

INSTRUCTIONAL DESIGN AND ASSESSMENT

Service-Learning at a Camp for Children With Asthma as Part of an Advanced Pharmacy Practice Experience

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Objectives. To describe a service-learning opportunity within an advanced pharmacy practice experience and report satisfaction survey results from 2001 through present.

Design. Pharmacy students volunteered to attend asthma camp during an ambulatory care rotation. Students administered and monitored medications and coordinated educational activities for campers. Students set goals for the week and completed reflective journals about the experience. A survey was administered 1 week and 6 months after the experience to assess satisfaction, changes in attitudes toward children with chronic asthma, and empathy towards patients.

Assessment. Most students accomplished their goals and were satisfied with the experience. Approximately 40% of students believed the experience changed their attitudes. Students agreed that volunteering at camp increased feelings of empathy towards patients with asthma.

Conclusion. Students were satisfied with the camp and perceived that the combination of service-learning and clinical rotations enhanced their professional development.

Keywords: service-learning, advanced pharmacy practice experience, asthma, camp, pediatric

INTRODUCTION

There are many definitions of service-learning (S-L), with its growing application in higher education. Jacoby defines S-L as "a form of experiential education in which students engage in activities that address human and community needs together with structured opportunities intentionally designed to promote student learning and development. Reflection and reciprocity are key concepts of service-learning."¹ The American Association of Colleges of Pharmacy Professional Affairs Committee established a definition of S-L applicable to pharmacy education which includes that it "helps foster civic responsibility or the development of a sense of caring for others" and "enhances what is taught in school by extending student learning beyond the classroom and into the community."² In order for S-L to be most effective, the project must include preparation, service, reflection, and conclusion. Weigert recognizes the 6 key components that make up S-L as being performance of some task, achieving a real need or goal with the task, connection of the need or goal with course objectives, integration into the course via assignments that include reflection, and assessment and evaluation of the task as an integral part of the course.³ By incorporating these components and

skills, the student is better able to develop an understanding of the patient and facilitate the provision of patient-centered pharmaceutical care. S-L combines service and academic activities and addresses community needs while promoting learning and professional development.

When offered as a part of the advanced pharmacy practice experience (APPE), S-L can allow students to offer high-level pharmaceutical care services to a population in need. Our objective is to describe an S-L opportunity at a camp for children with asthma as part of an ambulatory care advanced pharmacy practice experience in the fourth professional year (P4) of the doctor of pharmacy program.

DESIGN

Camp Chest Nut

Camp Chest Nut (CCN) is sponsored by the American Lung Association of Massachusetts, Inc. It offers children with asthma, who otherwise may not have been able to go to camp, the opportunity to attend a weeklong overnight camp and enjoy traditional camp activities. Often, children with chronic conditions such as asthma or food allergies are precluded from attending typical overnight summer camps due to their need for medical attention and the camps' inability to adequately ensure the safety of the child.

Camp Chest Nut is held each summer at a local camp and conference center. The camp provides facilities, staff counselors for each cabin, and an infirmary staffed by a

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registered nurse (RN). The camp RN is responsible for assisting with medications on an as needed basis and with minor medical needs. The respiratory and pharmacy directors and a volunteer medical staff of respiratory therapists (RT), pharmacists, RT students, and pharmacy students attend to the day-to-day respiratory and medical needs of the campers.

The typical camper has complex medical needs and the relationship between the camp and the pharmacy school provides an ideal context for students to experience S-L while at the same time providing the camp with a large group of highly trained volunteer medical staff. Campers are 8-12 years old and are selected from urban Massachusetts areas. It is the policy of the camp to select campers with moderate to severe asthma or those who have missed school due to asthma or have had recent emergency department visits. On average, 60 to 100 campers attend each year.

