

Pharmaceutical Care in Rural Community Pharmacy Clerkships: Emphasis on Developing Computer Skills to Enhance Patient Education¹

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Two pharmacy computer training laboratories were developed at opposite ends of Nebraska to facilitate student acquisition of computer skills focusing on patient education prior to rural clerkships at Nebraska Drug Information Network sites. The labs were equipped with IBM-compatible multimedia computers housing 20 patient education and nine professional software programs. Students (n=28) completed a two-day laboratory evaluating these products. Integration of these tools with pharmaceutical care activities was discussed. Student experiences with software databases were assessed prior to the laboratory and their use of the computer in delivering education was evaluated during the following one-month clerkship at Network sites. Most (96 percent) of students (n=25) had experience with IBM compatible computers predominantly in word processing (88 percent), graphics (62 percent) and spreadsheets (54 percent). The majority had previously used Identidex (88 percent), Poisindex (85 percent) and Drugdex (81 percent), however few were familiar with patient education programs (Aftercare: 31 percent, Home Medical Advisor Pro: 16 percent and DynaPulse: 15 percent). Of the 5,109 student-patient interactions during the ensuing month, drug and health information were provided in 2,752 (54 percent) of the interactions. Computer-assisted education occurred in 464 (17 percent) of these encounters. In nearly half of the cases (n=2,357; 46 percent) the student was involved only in the dispensing of the product. Given how critical patient education and pharmaceutical care are to the future of pharmacy, it is important that students have exposure to these products that should be the mainstay of their future practice. This validates the need for the computer training laboratories. Additionally, patient counseling in their clerkship experience is in need of enhancement and should occupy a greater percentage of student clerkship activities.

INTRODUCTION

The future of pharmacy rests upon successful implementation of pharmaceutical care principles. Chief among these are effective patient education. Efficient use of patient-oriented computer databases as well as professional software will facilitate the pharmacy practitioner's ability to provide accurate information in an efficient manner. In fact, the use of computers in patient education in community pharmacies has been identified as a "mechanical Help" key to community pharmacy's continued viability(1). As such, multimedia patient education materials are increasingly recognized as an efficient mode of obtaining and applying drug information and health care education(2-5). These efforts are in keeping with the health care agenda to be implemented by the year 2000 where patients will receive quality health care and health care education regardless of their geographic setting(6). Computer-based patient education programs are integral in delivering information technology whether the patient is located in an urban or remote rural setting. Pharmacy students need to be proficient in use of computer-assisted patient education programs. While software exists to assist pharmacy students in monitoring and documenting patient outcomes, no programs address student education in computer-assisted patient education(7).

The University of Nebraska Medical Center (UNMC) has initiated outreach programs to meet the health care and

health information needs of its rural constituents. UNMC developed the Rural Health Education Network (RHEN) five years ago as an interdisciplinary coalition of health care professionals and educators linking with rural communities to develop health education partnerships and foster development of future rural health care professionals. In furtherance of this mission, the College of Pharmacy (COP) developed a curriculum to attract and train rural students (senior year training can be exclusively in rural sites) and has developed a pharmaceutical care skills training program for our rural preceptors. Additionally, the Nebraska Drug Information Network began in 1993. Thirty drug/health information centers were developed at rural community pharmacies which serve as preceptor sites for pharmacy students. Each site is provided a 486 computer which provides a multimedia information service for both the pharmacist and the patient. Each site computer is connected to the Medical Center through a telecommunications program which allows access to various technical databases including (but not limited to) Medline™ and Micromedex™. Provided patient education materials are also provided at each site (Table I). In this setting, pharmacy students receive training to further drug information and health care education for rural patients.

