TOP STORIES
Governor’s Environmental Stewardship Award

As a result of their initiatives in safe dispose of unwanted medications the UT APhA-ASP chapter won the Governor’s Environmental Stewardship Award in the category of Solid Waste Reduction. Stephanie Yokley (below), Executive Vice-President (Knoxville) and P4 student pharmacist accepts the award during a ceremony in Nashville.

Students in Knoxville worked with the Knoxville Police and Health Departments to create a program that enabled the safe disposal of unwanted/expired medications. Last year, UT student pharmacists hosted three events at Earth Fare stores and Pellissippi State Community College. These events were advertised on the Earth Fare and City of Knoxville websites as well as local radio and TV news stations. During these events they collected 626.61 pounds of expired medications and were able to recycle 253.25 pounds. They counseled patients on proper medication disposal and the importance of keeping over-the-counter and prescription medications out of the water supply.

UPCOMING EVENTS

APhA-ASP Host Region III Meeting in MEMPHIS
October 15-17, 2010

COLLEGE FACULTY MEETING
October 12, 2010 • Tuesday
Noon CT - GEB 204 (Memphis); 220 (Knoxville)

PHARMACY GRAND ROUNDS
October 28, 2010 • Thursday
Noon CT - GEB 204 (Memphis); 220 (Knoxville)

See published manuscript describing the Medication Disposal Program at the end of this Newsletter.

View a Public Service Announcement by students in the Class of 2013 on the front page of the college’s website.

www.uthsc.edu/pharmacy/
Rotation - Residency Day • Memphis
KUDOS

FACULTY

FOSTER APPOINTED TO NATIONAL PRESTIGIOUS PANEL

Dr. Stephan Foster, Professor and Vice-chair of Clinical Pharmacy, has been invited to participate as a panelist at the Nation Foundation for Infectious Disease (NFID) Influenza/Pneumococcal News Conference. The event will be held on October 7th at the National Press Club in Washington, D.C. Other panelist include Dr. William Schaffner (President, NFID), Dr. Thoms Frieden (CDC Director), Dr. Daniel Jernigan (National Center for Immunization and Respiratory Diseases, CDC), Dr. Donald Berwick (Administrator, Centers for Medicare and Medicaid Services), Michael Bloomberg (Mayor of New York City), and Dr. Judith Palfrey (Past-President American Academy of Pediatrics). Dr. Foster will discuss the critical role of non-traditional vaccination settings, with the focus on pharmacies and administration by pharmacists.

ACCP PEDIATRIC PRN CHAIR-ELECT

Dr. Kelly S. Bobo, a graduate of the University of South Carolina, has been elected at Chair-elect for 2010-2011 of the American College of Clinical Pharmacy Pediatric PRN. She completed a residency in Pediatric Pharmacotherapy and Home Infusion Therapy at Le Bonheur Children’s Hospital, The University of Tennessee Health Science Center, and PharmThera, Inc. After completing post-doctoral training, she practiced for more than a decade as a clinical pharmacist in pediatric critical care at LeBonheur. Currently, she is the Pharmacy Educator at Le Bonheur and Director of their PGY1 and PGY2 Residency Programs. She is also an Assistant Professor in the Department of Clinical Pharmacy. Dr. Bobo maintains active membership in several national and local pharmacy organizations and is currently serving as President-Elect for the Mid-South College of Clinical Pharmacy for 2010. She is Board Certified as a specialist in Pharmacotherapy.

Publications

Gray-Winnett MD, Davis CS, Yokley SG, Frank AS. From dispensing to disposal: The role of student pharmacists in medication disposal and the implementation of a takeback program. J Am Pharm Assoc 2010;50:613–618.

See end of Newsletter for a copy of the paper.