Each camper is expected to bring a complete supply of all prescribed and nonprescription medications for asthma and any other chronic medical condition. These medications are administered by the volunteer medical staff and when not in use, locked and stored by the medical volunteers in compliance with state laws. The medical staff volunteers are also responsible for monitoring the campers' peak flow readings, respiratory symptoms, and response to medications. All student volunteers work under the close supervision of licensed faculty preceptors while at camp.

Campers live in cabins (4-8 campers per cabin) with one camp staff member and one medical volunteer present at all times. The medical volunteers rotate duties so that each person may have the experience of sleeping in the cabin and responding to medical needs throughout the night. The cabins remain together over the course of the week, participating in camp activities and completing teambuilding exercises.

Student Responsibilities

P4 students who are interested in volunteering at Camp Chest Nut are invited to apply 3 months prior to the APPE selection process. Up to 12 students are selected by the ambulatory care faculty members who attend camp and serve as preceptors for the students during the week. To apply, students are asked to respond to 4 questions: why they should be selected to attend Camp Chest Nut, how they would handle a clinical situation involving a child with worsening acute asthma, whether they would be able to administer and document campers' medications, and how they would approach a given scenario involving a child who was homesick, disruptive, or disrespectful.

Faculty members are blinded to the identity of the applicant until the end of the selection process. Once selected, the students are enrolled in an ambulatory care APPE with faculty members who will either attend camp themselves or integrate the camp activities within the APPE.

Since the start of our partnership with CCN, pharmacy students have been required to develop a program of asthma education for the campers. The asthma education programs that the students developed were to be age appropriate and integrated into normal camp activities. These programs are intended to integrate key principles of asthma self-management into games or activities that are fun, easy to play, and familiar to the campers. Often, these activities are played within the framework of other popular games. Types of asthma education programs are listed in Table 1 with example materials provided in Appendices 1 and 2.

In addition to providing basic medical care, the students also serve as important role models for the campers. The pharmacy students are expected to spend half the nights at camp in the cabins with the campers. During the day, the pharmacy students actively participate with the campers during activities such as a ropes course and water games. In the middle of the day, the campers have a quiet time, known as "siesta," during which they can do arts and crafts, write letters to their families, or lay down and rest. Some of the pharmacy students bring crafts and quiet activities for the campers to use during this time.

In 2003, changes were made to make CCN a true S-L experience for the pharmacy students by incorporating goal setting and reflective exercises into the curriculum. Prior to coming to camp, students were required to develop goals to be met by the completion of the camp experience and to attend 2 meetings to review the management of pediatric asthma and orient the students with camp policies. Students were also asked to keep a reflective journal throughout the week. These journals contained structured responses to questions designed to help students reflect on their camp goals and experiences. Details about the journal assignment, including questions and format are included in Table 2. These daily entries were designed to be completed in less than 15 minutes. In 2004, students were required to answer only 1 repeater question each day to reduce the time required to complete the reflection. For all years, the exercise was required for successful completion of the APPE.

ASSESSMENT

Demographics

To date, 44 pharmacy students have attended camp (25% male). In 2002, 22 (36%) fourth-year students applied to attend camp. In 2003 and 2004, 19 (22%) and