OBJECTIVES

The overall purpose of this project was to develop an educational program that will prepare pharmacy students to be productive conveyors of pharmaceutical care in the rural

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Table I. Software evaluated in computer laboratory

Software program	Brief overview	Vendor	Telephone
AfterCare Instruction*	disease state and drug information	Micromedex	800-525-9083
Bodyworks*	anatomical guide to human body	PC Connection	603-446-7791
Complete Guide to Prescription and Nonprescription Drugs	package-insert type information	Healthsoft	800-795-HEALTH
Consentwriter	general disease state information	Information Medical Systems, Inc.	800-326-7833
Diet Balancer	nutritional information designed to assist in diet management	Nutridata Software Corporation	800-922-2988
DynaPulse*	automated blood pressure monitoring with graphic displays	PulseMetric	800-927-8573
Family Doctor	general health and disease information	Creative Multimedia	503-241-4351
HealthDesk	health maintenance and management	HealthDesk Corp	800-578-5767
Home Medical Advisor Pro*	symptoms, diseases and procedure videos	Pixel Perfect	800-788-2099
Mayo Clinic Family Health Book*	general disease information with anatomical drawings	IVI Publishing	800-432-1332
Mayo Clinic Family Pharmacist*	drug information, patient profiles, drug TD	IVI Publishing	800-432-1332
Mayo Clinic The Total Heart	cardiovascular diseases, procedures and drug information	IVI Publishing	800-432-1332
Medical Dictionary and Family Health Guide	description of disease and health terms	HealthSoft	800-795-HEALTH
Personal Pediatrician	decision analysis based on child's symptoms	Family Care Software	800-426-8426
Personal Physician	decision analysis based on adult's symptoms	Family Care Software	800-426-8426
Pharm Assist	drug and travel information, first aid	Software Marketing	602-893-3377
Prescription Drugs for the Pharmacist	brief drug information	Quanta Press	612-379-3956
Vital Signs	health pamphlets, general health information	Texas Caviar	512-346-7887
Wellness Checkpoint*	health maintenance, surveys and guide	Info Tech	204-778-1500
Womb with a View*	pregnancy information, fetal development graphics and text	International Micro Design	916-683-2467

*Software used by the Nebraska Information Network.

community setting, especially as it relates to patient education and documentation of outcomes. The specific aims were: (i) provide a sufficient number of computer stations at both on and off sites such that each student will have the opportunity to complete the laboratory training session prior to beginning a clerkship at a rural Network community site; (ii) train community clerkship students in the knowledge and skills of health education using multimedia computer technology; and (iii) assess educational outcomes of this community clerkship program to improve student learning and provide quality evaluation of the preceptor's teaching skills. Within this construct further aims included: (i) assess the student's baseline computer skills and evaluate the extent to which they incorporated computer skills and programs learned during the laboratory experience into their one month clerkship; (ii) establish an evaluative pro-

cess and implement improvements to the laboratory and clerkship experience based on student experiences; and (iii) document the number and type of interventions the pharmacy student makes in a clerkship setting; compare computer-assisted interventions to those unaided by the computer; and (iv) disseminate project results to other colleges of pharmacy.

METHODS

Four computer systems were purchased and placed in two student computer laboratories. Three systems were located in the COP for use by students attending rural community clerkships in the eastern (10 sites) or central (15 sites) corridors of the state. One system is located offsite at an established training center for those students participating in a clerkship in the western corridor (five sites) of the state.

Computer software packages were purchased and installed on all four computer systems (see Table I). All software packages were purchased as Windows-based products. While some products (e.g., Vital Signs™) are also available in Macintosh, the reader is advised to consult with individual vendors regarding such availability.

Pre-training Assessment

Students completed a questionnaire documenting their prior computer skills and experience use of patient education materials. The students' expectations of the rotation prior to the clerkship were also delineated. (Appendix A).

