Published in final edited form as:

Subst Abus. 2013 ; 34(4): . doi:10.1080/08897077.2013.776658.

Teaching and Assessing Residents' Skills in Managing Heroin Addiction with Objective Structured Clinical Exams (OSCEs)

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Abstract

Background—Heroin abusing patients present a significant challenge. Objective Structured Clinical Exams (OSCEs) allow evaluation of residents' clinical skills. The objective of our study was to examine resident OSCE performance assessing and managing heroin abuse.

Methods—Evaluation and comparison of heroin-specific communication, assessment and management skills in a five-station PGY3 substance abuse OSCE. Faculty used a four-point Likert scale to assess residents' skills; standardized patients provided written comments.

Results—265 internal and family medicine residents in an urban university hospital participated over five years. In the heroin station, residents' skills were better ($p < 0.001$ for both comparisons) in communication (mean overall score 3.16 ± 0.51) than in either assessment (mean overall score 2.66 ± 0.60) or management (mean overall score 2.50 ± 0.73). The mean score for assessing specific high risk behaviors was lower than the mean overall assessment score (2.22 ± 1.01 vs. $2.74 \pm .59$, $p < 0.0001$), and the mean score for recommending appropriate harm reduction management strategies was lower than the mean overall management score ($2.39 \pm .89$ vs. $2.54 \pm .74$, $p < 0.005$). Standardized patients' comments reflected similar weaknesses in residents' skills.

Conclusions—Assessment and management of heroin abuse were more challenging for residents than general communication. Additional training is required for residents to assess and counsel patients about high risk behaviors.

Keywords

substance abuse; heroin addiction; Objective Structured Clinical Exam (OSCE)

INTRODUCTION

Heroin addiction is a significant problem in the US, and heroin abusing patients present a difficult challenge in medical settings. Substance abuse and related complications have been estimated to contribute to up to 25–40% of inpatient and 10–20% of outpatient primary care visits nationwide. Although alcohol and tobacco are the most commonly abused substances, opioids continue to be common drugs of abuse. In 2007, there were 106,000 new heroin

users and 2.1 million new users of pain relievers for a nonmedical purpose (1). Heroin abuse is associated with significant morbidity and mortality, and was reported as the primary abused substance in 189,780 emergency department visits in 2006 (2). Heroin use appears to be rising, as evidenced by increasing admissions to substance abuse treatment programs for heroin abuse in the last decade. In 2006, 14% of all admissions to drug treatment facilities were for the treatment of heroin as the primary substance of abuse (3). The majority of patients who undergo treatment for heroin abuse report injection as the primary route of administration (4).

Physician trainees in internal and family medicine often provide medical care to hospitalized and ambulatory drug and alcohol users. However, many studies have documented that physicians are reluctant to talk directly about substance abuse disorders and often have negative attitudes towards patients with these disorders (5). Even when substance use disorders are addressed, physicians are often unable to provide recommended interventions (6, 7).

Despite the high prevalence of heroin abuse, residency curricula rarely address the challenges posed by patients who actively use heroin. The Accreditation Committee on Graduate Medical Education (ACGME) (www.acgme.org) does not mandate specific guidelines for teaching about substance abuse, and few programs devote significant time to this complex and prevalent group of disorders. Teaching on substance abuse topics most commonly focuses on tobacco or alcohol and occurs in the context of Grand Rounds lectures (8). Opportunities for comprehensive substance abuse education are most often elective, if available at all. Although most people with substance abuse disorders are not thinking about changing their behavior at the time of contact with the medical system, educational efforts directed towards treating such precontemplative drug users have not been reported in the literature (9, 10). Currently, little data exist about optimal methods to teach substance abuse competencies, including the management of heroin addiction, to resident physicians.

Residency training programs are now required to provide performance-based assessments to document clinical skills, and the ACGME recommends Objective Structured Clinical Exams (OSCEs) as the preferred or next best method for assessing many of the required skills (11). An OSCE is a timed, multi-station examination in which learners interact with standardized patients (SPs) in realistic settings and perform tasks such as interviews, physical exams, and counseling (12,13). At each station the learner's performance is evaluated with checklists that are completed by faculty observers and/or SPs. OSCEs enable the same clinical scenarios to be presented to many trainees, allowing trainees to be compared (14). OSCEs can have adequate reliability and validity and have become the gold standard for performance-based assessment of communication-based skills (15). When immediate feedback is provided, OSCEs can be formative in improving skills and enhancing knowledge (15–17). A previously published analysis of our comprehensive substance abuse OSCE with feedback demonstrated that residents improved their performance as they progressed from their first to last station, regardless of station sequence (17).