Table 1. Asthma Education Games

	Description
LUNGO	Similar to BINGO, campers use a card printed with asthma key words (eg, names of medications, triggers, elements of asthma pathophysiology) to keep track of the key words that are called out. The first camper to cover the target pattern (eg, five-in-a-row) is the winner.
Asthmagories	Similar to the board game "Scattergories" by Milton Bradley, campers are timed as they try to write down the most asthma-related words that all start with the selected letter.
I Spy	Campers tour a cabin that contains dozens of imitation asthma triggers. The object of the game is to locate all of the triggers in the room.
Wheeze Tag	This game is a modification of Freeze Tag, where one or more campers is "it" and tags members of the opposite team. When a camper is tagged, they are "frozen" and must answer an asthma related question correctly before they can be "un-frozen" by a fellow teammate. Each of the question cards has an associated point value. The points from all cards answered correctly go to the opposing team and the team with the lowest point total wins the game.
Activity Cards (See Also Appendix 1)	Prior to any camp activity (eg, swimming, nature walk, ropes course, arts and crafts, archery, etc) the medical volunteer uses the activity card to start a conversation with their cabin about the effect of that particular activity on asthma and actions the camper may take to prevent or reduce these effects.
Scavenger Hunt (See Also Appendix 2)	5 by 8 inch cards representing asthma triggers are hidden throughout the camp. Each cabin has a separate color card and must find all of their color triggers. Once all the triggers are found the cabin sits as a group and answers the discussion questions.
"Weakest Link" Game	This game is based on the popular television show produced by "Weakest Link" productions in association with Gurin Company BBC Worldwide NBC Studios. Teams of 2 campers compete against each other to correctly answer questions about asthma in order to win the "bank" of bubble gum. After each round, one team is removed until only the winning team remains.

Table 2. Reflective Journal Format and Questions

Daily Questions	<ul style="list-style-type: none"> ● Sunday: Reflect on today's afternoon session. Please comment on your feelings, ability, and the experience of organizing both campers and yourself in preparation for the week. ● Monday: Reflect on one thing you have experienced or learned about yourself as a professional since yesterday. ● Tuesday: What has been the most rewarding activity or event that you have experienced at camp thus far and why? ● Wednesday: How would you describe your campers' attitudes and willingness to learn about their asthma during their activities? In addition, please comment on your feelings about their attitudes and willingness to learn. ● Thursday: Since administering your campers' medications and monitoring their peak flows, do you feel as if all your campers are well-controlled on their current asthma regimen? If not, what would you recommend if you were the pharmacist treating and educating this patient? Please choose only one camper. ● Friday: Reflecting back about the week, do you feel as if you met your goals and objectives, why or why not?
Repeater Questions (answered each day):	<ul style="list-style-type: none"> ● What surprised me today? ● What moved or touched me today? ● What inspired me today? ● What challenged me today?

17 (25%) students, respectively, applied to attend camp, indicating continued strong interested in the experience.

Goals

Students set many types of goals for their week at camp. Goals set in 2003 and 2004 are listed in Table 3. Most students appear to view the camp experience as an opportunity to learn more about asthma rather than about themselves. However, some students did want to be

involved professionally with campers as educators and personally as role models or mentors. Goals consistently highlight that the students want to learn about asthma, counsel campers about various aspects of asthma, and establish positive, fun relationships with campers. At the end of CCN 2003, 100% of students felt they had met their goals. At the end of CCN 2004, 80% of the students felt they had met their goals. The students that felt they did not meet all of their goals cited overstaffing of cab-

Table 3. Pharmacy Students' Goals for the Camp Chest Nut Experience

Goal	Number of Students Who Stated This Goal	
	2003 (N=10)	2004 (N=10)
Improve my own knowledge of pediatric asthma, triggers, medications and administration techniques in chronic and emergent situations	8	6
Effectively counsel children with asthma	7	6
Have fun	5	4
Be a positive role model, mentor to the campers	5	0
Learn about the impact (both psychological and physiological) of asthma on children	3	0
Actively monitor the campers' asthma and prevent acute exacerbations while at camp	2	1
Work with a team of medical professionals	2	3
Learn about the role of the pharmacist in asthma	1	0
Learn techniques to handle situations that may be difficult	1	0
Gain confidence in myself	0	2

Table 4. Pharmacy Students' Satisfaction With Reflective Journals Used in a Service-Learning Experience at a Camp for Children With Asthma

	2003	2004
I feel the daily journal helped me to reflect on my thoughts, feelings, and attitudes about my role as a health care professional in providing care and asthma education to campers.	3.5 (0.53)	3.8 (0.97)
The daily reflections helped me to recognize changes in my thoughts and attitudes that allowed me to provide a better level of care and asthma education to my campers.	3.5 (0.53)	3.4 (0.88)

(5=strongly agree to 1=strongly disagree) Mean (SD) responses based on those students who provided responses

In general, students felt that the reflections promoted a review of the day's events, but few thought they had a bearing on their roles or level of care offered.

ins and the campers' lack of cooperation or level of engagement in the learning activities as key factors.