Computer Laboratory Training

The laboratory goal was to familiarize the student with a wide variety of software programs including but not limited to programs afforded at the Network sites. Two exercises addressed this goal (Appendix B). Each student completed a grid indicating if each program addressed 22 attributes (e.g., multilingual, printing capabilities, drug-drug interactions, search capability) for 26 software programs (Appendix D). Students compared different programs listing advantages, limitations and cost considerations. They formulated a list of those patient education materials they believed to be worthwhile and cost-effective for a model pharmacy. A detailed rationale accompanied the plan. They were instructed to justify their selections based on financial considerations, but no budget ceiling was imposed. Furthermore, they were advised that several of the programs became available after Network selection was complete, hence they should base selections on those currently available and not merely those on the Network list (Table I). Students demonstrated competencies in using a computer blood pressure monitoring program (DynaPulse™) and computerized blood sugar monitoring (PDMPro™). Documenting and obtaining reimbursement for pharmaceutical care activities such as those facilitated through the computer were discussed in open forum. This included review of the NARD Pharmacist Care Claim Form as well as a documentation program developed by the primary investigator within Paradox™ (Borland Industries, Inc.). Students were also instructed and allowed hands-one experience with the following professional databases:

- Clinical Pharmacology
- Lexicomp's Clinical Reference Library
- Electronic Drug Reference
- Micromedex databases
- StatRef
- Traditional Chinese Medicine and Pharmacology
- The Herbalist
- Adverse Reaction Reporter
- Medline
- Clin-Sphere Facts and Comparisons

These activities were accomplished during two eight hour laboratories completed during the first two days of the rural rotation.

Community Pharmacy Clerkship

Students then entered a community pharmacy clerkship at one of the 30 Network sites. They were expected to integrate their laboratory experience with clerkship activities at the pharmacy. Each student maintained a log of how many times their patient interaction involved (Appendix C):

1. the prescription, no drug information delivered
2. drug information unaided by the computer related to a specific prescription
3. drug information aided by the computer related to a specific prescription
4. drug information unaided by the computer unrelated to a specific prescription
5. drug information aided by the computer unrelated to a specific prescription
6. general health information unaided by the computer
7. general health information aided by the computer

Post-training Assessment

At clerkship conclusion, the students completed another assessment of computer skills and a questionnaire documenting if and how their expectations were met based on a parametric Likert scale. Sample items assessed by the student included, but were not limited to, adequacy of patient contact, computer instruction and time to access the computer during the rotation (Appendix E).

Students were encouraged post-clerkship to utilize the databases in their other clinical clerkships. Hence it is hoped the student will integrate these computer resources into the routine of their professional lives as students.

RESULTS

Student Demographics

Twenty-eight senior pharmacy students averaging 27 years old (range: 24-54 years) elected this rotation entitled Rural Community Pharmacy Clerkships. The majority of the eighteen women and 10 men had previously worked in a pharmacy (n=25; 89 percent). Seventy-eight percent (n=22) had community pharmacy experience while 11 (39 percent) had hospital experience, three (11 percent) worked in a mail-order pharmacy and two (seven percent) had experience in a long-term care setting. Two students had worked in three of these settings (community, hospital and mail-order). In these settings, 26 (93 percent) had provided patient counseling.

Previous Computer Experience

Most students (n=25; 96 percent) had previous experience with IBM or IBM-compatible hardware with only nine (35 percent) students indicating previous experience with Apple computers despite the prevalence of Apple computers at the elementary and secondary school levels. While most students had experience in word processing (88 percent), graphics (62 percent) and spreadsheets (54 percent), few had experience with database entry (4;14 percent), statistical (2;7 percent) or pharmacokinetic (1; 3.5 percent) software (Table 11). In terms of professional software, the majority had previously used Identidex™ (88 percent), Poisindex™ (85 percent) and Drugdex™ (81 percent (Table II). Few, however, were familiar with patient education programs (Aftercare™; 31 percent. Home Medical Advisor Pro™; 16 percent and DynaPulse™ 15 percent). Only one (four percent) student had previous experience with HealthDesk™, Herbalist™, Mayo Clinic The Total Heart™, Medical Dictionary and Family Health Guide™ and PharmAssist™. None of the students had prior experience with Family Doctor™, Personal Pediatrician™, Personal Physician™, Vital Signs™. Complete Guide to Prescription and Nonprescription DRUGS™, Diet Balancer™ or Consentwriter for Primary Care™ (Table II).

