Feature Article

Educating Health Professionals about Fetal Alcohol Spectrum Disorders

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Abstract

Prenatal exposure to alcohol is a leading preventable cause of birth defects and developmental disabilities. Individuals exposed to alcohol during fetal development can have physical, mental, behavioral, and learning disabilities, with lifelong implications. These conditions are known as fetal alcohol spectrum disorders (FASDs). Health care professionals play a crucial role in identifying women at risk for an alcohol-exposed pregnancy and in identifying the effects of prenatal alcohol exposure among individuals. The Centers for Disease Control and Prevention's National Center on Birth Defects and Developmental Disabilities has funded four universities as FASD Regional Training Centers (RTCs). The RTCs, in collaboration with the CDC and the National Organization on Fetal Alcohol Syndrome, are developing, implementing, and evaluating educational curricula for medical and allied health students and practitioners and seeking to have the curricula incorporated into training programs at each grantee's university or college, into other schools throughout the region, and into the credentialing requirements of professional boards. This article highlights some of the innovative training approaches that the RTCs are implementing to increase knowledge regarding FASDs and the ability of health professionals to identify, treat, and prevent these conditions.

Prenatal exposure to alcohol is a leading preventable cause of birth defects and developmental disabilities. The term fetal alcohol spectrum disorders (FASDs) describes the full continuum of effects that can occur in an individual exposed to alcohol in utero.[1] These effects include physical, mental, behavioral, and learning disabilities; all of these problems have lifelong implications. The term FASDs is not intended for use as a clinical diagnosis, but instead comprises several conditions, including fetal alcohol syndrome (FAS). FAS is characterized by specific facial features, growth deficiencies, and central nervous system (CNS) problems.[2] The majority of individuals with conditions related to prenatal alcohol exposure do not meet the diagnostic criteria for FAS. These nondysmorphic individuals, although having CNS problems, very often are not provided with appropriate services.[3]

Studies by the Centers for Disease Control and Prevention (CDC) have reported FAS prevalence rates in the United States

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ranging from 0.2 to 1.5 cases per 1,000 live births.[2] These rates are comparable to or higher than prevalence rates of other birth defects and developmental disabilities such as Down syndrome and spina bifida.[2] Other disabilities related to prenatal alcohol exposure are estimated to occur at rates approximately three times the rate of FAS.[4] The average lifetime cost for an individual with FAS in 2002 was $2 million.[5] Information is not available to estimate the cost for those with non-FAS prenatal alcohol-related conditions, but it is likely to be much higher.

Based on survey data from 2002, more than half of all women of childbearing age who were at risk of becoming pregnant reported alcohol use. These women were sexually active, not using effective measures to prevent pregnancy, and, therefore, at risk for an alcohol-exposed pregnancy. Furthermore, 12% of women at risk of becoming pregnant reported binge drinking (defined in this survey as five or more drinks on one occasion). Among pregnant women, 10% reported alcohol use and 1.9% reported binge drinking.[6]

Health care professionals play a crucial role in identifying women at risk for an alcohol-exposed pregnancy, and in identifying effects of prenatal alcohol exposure among individuals. However, despite the data regarding alcohol consumption among women of childbearing age and the prevalence of FAS, screening for alcohol use among female patients of childbearing age and diagnosis for FAS and related conditions are not yet common practices of care.

In 2002, Congress mandated that the CDC's National Center on Birth Defects and Developmental Disabilities (NCBDDD)—in coordination with the National Task Force on Fetal Alcohol Syndrome and Fetal Alcohol Effect, other federally funded FAS programs, and appropriate nongovernmental organizations—develop guidelines for the diagnosis of FAS and other prenatal alcohol-related conditions and incorporate these guidelines into curricula for medical and allied health students and practitioners. In response to this mandate, the FAS Prevention Team, NCBDDD, funded four universities as FASD Regional Training Centers (RTCs).[7] The four RTCs are the Western Medical –Allied Health Education Center on Fetal Alcohol Exposure, the Southeastern U.S. Educational Center for Prevention of Fetal Alcohol Syndrome, the Midwest Regional Fetal Alcohol Syndrome Training Center, and the Northeast Fetal Alcohol Syndrome Regional Education and Training Center. The RTCs are working with the National Organization on Fetal Alcohol Syndrome (NOFAS) and the CDC to develop, implement, and evaluate educational curricula for medical and allied health students and practitioners. They are also seeking to have the curricula incorporated into the training programs at each grantee's university or college, into other schools throughout the region, and into the credentialing requirements of professional boards.