Ray MD, Boucher BA. Strengthening relationships between pharmacy faculty members and clinical training sites. Am J Health Syst Pharm 2010;67 1558-1562

STUDENTS, GRADUATE STUDENTS and POST-DOCTORAL RESIDENTS

STUDENTS’ INITIATIVE IS SAFE MEDICATION DISPOSAL – students on the Knoxville campus have been very engaged in community education about the safe disposal of medications. They have held numerous events over the last 3 years and have worked with other agencies to implement their vision for the program. These efforts have not gone unnoticed as evidenced by their recent recognition by the state (see page 1). A manuscript describing these efforts is at the end of the newsletter. A group of student pharmacists on the Memphis campus created a Public Service Announcement to demonstrate the proper disposal of medications. The short video can we viewed on the college website (http://www.uthsc.edu/pharmacy/).

ACCOLADES FOR THE PDC – OMEGA CHAPTER

In August, 11 Omega Collegiate brothers, 1 Katie Omega Alumnus and one of our Advisors (Dr. Suda) attended the Phi Delta Chi Leadership Development Seminar in Madison Wisconsin. This seminar is designed to foster the leadership skills of the brothers of Phi Delta Chi and consists of 3 days of workshops that deal with issues such as conflict, retaining membership and engaging brothers to be active in the fraternity. At the end of the seminar, there is an awards banquet where chapters are recognized for excellence in several areas. The Omega chapter was very fortunate to receive accolades in 4 different areas. We first received an award for achieving 100% in the Achievement Awards Program, a program designed to determine how well the chapter has met the requirements set forth by the national office. This award is based on completing monthly reports that highlight our service, scholastic and social events that occur on both of our campuses. We were then awarded 2nd place in Scholarship which is based on how well we as a chapter help out our brothers in the area of academics. Things that are included in the scholarship report are our tutoring and review sessions as well as the academic achievements of the brothers in our chapter. We were also awarded 3rd place in chapter publication. Each chapter is required to put together a publication that highlights what their chapter has done over the past year. Our chapter publication, titled "The Omegaphone" is consistently recognized as one of the best in the nation. Finally, we were recognized as the 5th chapter overall (out of over 60!). The Omega chapter has consistently been ranked in the top 10 nationally, and we are very proud of our achievements this year at the Leadership Development Seminar and look forward to another year of excellence.
Interim President of The University of Tennessee, Dr. Jan Simek (right), Elizabeth Ackerman (middle), APhA-ASP President and P3 student pharmacist, and Steve J. Schwab, MD (left), Chancellor of The University of Tennessee Health Science Center pose for a photo during the Annual ASP picnic in Memphis on September 22, 2010.
UT Teams Advance in ACCP’s Clinical Pharmacy Challenge

Congratulations to our Memphis and Knoxville teams competing in the inaugural year of the ACCP’s Clinical Pharmacy Challenge! Both of the UT teams progressed from the first online rounds (94 teams) to the second online rounds (48 teams). The ACCP Clinical Pharmacy Challenge, developed during past UT graduate Dr. Alexandra Barnette’s (Class of 2010) tenure as the Chair of the ACCP StuNet Advisory Committee, is a team-based competition composed of 3 rounds in a quiz bowl–type format (Trivia/Lightning, Clinical Case, and Jeopardy). Only four teams advanced from the second online rounds to progress to the live rounds to be held at the ACCP Annual Meeting in Austin, TX in October.

The Knoxville Team consisted of Phil Lee, Laura Pruett, Adam Sawyer and Daniel Marsh (alternate).

The Memphis team included (pictured left to right) Gillian Bell, Corry Taylor, Sampy Wright and Sandra Weissmiller (alternate).

We congratulate our team members on a job well done!
Tennessee Governor Phil Bredesen has appointed Nina Smothers, DPh, MBA, director of pharmacy and ancillary services of Baptist Memorial Hospital-Huntingdon, to the Tennessee Board of Pharmacy for a six-year term. Consisting of seven individuals, including six pharmacists and one non-pharmacist public member, the Board’s mission is to serve Tennesseans by providing a fair, flexible, and positive regulatory environment for pharmacy-related industries.