Table II. Student computer software background

	Number of students (percent)
Software type	
Word processing	23 (88.0)
Graphics	16 (61.0)
Spreadsheets	14 (54.0)
Database entry	4 (15.0)
Statistics	2 (7.5)
Pharmacokinetics	1 (3.7)
Professional Software Program	
Medline	26 (100.0)
Identidex	23 (88.0)
Poisindex	22 (85.0)
Drugdex	22 (85.0)
Patient Education Software Program	
AfterCare	8 (31.0)
Home Medical Advisor Pro	5 (19.0)
DynaPulse	4 (15.0)
Prescription Drugs: Pharmacist Guide	3 (11.0)
Mayo Clinic Family Health Book	3 (11.0)
Mayo Clinic Family Pharmacist	3 (11.0)
Bodyworks	2 (7.5)
Wellness Checkpoint	2 (7.5)
Womb With a View	2 (7.5)
HealthDesk	1 (3.7)
Herbalist	1 (3.7)
PharmAssist	1 (3.7)
Mayo Clinic Total Heart	1 (3.7)
Medical Dictionary & Family Health Guide	1 (3.7)

Computer Laboratory Experience

Pharmacy students completed the laboratory grid (average score 87.56 percent; range 76-95 percent) and plan (average score 93.28 percent; range 81-100 percent) for their model pharmacy. The following programs were most commonly selected by the students for their envisioned pharmaceutical care centers:

DynaPulse™ (95 percent)
 Home Medical Advisor Pro™ (82 percent)
 PharmAssist™ (64 percent)
 Womb with a View™ (60 percent)
 Mayo Clinic Family Health Book™ (45 percent)
 Family Doctor™ (41 percent)
 Wellness Checkpoint™ (41 percent)
 Herbalist™ (27 percent)
 HealthDesk™ (23 percent)
 Mayo Clinic Family Pharmacist™ (23 percent)
 Complete Guide to Prescription and Nonprescription
 Drugs™ (18 percent)
 Mayo Clinic The Total Heart™ (18 percent)
 BodyWorks™ (14 percent)
 Diet Balancer™ (14 percent)
 Personal Pediatrician™ (14 percent)
 Prescription Drugs for the Pharmacist™ (4.5 percent)

The students selected a mean of six programs (range: 1-8) totalling \$855 (range \$100-1,060). DynaPulse™ was recognized as an integral part of delivering pharmaceutical care in hypertension. The video component of Home Medical

Table III. Student postclerkship assessments

Assessment criterion	Average score ^a
Expectations met	7.0
Sufficient computer time in lab	7.8
Sufficient faculty support in lab	7.0
Sufficient patient interaction in pharmacy	7.1
Sufficient computer access in pharmacy	7.9
Sufficient preceptor support in pharmacy	7.3
Sufficient time for patient counseling	7.0

^aScale 1-9.

Table IV. Student documentation of information interventions

Type of interaction	Number of encounters
Prescription dispensed, no drug information delivered	2,357
Drug information delivered unaided by computer: related to a specific prescription	1,749
Drug information delivered aided by computer; related to a specific prescription	392
Drug information delivered unaided by computer; unrelated to a specific prescription	216
Drug information delivered aided by computer; unrelated to a specific prescription	66
General health information provided unaided by computer	258
General health information provided aided by computer	61

Advisor™ was well-received. The value of disease prevention and wellness promotion was acknowledged in use of Wellness Checkpoint™ in 41 percent of cases. Students indicated that two days was sufficient time in the computer laboratories and they had sufficient faculty support (average: 7 on a 9-point Likert scale) (Table III).

Clerkship Experience

Of the 5,109 student-patient interactions documented during the ensuing month, drug and health information were provided in 2,752 (54 percent) of the interactions (Table IV). Computer-assisted education occurred in 464 (17 percent) of these encounters. In 282 instances, drug information was delivered unrelated to a specific prescription. It is unknown to what extent this represents information delivered for prescriptions obtained elsewhere (e.g., mail order pharmacies). The pharmacist as a source of general health information was documented in 319 cases. In nearly half of cases (n=2,357; 46 percent) the student was involved only in the dispensing of the product.