WHY ADDRESS THE EDUCATION OF HEALTHCARE PROFESSIONALS?

NOFAS has participated as a partner in the RTC program throughout its development. For the first phase of this project, NOFAS developed a report of current efforts to address FASDs in medical and allied health curricula and offered recommendations for assessing the adequacy of existing curricula in the United States. NOFAS concentrated its research efforts in three areas: medical and allied health textbooks, existing medical curricula found through internet research, and professors' survey responses. NOFAS sent 826 surveys to all schools accredited by the Association of American Medical Colleges (AAMC), the American Association of Colleges of Nursing, the National League for Nursing Accrediting Commission, and the Accreditation Review Commission on Education for the Physician Assistant. The surveys requested information on course work relating to FASDs. NOFAS also requested information about textbooks used, amount of time spent covering FASDs, presentations, examination questions, and syllabi. NOFAS received responses from 27% of the institutions surveyed. Although nearly all of the programs surveyed reported that FASDs were addressed in their programs (99%), the majority addressed only FAS, and it was typically only briefly mentioned within a lecture (62%). Only a few programs (1%) reported comprehensive coursework on FASDs. Based on findings from this phase of research, NOFAS concluded that existing efforts to educate health professionals about FASDs were inconsistent and inadequate.

The second phase of the formative work was to identify critical elements of a uniform standard curriculum for training medical and allied health students and practitioners in the identification, diagnosis, and treatment of children with FASDs, with a focus on the needs of the families and caretakers of individuals affected. Using information obtained via the NOFAS parent support group, more than 1,000 e-mail records, and 308 oral and written testimonies from a national series of town hall meetings on FASDs, NOFAS identified services and elements that would offer enhanced treatment and support for families and caregivers. The recommendations included a variety of resources and possible referrals necessary to support families.

In addition to the efforts of NOFAS, a national survey was developed by members of the RTCs under the guidance of the CDC and in coordination with the American Academy of Pediatrics.[8] Questionnaires were mailed to a 3% random representative sample (n=1,600) of American Academy of Pediatrics members in the United States. The sample included general pediatricians, pediatric sub specialists, and pediatric residents. Participation rate was 55% (n=879). Results revealed that although many respondents reported being familiar with the teratology and clinical presentation of FAS, only 62% felt prepared to identify for referral, only 50% felt prepared to diagnose a child with FAS, and only 34% felt prepared to manage and coordinate the treatment of children with FASDs. Even fewer physicians (13%) reported that they routinely counseled their adolescent patients of childbearing age about the risks of drinking during pregnancy. These data support other findings from surveys of obstetricians and gynecologists regarding their need for further

Table 1. Fetal Alcohol Spectrum Disorders Core Competencies Covered by the Regional Training Centers

1. Demonstrate historical, biomedical, and clinical knowledge about fetal alcohol spectrum disorders.
2. Provide services aimed at preventing alcohol-exposed pregnancies in women of childbearing age through screening and brief interventions.
3. Apply concepts and models of addiction to women of childbearing age and pregnant women to provide appropriate prevention services, referral, and/or case management.
4. Describe the effects of alcohol on the developing embryo and fetus.
5. Screen, diagnose, and assess infants, children, adolescents, and adults for fetal alcohol spectrum disorders.
6. Provide long-term case management for persons with fetal alcohol spectrum disorders.
7. Explain issues related to fetal alcohol spectrum disorders (e.g., legal and ethical issues, economic and social consequences, legislative and policy issues).

training in screening and brief intervention with women of childbearing age in order to prevent this developmental disability.[9]

Based on these findings and additional group discussions among experts in the field, members of the RTCs, NOFAS, and the CDC worked collaboratively to develop a consensus set of seven core competencies (Table 1) and corresponding materials to use in trainings. More information on the development of these competencies has been published elsewhere.[7]

The following section highlights some of the RTCs' efforts in educating medical and allied health students and practitioners on this important public health issue. Each RTC designed, implemented, and evaluated novel approaches to address this topic with healthcare trainees and professionals.