Our institution is located in the Bronx, NY, an urban area with a high prevalence of heroin and other illicit drug abuse. Consequently, our residents care for many patients with heroin addiction and its sequelae, and a heroin using standardized patient was included in our five-station OSCE on substance abuse. As previously reported (17), the heroin station was one of the most difficult; but more importantly, our observation of residents' performance left us with the impression that residents had particular important skill deficits in interacting with heroin abusing patients. The objective of the current analysis was to examine the unique challenges of assessing and managing a precontemplative patient actively using heroin by injection. We focused our analysis on resident performance in assessing high risk behaviors

and employing harm reduction strategies, because we hypothesized that residents would have difficulty with these specific challenges.

METHODS

Structure of Substance Abuse OSCE

The process of developing our five OSCE stations and of our faculty and actor training has been previously described (17). The heroin station included a 23-year-old patient who presents with abdominal pain due to acute mild heroin withdrawal. He is precontemplative (i.e., not thinking) about stopping injection heroin use, and he becomes hostile if challenged about heroin use without sensitivity to his state of readiness to change. We chose injection drug use as our primary focus because 63% of patients admitted for treatment of heroin abuse reported injection as the route of administration (4). Table 1 summarizes the station tasks and associated teaching goals. The other OSCE stations were: a contemplative 35 year old male with gastritis and alcohol dependence; a 42 year old woman on methadone maintenance requesting medication for chronic pain; a precontemplative 23 year old male with crack abuse and chest pain; and a precontemplative 62 year old woman with alcohol abuse, abdominal pain and dysthymia.

The OSCE was administered during ambulatory block months in outpatient settings similar or identical to those in which the residents normally practice. Residents rotated through all five stations, had two minutes to read a summary and tasks for that station, and had ten minutes to conduct an interview while observed by faculty. During a five minute feedback segment, residents self assessed their performance and reflected on strengths and challenges. Also during the feedback segment, standardized patients (SPs) and faculty delivered verbal feedback about communication skills and provided key disease-specific information. During the two minutes while residents prepared for the next station, faculty and SPs completed rating forms.

The study was approved by Montefiore Medical Center's Institutional Review Board. Performance Assessment

Rating forms—Faculty completed a 17-item instrument (Table 2) that included 15 specific items in three domains (six general communication, six substance use assessment, and three substance use management items), and two global items (general organization and overall performance, not reported here.). For each of the 15 general communication, assessment, and management items, sub-skills were listed on the rating form to guide evaluation of each item. All items were rated on a four-point Likert scale, ranging from 1 = needs much improvement to 4 = done excellently. SPs provided written comments about residents' strengths and areas needing improvement.

Scores and comments—Overall scores for each of the three domains (general communication, assessment, and management) were calculated as means of all items within the domain. We also tallied SP comments and grouped them into themes. After the OSCE, the residents completed three questions evaluating its educational value using a three-point scale (low, moderate, high).

Statistical and Other Analyses

Analytic Plan—In order to understand the unique challenges of the heroin station, we first compared the residents' mean overall general communication, assessment, and management scores for this station. Because the mean overall assessment and management scores were lower than the mean overall general communication scores, we then compared the mean

scores for each of the specific items within this station's assessment and management domains to identify which skills were most difficult and therefore worthy of additional curricular attention.

Statistical Analyses—Differences between the mean overall scores for the three domains (general communication, assessment, and management) within the heroin station were assessed using paired t-tests. Paired t-tests were also used to compare the mean of each individual assessment and management item within the three domains to the mean score for the entire domain, with that item omitted. This technique allows the influence of each item on the mean overall to be identified and analyzed.

SP Comments—We classified SP comments into categories of clinical skills and counted the frequency of comments that indicated either an area of strength or need for improvement. The categories of skills related to communication and diagnoses were: building rapport, being nonjudgmental, identifying social stressors, and explaining the diagnosis and symptoms related to heroin withdrawal. The categories of skills related to assessment and management were: assessing high risk behaviors, recommending an alternative therapy for withdrawal symptoms, and counseling about risk reduction.

RESULTS

Between August 2003 and January 2009, we administered our substance abuse OSCE 33 times, to 265 PGY-3 internal medicine and family medicine residents.

Comparison of scores in communication, assessment, and management domains are presented in Table 2. Residents' mean overall scores were higher in the general communication domain than in either assessment or management ($3.16 \pm .51$ for communication vs. $2.66 \pm .60$ for assessment and $2.50 \pm .73$ for management, $p < 0.001$ for both comparisons). Residents mean overall assessment scores were higher than their mean overall management scores ($p < 0.001$).

In the communication skills domain, residents mean scores for probing for resistance or denial and strengthening the treatment alliance were lower than their mean overall communication scores (2.99 ± 0.62 vs. 3.19 ± 0.54 , 2.79 ± 0.90 vs. 3.21 ± 0.49 , respectively, $p < 0.0001$). Within the assessment domain, the residents' mean score for assessing high risk behaviors (multiple sex partners and sharing needles) was lower than their mean overall assessment score (2.22 ± 1.01 vs. $2.74 \pm .59$, $p < 0.0001$). Residents also scored lower on assessing psychosocial sequelae or prior cessation attempts than on other assessment skills ($p < 0.001$). Approximately half of residents needed much or some improvement in assessing high risk behaviors and psychosocial sequelae of heroin use.

Resident performance was also uneven in the management domain. Residents performed least well on offering a treatment plan appropriate to the diagnosis, which included counseling to reduce risk and scheduling a follow-up visit ($2.39 \pm .89$ vs. $2.54 \pm .74$, $p < 0.005$). The majority of residents (53%) needed much or some improvement in offering an appropriate management plan to a precontemplative patient actively injecting heroin.

Most of the SP's comments about residents' communication skills indicated that, with the exception of identification of social stressors, residents' communication and diagnosis skills were very good. The majority (87–92%) of comments was positive regarding building rapport, being nonjudgmental, and explaining the diagnosis and symptoms related to heroin withdrawal. More than half (60%) of SP comments indicated that residents needed improvement identifying social stressors. By contrast, SP comments revealed that they were

less impressed with the residents' assessment and management skills. The majority (59–81%) of SPs' comments about assessment and management indicated that the residents needed improvement in assessing high risk behaviors, recommending alternative therapy for symptoms, and counseling about risk reduction.

The OSCE Learning Experience

One third (35%) of residents reported no prior exposure to a similar case. The majority (81%) agreed that the degree of difficulty was “just right,” and 95% agreed that the educational value was moderate (32%) or high (63%).

DISCUSSION

Education about best methods for addressing substance abuse skills in residency education is sparse, although the need has clearly been demonstrated by Fleming and others (7). There are no reports in the literature addressing training internal medicine or family medicine residents in the diagnosis of heroin dependence, nor in the assessment and management of active injection users in the ambulatory setting. We found little to guide the development of education about skills for explaining addiction and managing heroin withdrawal symptoms.

Previous studies have reported the use of SPs and OSCEs to evaluate addiction medicine skills following teaching interventions. Several OSCEs administered before and after educational programs demonstrated improvements in medical students' substance abuse clinical skills (18,19). Among resident physicians, two studies used SPs to demonstrate the effect of substance abuse training on clinical skills (20,21), and one used SPs to describe the need for improvement in these skills (5,10).

Scant literature exists regarding the use of SPs and OSCEs to teach substance abuse specific communication skills. Walsh et al. (22) demonstrated that a simulated patient intervention with feedback was more effective than a didactic format in improving medical students' knowledge, attitudes, and interactive skills in alcohol intervention. The authors noted that there is an emerging consensus that traditional educational approaches, such as lectures and patient experience, may not be sufficient to develop the required alcohol related interactive skills and recommended that trainees receive specific substance abuse training, practicing targeted behaviors with feedback by trained observers/evaluators (22).

With increased use of buprenorphine as an outpatient opiate management strategy in ambulatory practice, there will be an increased need for clinicians who can evaluate opiate dependence and manage withdrawal and detoxification therapy (23,24). The goal of this study was to obtain more information about the relative strengths and weaknesses of medical residents' skills in managing active heroin use. This is the first study, to our knowledge, using performance-based assessment methodology with SPs to evaluate residents' clinical skills with a heroin injecting patient. We did not encounter any unique challenges in preparing actors to portray patients with substance abuse compared to other types of medical problems, nor did we encounter any specific issues in offering a substance abuse OSCE to our trainees. Although the behavioral management of substance abuse and addiction may be a less common focus of clinical instruction, it is well within the comfort range and skill set of the actors we used as standardized patients. The only particular challenge, relatively easily met by the addiction medicine experts who created this OSCE, was the ability to write authentic scenarios for the portrayals.

In our OSCE station evaluating residents' skills in assessing and managing heroin dependence, we learned that assessment and management are more difficult than general communication skills, and that management is also more difficult than assessment. While

residents' general communication skills were strong overall, our residents demonstrated relative weakness in their ability to accept patient denial and strengthen the treatment alliance. These skills are critical for maintaining a therapeutic relationship with an active substance user, and indicate an area for focused attention in communication skills training.