A pharmacist for the past 36 years, Smothers completed her pre-pharmacy curriculum at the University of Tennessee at Martin, followed by a B.S. in Pharmacy with Honors from the University of Tennessee Health Sciences Center. She then obtained a Masters in Business Administration in Health Services Management from the University of Dallas with a 4.0 GPA in 1998. Smothers has been employed with Baptist Memorial Hospital-Huntingdon for the past 35 years as director of pharmacy where she has successfully established and staffed the pharmacy department, including the development of policies and procedures, institution of a pharmacy-oriented medication program, and subsequently meeting the requirements of The Joint Commission. In addition to her pharmacy role, Smothers serves as the director of the ancillary services where she oversees the departments of radiology, respiratory therapy, and lab. She also serves as the hospital’s compliance and safety officers.

“I look forward to serving on the Tennessee Board of Pharmacy and giving back to my profession. I very much appreciate the opportunity to serve my fellow pharmacists in Tennessee,” says Smothers.

Smothers is active with several professional groups including the American Society of Hospital Pharmacists, Tennessee Pharmacists Association, West Tennessee Society of Hospital Pharmacists, and the Tennessee Society of Health System Pharmacists where she has held numerous offices and responsibilities and has been named as Pharmacist of the Year. In addition, Smothers is a member of the University of Tennessee’s Alumni Association of Carroll County where she has served as secretary and president. Smothers is presently serving as a city councilman with the town of Huntingdon. Nina is a member of Mt Zion United Methodist Church serving as Sunday School superintendent and Sunday school teacher. Nina is the mother of Nathan (Deanna) Smothers, Anna Kathryn Smothers, and Jack (Moriah) Smothers, and the grandmother of Noah, Grace, and Gabe Smothers.
Current members of the TN Board of Pharmacy

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<td>Albert Larry Hill, DPh (’85)</td>
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<td>Nina Smothers, DPh (’74)</td>
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<td>Charles E. (Buddy) Stephens, DPh (’72)</td>
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<td>Jason S. Kizer, DPh</td>
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Joseph R. Walker, PharmD has recently been honored by the American College of Clinical Pharmacology with the McKeen Cattell Memorial Award for the best research publication in the Journal of Clinical Pharmacology in 2009. Dr. Walker is an alumnus of the College of Pharmacy and graduated in 1995. He is currently a Director of Pharmacogenomics in the Translational Medicine & Clinical Pharmacology group at Daiichi Sankyo Pharma Development in Edison, NJ. The title of this contribution is ‘Quantitative Structure-Property Relationships Modeling to Predict the In Vitro and In Vivo Binding of Drugs to the Bile Sequestrant Colesevelam (Welshol)’.

OTHER

SNPhA's FUNDRAISER - Side-Effects of Pharmacy School T-Shirt

Colors: gray, navy, and black  
Prices: S-XL- $14.00; 2XL-4XL-$16.00  
Front: Side Effects of Pharmacy School in orange w/ navy border (gray border for dark shirts)  
Back: Side Effects of Pharmacy School (running vertically in same colors) with cartoon expressions of polyphagia, nausea, irritability, drowsiness, lethargy, confusion, headache, and polydipsia. (the navy will be gray on dark shirts)  
Contact: Tonya Phelps (tphelps4@uthsc.edu)
IT’S FOOTBALL TIME IN TENNESSEE – GO VOLS!!

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COLLEGE TRIVIA

At the conclusion of the last Newsletter it was 1931 and the total number of faculty in the College was 30. Today there are 69 full-time faculty.

Robert L. Crowe was appointed Dean of the School of Pharmacy. Dr. Crowe’s career goal was to become a physician, but after being introduced into the world of teaching, he decided that teaching was to be his life’s work. Although he never received his medical degree, he was licensed by examination to practice medicine (not surgery) in Tennessee. It is believed that Dr. Crowe is perhaps the only person in the 20th Century without a medical degree licensed to practice medicine in the state. He routinely practiced medicine in his office at the School of Pharmacy, seeing indigent patients at no charge. Dr. Crowe was also an inventor, having developed two medicines, had them patented, and later sold them to an Ohio drug firm. Dr. Crowe guided the School from a small department into one of the largest and best pharmacy schools in the United States. Dr. Crowe’s name was synonymous with pharmacy in Tennessee. He could be found in Nashville lobbying the General Assembly for the College and the profession during every session. Dr. Crowe served as dean until his death in July 1953.

