

Teaching the Testicular Exam: A Model Curriculum From “A” to “Zack”[®]

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Background and Objectives: *The testicular exam was not explicitly taught at our medical schools before 2002. In this article, we explore different phases of curriculum development, implementation, and evaluation of a method for teaching the testicular exam. **Methods:** Medical students participated in surveys and focus groups, and male patients participated in focus groups. From the results of the focus groups, we developed a comprehensive testicular exam module that includes (1) a PowerPoint lecture, (2) a video, (3) reading materials, and (4) an artificial male model (“Zack”[®]). These materials were then incorporated into family medicine clerkships. Students and faculty have evaluated the project. **Results:** Initially, students expressed discomfort discussing sexual issues with patients, especially those of the opposite gender, and knew little about testicular cancer. Male patients had limited knowledge of the testicular self-exam and felt that their physical exam training had not been ideal. Faculty and students agreed that a lecture on the testicular exam and practice with Zack were useful in improving their exam skills, while the video and readings were less so. **Conclusions:** To address curricular deficits, a self-contained module on the testicular exam has been successfully incorporated into family medicine clerkships at two different medical schools. This module is easily adaptable to other settings and institutions.*

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Discussion about sensitive topics and sexual organs can be uncomfortable for both physicians and patients. If not appropriately addressed, this discomfort can result in inadequate patient education about self-examination of sexual organs, with failure to detect early warning signs of cancer. Discomfort may also result in patients feeling physically and psychologically exposed and humiliated, increasing the possibility of withholding important information or even avoiding the physician completely,¹ which could potentially delay cancer screening and/or early diagnosis.

Although rare, testicular cancer is the most common cancer in men between the ages of 20 and 35. The incidence of testicular cancer has been steadily increasing over the last decade, particularly in white males.² Early detection and treatment clearly improve patient outcomes. Cure rates approach 100% for early stages and 90% for all stages, making it one of the most curable of all solid neoplasms.³

The American Cancer Society recommends routine testicular exams by a clinician for men over age 20 and the American Academy of Pediatrics recommends testicular self-exam (TSE) beginning at age 18.^{4,5} Although the routine screening of all male patients using either of these techniques is not recommended by the US Preventive Services Task Force, the Task Force does recommend that patients at increased risk be “informed of their increased risk of testicular cancer and counseled about the options for screening.”⁶ Patient preference would then determine whether these men would be screened by physician examination and/or TSE. Further, the Task Force recommends that adolescent and young males be “advised to seek prompt medical attention if they notice a scrotal abnormality.” Several studies of male college students have shown that more than 90% had had no previous training on how to perform a TSE.^{7,8} However, men who are taught the testicular exam are able to remember and correctly demonstrate the proper technique.

As part of a broader educational initiative at Brown Medical School (BMS) and Dartmouth Medical School (DMS) funded by the National Cancer Institute (R25 CA82320), educational research and curriculum development on the testicular exam, as well as several other

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male cancer screening topics, has been undertaken by a team of medical educators and medical school faculty for the past 2 years. In this report, we describe curriculum development, implementation, and evaluation of the testicular exam module at both schools.

Methods

During the academic year 2002–2003, BMS had 324 students enrolled, 56% of whom were female, and DMS had 289 students, 46% of whom were female. BMS has a required 6-week family medicine outpatient rotation with no night call. This rotation can be taken at any time during the third year or in the first half of the fourth year of medical school. Students spend 30% of their time at the main hospital participating in didactic sessions, which follow the life cycle chronologically. DMS has a required 8-week family medicine outpatient rotation with no call during the third year of medical school. Students spend 20% of their time in formal didactics.

Needs Assessment

In preparation for formal curriculum development, faculty researchers conducted needs assessments involving medical students and male patients at both schools. Students participated in surveys and single-gender focus groups; male patients participated in focus groups led by male facilitators. Results of these

three assessments and corresponding components of the new curriculum are presented in Table 1.

1. Surveys. To assess students' training experiences and needs, a two-page self-administered survey was distributed to BMS and DMS students after class lectures (first- and second-year students) and through campus mail (third- and fourth-year clerkship students) in May 2001. Student participation was voluntary and anonymous. A total of 253 surveys were collected or returned through campus mail, for a response rate of 43%. The surveys addressed male cancer screening in the medical curriculum and also comfort/confidence levels of students with both related subject matter and skills. In general, neither male nor female medical students felt as comfortable discussing sexual issues with patients of the opposite gender as they did with patients of the same gender ($P < .001$). Male students were significantly more comfortable teaching the TSE than female students ($P < .0001$). Using a scale from 1 (no understanding) to 7 (thorough understanding), students rated their knowledge of testicular cancer the lowest of any male cancer screening topic (prostate 4.3, colorectal 4.1, and testicular 3.5).

