnosis of any patient presenting with draining skin lesion or painful rash who is receiving anti-TNF agents or has in the recent past. Anti-TNF therapy doubles the risk of opportunistic infections in inflammatory bowel disease patients.[9,10] This underscores the importance of adherence to guidelines for their prevention and management. A high level of vigilance and scrutiny in examination and follow up are highly recommended for this group of patients.

CONCLUSION

A high level of suspicion must be enforced when patients receiving TNF-alpha inhibitors present with skin manifestations, in particular, cellulitis-rash or draining lesion. Early identification and treatment of nocardia is pivotal to prevent disseminated disease and mortality.

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COMMENTARY

Preparing Medical Students for the Medical Interview

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INTRODUCTION

The medical interview is possibly the most important encounter the physician has with a patient, frequently uncovering important clues as to what prompted the patient's visit. To conduct an optimal medical interview, the physician must be aware of patient behavior patterns and be able to communicate effectively. In a seminal essay written in 1973, George Engel proclaimed, "The keystone around which medical care has evolved over the ages remains the interpersonal encounter between the patient and a physician."[1] He also claimed that the history obtained during the physician-patient encounter remains "the most sensitive and powerful instrument available to the physician."[2] Lipkin et al.[3] argued that communication with patients is the core clinical skill for the practice of medicine. Given the importance of the physician-patient encounter and the medical interview, it is not surprising these topics are essential elements of the undergraduate medical education curriculum.

In 2005, the AAMC Task Force on the Clinical Skills Education of Medical Students published a monograph outlining recommendations for clinical skills curricula for undergraduate medical education.[4] In 2008, the AAMC published a second monograph addressing the clinical skills curriculum and performance outcomes expected for pre-clerkship students.[5] In both monographs, the task force members stressed the importance of medical students being able "to engage and communicate with a patient and to build a physician-patient relationship for the purposes of information gathering, guidance, education, and support."[4,5]

Multiple authors have reported on the methods and successes of programs to enhance communication and medical interviewing skills.[6-11] Although no one program seems to be superior to another, it was apparent that attention to development of these skills was important. The rural regional medical campus of University of Kansas School of Medicine-Salina (KUSM-S) designed a program entitled *Preparing Medical Students for the Medical Interview* that introduced the students to patterns of human behavior and effective communication techniques, information critical to starting the medical interview. The program introduced medical students to the basic interpersonal communication skills necessary to establish rapport with the patient during the initial moments of the medical inter-

view, including a conversation template to follow for the first two minutes after entering the exam room. The students who completed this introductory program, delivered during the first two weeks of medical school, should be prepared to enter the exam room and create an environment that the patient immediately will perceive as safe enough to discuss their health issues.

The program was comprised of four learning activities: (1) Behavior Pattern Awareness (Social Styles), (2) Basic Listening Skills, (3) Recognizing Potential Interviewing Barriers, and (4) The First Two Minutes. This program helped the student navigate the new social encounters of the medical exam room and complemented the techniques of taking a history and performing a physical exam. The total time required to complete this program was approximately three hours, divided into three separate sessions. The first learning activity was covered in the first session. The second, third and fourth learning activities were covered in a second session. The elements of the fourth learning activity (The First Two Minutes) were practiced in a third session.

All social encounters between two individuals involve some degree of risk-taking. If one says "Hello" to a passerby, there is the risk that the person addressed will not respond in the manner expected by the initiator of the greeting. Similarly, when patients meet with a medical professional, especially during the first encounter, they must quickly decide if they can trust the care provider enough to take the risk of communicating their concerns. Patient-physician communication can be influenced by socioeconomic status, race, and gender.[12-15] The intimate nature of the doctor-patient relationship, and the associated need for trust, requires that the patient be assured that the clinical environment is welcoming and safe. Meaningful dialogue, leading to an understanding of the patient's health issues, making a diagnosis, and outlining a treatment program, start with a trusting relationship. The decision to trust is frequently made by the patient within seconds of a clinician entering the room.[16]

The KUSM-S program was developed to raise the students' awareness of social styles and to introduce basic communication skills that foster empathy and trust. While some medical students may be cognizant of social styles and have developed effective communication skills prior to medical school matriculation, many of their peers were unaware of social styles and needed to hone their communication skills. This program allowed students to learn, or review, then practice effective communication skills, a set of skills that encompasses a variety of verbal and nonverbal techniques. The following four learning activities were designed to aid in acquisition and mastery of those skills.

Learning Activity 1: Behavior Pattern Awareness

The initial step in preparing students for the medical interview was raising awareness of, or in some cases, introducing the student to the concept of Social Styles® as outlined by the Tracom Group.[17] Social Styles® is a guide to discovery of predictable patterns of behavior, including how people interact with each other, the speed at which people do things, and other nonverbal types of body language.