WESTERN MEDICAL–ALLIED HEALTH EDUCATION CENTER ON FETAL ALCOHOL EXPOSURE

The primary goal of the David Geffen School of Medicine at the University of California, Los Angeles (UCLA), is to introduce medical students to the practice of public health and preventive health care by integrating preventive clinical medicine into a basic science curriculum. Given this approach, the Western Medical–Allied Health Education Center on Fetal Alcohol Exposure has integrated educational materials on FASDs into the medical school curriculum.

Example of Training Approach

At UCLA, standardized patient (SP) cases—that is, scenarios in which an actor has been carefully coached to accurately and consistently portray a specific patient—allow students to learn and practice skills in counseling patients to promote positive changes in health behaviors. Students work with two faculty tutors, a physician and a mental health professional, in small groups. Tutors are provided with a written guide that highlights the learning objectives of the case, specific skills students should be practicing, and important discussion points. Students are given their own guide that specifies the learning objectives, tasks they should accomplish during the interview with the patient, and readings for review prior to the patient session.

Using this approach, screening for alcohol use and brief intervention (BI) techniques were introduced into an SP case of an adolescent girl who is binge drinking and pregnant. Although there were several learning objectives identified for this case, those specifically related to alcohol use included (1) introducing skills in screening an adolescent for alcohol and other substance use; (2) sensitizing students to the importance of informing women about the risks of alcohol use; and (3) introducing BI techniques. Both the student and tutor guides included a standardized alcohol screening tool designed for adolescents, a chart explaining the concept of a standard drink, and an example of a BI for alcohol reduction or cessation (Table 2). Following a three-hour small-group session in which students discussed the readings and practiced an interview and BI, each student was evaluated individually using a 20-minute videotaped interview with an SP. Students were instructed to inform the patient that she is pregnant, review her options (e.g., keeping the baby, adoption, or terminating the pregnancy), screen and counsel her regarding the risks of alcohol use to both herself and the fetus, and briefly discuss drinking and smoking cessation. Upon completion of the interview, the SPs completed a checklist evaluating the student's fulfillment of the goals of the session.

Evaluation and Commentary

Analysis of the checklists from the SPs and feedback from faculty tutors confirmed that all of the students (100%) were able to take an adequate history of the patient's alcohol and substance use. During the videotaped interview, the majority (85%) of students informed the patient about the risks of alcohol to the fetus and to the patient's health. Although results revealed that students were effective in screening for alcohol use and informing the patient of the risks of alcohol consumption, fewer than half (45%) provided the patient with a BI. This percentage is not atypical of first-year students who are asked to practice a chal-

Table 2. Example of Brief Intervention for a Pregnant Woman from the Western Medical–Allied Health Education Center on Fetal Alcohol Exposure

FEEDBACK AND RESPONSIBILITY

"You have already done many good things to help your baby be healthy. You mentioned that you are having ____ drinks on occasion. Did you know that there is no safe amount of drinking when you are pregnant because alcohol exposure can hurt a developing baby? No one can make you decide to change your drinking. What you do about your drinking is up to you. But you can have a healthier baby if you stop drinking now. A baby who has been exposed to alcohol during pregnancy might have some problems."

Major Problems**:** Small size, mental retardation, facial deformities, heart problems

Other Problems**:** Eating and sleeping problems, hyperactivity and inattention, language delays, memory and learning, hearing and vision impairments, social problems, motor delays

ADVICE TO CHANGE

"The best advice for a pregnant woman is to not drink any alcohol."

Ask for a response to your advice to make sure the patient understands the need to take action: "What do you think about what I have just said? Would you like to work with me to quit or reduce your drinking?"