2. Focus Groups With Medical Students. DMS has routinely used male standardized patients to teach the genitourinary (GU) examination to second-year medical students. ADMS faculty member assessed student perceptions of this learning experience with two focus groups (conducted after working with the standardized patient) comprised of medical students who responded to a broadcast e-mail soliciting their participation. To facilitate an open discussion of sexual exams and gender-related issues, focus groups were either all male or all female. The faculty moderator followed a protocol containing specific questions about student comfort with communication and technical aspects of the male GU exam. The protocol also allowed for exploration of student-initiated topics. Each student signed an informed consent that described the focus group's research purposes and methods used to ensure participant anonymity. A qualitative researcher at BMS reviewed the transcripts and pre-

Table 1

Needs Assessment and Curriculum Development

	Findings	New Curriculum
Medical Student Surveys	<ul style="list-style-type: none"> Students were uncomfortable discussing sexual issues with patients of the opposite gender Their knowledge of testicular cancer rated lowest among all male cancer screening topics 	<ul style="list-style-type: none"> Observational video (male patient, female doctor) Role play PowerPoint presentation on testicular cancer
Medical Student Focus Groups	<ul style="list-style-type: none"> Male group said more emphasis on communication with male patients was needed Female group wanted competence with physical exam skills prior to real clinical encounters 	<ul style="list-style-type: none"> Video Role play Anatomic testicular model
Male Patient Focus Groups	<ul style="list-style-type: none"> Clinicians should explain the context of the physical exam Patient's concerns are not always addressed 	<ul style="list-style-type: none"> PowerPoint presentation on normal male anatomy, TSE, and the screening recommendations of various agencies Opportunity to practice simultaneous communication and physical exam skills

pared summaries describing major themes of focus group discussion.

Focus group results revealed that male medical students felt they were not taught adequately how to interact with male patients and that more emphasis on communication with male patients was needed. With respect to physical exam skills, male students felt comfortable with their anatomical knowledge, but many were concerned about inflicting pain on the patient. Female medical students were aware of the importance of addressing comfort during the male genital exam but were not sure how to do that most effectively. A few female students expressed concerns about potential sexual attraction between provider and patient and their ability to deal professionally with this situation. Female medical students were anxious about their mastery of male GU exam procedures and needed to feel competent with their clinical skills before examining real patients.

3. Focus Groups With Patients. To elicit patient perspectives, research staff conducted four focus groups with young male patients, ages 18–35, at two sites in Rhode Island and New Hampshire. Focus group participants were recruited from college campuses in both states using informational flyers, an informational table in dining halls, and broadcast e-mails. Inclusion criteria were age 18–35, previous experience with a clinical genital exam, and self-reported comfort discussing cancer screening in a small group with other men and a male physician.

Male physicians moderated the focus groups, which averaged five participants each. The discussion protocol focused on (1) experiences with the GU exam, (2) knowledge of testicular cancer screening and sources of that information, (3) suggestions for how to conduct the GU exam from a patient's perspective, and (4) influence of the gender of the examiner on the interaction.

4. Focus Group Analysis. Each focus group session was audiotaped, and all transcripts were entered into the qualitative data analysis software QSR-NVIVO® (QSR International Pty Ltd, Melbourne, Australia). The qualitative research specialist generated the coding in consultation with medical faculty. All codes were determined by a combination of the key research questions and grounded theory analysis.^{9,10}

Analysis of focus group transcripts revealed that none of these patients had ever had any prior explanation by a clinician before receiving a GU exam. They did not feel physicians talked enough during the exam, and they uniformly felt rushed. Of note, once they learned exactly what a testicular exam was, many of these patients reported that they had never had one when they previously thought they had.

General knowledge of testicular issues was quite limited. Sources of information included videos in health classes, pamphlets, and health educators in high school. No one cited physicians as a source of information. Suggestions they had for future providers included slow down and talk at the patient's level, address the patient's concerns, and create a context with an explanation using either a picture, a model, or a diagram. Preferences for gender of the examiner were varied and seemed often driven by specific individual experiences. However, there was consensus that a clinician's professionalism and comfort was more important than the physician's gender.