1936

1937 B.S. Pharm 
The School conferred the first B.S. in Pharmacy degree.
The University of Tennessee College of Pharmacy

Submit news items to sphelps@uthsc.edu or jbogue@uthsc.edu

The University of Tennessee Health Science Center is an EEO/AA/Title VI/TitleIX/Section 504/ADA/ADEA employer.
From dispensing to disposal: The role of student pharmacists in medication disposal and the implementation of a take-back program

Misty D. Gray-Winnett, Courtney S. Davis, Stephanie G. Yokley, and Andrea S. Franks

Abstract

Objective: To decrease the amount of pharmaceuticals present in our community's water supply, reduce the accidental and intentional ingestion of pharmaceuticals, and increase awareness of proper medication disposal.

Setting: Knoxville, TN, from November 2008 to November 2009.

Practice description: Medication and thermometer collection events were held at various community retail establishments. Community officials and students collaborated to plan advertising, implementation, and appropriate medication and thermometer disposal. Event volunteers set up easily accessible tents and tables in high-traffic areas to collect unused medications, mercury thermometers, and recyclable medication bottles.

Practice innovation: Student pharmacists worked cooperatively with community partners to collect unused medications and exchange thermometers.

Main outcome measures: Pounds of recyclables collected, pounds of medications collected, and number of thermometers exchanged.

Results: The events increased community awareness of appropriate medication disposal and pharmacists' roles in safe use of medications. From November 2008 to November 2009, more than 1,100 pounds of unwanted medications were collected through events and the drop box. Additionally, more than 470 pounds of recyclable packaging material was collected and 535 mercury thermometers exchanged.

Conclusion: Student pharmacists can partner with community officials and businesses to provide safe and appropriate medication and mercury thermometer disposal.

Keywords: Medication disposal, environmental effects, public health, student pharmacists, pharmacy services.


The oath of a pharmacist includes the promise to "devote myself to a lifetime of service to others through the profession of pharmacy." Additional, the pharmacists' code of ethics obligates them to "serve individual, community, and societal needs." By promoting proper disposal of medications, pharmacists can be environmental stewards and prevent drug diversion and accidental ingestion. As the medication experts, pharmacists are the health professionals best equipped to educate patients regarding medications, from dispensing to disposal.

Although the presence of medicinal compounds in water was speculated, it was not confirmed until 2002, when a scientist from the U.S. Geological Survey developed new analytical methods to measure previously undetectable concentrations of contaminants. An investigative report by the Associated Press in March 2008 found small amounts of various pharmaceuticals in the drinking water of 24 major metropolitan areas. This report spurred reactions from the public about drugs in the water and incited questions about the proper way to dispose of medications. A report by Chang-Ping and Chu describes the presence of pharmaceuticals and personal care products in the Little Pigeon River in east Tennessee. Some of the medications detected included ibuprofen, caffeine, triclosan, and bisphenol A. Assays also revealed a dose-dependent increase in estrogenic activity in the water. This study proves that the incidence of medications in the water is relevant in our region of east Tennessee.

Drugs find their way into our environment via three major pathways. The first route is via excretion, which includes the elimination of unchanged drug and/or active or toxic metabolites in the urine and/or feces. The second way is dermatological shedding of topically applied drugs during bathing. The third route is through direct disposal of unused or outdated medications, either in a landfill or by individuals flushing them down the toilet or sink.