Using this model, behavior patterns are described as a combination of assertiveness (asking versus telling) and responsiveness (controlled feelings versus displaying feelings), resulting in four distinct social styles: (1) "driver", more assertive (tells) and more controlled, (2) "analytical", less assertive (asks) and more controlled, (3) "amiable", less assertive (asks) and less controlled (emotive), and (4) "expressive", more assertive (tells) and less controlled (emotive). Using a free online instrument, students completed a short survey of behaviors they see in themselves to identify their own social style.[18] Students learned the nuances of their own behavior patterns and were challenged to become more cognizant of the fact that they are likely to be interviewing patients with behavior patterns different than their own. Students participated in a few simple exercises designed to raise awareness of the different behaviors inherent with each of the four Social Styles®, discussed the interpersonal issues that could arise as a result of miscommunication between individuals with different communication styles, and conceptualized ways to change one's own communication style to be more receptive to others.

Learning Activity 2: Basic Listening Skills

One of the attributes of physicians who receive high satisfaction ratings was being a good listener.[19-23] It is essential that students learn to listen to their patients without interrupting them. In observational data from internal medicine and family medicine residents, Rhoades et al.[24] found that resident physicians interrupted patients, on average, within 12 seconds after entering the room. Good listening does not imply that the clinician should ask the opening question, check a clock, wait until a certain amount of time has passed, then ask for clarification or introduce another question. However, there are a number of techniques that can be used to let the patient know that the doctor is interested and engaged in what is being said (i.e., actively listening). If practiced and done correctly, the patient should feel that the doctor is genuine, empathic, and shows them unconditional positive regard.

This learning activity introduced the student to several basic techniques that, when used effectively, can enhance the patient's feeling of trust in the doctor. These listening skills were chosen for their value in helping the patient express the issues that brought them into the exam room that day, as well as helping the doctor listen to the things being said.[25]

1. **Attending** involves making eye contact, being a culturally comfortable distance from the person at or below their eye level, maintaining an open posture with nothing between the student and the patient, and leaning slightly toward them.

2. **Active Listening** encourages the student doctor to resist distractions and listen to the tone of the patient's voice for cues to underlying feelings. The student is listening for basic themes that the patient is presenting while maintaining eye contact and correct posture.

3. **Encouraging** during the process of active listening lets the patient know on a more direct level that there is a connection by nodding when they finish a thought, or by giving small verbal encouragers like, "OK" or "tell me more."

4. **Reflecting** through paraphrasing shows the patient that the student is listening actively in a slightly more aggressive manner. This is accomplished by repeating key phrases back to the patient, in their own words, for approval.

5. **Silence** is possibly the hardest skill of this group to master. Students, as well as patients, are often uncomfortable if something is not being verbalized continuously. However, if the student can remain attentive and quiet during patient silences, it gives the patient the message that what is being said is important and often will encourage them to carry their narrative to a higher level.

Learning Activity 3: Recognizing Potential Interviewing Barriers

While the vast majority of patients seeking treatment are very willing to disclose their symptoms, there will be some patients that will be challenging to interview and call for more advanced interviewing techniques, as discussed in *Bates' Guide to Physical Examination and History Taking*.[26] Whether they are silent, angry, have behaviors that are offensive to the physician, or myriad other possibilities, it will be apparent soon after entering the exam room that the patient is not responding to the usual prompts. This is the student's key to stop using the standard protocol and switch to more advanced techniques. Several commonly used counseling techniques were discussed with the students as possible approaches: acknowledging barriers immediately, responding to patient feelings as soon as they are noticed, giving affirmations, actively redirecting the patient if necessary, and the use of an objective, nonjudgmental voice during the interview. While in-depth study of these advanced techniques was outside the boundaries of the program, students discussed possible barriers to an optimal medical interview and some ways they might handle the barriers.

The individuals who present barriers or obstacles to a physician obtaining a history and physical exam often are called difficult or challenging patients. From a Social Styles® perspective, they may be people who have behavior patterns different from those of the physician. Students were challenged to be aware of these differences and to consider ways they could modify their own behavior styles to communicate more effectively during challenging patient interviews. Adapting to the patient's behavioral pattern may create the environment necessary for a patient to be heard and understood, leading to better treatment possibilities. Students also were encouraged to think about their personal philosophy of treatment as a guide in handling challenging situations.

Learning Activity 4: The First Two Minutes

This learning activity was the culmination of the program and involved the preparation and actual mechanics of entering the exam room and concluded after listening to the patient's concerns. While the medical interview will take longer than two minutes, the two minutes that occurred from the time the doctor entered the exam room to the conclusion of

the patient's initial description of reasons for the visit comprised the fourth learning activity: The First Two Minutes.