MENU OF WAYS TO REDUCE DRINKING-RISKY SITUATIONS

"People drink for different reasons. Here are some examples of risky situations for some people: at a party, on weekends, following arguments, when feeling uptight or stressed, when feeling angry, when smoking, when friends are drinking, when feeling sad, wanting to fit in. Are there situations in which you feel like you want to drink? It is important to figure out how you can resist drinking in risky situations. Here are some examples of ways in which people cope with a desire to drink: go for a walk, call a friend, grab a snack, listen to music. Can you tell me some ways you think you can avoid drinking in risky situations?"

ESTABLISHING A DRINKING GOAL

"Now, thinking about how much alcohol you have told me that you drink, would you like to set a drinking goal? Would you like to stop or lower your alcohol use? A reasonable goal for someone who is pregnant is abstinence—not drinking any alcohol. I know that some people find that total abstinence is difficult. What would you like to do? What goal would you like to set for yourself? Stop drinking altogether or cut down?"

SET YOUR GOAL

Encourage abstinence. Agree on a number of drinks per week.

SELF EFFICACY

"On a scale of 1 to 5, how sure are you that you can stop (lower) your drinking? A "1" means you think you cannot stop (cut down) your drinking, and a "5" means you are sure you can stop (cut down) your drinking. If you feel that you cannot stop drinking right now, here are ways to cut down."

Add water to hard liquor (whiskey, rum, gin).
Drink no more than one drink per hour.
Eat food when you drink.
Sip your drinks.
Do not drink from the bottle.
Drink water or juice instead of alcohol.
Do not drink three or more drinks per drinking occasion.

ENCOURAGEMENT AND FOLLOW UP

"Changing one's behavior can be hard. It will become easier."

Remember your drinking goal.
Some people have days when they drink too much. If this happens to you, *do not give up*.
At the end of each week, think about how many days you did not drink and congratulate yourself.
Your follow-up visit is important. Please remember to come see me.

Source: O'Connor & Whaley, UCLA Project Care, 2007, NIAAA grant # AA12480.

Table 3. Trainings 2002–2006: Western Medical–Allied Health Education Center on Fetal Alcohol Exposure

Audience	Number of Participants	Number of Competencies Covered	Hours of Curriculum Exposure
Medicine (first-year students)	700	7	17.5 (per student)
Students, professionals, and parents*	1,575	6†	55.0 (total)
State and federal government‡	145	6†	4.0 (total)
Total	2,420		76.5

*Includes psychiatrists, psychologists, pediatricians, nurses, social workers, marital and family therapists, family practice physicians, medical researchers, obstetricians and gynecologists, drug counselors, speech and language specialists, occupational and recreational therapists, and lay people.
†Competency 3 ("Apply concepts and models of addiction to women of childbearing age and pregnant women to provide appropriate prevention services, referral, and/or case management") was not covered.
‡Includes agency professionals, child advocates, judges, attorneys, legislators, and legislative aides.

lenging new skill for the first time, and the faculty did not expect that students would become highly skilled or comfortable with this approach after a single exposure to the technique. For this reason, health behavior modification techniques such as BI are now being introduced into the formal first-year curriculum and are being revisited in different ways in each progressive year of medical school. UCLA faculty anticipate that repeated practice with screening and BI techniques on alcohol reduction and cessation will provide students with sufficient comfort and skill to use these procedures routinely upon completion of their medical training. See Table 3 for total number of participants reached by the Western RTC.

SOUTHEASTERN U.S. EDUCATIONAL CENTER FOR THE PREVENTION OF FETAL ALCOHOL SYNDROME

The Southeastern RTC serves Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee, with an emphasis on FASD prevention, care, and ethics for minorities and individuals affected by health disparities. The center is a collaboration between Meharry Medical College, Morehouse School of Medicine, and Tennessee State University. Training efforts address the concern that while health practitioners appreciate the importance of prevention and diagnosis for FAS and FASDs, they might feel apprehensive about their skills to assess maternal drinking or its consequences for a child.[10,11] This contributes to missed recognition of FASDs in children and less optimal management of their health and social needs.

Example of Training Approach

To overcome barriers between knowledge competencies and clinical practices for FASDs, one of the center's strategies has been to design role-play training to help practitioners develop skills and confidence for responding to a mother who might expose a fetus to alcohol during pregnancy, and to address a possible FAS diagnosis. At Meharry Medical College, training for the pediatrics clerkship centers on a videotaped role-play session, reaching 80 students each year. Morehouse School of Medicine is adapting the role-play methodology for its medical students.

The pediatrics training consists of three one-hour sessions during consecutive weeks. The first session is dedicated to didactics about clinical features of FASDs and interviewing techniques to assess alcohol use, using an alcohol assessment tool for women,[12] and BIs for at-risk alcohol use. Aspects of all seven core competencies are addressed in this session. Students then view a videotaped presentation of a role play by two students modeling the assigned role-play exercise. The exercise involves a student doctor responding to a mother at her baby's regular newborn checkup, in which the baby shows physical characteristics indicative of FAS. Students review a "score sheet" providing 10 objectives to be met in the role play, such as "screens mother for alcohol use in pregnancy using a minimum of four questions," "describes three or more clinical features of FAS," and "shows support for the mother."

In the second session, pairs of students (one playing the mother and one playing the doctor) are concurrently videotaped in patient examination rooms, with 15 minutes allotted for the encounter. Immediately following the role-playing, there is a discussion of how students felt in their respective roles. Typically, issues of a mother's feelings of guilt or shame, and a doctor's possible blame toward the mother or wanting not to offend her, are shared. For the third session, the instructor selects one of the videos created by the class for their viewing, which serves as a peer-generated demonstration of FASD competencies for discussion of good practices.

Evaluation and Commentary

Medical students show considerable variations in their communication styles and skills in this exercise. Preliminary findings, based on 51 videos, show that 72.5% (or 37 of 51) of medical students playing the role of the doctor achieve eight or more of the 10 scoring objectives. The students are able to discuss FASDs in a mock clinical encounter and respond to different "presentations" of mothers portrayed by fellow students. Thus, medical students are demonstrating significant practical skills related to addressing FASDs, which they may in turn transfer into their professional practices.

Evaluations of this training effort have so far been positive, with students, on average, agreeing that "the classes enhanced my understanding of FAS" and "will help me provide clinical care." Students also agreed

that the FAS role-play scenario was "fun." These outcomes suggest that the training helps medical students overcome traditional barriers in addressing FASDs.

The opportunity for students to choose the role of the mother allows class members to consider their judgments about women who engage in risky drinking from an empathetic perspective. This helps the class consider how a doctor can constructively address his or her own feelings as well as the mother's in a way that benefits the mother and her child. Classes usually arrive at some level of consideration of the difficulties women can face that cause them to drink, as well as the difficulties a mother faces discussing her drinking behaviors and the possibility that she might have harmed her child. The value of a nonjudgmental and supportive approach to address the mother's drinking is raised.

As health providers move forward in FASD prevention and care, skills for sensitive and efficient communication are integral. The role-playing technique has also been adapted in a less structured format, with a train-the-trainer program for diverse health care professional groups in which one pair of trainees volunteers for a videotaped role-play, followed by in-class discussion of the video. This method spurs valuable discussion and is well-received by trainees. See Table 4 for trainees reached by the Southeastern RTC.

Table 4. Trainings 2005–2006: Southeastern U.S. Educational Center for the Prevention of Fetal Alcohol Syndrome

Audience	Number of Participants	Hours of Curriculum Exposure Per Student
Medical students	70	15.0
Psychiatry residents	14	1.0
Allied health students	258	20.0
Nursing students	20	2.0
Local higher institutions*	285	7.5
Family medicine clerkships	48	6.0
Public Health Institute students†	30	1.0
Primary care physicians	157	7.5
Allied health staff	238	8.25
Community health center staff	87	6.0
Total	1,207	74.25

*Local higher institutions included Spelman College, Morehouse College, Clark Atlanta University, Emory University, and Georgia State University in Atlanta; in Tennessee, they included the masters of science in public health program at Meharry Medical College, Tennessee State University, Middle Tennessee State University, University of Tennessee, Belmont Nursing, and East Tennessee State University.
†The Public Health Institute is offered through Morehouse College, and students from within the AU Center can take courses offered. This includes Clark Atlanta University, Spelman College, and Morehouse College.