DISCUSSION

Innovations in health care and information technology must be matched by a commitment to assess and implement their appropriate use. This is especially true for pharmacy where medical informatics and pharmacoinformatics could allow pharmacists to expand their consultation potential and improve health care quality(8). Pharmacy education models must keep pace with the needs of a technologically and infor-

mation-oriented society(9). While pharmacy educators have developed interactive courseware to help students learn problem-solving skills in the areas of calculations, therapeutics, and drug information, similar programs do not exist for integration of pharmaceutical care with drug information particularly in the area of patient education(10). This is despite the commercial availability of both professional and patient-oriented software(11). The UNMC computer training laboratories provide a bridge between available technology and pharmaceutical care in the community setting. Effective use of the materials and experience provided in the computer training laboratory allow students to develop proficiency with computer tools that will assist them in developing efficient pharmaceutical care centers. The laboratory experience allows the student initial exposure to the products. The community clerkship experience then allows the student to immediately apply their computer training.

Despite experience with IBM-compatible software, most students did not have any prior experience with patient education software databases. Given how critical patient education and pharmaceutical care are to the future of pharmacy, it is important that students have exposure to products that should be the mainstay of their future practice. The most commonly used patient education product was AfterCare™ (31 percent), a Micromedex product. This is most likely a correlate of the students use of other Micromedex products (Drugdex™; 81 percent, Poisindex™; 85 percent), hence producing a long shadow effect. While few students had prior experience with DynaPulse™ (16 percent), most (95 percent) after completing the computer training laboratory indicated they would want it for their own pharmaceutical care centers. Hence, the laboratory experience had an impact on future directions for their practice. Rather than be an elective clerkship, consideration should be given to incorporating the computer training laboratories as a required component of the curriculum at UNMC and at other colleges of pharmacy as well.

During the clerkship experience, 464 (17 percent) of the 5,109 student patient interactions involved computer-assisted education. Thus, the students had immediate opportunities to apply the knowledge gained in the computer laboratory experience. However, in 46 percent of the encounters (n=2,357) the student was involved only in drug product dispensing deferring to the preceptor pharmacist to provide patient education. While it is certainly beneficial for the pharmacy student to observe a mentor in this role, it is unlikely that 46 percent of the student's activity should be spent in observation. Care should be taken that patient counseling during experiential training occupies a significant percentage of student clerkship activities.

This project provides a model for other colleges of pharmacy to promote the needed paradigm shift to position pharmacists as pharmaceutical care providers in the community setting. It develops an experiential model integrating computer skills with patient education to facilitate the provision of pharmaceutical care. One of the possible limitations of this model is the availability of multimedia computers and software at experiential sites in other states. Most sites, however can upgrade a 486 computer to multimedia capabilities for \$250 hence the capital outlay can be minimized. Software expenditures can be tailored to fit the individual pharmacy's need; approximately \$1,000 was expended for each of the Network sites at UNMC.

In an age of information technology tempered by health

care reform, the model described in this report is timely. The project represents a method for incorporating direct patient care into pharmacy practice through the use of computer-assisted informational tools.

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APPENDIX A

RURAL COMMUNITY PHARMACY CLERKSHIP AT NEBRASKA DRUG INFORMATION NETWORK SITES

PHARMACY STUDENT BASELINE ASSESSMENT

Name: _____ Pharmacy Year: P1 P2 P3 P4 (circle)

Demographics: Date of Birth: _____ Gender _____

1. Previous computer experience? Y/N If

yes,

a. in what capacity? (check all that apply)

___ IBM

___ DOS

___ Windows

___ Apple

___ word processing (e.g., WordPerfect, Microsoft Word)

___ database entry (e.g., Paradox, dBase 4)

___ pharmacokinetics (e.g., Simkin)

___ research-oriented (e.g., RStrip, PCNONLIN, InPlot)

___ statistics (e.g., InStat, SPSS, SAS, Stata)

___ spreadsheets (e.g. Lotus 1-2-3)

___ graphics (e.g., FreeLance, Harvard Graphics, CorelDRAW)

___ other (please specify):

b. to what extent?