Decreasing the amount of medication that humans ingest will decrease the concentrations of drugs in water resulting from excretion. Pharmacists can intervene by discouraging wasteful prescribing practices such as minimizing therapeutic duplications, streamlining pharmacotherapy, limiting extended quantities, and reducing the number of medications used to treat drug-related adverse effects. Nonadherence leads to excess medications in the home and affects the health of the patient. Frequent dosing or medication changes also contribute to the accumulation of medications in the home. Another factor is patient death; family members are left with a decision regarding their loved one's unused prescription medications. The direct disposal issue can be addressed primarily by educating patients and health professionals on the proper disposal of medications. By decreasing the availability of unwanted medications, pharmacists can help reduce poisonings in preschool children, overdoses in adolescents and adults, and product confusion in the elderly and individuals with low health literacy. Additionally, by counseling on proper disposal of medications, pharmacists can help decrease the quantity of pharmaceuticals that reach the groundwater and waterways.

The Office of National Drug Control Policy (ONDCP) has federal guidelines that recommend proper methods for disposal of unused or unwanted medications. The guidelines state, "Do not flush prescription drugs down the toilet or drain unless the label or accompanying patient information specifically instructs you to do so." ONDCP also recommends taking advantage of community drug take-back programs, if available. It also has guidelines on disposing of medications if a take-back program is not present in the community. The American Pharmacists Association has partnered with the U.S. Fish & Wildlife Service and Pharmaceutical Research and Manufacturers of America to develop drug disposal information for patients. The SMART Disposal website can be accessed at www.smartdisposal.net.

Other countries have been on the forefront of the drug disposal issue. The United Kingdom has a service that provides proper removal of unused medications from community pharmacies via the DOOP (disposal of old pharmaceuticals) scheme, which destroyed more than 580 tons of unused medications in England in 2004. Further, a U.K. study investigating the potential for unused medication reuse concluded that "approximately one-quarter of returned medicines is in a condition potentially suitable for re-use" and recommended that U.K. authorities reassess the issue. Canada is another country that is mindful of the importance of proper medication disposal. For example, Lions Gate Hospital in
north Vancouver accepted unused drugs from patients and physicians during a 2-day period in November 2001. A total of 47 kg of medications were collected, the majority of which were physician samples. Many of Canada’s provinces already have take-back programs, through which patients can bring unused medications to community pharmacies for proper disposal. In British Columbia, the collection of medications from patients falls under the Post-Consumer Residuals Stewardship Program Regulation, which is funded by pharmaceutical companies. The United States is making headway, however, with some states having record numbers of unused medications being turned over for proper disposal in the previous year. For example, Utah, a state with 37 police station collection bins, had one drop box that collected a record 738 lb in 2009. Figure 1 shows states that currently have a take-back program in one or more communities.

In addition to medication disposal, proper disposal of mercury, particularly that present in mercury thermometers, is important. Exposure to mercury is toxic to both the central nervous system and the kidneys. It readily vaporizes at room temperature and enters systemic circulation through inhalation. This can pose a health risk resulting from the continued use of mercury thermometers in many households. These glass thermometers have the potential to break and aerosolize their contents, which can easily affect anyone who comes in contact with the vapor. Signs of toxicity progress from paresthesias and weakness, to coma, and eventually to death. Therefore, disposing of mercury thermometers and switching to digital thermometers to decrease the chance of an accidental exposure is important. Pharmacists should educate patients on proper disposal of mercury thermometers when they purchase digital thermometers from the pharmacy. Although Knox County (Tennessee) had a thermometer exchange program in place before student pharmacists became involved, we have been able to help with establishing a program that offers proper disposal of both mercury thermometers and medications. The current work only focuses on disposal of medications that have been in the possession of patients, drugs can find their way into the environment via other pathways. This take-back program does not address the medication disposal issues associated with long-term care facilities, hospitals, and private practice.

**Objectives**

The objectives of the take-back program were to decrease the amount of pharmaceuticals present in our community’s water supply, reduce the accidental and intentional ingestion of pharmaceuticals, and increase awareness of proper medication disposal.

**Program approach and process**

**Collaboration**

In response to concerns about drugs in water systems and proper disposal of medications, American Pharmacists Association (APhA) Academy of Student Pharmacists (ASP) leaders from the University of Tennessee College of Pharma-

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**Figure 1.** States that currently have medication disposal programs in one or more communities. Source: www.teleosis.org/gpp-national.php.
cy in Knoxville, TN, connected with public officials and began the process of educating the public about proper medication disposal. The APhA-ASP Executive Vice President and Vice President of Patient Care partnered with public officials to develop a program that would be law abiding and environmentally friendly. After extensive research and discussions at the health department, the event planning ensued.

When planning the first event, meeting with public officials and other key players to clarify organizational responsibilities was essential. To comply with Drug Enforcement Administration (DEA) regulations, the participation of the police department was necessary. Other fundamental contributors included the city solid waste project manager, the state environmental coordinator, the county recycling coordinator, an environmental epidemiologist, and the health department’s director of pharmacy. Participation of the U.S. Attorney’s office before the event helped the Knoxville Police Department and other organizers feel confident that the event was being handled in a proper and legal manner. Student pharmacist volunteers played many roles in the event planning and process, including designing and distributing flyers and assisting with thermometer and medication collection.

Advertising
Advertising was critical to the success of the medication collection events. The pharmacy team leaders created a flyer for each event. Our partners printed the flyers, and student pharmacists distributed them at local pharmacies and posted them around the community. The events were also publicized via newspaper advertising, local television news and radio spots, and website articles. Advertising spots were donated by local media outlets. Event planners continued to enhance the advertisements in an effort to reach different populations of our diverse community.

Implementation
The first medication collection event was held in November 2008, with a “drive-through” arrangement in a large discount store parking lot. Student pharmacist volunteers wore orange vests for safety and approached vehicles as they pulled up to the tent. A total of 22 student pharmacists exchanged mercury thermometers with new digital ones, assisted with medication collection, and surveyed attendees. After law enforcement officers collected the unwanted drug substances from patients, the materials were sorted. Plastic drug bottles, lids, and paper packaging were recycled, and sharps were placed in appropriate containers. During this event, 105 mercury thermometers, 93 lb of medications, and 42 lb of recyclables were collected. The assistance received from the many organizations and businesses was greatly appreciated and crucial to the success of the first medication collection event.

The second medication collection event was held in April 2009 at an environmentally friendly food market. Tables and tents were set up in front of the building so that people could drop off medications. A total of 13 student pharmacist volunteers served at the event. Several students were stationed at the medication buckets, where they emptied contents and recycled bottles. An appropriate container was available for disposing of sharps-related materials. Student pharmacists exchanged mercury thermometers and surveyed participants. An estimated 100 to 150 people from the community attended the event. A total of 75 thermometers were exchanged, 250 lb of unused or expired medications were collected, and 112 lb of recyclables were sorted. The second event was extremely successful, as we more than doubled the amount of medications collected from the first event. The setup of the second medication event was superior to the first.
therefore, successive events were modeled after the tent and table arrangement at the environmentally friendly food market. The results from subsequent events are displayed in Figure 2. The city government provided the funds necessary for event implementation, and the estimated budget was around $4,500 for each event.

To serve those who were unable to attend events, a permanent post office–style drop box with 24-hour access was installed in the Police Safety Building foyer in downtown Knoxville. Installing a drop box is an important addition to any medication disposal program. A permanent location allows convenient access to medication disposal. A police official empties the drop box approximately every month, depending on use. In 2009, from April to November, the total amount of medications emptied from the drop box totaled 170.8 lb (Figure 2). The program hopes to further expand this service by placing drop boxes in various locations throughout the community.

Reflections
Postevent meetings were held to evaluate and reflect on each event. The event organizers discussed how to continuously improve future events to reach as many community residents as possible. The surveys performed at each event were used to evaluate the outcomes of our efforts. Participants were asked whether they brought medications, thermometers, or both; how they heard about the event; whether they thought the location was good and, if not, where would they like to see an event; whether they would go to another event; and their ZIP Code. The survey was optional, but most people volunteered answers. Information collected from the surveys has helped to plan for future medication collections. The results from the question, “How did you hear about this event?,” are shown in Figure 3. Some limitations of the events’ surveys included a lack of data describing the type of medications collected and demographics of the population dropping off medications.

The college of pharmacy supported the students who were involved in developing and implementing this new, innovative program that went beyond patient care. The medication disposal program brought awareness of environmental issues to the college, students, and faculty. Our involvement in the program encouraged other student pharmacists to be involved in environmental stewardship; as a result, the Knoxville student leaders started addressing recycling issues on our college campus. Additionally, by educating future pharmacists about proper medication disposal, we hope to inform the broader group of patients entrusted to our care.

Limitations
Certain laws and regulations limit the widespread implementation of this program. In many states, including Tennessee, the “take back” of controlled substances is prohibited. To comply with regulations and facilitate the acceptance of controlled substances, a law enforcement official must be the receiver of controls and drop boxes should be located in a public governmental facility. Another challenge is ease of access to the community. People without a suitable means of transportation may be unable to use proper disposal facilities, even if they do exist in their area. Ideally, through changes in regulations, the most easily accessible health care provider, the pharmacist, would be able to take back unwanted medications for disposal. The Environmental Protection Agency (EPA) recently (December 2, 2008) proposed an amendment to the Universal Waste Rule: Addition of Pharmaceuticals (40 CFR Part 260, 261, 264, et al.)13 It proposes adding pharmaceutical waste to the universal waste system, and under the household hazardous waste exclusion in 40 CFR 261.4(b)(1), hazardous wastes generated by households are not subject to the hazardous waste regulations. EPA also states that it supports the development of community take-back programs that comply with DEA regulations and the Controlled Substances Act.13 This amendment would help simplify pharmaceutical waste disposal and provide streamlined standards for those involved with pharmaceutical waste.

Toolkit for success
The involvement of pharmacists, student pharmacists, and pharmacy organizations is critical to the success of medication collection programs. A study by Seehusen and Edwards14 found that previously counseled patients were more likely to return unused or expired medications to a pharmacy or provider. Collaboration with city and county officials is critical to the successful implementation of a take-back program. This requires initiative, effective communication, and follow-through with everyone involved. One organization cannot take credit for the take-back program because each party involved has a distinct function. In addition to the organizations previously mentioned, the community also plays a vital role. Without their participation and desire to better the environment, take-back programs cannot be successful.

Many resources are available for communities wanting to develop a take-back program. For instance, the Illinois–Indiana Sea Grant has published a thorough and informative resource for communities wanting more information on medication disposal titled Disposal of Unwanted Medicines: A Resource for Action in Your Community (www.iisgcp.org/unwantedmeds/index.html). Additionally, the Teleosis Institute (www.teleosis.org) provides educational programs, tools, and resources to aid health professionals in implementing environmentally sound strategies and has created a new model of care called Green Health Care.

Conclusion
An environmentally friendly mechanism for safe medication disposal can help decrease pharmaceuticals in the water supply. Through patient and community education, we increased understanding of the consequences of accumulating unused medications and improper disposal. We hope to have prevented inadvertent or intentional inappropriate use of medication by reducing the amount of unused medications in the home. By collaborating with city, county, and state offi-
cially, we demonstrated that students pharmacists’ contributions are valuable to civic endeavors. In addition, the involvement of pharmacists and student pharmacists in the community increases public awareness of the profession’s role as patient care providers. Promoting appropriate practices in accordance with the law is our job as health professionals. As pharmacists, we know that the use of pharmaceuticals creates an effect, beneficial and/or adverse; we must also realize that we can and have the responsibility to influence the ecological, social, and economical consequences of medication use. The impact of this program on the community is substantial. Properly disposing of unwanted medications keeps the substances out of the water supply and out of the possession of children and people who should not have them, thereby improving public health and public safety.

References