Curriculum

Using the results summarized above, we designed and developed a comprehensive testicular exam module incorporating multiple teaching methods (Table 2). This module includes a 45-minute PowerPoint lecture that covers the epidemiology of testicular cancer, individual risk factors, clinical presentation, diagnosis and staging, screening, and the role of the testicular exam in early detection. Physical exam and communication skills are taught in conjunction with the lecture. Normal and possible abnormal physical findings are reviewed. The lecture also discusses the varying recommendations by different medical organizations about the TSE, providing a forum for discussion of the strength of recommendations and the quality of the evidence as well as a review of the principles of effective cancer screening.

Table 2

The Testicular Exam Curriculum

1. PowerPoint lecture (45 minutes)
 - Specific goals:
 - a. Understand the epidemiology of testicular cancer and the role of testicular exam in screening and early detection.
 - b. Acquire skills necessary for performing the male genitourinary (GU) exam.
 - c. Learn to teach patients testicular self-exam (TSE) techniques during a GU exam.
 - d. Practice communication skills necessary for age-appropriate patient education.
 2. Video (7 minutes)
 - Case-based discussion to illustrate the integration of communication skills with performance of the physical exam.
 3. Readings
 - Junnilla J, Lassen P. Testicular masses. *American Family Physician* 1998;57(4):685-95.
 4. "Zack"®
 - A multipurpose male care simulator (www.healthdc.com).
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A 7-minute video allows students to observe a female physician performing a history and physical exam on a young male patient while simultaneously providing patient education on TSE. Like the lecture, it also focuses on the integration of key communication skills with performance of the physical exam.

A single reading on testicular masses accompanies this module.¹¹ Students also receive a TSE “shower card,” typical of a patient education tool that might be given to patients to guide self-examination while bathing. Finally, students are able to practice their physical exam skills on a plastic model named “Zack.”[®] Zack is a commercially available life-size male anatomic torso designed as a men’s health teaching tool. He has several abnormal findings on his physical exam, including multiple testicular masses.

At BMS, the testicular exam module was incorporated into the fifth week (adolescent medicine) of the family medicine clerkship as a 75-minute session. At DMS, the testicular exam module is taught as a 90-minute session very early in the family medicine clerkship to provide students with physical exam skills for use in the clinical setting. Each school has between 5 and 15 students in any given rotation and two anatomic models. The general format of the module is a 45- to 60-minute interactive didactic presentation, including the video case demonstration, followed by a 30-minute hands-on skill session where students are paired to role play the history component with each other and the physical exam component on Zack. Students finish by presenting their findings to the faculty.

Program Evaluation

Clerkship students at both schools completed a self-administered evaluation form on the same day that the module was taught. This anonymous, standard evaluation form had five questions, each with a 5-point Likert response scale. Two additional evaluation questions

were added specifically for this module. They included: “The model is useful” and “I feel more confident with respect to my physical exam skills.” This written evaluation form also asked students for general comments and suggestions. Clerkship staff distributed and collected evaluations so that response rates approached 100% over 12 months (January to December 2002). Clerkship staff also formally surveyed any faculty who taught this module during 2002 using a written evaluation form after completion of each session. Written faculty evaluation forms included three open-ended questions on changes made in format or content, observations, and suggestions for revision. Quantitative responses were averaged; qualitative responses were compiled. The clerkship directors at each school reviewed all evaluations.

Results

Quantitative and qualitative results from both BMS and DMS are shown in Tables 3 and 4. In general, this teaching module has been well received by students at both medical schools. Students were especially positive about the opportunity to practice their physical exam skills with Zack.

Formal feedback from faculty who teach this module at both medical schools has been universally positive, with female faculty in particular reporting an increased level of personal comfort with their own clinical skills as well as their ability to effectively teach this topic to students. Informally, faculty have reported a great deal of satisfaction in observing students’ level of comfort increase both during the session as well as

Table 3

Student Evaluations (January–December 2002)

	<i>Brown Medical School (eight rotations)</i>	<i>Dartmouth Medical School (three rotations)</i>
Informative	4.5	4.6
Clear + well organized	4.4	4.8
Stimulating and interesting	4.3	4.4
Sufficient opportunity to ask questions	4.7	4.8
I learned a lot from this talk	4.3	4.3
The model is useful	4.5	4.3
I feel more confident re: PE skills	4.4	4.3

PE—physical examination
1=strongly disagree, 5=strongly agree

Table 4

Student Evaluation Comments (January–December 2002)

Positive comments:

- “Fun. Good. Practical. I like.”
- “This was a first and very needed lecture.”
- “Model was great learning tool.”
- “Excellent model.”
- “One of the best lectures we’ve had.”
- “Zack is a useful model.”
- “Testicular cancer screening is not done in the clinic . . . students benefit from the review.”
- “It was very good, especially the video component.”

Negative comments:

- “Would be helpful . . . to really perform the exam.”
- “This should be part of the physical dx course in year 2 of med school.”
- “Examine and compare normal and abnormal model, get a normal scrotum for the model.”
- “Video was not particularly helpful.”
- “More on differential diagnosis.”
- “Probably leave out the video.”
- “Male students should serve as live models.” (n=2)

throughout the clerkship.

Discussion

Medical students' gender affects their clinical experience with sensitive procedures such as the testicular exam.¹² In a study performed at Jefferson Medical College in 1996, family medicine clerkship students recorded more than 16,500 patient encounters. Although there were no student gender differences in most procedures, there were significant differences in procedures and examinations related to sexual organs. Almost half (42%) of female students did not perform a single testicular exam during the clerkship, compared with less than one third (29%) of male students ($P < .05$). Clearly, the students' gender affected their opportunities to practice this clinical skill. Further, even a large proportion of male students never had the opportunity to practice the testicular exam during this clerkship. We sought to address this potential disparity at our medical schools with a didactic module on the testicular exam taught during the family medicine rotation.

Neither of our medical schools previously had a comprehensive male cancer screening curriculum. As a result, this module has been easy for us to integrate into our respective curricula. The didactic session, which provides a thorough review of the facts on testicular cancer and current screening recommendations, has been well received. The testicular model, Zack, which allows hands-on practice and immediate feedback, is a critical part of the module. The video, which allows for direct observation but not for interaction, has been less well received but consistently useful in demonstrating the incorporation of communication skills, performance of the TSE, and direct patient education. As with other sexual health topics, this module provides an opportunity for discussion of age-appropriate health maintenance including contraceptive use and risks for sexually transmitted diseases.

Students have found that learning communication and physical exam skills together is actually easier and more successful than learning each of those skills individually. Many have informally reported weeks after the session that they are much more comfortable with TSE counseling and performing the male GU exam after participating in this session.

This study has several limitations, one of which is that we are not able to comment on differences between male and female medical students, since their written evaluations were anonymous. The most important limitation, however, is that we have no data on whether this

teaching method has an effect on students' performance. Specifically, we do not know, at this point, if our teaching module results in better physical exam skills with actual patients. Nor do we know if the teaching module improves students' ability to communicate with patients about genital examination. Our data only tell us that our teaching module was well received by students and faculty. Additional study will be needed to determine the long-term benefits of our teaching method.

Note: This module is part of a larger series of 10 modules on male cancer screening supported by the National Cancer Institute (R25CA82320). Please contact Barbara Fuller at Barbara_Fuller@brown.edu for more information on the curriculum. "Zack[®]" is available from HEALTH EDco at www.healthedco.com.

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REFERENCES

1. Lazare A. Shame and humiliation in the medical encounter. *Arch Intern Med* 1987;147:1653-8.
2. Ries L, Kosary C, Hankey B, et al. SEER cancer statistics review, 1973-1995. Bethesda, Md: US DHHS, Public Health Institute, National Institutes of Health, 1998. www.seer.incs.nci.nih.gov.
3. Steele G, Richie J, et al. The national cancer database report on patterns of care for testicular carcinoma, 1985-1996. *Cancer* 1999;86(10):2171-83.
4. Smith RA, Mettlin CJ, Davis KJ, Eyre H. American Cancer Society guidelines for the early detection of cancer. *CA Cancer J Clin* 2000;50:34-49.
5. American Academy of Pediatrics. Guidelines for health supervision II. Elk Grove Village, Ill: American Academy of Pediatrics, 1988.
6. US Preventive Services Task Force. Guide to clinical preventive services, second edition. Baltimore: Williams & Wilkins, 1996.
7. Ostwald S, Rothenberger J, Sullivan W. Young men's reproductive health. Minneapolis: University of Minnesota Press, 1985.
8. Wardle J, Steptoe A, Burckhardt R, et al. Testicular self-examination: attitudes and practices among young men in Europe. *Prev Med* 1994;2:206-10.
9. Strauss A, Corbin J. Basics of qualitative research: grounded theory procedures and techniques. Thousand Oaks, Calif: Sage Publications; 1990.
10. Strauss A, Corbin J. Grounded theory methodology. In: Denzin NK, Lincoln YS, eds. Handbook of qualitative research. Thousand Oaks, Calif: Sage Publications, 1994:273.
11. Junnila J, Lassen P. Testicular masses. *Am Fam Physician* 1998;57(4):685-95.
12. Louis DZ, Gottlieb J, Markham FW, Hojat M, Rabinowitz C, Gonnella JS. Students' gender and examination of patients in a third-year family medicine clerkship. *Acad Med* 1996;71(10):S19-S21.