___ have used once

___ have used several times

___ have used extensively

2. Check which of the following computer programs you have previous experience with:

- Medline (National Library of Medicine)
 - Drugdex (Micromedex)
 - Identidex (Micromedex)
 - Poisindex (Micromedex)
 - AfterCare Instructions (Micromedex)
 - Bodyworks (PC Connection)
 - DynaPulse (PulseMetric)
 - Home Medical Advisor Pro (PixelPerfect)
 - Mayo Clinic Family Health Book (IVI Publishing)
 - Wellness Checkpoint (InfoTech Inc.)
 - Womb with a View (IMD, Inc.)
 - Adverse Reaction Reporter (Facts and Comparison, Inc.)
 - Complete Guide to Prescription and Non-prescription DRUGS (HealthSoft)
 - Consentwriter for Primary Care (IMS, Inc.)
 - Diet Balancer (Nutridata Software Corp)
 - Family Doctor (Creative Multimedia Corporation)
 - HealthDesk (HealthDesk Corp)
 - Herbalist (Hopkins Technology)
 - Mayo Clinic The Total Heart (IVI Publishing)
 - Mayo Clinic The Family Pharmacist (IVI Publishing)
 - Medical Dictionary and Family Health Guide (HealthSoft)
 - Personal Pediatrician (Family Care Software)
 - Personal Physician (Family Care Software)
 - PharmAssist (Software Marketing Corp)
 - Prescription Drugs: A Pharmacist's Guide (Quanta Press, Inc.)
 - Vital Signs (Texas Caviar, Inc.)
 - other medical databases
 - none of the above
- to what extent?
- have used once
 - have used several times
 - have used extensively

3. Have you worked in a pharmacy before? Y/N

If yes

- a. what type of pharmacy
 - Community
 - Hospital
 - mail-order
 - other (please specify):
- b. in what capacity and for how long?
 - clerk (___ months)
 - technician (___ months)
 - intern (___ months)
 - other (please specify):

4. Have you provided patient counseling before? Y/N

If yes,

- a. in what form?
 - verbal only
 - written only
 - both verbal and written
- b. in what capacity?
 - clerk
 - technician
 - intern
 - pharmacy student in class/course
 - pharmacy student outside of class
 - other (please specify):

5. What are your expectations of this clerkship? (please be specific as possible)

6. What are your concerns regarding this clerkships? (please be as specific as possible)

APPENDIX B

RURAL COMMUNITY PHARMACY CLERKSHIP AT NEBRASKA DRUG INFORMATION NETWORK SITES

PHARMACY STUDENT SOFTWARE PROGRAM EVALUATION

1. Complete the attached evaluation matrix form (Appendix C.) (___ pts; percent of clerkship grade))
2. Formulate a list of programs you would select for your own pharmacy post graduation. List advantages and limitations of the programs which influenced your selections. Include cost considerations. Your typed analysis will be graded according to:
 - clarity of presentation
 - completeness balance (mix of programs)
 - fiscal soundness
 - rationale for use of programs

Utilize the following format in your written analysis:

Name of Pharmacy (make up name of your choice):

Chief Pharmacist (you):

Rationale for use of software programs:

List of programs selected:

Rationale for program selections (i.e., advantages, limitations, etc.)

APPENDIX C.

COMMUNITY PHARMACY CLERKSHIP (non-network sites)

PHARMACY STUDENT/PATIENT INTERACTION LOG

Each day tally how many times you interacted with a patient in the categories provided below. The pharmacies will have computerized patient education drug information databases at your disposal. Not all pharmacies will have health-related computer databases; if you're at a pharmacy which does not, then you will not have any entries under #7. At the end of the clerkship, please total the number under each category and submit this form to Dr. Paul Jungnickel, Dr. Lucinda Miller or Dr. Kerri Vandel.