MIDWEST REGIONAL FETAL ALCOHOL SYNDROME TRAINING CENTER (MRFASTC)

MRFASTC is a collaboration between the Saint Louis University School of Medicine and College of Health Sciences, the University of Missouri–Columbia Schools of Medicine and Health Professions, and the St. Louis Arc. (An affiliated chapter of The Arc of the United States, St. Louis Arc is a nonprofit agency that provides support and services to adults and children with mental retardation and other developmental disabilities and their families throughout the St. Louis metropolitan area.) The approach used by MRFASTC to educate audiences about prenatal alcohol exposure and its effects includes integrating developed material into medical school curricula and offering workshops to health care professionals throughout a six-state area (Arkansas, Iowa, Kansas, Missouri, Nebraska, and Oklahoma).

Examples of Training Approach

After developing an extensive curriculum on FASD recognition, diagnosis, treatment, and prevention, MRFASTC faculty negotiated with course directors at their medical schools and schools of allied health to introduce appropriate aspects of the curriculum into those courses. For example, a MRFASTC faculty member who is also an expert pediatric dysmorphologist was able to introduce a problem-based learning case developed by the MRFASTC team to first-year students at the University of Missouri School of Medicine. The case describes a child with FAS in which the diagnostic and therapeutic process unfolds, covering many of the core FASD competencies.

In order to train health care professionals in a six-state area, MRFASTC faculty have also adopted a train-the-trainer model. Through a community advisory board and letters of invitation directed at deans of health profession schools, the team has been able to recruit 36 health care "opinion leaders" from the six states. These individuals were trained in the FASD curriculum during a two-day conference in March 2004. Additionally, the trainees participated in one of three workshops directed at different health care providers (e.g., family practice physicians, obstetrician-gynecologists, pediatricians, psychologists, occupational and physical therapists), further refining their knowledge and developing specific skills for their target audience. Each trainee was asked to hold two training events in his or her area with local health care professionals or students during the next year, tailoring the presentation to the particular audience.

Evaluation and Commentary

Evaluation shows that the MRFASTC program has increased the number of competencies covered and the time devoted to FASDs in all of the targeted schools (see Table 5). Evaluation of the train-the-trainer model revealed that 32 of 36 trainees held at least one training event; this resulted in a

Table 5. FASD Core Competencies Covered Before and After Establishment of the Midwest Regional Fetal Alcohol Syndrome Training Center

Training Setting	Prior to MRFASTC (2003)		After three years of MRFASTC (2006)		Total number of students trained per year
	Number of competencies covered (out of 12)	Total time (minutes)	Number of competencies covered (out of 12)*	Total time (minutes)	
Saint Louis University, School of Medicine	1	15	6	90	150
Saint Louis University, Occupational Therapy	5	150	11	275	26
Saint Louis University, Physical Therapy	0	0	7	148	55
Saint Louis University, Physicians Assistant	5	35	10	150	34
University of Missouri–Columbia, School of Medicine	5	55	9	720†	96
University of Missouri–Columbia, Occupational Therapy	3	30	7	83	24
University of Missouri–Columbia, Physical Therapy	2	26	8	183	40
University of Missouri–Columbia, Communication Science (Speech Therapy)	5	42	9	126	30
Total		353		1,775	455

