



**CLINICAL STAFF TRAININGS TO PROMOTE APPROPRIATE USE OF ANTIBIOTICS
AMONG PATIENTS: A PROJECT BY THE LOS ANGELES COUNTY DEPARTMENT OF HEALTH
SERVICES, LOS ANGELES ANTIBIOTIC RESISTANCE EDUCATION ADVOCATES
(LAC DHS LA AREA)***

BACKGROUND

Antibiotics are becoming less effective and in some cases ineffective against bacterial infections (referred to as “antibiotic resistance”). The combination of overuse and misuse of antibiotics is a significant cause for concern as a contributor to the problem of antibiotic resistance in the community and in healthcare settings. Effective interventions to promote appropriate antibiotic use should include involvement of healthcare providers and the public.

In an effort to encourage patient education about appropriate antibiotic use among parents and children, free, 1-hour in-service trainings were offered in 2003 by the Los Angeles County Department of Health Services, Los Angeles Antibiotic Resistance Education Advocates (LACDHS LA AREA) project to clinical staff (e.g., physicians, nurses, medical assistants, and managers) of the Comprehensive Perinatal Services Program (CPSP). CPSP is a Medicaid fee-for-service program that integrates nutrition, psychosocial, and health education assessments, interventions, and perinatal education with basic obstetrical care for low-income pregnant women. Based on initial reviews, reports and feedback from similar training offered to CPSP sites in 2001, the presentation was revised to include additional topics regarding patient demand for antibiotics and risks in consumer use of illegal prescription antibiotics. Other additions included a follow-up survey to assess continuing patient education and a materials order form for requesting more antibiotic resistance education materials. Complementary to these improvements, clinical staff trainings were initiated in 2003 in response to unfulfilled training requests from CPSP providers in 2001.

**Behaviors That Promote
Antibiotic Resistance**

Antibiotic Overuse: Antibiotics are unnecessarily taken to treat upper respiratory viral illnesses such as the cold and flu. Antibiotics should be used solely for the purpose of treating bacterial infections. The widespread misconception that antibiotics treat all types of illnesses stresses the need for public education.

Antibiotic Misuse: Incomplete courses of antibiotic prescriptions are consumed and the leftover prescriptions are taken for a later use or shared with others. Patients often take antibiotics and stop because they feel better—not knowing that taking the entire prescription is necessary to maximize treatment of eradicating bacterial infections.

METHODS

Announcement Mailings: Letters were sent to advertise the trainings to CPSP clinical staff in LAC. Training registration forms were also sent. Completed forms were processed by scheduling a 1-hour training session at the participant’s facility.

Training: A 1-hour training session was developed by LA AREA that included the following topics: 1) introduction to the problem of antibiotic resistance, 2) consequences of antibiotic resistance, 3) public knowledge, attitudes, and practices concerning antibiotic use, 4) behavior change messages in addressing overuse and misuse of antibiotics, 5) addressing patient demand for antibiotics, 6) risks in consumer use of illegal prescription strength medications including antibiotics, and 7) promoting disease prevention. All training sessions were conducted with a PowerPoint™ presentation with slide handouts provided. All participants wrote their names on a sign-in sheet.

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Pretest, Posttest and Evaluation: The pretest, posttest, and training evaluations were developed to assess any changes in knowledge of participants and evaluate the effectiveness of the intervention. Tests and evaluations were anonymous. Incomplete and/or illegible tests and evaluations were omitted from data analysis. The test consisted of 10 true-false questions in the areas of: 1) viruses vs. bacteria, 2) antibiotic use misconceptions, 3) common misuse practices, and 4) health and safety tips. Questions from the pretest were the same for the posttest.

Evaluations that were administered immediately after the trainings consisted of closed-ended questions that assessed participant attitudes about the clarity, content and usefulness of the information. Attitudes were measured on a 5-point Likert scale to ask participants whether they “strongly agree, agree, are neutral, disagree, or strongly disagree” with the statements. Open-ended questions assessed participant attitudes about the strengths and weaknesses of the training.

Supplemental Resources: Participants were given technical articles about antibiotic resistance, prescription pad forms for treating viral infections, formatted letters to day care providers and clinical practice guidelines. A train-the-trainer set of computer disks were provided to each participating site. These disks included the training presentation, speaker notes, tests and evaluation forms. Patient education materials on antibiotic resistance were also given to participants. These materials included brochures, posters and videotapes.

Follow-up Survey: Following completion of the trainings, a follow-up survey was mailed to participants to assess the extent of continuing education efforts about appropriate antibiotic use, the interest in future trainings for clinical staff and the usefulness of the distributed materials. Only staff who participated in the training were asked to complete the survey and a copy of each site’s sign-in sheet was sent to help identify those individuals. Thus, more than one completed survey can be returned from a single site.

Materials Order Form: Included with the survey were forms to request additional free antibiotic resistance education materials.

RESULTS

Announcement Mailings: In March and April 2003, letters were sent to 496 CPSP sites. A total of 54 (10%) sites returned a training registration form.

Training: Thirty-two sites received in-service trainings between May and December 2003. The remaining 22 sites did not receive training due to loss to follow-up, non-response after repeated attempts of contact, the provider indicating loss of interest, or continuous postponement by the provider of scheduled in-service trainings. Included in the training were 222 health professionals; the majority were nurses and medical assistants.

Pretest and Posttest: There were 127 pretests and 184 posttests administered among the 32 participating sites. Among the pretests, 5 were incomplete and/or illegible and were omitted from data analysis. Among 9 sites, 53 pretests were not administered in order to save time at the request of the participants. Test comparisons showed an improvement in knowledge from pretest (35%) to posttest (83%) in getting all ten answers correct. An indeterminable number of participants who came late to the trainings and were only able to complete the posttest scored well despite receiving partial training (Figures 1 and 2).

Evaluation of Closed Ended Questions: Among 190 evaluations that were administered and collected, 10 were incomplete and/or illegible and were omitted from data analysis. The majority of participants felt that the training was beneficial to them and their patients (Table 1). This includes the clarity of the presentation and materials.

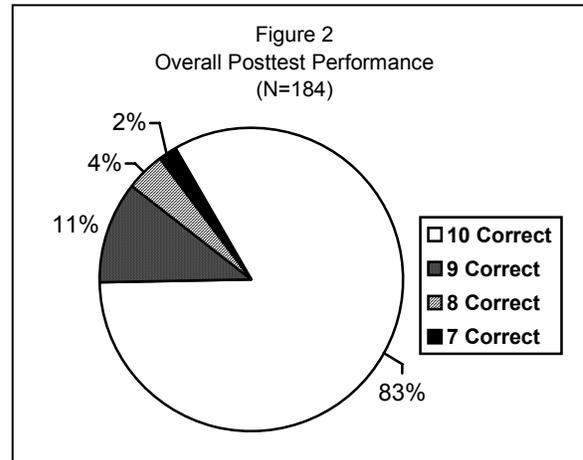
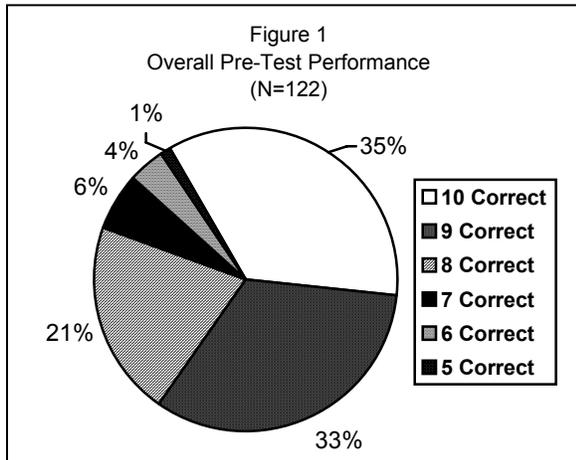


Table 1. Evaluation of Trainings

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I learned something new.	3%	1%	10%	44%	42%
I will share today's information with my patients/recipients of my service.	3%	0%	2%	35%	60%
Speaker was clear.	3%	1%	3%	40%	53%
Handouts were clear.	3%	0%	2%	38%	57%
Information was helpful.	2%	1%	3%	35%	59%

Evaluation—Open-Ended Questions: When participants were asked what they liked about the training, the majority of them felt that it was clear and informative. This was especially true for those who felt that they learned something new. When participants were asked what they would improve in the training, the majority of them did not have any suggestions. A few expressed considerations of making the presentation more technical for advanced audiences. For example, one participant wanted to hear about specific antibiotics. It was unclear as to whether or not this type of presentation would be about clinical practice guidelines and judicious prescribing. Under the open comments section, a few participants did express the need for antibiotic resistance education out in the community. Some expressed satisfaction with now having Spanish materials to share with their patients. Some participants who were neutral or didn't feel that they learned something new commented that as trained medical professionals, they were already aware of the problems of antibiotic resistance.

Supplemental Resources: Over 16,000 patient education materials on antibiotic resistance were disseminated to the 32 participating CPSP sites throughout the training period.

Follow-up Survey: Surveys were mailed to 32 sites that participated in the training; 10 (31%) sites returned forms. A total of 35 surveys were received from the 10 sites (range 1–5 per site) One survey was incomplete and omitted from data analysis. In assessing the extent of continuing education efforts about appropriate antibiotic use, the majority of participants reported sometimes to always discussing the issue with their patients (Table 2).

When participants were asked about the methods of education they used to discuss antibiotics and antibiotic resistance with their patients, 55% (n=18) only conducted face-to-face discussion, 11% (n=4) left materials in the waiting room only, 31% (n=11) did both, and 3% (n=1) did not conduct patient education. A few of the sites (3 of 11) reported using the training materials to train other staff (resulting in



11 additional people trained) and many (7 of 11) reported interest in receiving another training session for any other current or future employees of their clinical staff. Provider attitudes towards the utility of the English and Spanish antibiotic resistance education materials were largely ranked as somewhat useful to very useful in their practice.

Table 2. Discussion of Antibiotics—Responses to Follow-up Survey

	Always	Most of time	Sometimes	Never
How often do you talk to your patients about antibiotics? (n=34)	24%	29%	44%	3%
How often do you talk to your patients about antibiotic resistance and the proper uses of antibiotics? (n=34)	29%	39%	29%	3%

Materials Order Form: Requests for over 5,000 patient education materials were delivered amongst 6 sites that returned order forms.

DISCUSSION

In the efforts to outreach to an accessible population of participants through CPSP, it was unfortunate that only 10% of CPSP participants registered for the trainings and only 60% of these participants received the trainings. It is unknown why there was such a low response; CPSP offices may be too busy to incorporate training opportunities into their work schedules or the topic of antibiotic resistance may not be a topic of interest in this population. In the future, we will make targeted follow-up to those sites that did not respond.

The difficulties experienced in trying to conduct the trainings among those interested were primarily due to the busy schedule and limited time offered by CPSP participants. Scheduled meetings were often postponed by participants with some declining offered trainings or were lost-to-follow-up afterwards. Upon arrival to some participating CPSP sites, trainings had to be delayed due to excess and/or unexpected patient visits. Consequently, pre-tests weren't conducted in order to save time at the request of the participants. Additionally, a few participants came late to the trainings and did not take the pre-test.

Performance comparisons showed a large improvement from pretest (35%) to posttest (83%) in answering all questions correctly. Additionally, the majority of participants (66%) felt that they learned something new.

The majority of participants felt that the test was easy. Whether or not this reflected the pre-test and/or post-test (which both had the same test questions) cannot be determined. Since the majority of the questions tested knowledge on antibiotic use and practices, future questions should be added regarding effective patient-provider communication and tools for education about appropriate antibiotic use. Such questions would appropriately address the main focus of the training—to promote increased efforts among participants to educate patients about antibiotic resistance and appropriate use.

In addition to the low response rate to the training registration, the follow-up surveys had a low response rate. Only 34% of participating sites returned follow-up surveys. In the future, a second mailing of training registration and follow-up survey announcements will be conducted.

The follow-up survey may not have accurately assessed post-training effects of patient education. For example, the question, "Since the training, how often do you talk to your patients about antibiotic resistance and the proper uses of antibiotics?" could be interpreted by the respondent in terms of all total patient visits. Since not every patient visit would result in prescribed antibiotic treatment, the question should have been clarified to indicate only "when appropriate" (i.e., when a patient insists on receiving an antibiotic, when the patient is prescribed an antibiotic, etc.).



The participants' positive feedback about the presentation indicated the need to educate patients about antibiotic resistance. Participants felt that this subject was relevant to their everyday practice and they were candid to discuss their experiences with patients who use antibiotics inappropriately. Participants' accounts included patients who come into their clinics asking for antibiotics to treat their cold or flu.

Participants discussed cases where patients used specific antibiotics in the absence of any illness. Some of these cases involved parental decision to treat their child with antibiotics. Participants also discussed cases in which patients would share antibiotics and other medications with family members. However, some participants reported having patients who would proactively seek their advice regarding the right medications to take for their specific illness. Expecting mothers were reported to be more often reluctant about taking any type of medication (unless directed by the doctor) for concern over their baby's health.

Participants were appreciative of receiving patient education materials especially when they did not have any materials on the subject of appropriate antibiotic use before the training. Additionally, the materials would complement patient education efforts especially when participants receive requests for antibiotics from patients with the cold or flu. In addition to the request for Spanish language materials by participants, there were two sites that each requested materials for their patients in Chinese and Korean respectively. Fortunately, a high volume of health education materials (over 21,000) was successfully distributed amongst 32 participating sites.

Based on discussion and evaluations from CPSP participants in the training, antibiotic resistance and appropriate antibiotic use are important issues to discuss with patients especially when some participants reported overuse and misuse of antibiotics among their patients. Efforts to improve and continue these trainings in addition to supporting participants with education materials will be conducted in the near future.