We identified general and specific deficits in residents' ability to assess and manage heroin use. Screening for high risk behaviors and counseling for harm reduction were the most important deficits. A recent review by Ritter and Cameron asserted that there is sufficient evidence to support the wide-spread adoption of harm reduction strategies including needle syringe programs and brief intervention (25). Combined with the efficacy of these interventions, our results suggest that teaching programs should strive to provide information and teach supporting clinical skills for assessing high risk sexual behavior and needle sharing, and for counseling about harm reduction. Such information might include condom use, syringe exchange programs, clean injection techniques, and overdose prevention.

In addition, our results provide guidance for enhancing substance abuse curricula. In our own residency program, the results of this study were translated into enhanced attention to opiate abuse in our existing, first year substance abuse curriculum (26). We also included specific attention to harm reduction and prescribing medications for opioid withdrawal symptoms during the group debriefing session that follows our substance abuse OSCE.

Limitations

Although we have previously demonstrated that performance during a multi-station OSCE improves regardless of station sequence, we have not demonstrated that experiencing an OSCE encounter with a standardized patient with heroin abuse will improve performance with other SPs or real patients who abuse heroin, or with patients with other substance abuse disorders. Future studies should examine the durability and retention of skills and how they translate into actual patient encounters and outcomes, including assessment of patient-based and clinical outcomes.

Conclusion

This study demonstrates that third year residents had difficulty with the assessment and management of heroin abuse because of deficits in assessment of high risk behaviors and counseling for harm reduction. These results provide evidenced based guidance for the development of more effective residency training curricula in substance abuse in general and heroin abuse and withdrawal in particular.

Acknowledgments

The project was supported by NIH R25 DA 14551 and R25 DA023021 (to J. Arnsten). Portions of this research were presented at the Society of General Internal Medicine Mid-Atlantic Regional Meeting in March 2007, the Society of General Internal Medicine 30th Annual Meeting in May 2007, and the meeting of the Association of Medical Education and Research in Substance Abuse in November 2007.

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TABLE 1**Heroin Station Tasks and Teaching Goals**

Station Task	Teaching Goal
Establish rapport with a patient with heroin addiction who will become hostile if inappropriately challenged about his addiction	Maintain the therapeutic alliance regardless of the patient's readiness to change
Take a comprehensive drug use history	Screen for high risk behaviors including needle sharing and safer sex
Make a diagnosis of heroin addiction	Understand the clinical presentation of heroin dependence and explain the symptoms to the patient
Educate the patient about heroin addiction, opiate dependence and withdrawal	Educate about options for pharmacological management of heroin withdrawal
Counsel a precontemplative patient who is actively using heroin	Harm reduction, i.e. needle exchange, clean injection technique, use of a test dose

TABLE 2

Faculty Rating Form Content, N=265

Domain/Item	Item Score	Domain minus item ^a	Significance ^b	Domain score
General Communication				3.16±0.51
Allows patient to express self	3.24±0.61	3.14±0.53	p<0.001	
Communicates in non-judgmental fashion	3.33±0.64	3.12±0.52	p<0.0001	
Exhibits empathic/supportive attitude	3.26±0.67	3.13±0.53	p<0.001	
Probes for resistance/denial	2.99±0.62	3.19±0.54	p<0.0001	
Uses appropriate language	3.24±0.64	3.14±0.54	p<0.005	
Strengthens treatment alliance	2.79±0.90	3.21±0.49	p<0.0001	
Assessment of Problem				2.66±0.60
Current patterns of use (increasing frequency, amount)	2.96±0.89	2.61 ±0.60	p<0.0001	
Physical sequelae/dependence (increased tolerance, opiate withdrawal symptoms)	2.95±0.77	2.63 ±0.64	p<0.0001	
Psychosocial sequelae (increased isolation, using savings to pay for drugs)	2.51±0.89	2.67± 0.62	p=0.004	
High risk behaviors (multiple sex partners, sharing needles)	2.22± 1.01	2.74±0.59	p<0.0001	
Current/past cessation attempts/ treatments (no efforts to reduce risk or seek help, no drug-free periods)	2.57 ±1.00	2.70±0.61	p=0.03	
Stage of change (precontemplative)	2.79 ±0.88	2.63±0.61	p=0.002	
Management of Problem				2.50±.73
Motivational interviewing (nudges ambivalence, relates withdrawal symptoms to use, highlights fears of OD)	2.56±0.78	2.45±0.83	p=0.04	
Advice appropriate to stage of change (no inappropriate referral, encourages awareness)	2.52±0.71	2.48 ±0.71	p=0.30	
Treatment plan appropriate to diagnosis (risk reduction, follow-up visit)	2.39 ±0.89	2.54 ±0.74	p=0.001	

^aMean of all other items in the domain^bSignificance of difference of each item and mean of remaining items in domain

Scale used for all items: 1=needs much improvement, 2=needs some improvement, 3=done well, 4=done excellently