*MRFASTC began using 12 core competencies before the group established a core of seven competencies. Therefore, it continued assessing the curriculum based on these 12 competencies, which are (1) recognize the constellation of features associated with fetal alcohol syndrome and other alcohol-related effects, and the maternal high-risk behaviors that may result in FAS, (2) understand basic biomedical mechanisms that result in FAS, (3) select valid and reliable assessment instruments to screen for high-risk behaviors and/or FAS, (4) identify risk factors and interventions for secondary disability, (5) refer for further workup when appropriate, (6) conduct brief interventions, (7) assist clients in accessing local FAS-related resources, including family support, (8) appreciate and use interdisciplinary team evaluations for individuals with FAS, (9) communicate information effectively, (10) demonstrate the ability to provide ethical protections for patients respecting confidentiality and autonomy, (11) plan and perform clinically relevant treatment and management plans to assist and aid the patient, and (12) educate pregnant women about the effects of alcohol on their babies.
†Ten hours or 600 minutes were devoted to a problem-based learning case of a child with FAS introduced into the first-year curriculum.

total of 74 training events and 2,874 health care professionals who received training. At some of the events, a 10-question true/false test was given both before and after the training session; these assessments always documented increased knowledge about the prevention, recognition, and treatment of FASDs.

Surveys of health care providers have generally shown wide variability in knowledge of recognition, diagnosis, treatment, and prevention of FASDs, and have documented provider discomfort in intervening with women at risk for delivering a child with an FASD or diagnosing a child and providing effective case management.[8,9,13] In a very short time, MRFASTC has documented the efficacy of the train-the-trainer model in reaching a large number of health care professionals, improving their knowledge in this area. In addition, the program

has demonstrated that energetic, committed faculty can introduce new material into health professions school curricula. Next steps include extending the impact of MR-FASTC by involving more medical schools and allied health professions schools and developing ways to facilitate practitioners in integrating this new information into their practice patterns.

NORTHEAST REGIONAL FAS EDUCATION AND TRAINING CENTER

The Northeastern RTC, located in the University of Medicine and Dentistry of New Jersey (UMDNJ), provides FASD-related education in multiple training and practice environments. Within the UMDNJ system, the Northeastern RTC has provided FASD training to all three major campuses and is working with the affiliated nursing, allied health, and public health schools. The New Jersey Medical School (NJMS), Department of Pediatrics, has a "week of FASD" for residents and third-year medical students, in which information is provided on each core competency and practical case presentations from the affiliated state diagnostic centers are incorporated. In addition, a question regarding FASDs has been added to the biannual Objective Structured Clinical Examination.

Outside of the medical school environment, training has been provided to the New Jersey State Department of Justice personnel (probation officers, state troopers, family court, and judges) and local school districts and hospitals. Relationships and trainings have also been established at the state level with the Department of Human Services, Department of Health, Division of Youth and Family Services, Division of Medical Assistance and Health Services (which administers the state Medicaid program), Maternal Child Health Consortia, and state nurses. The Northeastern RTC is an important and active member of the New Jersey Governor's Taskforce on FAS.

The presence of existing statewide FASD diagnostic centers to which health professionals can refer patients has led to a focus on screening and early identification of FASD in Northeastern educational initiatives. Each center offers multidisciplinary diagnostic services that include evaluation by a developmental pediatrician, psychologist, social worker, nurse, speech therapist, and physical or occupational therapist (or both). In addition, all staff at each site have received training in the University of Washington FASD 4-Digit Diagnostic Coding system.[14]

Table 6. Trainings 2002–2006: Northeast Regional Fetal Alcohol Syndrome Education and Training Center

Audience	Number of Participants
Students:	
Medicine	215
Social work	25
Infant mental health	43
Physicians (pediatrics, obstetrics-gynecology, American Society of Addiction Medicine, psychiatry)	560
Nurses/students	466
Allied health:	
Physician assistants	65
Dieticians	26
Occupational therapists/ physical therapists	50
Social workers	125
School personnel:	
Grade school	50
Special education	197
Nursery/preschool/Headstart	48
Family care workers	285
Corrections/probations	
Family court	228
Community health/mental health organizations	180
State agencies:	
MEDICAID	75
WIC	50
Child Protection	70
Foster parents	35
Professional conferences with mixed audiences	335
Total	3,128