The activity consisted of six components, or steps, which when considered individually may not seem significant, but when considered as a whole helped the novice physician present himself or herself as a trusting and capable caregiver. Students were encouraged to commit these steps to memory, incorporating them into their ritual of conducting the medical interview.

1. **Read and Consider.** The student doctor reads the patient case file and spends a few moments considering information (e.g., reason for visit, age, gender, height, weight, and vital signs) that could be critical during the upcoming interview. This also aids in closure of a previous patient encounter and directs focus on the new one.

2. **Deep Breath and Smile.** This step encourages the clinician to take one or more deep cleansing breaths, which along with a sincere smile, provides stress reduction before every encounter. When coupled with positive thoughts, this creates an environment conducive to a helping relationship.[27]

3. **Knock and Enter.** The knock allows the patient time to prepare for someone to enter. It also may prevent a possible embarrassing situation for either physician or patient, if the physician was to enter unannounced. Additionally, if the doctor waits long enough to allow the patient to respond, it will provide some degree of empowerment to the patient. The door is opened and The First Two Minutes begins. Everything done up to this point is preparatory to entering the exam room, to make a good first impression, and to start building a trust relationship with the patient.

4. **Smile and Introduction.** Upon entering the room, the physician may have less than a second to no more than seven seconds to make a good impression.[16, 28, 29] For this reason, wearing a comfortable or sincere smile is seen as critically important. The idea of a real smile can be juxtaposed with a fake smile often used by performers and sales personnel who know the importance of a smile but come off as insincere. Along with the smile, eye contact and a practiced introduction are essential. Montague et al.[30] found that doctors who made eye contact with their patients and one or two social touches (e.g., handshake, hug, or pat on the back) were rated as more empathetic by their patients. Additionally, patients felt more connected to the doctor. The introduction may be the same for each individual patient. Something as simple as, "Hi, Mr. Jones, my name is Jim Smith. I am a student doctor at KU School of Medicine in Salina," will suffice. Students are instructed to avoid asking the question, "How are you?" after the introduction. This question can lead to two unwanted results: the patient saying, "Fine," when this is not the case or the patient immediately launching into a discussion of their chief complaint before the clinician is ready to listen.

5. **Wash and Weather.** Handwashing is one of the essential steps in preparing to conduct a physical exam but also can disconnect the patient from the doctor, even after the introduction. To ensure that the positive flow continues during the washing sequence, the clinician should garner some stock questions or stories to engage the patient while in transition. Asking about books or television shows the patient has read/watched recently or discussing the weather or sports are appropriate topics during this time. Bringing up controversial topics (e.g., politics, religion) is not a good idea, as it may lead to longer conversations than desired and can end up pitting the doctor's opinions against the patient's.

6. **Sit, Ask, and Listen.** During this step the doctor takes a position at or slightly below eye level of the patient and asks the opening question. This initial question should be rehearsed and can be the same for every patient encounter, something similar to, "How can I help you today?" is quite adequate. Sitting at, or a little below, the patient's eye level transmits the message that the patient is in control.[31] The student doctor continues by actively listening to the patient.

The First Two Minutes began with the opening of the exam room door and was not complete until the student had listened attentively to the patient for at least one minute. Within several days of introducing The First Two Minutes, KUSM-S students had the opportunity to practice these six steps on eight standardized patients. Students were instructed to listen to the patient's response to the opening question using the listening skills from learning activity two. The goal during this phase was to allow the patient the time they need to describe, in their own words, their reason for coming in that day. Frequently, this important piece of patient empowerment is cut short by an overanxious clinician. Listening to the patient explain his or her symptoms is perhaps the most important part of the medical interview. The old adage that, if you listen to the patient they will tell you what is wrong, is sage advice. The medical history alone can lead to the final diagnosis in 76% of cases.[32]

DISCUSSION

Communication skills are a requisite part of being a physician. The physician who immediately can set his or her patient at ease and effectively engage the patient in a discussion should have a better chance of discovering what ails the patient and communicate a plan of action that the patient will accept. *Preparing Medical Students for the Medical Interview* was a program that the students at KUSM-S found valuable in preparing to interview their first patient, even if that patient was a role-playing standardized patient. Although we have not studied our results using stringent scientific principles, anecdotally, the students who have completed this brief program felt more comfortable and less nervous seeing their first patients than previous classes of students not exposed to the program.

CONCLUSION

The importance of a positive physician-patient interaction in the initial stages of the medical interview cannot be overemphasized. KUSM-Salina's *Preparing Medical Students for the Medical Interview* program was a relatively simple strategy to teach the beginning medical student how to approach the medical interview. The techniques helped medical students establish a trusting relationship with their patients and promoted effective communication, hopefully, resulting in improved patient care.

ACKNOWLEDGEMENTS

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