Reflective Journals

All students completed the journal exercise and answered all questions. Their satisfaction with the experience was assessed by 2 questions with which students rated their level of agreement using a 5-point Likert scale. Satisfaction survey results for the reflective journals are in Table 4. Students in both years were either neutral towards or somewhat in agreement with the statements that the journal exercise fostered reflection and promoted recognition of changes in attitudes and values. There was greater agreement among students in 2004 with the statement that the journals were helpful in reflecting on their roles as health care providers, but stu-

dents did not agree that keeping a journal resulted in the provision of better care. Comments provided indicated that most students felt the reflective journals were beneficial. The journals encouraged the students to formally stop and reflect on the day's activities and to think about how they were affected by them. One student who attended camp in 2003 noted, "It was time consuming, but it did make me look back and remember what had taken place throughout the day – with so much going on, I'd forget half the stuff that happened." Another student from the same session commented, "The daily reflections forced me to look back on the day and remember the events that occurred. This helped because I was able to think about what happened that day and how I was able to handle it." When asked for suggestions on how to improve the journal exercise, many students stated that the assignment took too much time to complete, and some students found it hard to reflect on meaningful topics toward the end of the week. This feedback will be taken into consideration when future journal entries are assigned.

Post-Camp Surveys

Following the experience, students were asked to complete a satisfaction survey 1 week after camp and another survey 6 months later. In each case, students were asked to respond with their level of agreement and space was provided for comments. Results of the post-camp surveys are detailed in Tables 5 and 6. Responses on satisfaction surveys showed that participating in the camp was useful as a professional learning experience about asthma, improved self-confidence, and allowed students the opportunity to positively interact with patients and a team of medical professionals. Students agreed that their interactions with the campers were ben-

Table 5. One Week Post-camp Satisfaction Survey of Pharmacy Students Who Participated in a Service-Learning Experience at a Camp for Children With Asthma

	2001	2002	2003	2004
Do you think your beliefs and attitudes have changed as a result of attending camp? % Yes	N/A	N/A	60%	78%
Survey Item	Response Mean (SD)	Response Mean (SD)	Response Mean (SD)	Response Mean (SD)
My professors prepared me for what was expected of me during camp. [†]	N/A	N/A	4.4 (0.7)	4.1 (0.93)
My educational background prepared me with the skills and information I needed to be able to properly assist campers in case of an asthma attack. [†]	3.3 (1.39)	4.7 (0.47)	4.4 (0.97)	4.4 (0.53)
After attending camp, I feel more confident to make recommendations and provide information regarding asthma to health care providers. [†]	N/A	N/A	3.9 (0.78)	4.1 (0.6)
After attending camp, I feel more empathy for patients who suffer from asthma. [†]	N/A	N/A	4.2 (1.03)	4.0 (1.22)
What is your overall rating of this volunteer experience? [†]	4.0 (1.22)	5 (0)	4.7 (0.48)	4.7 (0.5)
How beneficial was the experience to your future practice? [*]	2.0 (0.71)	3.4 (0.67)	N/A	N/A
How beneficial was the interaction with other health professionals at camp? [*]	2.2 (0.92)	3.3 (0.67)	3.3 (1.06)	3.4 (0.53)
How was your acceptance by the health professionals at camp? [*]	2.6 (1.06)	3.5 (0.69)	3.5 (0.71)	3.7 (0.5)
How beneficial was your contribution to the medical needs of the campers? [*]	3.3 (0.71)	3.9 (0.3)	3.6 (0.7)	3.7 (0.5)
How beneficial was your interaction with campers? [*]	3.0 (0.87)	3.9 (0.3)	3.9 (0.32)	3.7 (0.5)
How beneficial was providing asthma and drug information to campers? [*]	2.7 (1.0)	3.6 (0.69)	3.8 (0.42)	3.2 (0.67)
How beneficial was using your physical assessment skills? [*]	2.6 (1.13)	2.7 (1.19)	3.2 (0.53)	2.4 (0.53)
How beneficial was making recommendations on the camper evaluation form? [*]	2.4 (0.74)	2.7 (0.9)	3.0 (0.67)	3.2 (0.83)

N/A=indicates question not asked.

[†] Responses based on a Likert scale on which 5=strongly agree to 1=strongly disagree.

^{*} Responses based on a 4 item scale on which 4=very beneficial to 1=not beneficial.

eficial and reported that the camp experience resulted in greater empathy for patients with asthma, both immediately after camp and 6 months later. Students also felt that attending camp changed their beliefs and attitudes, although more students felt this was true immediately after camp than 6 months later. Six months after camp, students still agreed that they were more confident in making recommendations about asthma treatment to other health care providers and felt more empathy towards patients with asthma (see Table 6).

In their comments, many students admitted they had never really thought about the daily struggles of children with asthma. Students noted that this improved understanding of both children and asthma influenced the way they practiced pharmacy in the workplace and in subsequent APPEs. For example, one student from 2003 wrote, “After attending camp, I have found myself counseling patients with asthma to a greater extent than I did

before attending camp. I believe that there is a huge role for a pharmacist to affect the quality of life of patients with asthma.” Students also commented that the experience helped to better connect the material learned in didactic lessons to clinical practice. Though the vast majority of the comments were centered on how the experience affected the students in a professional way, some did comment on their interpersonal experiences. Students enjoyed interacting with the diverse group of campers and staff members. One student from 2001 noted that the strength of the camp was the “life experience—seeing and hearing things that were eye opening.” and felt that they were able to bond with their campers, classmates, and camp staff members. Another noted, “Overall, camp was fun, the bugs were annoying, I developed a new fear of chipmunks, but I really felt like I gave something back to my community.” When asked about weaknesses of the experiences, most students

Table 6. Pharmacy Students' Satisfaction With a Service-Learning Experience at a Camp for Children With Asthma

	2002		2003	
	6 Months Post-camp Satisfaction Survey	Change From 1 Week Post-camp Survey	6 Months Post-camp Satisfaction Survey	Change From 1 Week Post-camp Survey
My professors prepared me in advance for what was expected of me during camp.*	4.5 (0.52)	N/A	4.5 (0.53)	0.1
My educational background prepared me with the skills and information I needed to be able to properly assist campers in case of an asthma attack.*	4.5 (0.52)	-0.2	4.4 (0.74)	-0.1
After attending camp, I feel more confident to make recommendations and provide information regarding asthma to health care providers.*	4.4 (0.67)	N/A	4.4 (0.52)	0.5
After attending camp, I feel more empathy towards patients who suffer from asthma.*	4.1 (0.94)	N/A	4.3 (1.39)	0.1
Do you think your beliefs and attitudes have changed as a result of attending camp?†	42%	N/A	38%	-22

Mean (SD) based on students who provided responses

* 5=strongly agree to 1=strongly disagree

† Percent responding "yes" to the question.

identified difficulties dealing with discipline and behavioral issues among the campers.

DISCUSSION

There are several published examples of S-L programs, including within schools and colleges of pharmacy either as a required component of the curriculum or as an elective course.⁴⁻¹¹ One recent publication describes an elective opportunity at a camp for children with diabetes.¹² Condren described the design and assessment of experiential learning at a pediatric diabetes camp. Students were in the fourth year of the professional pharmacy program (P4), and participated either in a week-long or 9-day long camp.¹² Before attending the camp, students completed a pre-camp curriculum which prepared them for a variety of tasks that would be necessary for the care of the campers including physical assessment, blood glucose monitoring and providing diabetes education. The curriculum also reviewed camp policies and procedures. The camp experience was either completed as an elective or within a pediatric APPE. Each student who participated had to demonstrate required competencies at the end of the experience. In their evaluations completed after the camp, students described a feeling of being knowledgeable about the condition, feeling comfortable with adjusting insulin regimens, and were willing to recommend the camp to other students. This experience provided P4 students the opportunity to develop skills related to diabetes in a way that is unique to S-L. To ensure the success of this experience, Condren noted that it is important to clarify the role of the

pharmacists and pharmacy students with other members of the camp staff.¹²

Overall, our experience has also been successful. Post-camp surveys indicate that students were generally satisfied with the experience. It helped to foster values of caring and impacted students' attitudes as well as provided an environment to improve patient counseling skills and knowledge of asthma treatment. Student comments from Camp Chest Nut and the diabetes camp were similar in tone and largely centered on the professional and clinical experience students felt they gained, especially by providing education to the campers, rather than personal insight or interpersonal relationships.

As with other elective S-L experiences, our students were a self-selected population, likely to be highly motivated and different from students who did not opt to go to camp. Also, the questions asked on the survey instrument (Tables 5 and 6) were established to improve the quality of the camp experience for all student volunteers, not only for pharmacy students.

Students' impressions of the reflective journal activity have remained consistent over the past 2 years. In 2004, the journal requirements were streamlined to avoid redundancy and shorten the time necessary to complete the requirement. All students completed the exercise, which is a key component to any S-L experience, but not all students realized the contribution this experience could make to their professional development. We did not assess how the reflective component affects students' personal development, but in coming years we plan to

further refine the journal activity to encourage insight into personal attitudes and values and how these changed as a result of camp.

Although the students have the opportunity to interact directly with the campers on a personal level, the impact of this activity has not been assessed. A number of students have mentioned after their asthma camp experience that they enjoyed the free time spent with the campers, and were able to develop a relationship as an “unofficial” big brother or big sister. The students commented that they enjoyed how the campers seemed to appreciate their participation in the various camp activities and special arts and crafts that a few of the pharmacy students brought for their campers. In the future, it would be interesting to formally assess how this interaction may help the students grow on a personal level.

Key factors needed to ensure the success of this type of experience include preparing the students for what to expect while at camp, providing time to meet and interact with other medical professionals prior to the campers arriving, incorporating activities for students to utilize pharmacy knowledge and physical assessment skills and for students to recommend changes to therapies based on the patient’s response while at camp. In the CCN model, all camp staff members arrive the day before the campers. This time is used to orient all staff to camp policies and documentation requirements and to get to know one another. In our experience, in the year when this opportunity was not possible, there was more friction among the pharmacy students, medical staff members, and camp staff members, and the roles and responsibilities of each were less defined.

Offering this type of S-L experience as an elective opportunity rather than a requirement is important, given the effort and dedication required to care for children around the clock for several days in a row.¹² We have some experience with both systems. In 2001, the students who were already assigned to ambulatory care rotations with CCN faculty members were strongly encouraged to attend the camp, and all agreed to participate. In subsequent years, students who were interested in participating in the camp had to apply to do so, and were then selected and placed on appropriate ambulatory care rotations. In our experience, the latter model resulted in participants who were more dedicated to the idea of attending camp and providing a high level of care, and therefore more satisfied with the experience. This is reflected in responses to questions on the satisfaction survey (Table 5) as more students in subsequent years agreed or strongly agreed with positive statements about the camp and the experience than did in 2001.

Students generally felt that they met the goals they established prior to coming to camp. In 2004, there was an excess of medical staff members due to low camper enrollment and pharmacy students were less likely to observe key patient care situations (eg, acute exacerbation of asthma). While some viewed the lower camper-to-staff ratios as positive, some students felt they did not meet the goals they established for the experience. It appears that the more direct responsibility the students have for the campers’ medical needs, the better they feel the experience is.

With the trend toward increasing S-L courses in the PharmD program, it is important to consider not only the students’ perceptions, but also faculty members’ understanding and perceptions of this learning technique. In 1997, Murawski et al surveyed 78 institutions and of the 41 schools that submitted usable responses, 42% said their institution had an S-L program in place.⁵ The survey found that there were barriers to initiating such a program, such as the time commitment of the faculty members and students’ acceptance of S-L. However, the survey did show that after the students participated in such an activity, they enjoyed it and were able to develop their skills with a better understanding of their patients. Although the survey was completed by a representative of each institution and may not represent the beliefs of each school, Murawski concluded that S-L seems to be both a beneficial and functional method of pharmacy education, and should be considered in all pharmacy institutions.⁵

Another study, conducted by Peters and MacKinnon in 2003, sought to determine the number of pharmacy programs with S-L experiences and to identify in which professional year the programs were offered.⁹ Surveys were sent to the 82 institutions recognized in the American Association of Colleges of Pharmacy Roster of Colleges of Pharmacy. Twenty-eight of the 38 colleges that responded provided either voluntary or required S-L opportunities. Fifty-four percent of the S-L opportunities were required for completion of the program. Most of the programs were incorporated into the P1 year, but approximately 25% of the institutions responding reported offering an S-L program in the P4 year. Seventy-five percent included a reflective component in their S-L program.⁹ In our program, we continue to have more students apply than we can accommodate and the experience requires significant faculty resources. At least 2 licensed preceptors must be at camp at all times, including overnight. It has been helpful to have at least 2 faculty members or licensed pharmacists involved with CCN each year in order to accommodate changes in schedules and to ensure

availability for precepting while at camp. Five faculty members have been involved throughout the 4 years our school has participated in CCN.

CONCLUSIONS

Attending Camp Chest Nut during the APPE allowed students to experience S-L. Students rated the experience as positive and beneficial to their future practice. Responses on a questionnaire completed 1 week after attending the camp indicated that the majority of students felt more confident to make asthma-related patient care recommendations and greater empathy for patients with asthma. The inclusion of goal setting and journaling provided students with opportunities for reflecting on daily events at CCN. These activities will be refined in future years. This study demonstrates that S-L is a viable way of helping pharmacy students develop empathy, communication skills, and an appreciation of community service that extends beyond didactic lessons.

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REFERENCES

1. Jacoby B. Service-learning in today's higher education. In: Jacoby B and Associates, eds. *Service-learning in higher education*. San Francisco, Calif: Jossey-Bass Publishers;1996:5.
2. Final Report 2000-2001 Professional Affairs Committee. American Association of Colleges of Pharmacy. Available at: http://www.aacp.org/Docs/AACPFunctions/Structure/4558_PACReportfinal2001.pdf. Accessed December 14, 2004.
3. Weigert KM. Academic service learning: its meaning and relevance. In: Rhoads RA, Howard JPF, eds. *Academic service learning: a pedagogy of action and reflection*. San Francisco: Jossey-Bass;1998: 3-10.
4. Lamsam GD. Development of a service-learning program. *Am J Pharm Educ*. 1999;63:41-5.
5. Murawski MM, Muraski D, Wilson M. Service-learning and pharmaceutical education: an exploratory survey. *Am J Pharm Educ*. 1999;63:160-4.
6. Piper B, DeYoung M, Lamsam GD. Student perceptions of a service-learning experience. *Am J Pharm Educ*. 2000;64:159-65.
7. Barner JC. Implementing service-learning in the pharmacy curriculum. *Am J Pharm Educ*. 2000;64:260-5.
8. Schumann W, Moxley DP, Vanderwill W. Integrating service and reflection in the professional development of pharmacy students. *Am J Pharm Educ*. 2004;68:Article 45.
9. Peters SJ, MacKinnon GE. Introductory practice and service learning experiences in US pharmacy curricula. *Am J Pharm Educ*. 2004;68:Article 27.
10. Nemire RE, Margulis L, Frenzel-Shepherd E. Prescription for a healthy service-learning course: A focus on the partnership. *Am J Pharm Educ*. 2004;68:Article 28.
11. Jarvis C, James VL, Giles J, Turner CJ. Nutrition and nurturing: A service-learning nutrition pharmacy course. *Am J Pharm Educ*. 2004;68:Article 43.
12. Condren M. Diabetes camp as an experiential clerkship site. *Am J Pharm Educ*. 2003;67:Article 119.

Appendix 1. Sample activity cards for pharmacy students participating in a service-learning experience at a camp for children with asthma.

Challenge Course

1. Pre-activity question: What are your own expectations for this activity? Make sure campers have an appropriate goal to reach for.
2. Warm-up exercises: Stretch all muscle groups: Arms and legs; Wrists and ankles; Neck and back.
3. How does asthma relate to this activity? Challenge courses sometimes bring about anxiety. Anxiety is an asthma trigger. Make sure campers are comfortable with the challenge, encourage yet do not discourage them.
4. What triggers may you experience? Anxiety, stress, grass, wooded area, dust, dirt, heat, humidity, bees.
5. Symptoms? Heavy or difficult breathing; Racing heartbeat; Minor/profuse sweating.
6. Prevention? Encouragement and letting campers know their max capabilities (ie, it is great just to make an effort and/or attempt).
7. Steps to take if attack occurs? Calm the camper; Assess the situation; Provide medication(s) if required.
8. Post Activity Question: What team building skill(s) has this activity taught you in regards to having an asthma attack or exacerbation? Want the campers to understand that a person experiencing an asthma attack benefits when assistance is given in a calming and relaxing manner. Try to work as a team to overcome the attack.

Swimming and Sailing

1. Pre-Activity Question: What can you do before swimming or sailing that will help to prevent an asthma attack?
2. How does asthma relate to this activity? Exercise is one of the common causes of an asthma exacerbation; however, swimming is actually the least provoking. Swimming and sailing can involve activities that could easily precipitate an asthma attack, such as the use of shoulder muscles. They also increase endurance and tolerance for exercise and help to improve breathing techniques.
3. Triggers: fear of water, holding breath, cold water/ temperature, swallowing water, overexertion.
4. Symptoms: Coughing; Wheezing; Shortness of breath; Difficulty breathing and tightness of chest.
5. Prevention: To prevent an exacerbation prior to the activity, a bronchodilator, such as albuterol, could be used before the exercise. A light warm-up and stretching routine should be done before and after physical activity.
If an attack occurs remain calm, get the child out of the water, stop and rest, dry off or warm up, take necessary medications, focus on deep and controlled breaths. Get help. Tell your RT, RPh, RN or provider.

Appendix 2. Sample scavenger hunt discussion questions for pharmacy students participating in a service-learning experience at a camp for children with asthma.

Furry Pets

Kesha's science team wants to learn about caring for animals as part of a science project. Furry pets are one of Kesha's asthma triggers. If she doesn't do this project Kesha will not get a good grade. What should she do?

Exercise

Jake wants to try out for the basketball team at school. He has played at the park before and is pretty good. He has never had an asthma episode after playing, but his mother is worried that playing for the team will be too much. What should Jake tell his mom to convince her that he can manage his asthma if he makes the team?

Cigarette Smoke

Daniella has asthma. Smoke is one of Daniella's asthma triggers, but her mom still smokes in her house. What can Daniella suggest to her mom to help her breathe easier?

Allergies/Pollen

Cristina's class is taking a nature walk for a class field trip. Her allergies have been bothering her a lot lately and she is nervous about spending a whole day outside. What could Cristina do to make sure her asthma stays under control?