Training Approach

Training is provided either through 2–5 hour sessions or two-day sessions combining didactics, video, and case discussion. The Northeastern RTC has developed an online, web-based introductory training course covering the core modules of the FASD competencies. A related but more general version of the course for continuing medical education (CME) accreditation is nearing completion. Case studies based on experiences in the New Jersey–funded FASD diagnostic centers provide students with training in typical diagnostic issues and challenges. Train-the-trainer materials for in-person presentations have been developed. The

Northeastern RTC, through workshops and training sessions, has educated a total of more than 3,000 students, parents, and professionals (see Table 6). In addition to New Jersey, training has been offered in Maine, New York, Pennsylvania, and Washington, D.C., with future presentations planned for Delaware and Puerto Rico. Given the diversity of the region, the Northeastern RTC will continue to adapt the core curriculum to the individual needs of each state in the region.

Evaluation and Commentary

All training presentations, both online and in-person, have been evaluated using pretests and post-tests focused on FASD-related knowledge. The presentation of similar materials to a variety of audiences allows for comparison and refinement of learning materials for the various groups. Initial results point to a need for better teaching of facial dysmorphism as a component of FAS among nurses. Among social workers, improvements have been demonstrated on knowledge regarding alcohol consumption during pregnancy.

Prenatal exposure to alcohol results in a considerable variation in developmental outcomes. Similarly, there is variability in health care professionals' knowledge and skills in working with individuals with FASDs. Online courses and multidimensional, flexible outreach to the various health care professionals interacting with individuals with FASDs will improve practice in all aspects of care.

DISCUSSION

Educating health care professionals about the risks of drinking alcohol during pregnancy is a critical piece of the puzzle in preventing FASDs and improving the lives of individuals with these conditions. The creation of the FASD RTCs has offered a unique opportunity to develop partnerships within and across the respective programs. The multidisciplinary consortium of experts in the fields of FASDs and medical school and allied health education collaborated on the development of the core competencies for an FASD curriculum, which served as a guide for all of the RTCs as they developed their multifaceted training approaches and key areas of focus.

It is important to note that the topic of alcohol use during pregnancy is still often viewed as controversial. Providers are often uncomfortable discussing alcohol use with their patients or identifying children with FASDs. Developing ways to address these communication issues in a positive, nonthreatening way is an ongoing challenge. Determining the best approaches to integrating these skills within provider practice settings is another challenge. Although health providers might have the knowledge and skills outlined by the RTCs, physician providers have very limited time with patients. The experience of the RTCs has been that students and health care professionals alike recognize the importance of learning about the prevention, diagnosis, and treatment of FASDs, but further examination of realistic approaches to translating such valuable knowledge and skills into practice settings is needed.

As illustrated in the preceding examples of strategies and their evaluations, provision of skills-based education techniques enables students and practitioners to apply the knowledge and skills they have learned about topics such as diagnosing a child with FAS or screening a woman for alcohol use. Techniques such as case studies, SPs, role-playing with feedback, and train-the-trainer sessions offer participants in these programs a number of different ways to learn about FASDs. The RTCs have developed high-quality curriculum materials and tools for both medical and allied health students and practitioners alike. Continued evaluation of these training efforts is critical, along with assessment of skills once trainings have been conducted to ensure such skills are integrated within practice.

CONCLUSION

FASDs are among the leading preventable causes of developmental disorders in the United States. For this reason, efforts must be directed toward the primary prevention of these conditions through screening of and brief intervention with all women of childbearing age. Furthermore, if a child with prenatal alcohol exposure is diagnosed early and receives appropriate treatment, many secondary disabilities such as school failure and mental health problems can be prevented.[15] Through the use of innovative approaches to medical and allied health education, health care professionals will be better equipped to participate in the prevention, diagnosis, and treatment of this major developmental disability. The curricula highlighted here, along with examples of innovative training approaches, provide the foundation necessary to expand these educational efforts for dissemination across the country.

* *Funding provided by the Centers for Disease Control and Prevention in collaboration with the Association of Teachers of Preventive Medicine, Association of American Medical Colleges, Association of Schools of Public Health, and the Minority Health Professions Foundation.*

DISCLAIMER

The findings and conclustions in this report are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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