- # ___ 1. the prescription, no drug information delivered
- # ___ 2. drug information unaided by the computer related to a specific prescription
- # ___ 3. drug information aided by the computer related to a specific prescription
- # ___ 4. drug information unaided by the computer unrelated to a specific prescription
- # ___ 5. drug information aided by the computer unrelated to a specific prescription
- # ___ 6. general health information unaided by the computer
- # ___ 7. general health information aided by the computer

RURAL COMMUNITY PHARMACY CLERKSHIP AT NEBRASKA DRUG INFORMATION NETWORK SITES

PHARMACY STUDENT SOFTWARE PROGRAM EVALUATION

	DI	ES	DES	SX	DDI	BP	ANAT	VID	HM	DIET	PCC	AdTe	HP	SEA	QA	NUT	PROC	PHOTO	RXID	PRT	ABUSE	TRAV	
Adverse Reaction Reporter (Facts and Comparison, Inc.)																							
AfterCare Instructions (Micromedex)																							
Bodyworks (PC Connection)																							
Complete Guide to Prescription and Nonprescription DRUGS (HealthSoft)																							
Consentwriter for Primary Care (IMS, Inc.)																							
Diet Balancer (Nutridata Software Corp)																							
Drugdex (Micromedex)																							
DynaPulse (PulseMetric)																							
Family Doctor (Creative Multimedia Corp)																							
HealthDesk (HealthDesk Corp)																							
Herbalist (Hopkins Technology)																							
Home Medical Advisor Pro (PixelPerfect)																							
Identidex (Micromedex)																							
Mayo Clinic Family Health Book (IVI Publishing)																							
Mayo Clinic The Total Heart (IVI Publishing)																							
Mayo Clinic the Family Pharmacist (IVI Publishing)																							

LEGEND:

- | | |
|--|--|
| DI: drug information provided | AdTe: addresses and telephone numbers of health agencies provided |
| ES: bilingual (English/Spanish) | HP: health pamphlets provided |
| DIS: disease information provided | SEA: has search capabilities |
| SX: symptom information provided | QA: has question/answer capability |
| DDI: drug-drug interaction information provided | NUT: provides general nutrition information |
| BP: blood pressure monitoring capability | PROC: provides information on procedures (e.g., balloon angioplasty) |
| ANAT: anatomical drawings provided | PHOTO: provides actual pictures of conditions (e.g., measles) |
| VID: videos provided | RXID: provides pictures of tablets and capsules or a verbal description |
| HM: health maintenance information provided (e.g., what your risk factors are) | PRT: has printing capabilities |
| DIET: diet information provided | ABUSE: provides information on drugs of abuse |
| PCC: parenting and child care information provided | TRAV: provides travel information (e.g., vaccinations for endemic areas) |

APPENDIX E

**RURAL COMMUNITY PHARMACY CLERKSHIPS
AT NEBRASKA DRUG INFORMATION NETWORK
SITES**

**PHARMACY STUDENT POST-CLERKSHIP ASSESS-
MENT**

Name: _____ Pharmacy Year: P1 P2 P3 P4 (circle)

Demographics: Date of Birth: _____ Gender _____

Please answer the following questions regarding the clerkship on the following scale where 9 indicates you strongly agree with the statement, 1 indicates you strongly disagree with the statement and 5 reflects a neutral stance.

1. Your expectations for this clerkships were met 1 2 3 4 5 6 7 8 9

- 2. You had sufficient time with the computers in the computer lab 1 2 3 4 5 6 7 8 9
- 3. You had sufficient faculty support in the computer lab 1 2 3 4 5 6 7 8 9
- 4. You had sufficient opportunity for patient interaction at the community pharmacy 1 2 3 4 5 6 7 8 9
- 5. You had sufficient opportunity to access the computer at the community pharmacy 1 2 3 4 5 6 7 8 9
- 6. You had sufficient preceptor support at the community pharmacy 1 2 3 4 5 6 7 8 9
- 7. You had sufficient time for patient counseling at the community pharmacy 1 2 3 4 5 6 7 8 9

Comments:
