

The University of New Mexico

College of Pharmacy

PHARMACY 770

DRUG INFORMATION ADVANCED PHARMACY PRACTICE
EXPERIENCE

It is the mark of an educated mind to be able to entertain a thought without accepting it.

--ARISTOTLE

I. Goal and Objectives.

- A. Goal. The goal of drug information instruction is to prepare a student to serve as an effective provider of drug information. An effective provider perceives, assesses and evaluates drug information needs; and retrieves, evaluates, communicates and applies data from the published literature and other sources as an integral component of pharmaceutical care.

This goal is achieved through the completion of didactic and experiential courses as well as direct patient care experiences. This APPE is one element in the preparation of a student to be an effective drug information provider.

B. Objectives. Upon completion of this APPE a student will be able to:

1. demonstrate effective written and verbal communication skills.
2. describe the types and functions of commonly available drug information resources.
3. demonstrate proficiency in the use of commonly available drug information resources.
4. use a systematic approach to resolve drug information problems.
5. demonstrate efficient literature search strategies.
6. critically analyze and evaluate biomedical literature.
7. interpret and combine information from multiple sources into a concise and coherent written or verbal presentation.
8. apply appropriate drug information to patient care situations, recognizing that more than one resolution might be applicable.
9. assess the drug information resources and needs of his/her practice setting(s) as well as of the health professionals and consumers he/she supports.

Achievement of the course objectives will contribute to meeting the following expectations:

UNM COP Competencies

- 1.1 Collect and organize patient information to identify, prioritize, and assess medication/disease related problems necessary to formulate evidence-based, patient-specific medication treatment plans.
- 1.3 Design, monitor and/or modify individualized dosage regimens and treatment approaches using pharmacokinetic, pharmacodynamic, and/or pharmacogenomic data.
- 1.4 Select the appropriate dosage form, formulation, route/method, and schedule of drug administration.
- 2.1 Educate the public and other healthcare providers regarding health and wellness; prevention and treatment of diseases, medical conditions, adverse drug events; and optimal use of medications, medical devices, natural products and nutritional supplements.
- 2.3 Develop and provide collaborative services to prevent, detect, and manage disease and optimize patient outcomes through effective drug management.
- 5.1 Use information technology systems to retrieve data and literature to assist in drug information provision, patient care, drug distribution, patient safety, and compensation.
- 5.2 Interpret, evaluate, and apply information from primary literature as well as secondary and tertiary resources to effectively manage patient care.
- 5.3 Provide appropriate health and drug-related information to patients, professional colleagues, other health professionals, and community members.
- 5.4 Use various electronic technologies to:
 - a. access and manage scientific/clinical information and data;
 - b. document and manage patient care;
 - c. maintain practice management records;
 - d. support professional communication;
 - e. support education of patients, families, and professional associates; and
 - f. support safe and effective drug distribution.
- 6.1 Use oral, written, and multimedia skills to effectively communicate with patients, prescribers, other health professionals, caregivers, and members of the community.
- 6.3 Document and present patient or drug information in an organized, logical manner appropriate for the clinical situation.
- 6.4 Assess and adapt communication to the ability of patients and caregivers to obtain, process, understand, and use health or medication related information.
- 7.4 Develop, acquire and maintain personal and professional development through ongoing self-directed learning and reflection.
- 7.5 Maintain professional awareness by identifying emerging health-related issues, products and services, and analyzing potential implications for:
 - a. disease prevention and treatment services;
 - b. management of resources used in providing patient care; and
 - c. patient-specific and population-based therapeutic outcomes.
- 7.6 Develop appropriate leadership strategies that promote safe and optimal use of medications.

ACPE Guideline 12.1

To be capable of the above [to practice pharmacy independently at the time of graduation], pharmacy graduates also must be able to:

- retrieve, analyze, and interpret the professional, lay, and scientific literature to provide drug information and counseling to patients, their families or care givers, and other involved health care providers.

- demonstrate expertise in informatics.¹
- evaluate the quality of basic science and clinical research evidence to appropriately apply study results to practice decisions

ACPE Appendix B. Additional Guidance on the Science Foundation for the Curriculum **Biostatistics**

- evaluation of statistical results
- understanding of statistical versus clinical significance

Pharmacoepidemiology

- studies that provide an estimate of the probability of beneficial effects in populations, or the probability of adverse effects in populations, and other parameters relating to drug use benefit

Drug Information

- fundamentals of the practice of drug information
- application of drug information skills for delivery of pharmaceutical care
- technology of drug information retrieval for quality assurance
- the ability to judge the reliability of various sources of information

Literature Evaluation and Research Design

- fundamentals of research design and methodology
- principles of evaluation of the primary literature
- practical implications of the primary literature
- principles of research design and analysis in practicing evidence-based pharmacy
- levels of clinical evidence

Pharmacognosy and Alternative and Complementary Treatments

- dietary supplements (vitamins, minerals, and herbals)
- herbal-drug interactions

II. Faculty.

- A. Leslie A. McCament-Mann, Ph.D., (lmccament-mann@salud.unm.edu); 272-4261(messages)
- B. William G. Troutman, Pharm.D., (wtroutman@salud.unm.edu)
- C. Sarah K. Morley, M.L.S., (smorley@salud.unm.edu)
- D. Ingrid C. Hendrix, M.I.L.S., (ihendrix@salud.unm.edu)

III. Description of Activities.

- A. Readings and group discussions. The required text for this APPE is: Riegelman RK. Studying a study and testing a test: Reading evidence-based health research. 6th ed. Baltimore: Lippincott Williams & Wilkins; 2013. Additional readings are posted on the COP's Moodle site. Appendix A contains the required readings arranged by class session. During a group discussion, students

¹ Competencies in informatics include basic terminology (data, information, knowledge, hardware, software, networks, information systems, information systems management); reasons for systematic processing of data, information and knowledge in health care; and the benefits and current constraints in using information and communication technology in health care. (Adapted from recommendations of the International Medical Informatics Association)

will be expected to have read all assigned materials and to be prepared to serve as a discussion leader for the topic (see below). Each student will bring a list of 10 focused questions based on the reading to class to facilitate the discussion. Question lists will be turned in to the instructor at the conclusion of each day's session. Students will be evaluated for each discussion session with 2 points = meaningful contribution to discussion and preparation of question list, 1 point = less than full participation or preparation, and 0 points = absent or no contribution.

1. As discussion leader, it is the student's job to:

- a) identify the important concepts presented in the required reading.
- b) determine whether all members of the group understand and can apply these important concepts.
- c) engage the group in discussion of the members' focused questions.
- d) ask for examples other than those described in the reading.
- e) identify areas of group weakness and form questions for the faculty.

2. As discussion leader, it is not the student's job to:

- a) lecture to the group.
- b) summarize the reading.
- c) answer all of the questions.

B. Drug information questions. Students will receive and respond to drug information (DI) requests from health professionals and the public in the NMPDIC call center. Each student will sign up for five 2-hour blocks per week. No more than two students may sign up for the same 2-hour time block. The student-developed schedule will be posted on at least a weekly basis. While in the call center, students will be under the direct supervision of the APPE instructor. In the instructor's absence, the pharmacist Specialists in Poison Information (SPIs) on duty at NMPDIC will act as supervisors. Students will provide DI responses following approval of the instructor or a supervising SPI. All questions, responses, and recommendations will be documented using the Toxicall[®] system. Responses will be the result of the student's most complete effort at resolving the inquiry. All calls will be recorded and one call each week will be randomly selected and evaluated. The evaluation of this part of the APPE is presented in appendix B. The previous day's DI calls may be reviewed at the close of morning discussion sessions. Each student may also present the details of one DI call during a morning discussion session for extra credit. The verbal presentation may last up to 10 minutes and must be accompanied by a written report of the call in SOAP format using complete sentences [**S**=Question and context, **O**=Relevant drug and medical history, **A**=Research and evaluation of available evidence, **P**=Recommendations made].

C. Journal club presentations. Each student will select two current articles for presentation. Journal club #1 will focus on clinical studies of dietary supplements. Journal club #2 will provide the opportunity for exploration of an interest area that might also form the basis for the student's drug information project. The first article must be submitted for Dr. McCament-Mann's approval no later than **Friday of the first week** and the second article no later than **Friday of the second week**. Do not use an article you have previously presented. Articles presented by students in this rotation previously also are not allowed. Not less than 48 hours before the presentation, the student will submit an outline (1-2 pages) via e-mail to the instructor and provide copies of the article to group members so that all may prepare for the discussion. Each presentation is allotted 30 minutes including discussion time. On the day of presentation, the student also will submit a

1-page synopsis of the article and its significance, written at an appropriate level for communication with a general audience (patients, non-healthcare professionals). See journal club scoring criteria and presentation guidelines (appendix C).

- D. Drug information project. Each student will complete a drug information project consisting of a presentation and paper that will be due the end of the fourth week. As soon as possible, the student will identify a drug information topic to research and evaluate. The topic cannot be one that the student has researched or presented in a previous course or one that has been presented by another student during their drug information APPE. The student will prepare an answerable question in PICO format (patient problem, intervention, comparison, and outcome) and arrange to meet with Dr. McCament-Mann on or before **Monday of the second week** to obtain approval. A written search strategy is due by **Friday of the second week**, after which students will arrange to meet individually with Clinical Services Librarians for review and feedback. The project will be presented as a fully referenced written paper and verbal presentation following the guidelines presented in this syllabus.
1. Each student will prepare fully referenced written and verbal presentations as follows:
 - a) The student will conduct a thorough search of the biomedical information available at the University of New Mexico libraries and other campus resources to gather information on the selected and approved topic.
 - b) Whenever possible, the student will utilize original information sources rather than abstracts, summaries, narrative reviews, or secondary citations.
 - c) The student will carefully evaluate the literature and will base the written and verbal presentations on the best available studies.
 - d) Verbal presentations will not exceed 15 minutes in length. The presenting student will provide referenced, 1- or 2-page, outline-style handouts of the presentation for all in attendance.
 - e) The evaluation criteria for the verbal and written presentations are presented in appendices D and E.
 2. Questions regarding style can be answered by consulting: American Medical Association manual of style: a guide for authors and editors. 10th ed. New York: Oxford University Press; 2007. All reference citations will be numbered consecutively in the order of their appearance in the manuscript and, once numbered, a reference will continue to be cited by that number throughout the manuscript. Reference style will conform to the style recommended by the International Committee of Medical Journal Editors (appendix F).
- E. The final paper will be prepared using the formatted template that will be provided.
1. The paper will not exceed 7 pages in length (excluding references and search strategy).
 2. It will be printed on white, 8½×11-inch paper.
 3. A description of the final search strategy, including search terms and results, will accompany each written project report as a separate document.
- F. This APPE will be conducted in accordance with the UNM College of Pharmacy Course Policies and Procedures as posted on the College website. Specifically, this refers to the policies and for:

Academic Dishonesty, Disabled Students, Grade Remediation, and Grade Reconsideration Requests.

- G. Confidentiality and academic integrity. The activities of this APPE will expose students to patient-specific information through cases handled by students and through the regular work of the NMPDIC being conducted while students are present. This information is confidential. All written work submitted by students will be their own work. Any plagiarism, breach of confidentiality, or other unprofessional behavior will be grounds for immediate disciplinary action consistent with the UNM and College of Pharmacy Student Codes of Conduct.

IV. Grading. Student performance scores are available at any time and will be calculated according to the following plan (296 points total):

Discussion sessions	28 points (2 points/session)
Call responses	68 points (17 points/call)
Journal club presentations (2)	100 points (40 verbal and 10 written/article)
Drug information project	100 points (30 verbal and 70 written)

Assignment of final grades will adhere to the following plan:

A	= $\geq 90\%$ of available points (≥ 266 points)
B	= $\geq 80\% < 90\%$ (236-265 points)
C	= $\geq 70\% < 80\%$ (207-235 points)
D	= $\geq 60\% < 70\%$ (177-206 points)
F	= $< 60\%$ (< 177 points)

APPENDIX A – SCHEDULE AND ASSIGNED READING

date	topic	text	other reading
	Orientation <i>Art & Science of Searching: Session 1</i>		
	Answering DI questions <i>Art & Science of Searching: Session 2</i>		Kier KL, Malone PM, Stanovich JE. Chapter 2. Formulating effective responses and recommendations: a structured approach. In: Kier KL, Malone PM, Stanovich JE, eds. Drug information: a guide for pharmacists. 4th ed. New York: McGraw-Hill; 2012.* Bryant PJ, Norris KP, McQueen CE, Poole EA. Chapter 5. Literature evaluation II: beyond the basics. Dietary supplement medical literature. In: Kier KL, Malone PM, Stanovich JE, eds. Drug information: a guide for pharmacists. 4th ed. New York: McGraw-Hill; 2012.*
	Health research design <i>Art & Science of Searching: Session 3</i>	Chap. 1	
	Analysis of research results <i>Art & Science of Searching: Session 4</i>	Chap. 2	
	Drawing conclusions	p. 54-62	Barratt A, Wyer PC, Hatala R, McGinn T, Dans AL, Keitz S, et al. Tips for learners of evidence-based medicine: 1. Relative risk reduction, absolute risk reduction and number needed to treat. <i>CMAJ.</i> 2004;171:353-8.
	Patient selection in clinical trials Info. source: clinicaltrials.gov		Stunkel L, Grady C. More than the money: a review of the literature examining healthy volunteer motivations. <i>Contemporary Clinical Trials.</i> 2011;32:342-52. Patient refusers, nonqualifiers, dropouts, dropins, and discontinuers. In: Spilker B. Guide to clinical trials. New York: Raven Press; 1991. p. 235-41. Pablos-Méndez A, Barr RG, Shea S. Run-in periods in randomized trials. Implications for the application of results in clinical practice. <i>JAMA.</i> 1998;279:222-5.
	Clinical trials	Chap. 4	Schulz KF, Altman D, Moher D. CONSORT 2010 statement: updated guidelines for reporting parallel group randomized trials. <i>Ann Intern Med.</i> 2010;152:726-32.
	Case-control and cross-sectional studies		Schultz KF, Grimes DA. Case-control studies: research in reverse. <i>Lancet.</i> 2002;359:431-4. Meier CR, Derby LE, Jick SS, Vasilakis C, Jick H. Antibiotics and risk of subsequent first-time acute myocardial infarction. <i>JAMA.</i> 1999;281:427-31. Levin KA. Study design III: Cross-sectional studies. <i>Evid Based Dent.</i> 2006;7:24-5. Sexton M, Althius MD, Santanello N, Hyndman S, Williams R, Schmeidler D. Sex differences in the use of asthma drugs: cross sectional study. <i>BMJ.</i> 1998;317:1434-7.
	Cohort and before-after studies	p. 108-118	Grimes DA, Schultz KF. Cohort studies: marching towards outcomes. <i>Lancet.</i> 2002;359:341-5. Thapa PB, Gideon P, Cost TW, Milam AB, Ray WA. Antidepressants and the risk of falls among nursing home residents. <i>N Engl J Med.</i> 1998;339:875-82.

			A primer on before-after studies: evaluating a report of a “successful” intervention. <i>Eff Clin Pract.</i> 2002;5:100-1.
	Journal club #1		Send out articles at least 48 hours ahead for advance review and preparation by the group.
	Causality, case reports, case series		Bryant PJ, Norris KP, McQueen CE, Poole EA. Chapter 5. Literature evaluation II: beyond the basics. Reports without control group: case studies, case reports, and case series. In: Kier KL, Malone PM, Stanovich JE, eds. <i>Drug information: a guide for pharmacists.</i> 4th ed. New York: McGraw-Hill; 2012.* Gregory PJ, Cochrane ZR. Chapter 15. Medication misadventures I: adverse drug reactions. Causality and probability of adverse drug reactions. In: Kier KL, Malone PM, Stanovich JE, eds. <i>Drug information: a guide for pharmacists.</i> 4th ed. New York: McGraw-Hill; 2012.* “Causality Algorithms” Kelly WN, Arellano FM, Barnes J, Bergman U, Edwards IR, Fernandez AM, et al. Guidelines for submitting adverse event reports for publication. <i>Drug Saf.</i> 2007;30:367-73. Dodd MA, Dole EJ, Troutman WG, Bennahum DA. Minocycline-associated tooth staining. <i>Ann Pharmacother.</i> 1998;32:887-9.
	Noninferiority studies		Bryant PJ, Norris KP, McQueen CE, Poole EA. Chapter 5. Literature evaluation II: beyond the basics. Non-inferiority trials. In: Kier KL, Malone PM, Stanovich JE, eds. <i>Drug information: a guide for pharmacists.</i> 4th ed. New York: McGraw-Hill; 2012.* Schulman S, Parpla S, Stewart C, Rudd-Scott L, Julian JA. Warfarin dose assessment every 4 weeks versus every 12 weeks in patients with stable international normalized ratios: a randomized trial. <i>Ann Intern Med.</i> 2011;155:653-9.
	Cross-over studies		Selection from: Spilker B. <i>Guide to clinical trials.</i> New York: Raven Press; 1991. Cleare AJ, Heap E, Malhi GS, Wessely S, O’Keane V, Miell J. Low-dose hydrocortisone in chronic fatigue syndrome: a randomised crossover trial. <i>Lancet.</i> 1999;353:455-8.
	Journal club #2		Send out articles at least 48 hours ahead for advance review and preparation by the group.
	Narrative and systematic reviews; meta-analyses Info. source: Cochrane Databases	Chap. 7	Johnston BC, Ma SSSY, Goldenberg JZ, Thorlund K, Vandvik PO, Loeb M, et al. Probiotics for the prevention of <i>Clostridium difficile</i> -associated diarrhea: a systematic review and meta-analysis. <i>Ann Int Med.</i> 2012;157:878-88,W317-8.
	Clinical practice guidelines	Chap. 13	Manoguerra AS, Erdman AR, Booze LL, Christianson C, Wax PM, Scharman EJ, et al. Iron ingestion: an evidence-based consensus guideline for out-of-hospital management. <i>Clin Toxicol (Phila).</i> 2005;43:553-70.
	Sponsorship and advocacy		Wang T, McCoy CP, Murad MH, Montori VM. Association between industry affiliation and position on cardiovascular risk with rosiglitazone: cross sectional systematic review. <i>BMJ.</i> 2010;340:c1344. Bodenheimer T. Uneasy alliance--clinical investigators and the pharmaceutical industry. <i>N Engl J Med.</i> 2000;342:1539-44. Deyo RA, Psaty BM, Simon G, Wagner EH, Omenn GS. The messenger under attack--intimidation of researchers by special-interest groups. <i>N Engl J Med.</i> 1997;336:1176-80.

*Refers to text in HSLIC’s “Access Pharmacy” database.

APPENDIX B
DRUG INFORMATION RESPONSE
SCORING SHEET

History

- _____ Active listening – Did not need to ask for information twice. (1-0)
- _____ Completeness – Obtained all essential information including drugs and medical conditions. (1-0)

Researching Answer

- _____ Reference exploration – Used sources beyond Micromedex©. When appropriate, the primary literature was used to develop response instead of only secondary or tertiary literature. (2-0)

Written Documentation

- _____ Data coding – Case was properly coded according to NMPDIC guidelines. (1-0)
- _____ Completeness – All essential information was included in inquiry write-up. (2-0)
- _____ Referencing – Reference(s) were retrievable and appropriate. Citations were complete. (1-0)
- _____ Accuracy – Response was correct. (2-0)

Verbal Response

- _____ Completeness – All essential response information was communicated to client. (2-0)
- _____ Organization – Response was structured with a logical flow of information. (1-0)
- _____ Terminology – Information was communicated at an appropriate education level. (1-0)
- _____ Timeliness – Complete response occurred within a reasonable time period. (1-0)
- _____ Correlation to documentation – Verbal response correlated to written documentation. (1-0)

Courtesy

- _____ Courtesy – Courteous to client throughout interaction. (1-0)

Presentation [*extra credit*]

- _____ Presented case to morning drug information conference in SOAP format. (5-0)

_____ TOTAL POINTS (17 points possible)

Case Number _____

student's name _____

evaluator _____

APPENDIX C

JOURNAL CLUB PRESENTATION GUIDELINES

1) Full Article Citation:

2) Introduction:

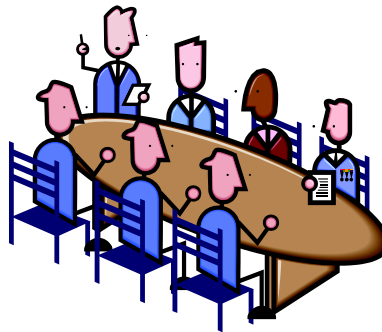
- a. Why you chose this article
- b. Basic features of the study
 1. Design type
 2. Research question in PICO format
 - i. Patient Population/Problem studied
 - ii. Intervention or Exposure (treatment, risk factor, etc.)
 - iii. Comparison/Control (alternative to the intervention/exposure)
 - iv. Outcomes measured (what, how)
 3. Why this question is important
 4. Authors' affiliations and study support

3) Study Description:

- a. Sample selection
 1. sampling method, sample size
 2. inclusion and exclusion criteria
 3. comparison of participants vs. non-participants
- b. Subject allocation
 1. method of assignment to experimental and control groups
 2. blinding
 3. matching of demographic characteristics
- c. Analysis
 1. intention-to-treat vs. per-protocol
 2. dropouts/lost to follow-up
 3. statistical methods, power
 4. confounding factors
 5. adverse events
- d. Results
 1. summary of key findings with confidence intervals or p-values
 2. statistical *versus* clinical significance
- e. Authors' conclusions

4) Evaluation:

- a. Technical critique
 1. place of the study design in the hierarchy of study types
 2. was the study well-conducted based on published criteria for this study type?
 3. potential for bias and confounders
 4. internal and external validity
- b. Do the authors' conclusions fit the data? How do YOU interpret the data? Are the findings generalizable to a larger population?
- c. Would you recommend a change in practice because of this study?



5) Helpful Hints for Journal Club Presentations:

- a. Do not read directly from the article or your handout.
- b. When describing tables or figures, emphasize important points and make observations; don't just read data to the group.
- c. Two things you must do are:
 - i. Evaluate the appropriateness of the study methodology and analysis to answer the research question.
 - ii. Decide what the results mean for health professionals and patients.
- d. Choose a topic of interest to you and engage all group members in the discussion.

JOURNAL CLUB SCORING

Circle one score in each section:

Introduction (0-4 pt)

- 4 pt** Made clear, concise statements of study's context, design, and the research question.
- 2 pt** Statements of context, study design, or research question were unclear or not concise.
- 0 pt** Failed to state context, study design, or research question.

Study Description (0-8 pt)

- 8 pt** Presented concise, complete summary of study methodology, analysis, results, and authors' conclusions. Student communicated these in such a manner as to enable full audience understanding of the study.
- 4 pt** Most aspects of the study were presented, but there were important omissions or extraneous information. Student communicated these in such a way that only partial audience understanding was likely.
- 0 pt** Essential points were omitted from the summary of study methodology, analysis, results, and authors' conclusions, or extraneous information obscured main points. Student communicated in such a manner that adequate audience understanding was unlikely.

Evaluation

Technical Critique (0-8 pt)

- 8 pt** Student evaluated study according to Journal Club guidelines and course content and was able to make and defend statements about the study's validity, strengths, and weaknesses.
- 4 pt** Student evaluated some aspects of the study, but did not adequately critique validity, strengths or weaknesses. Described more than evaluated the study.
- 0 pt** Almost no evaluation of the study was presented. Descriptive only.

Student's Conclusions (0-8 pt)

- 8 pt** Student concisely stated and was able to defend either agreement or disagreement with the study authors' conclusions and demonstrated independent formulation of own conclusions.
- 4 pt** Student stated agreement or disagreement with authors' conclusions but did not adequately defend this position; some formulation of own conclusions.
- 0 pt** Student did not express evaluation of authors' conclusions or formulation of own conclusions.

Organization (0-4 pt)

- 4 pt** Presentation was logical and adhered to prescribed format progressing from introduction through study description and student's evaluation in a concise manner.
- 2 pt** Presentation was somewhat logical but lacked clear adherence to prescribed format or contained nonessential material.
- 0 pt** Presentation was disorganized and difficult to follow.

Discussion Leadership (0-8 pt)

- 8 pt** Student led the discussion, focusing on major points of study and critique. Avoided excessive sidetracking. Limited entire presentation and discussion to 30 minutes.
- 4 pt** Student included some but not all major points of the study and critique. Experienced some difficulty engaging participants. Did not finish within 30 minutes.
- 0 pt** Failed to discuss the major points. Lost control of the group. Time limit? What time limit??

Written Synopsis for a General Audience (0-10 pt)

- 10 pt** Student turned in a 1-page synopsis of the article's main points and relevance, written for a general audience (patients or non-healthcare professionals) using appropriate terminology, grammar, spelling and punctuation.
- 5 pt** Student turned in synopsis of article that did not meet the requirements for full credit.
- 0 pt** Student did not turn in synopsis of article.

TOTAL SCORE: _____ (50 points possible)

Student name: _____

Evaluator name: _____

APPENDIX D
EVALUATION OF WRITTEN DRUG INFORMATION PROJECT

1. ____ Understanding of problem (7, 4, 0)
2. ____ Appropriate background information (7, 4, 0)
3. ____ References (7, 4, 0)
4. ____ Evaluation of available literature—technique (9, 4, 0)
5. ____ Evaluation of literature—interpretation of findings (7, 4, 0)
6. ____ Ability to reach a valid conclusion and resolve the problem (9, 4, 0)
7. ____ Organization of the written report (7, 4, 0)
8. ____ Writing technique (7, 4, 0)
9. ____ Search strategy (10 points possible)

- ____ TOTAL POINTS (70 points possible)

Comments:

Student name _____

Evaluator name _____

WRITTEN DRUG INFORMATION PROJECT CRITERIA

1. Understanding of problem

Nature, scope, and importance of problem clearly presented and appreciated. (7 pts)

Nature, scope and importance of problem might be clear to writer but not clearly presented to reader. (4 pts)

Failed to define nature, scope or importance of problem or writer did not understand them. (0 pts)

2. Appropriate background information

Background information was appropriate to the level of the student's peers; essential concepts were included with no unnecessary material added. (7 pts)

Background information was appropriate to the level of the student's peers but not completely presented or extraneous material was included. (4 pts)

Background information was not presented or was inappropriate for the level and needs of the student's peers. (0 pts)

3. References

Paper was well referenced. Sources of all key information were clear. References were retrievable and in the required format. (7 pts)

Paper was referenced, but student failed to cite references consistently or references were not in required format. (4 pts)

There were many essential points for which references were not provided or the references were not retrievable. (0 pts)

4. Evaluation of available literature: technique

Student evaluated studies in terms of experimental design, protocol, instruments of measurement, and handling of results. Student contrasted data from different studies and made comparisons in a logical manner. (9 pts)

Student evaluated literature but did a less than complete job or either ignored or did not attempt to account for conflicting reports. Student described more than evaluated studies. (4 pts)

Student failed to evaluate literature and simply presented results. Where conflicting data were reported, he/she did not attempt to analyze. (0 pts)

5. Evaluation of literature: interpretation of findings

Student presented data and interpreted clinical significance of results as they related to the assignment. Student reported assessments of literature concisely and did not include nonessential information. (7 pts)

Student did not present relevant data or reported on assessments that were not essential to the problem or student's apparent understanding of clinical significance was incomplete. (4 pts)

Student was unable to pick out essential issues and formulate an assessment; included extraneous information or student failed to evaluate the literature. (0 pts)

6. Ability to reach a valid conclusion and resolve the problem

Student was able to reach a valid conclusion based on and supported by a thorough evaluation of the available literature. Student reported this conclusion in a concise manner and made practical recommendations for resolution of problem. (9 pts)

Student did not reach a conclusion based on evaluation of literature or did not make practical recommendations for resolving the problem. (4 pts)

Student did not reach a conclusion and the problem was not resolved; the student's conclusion was not based on the data presented and the resolution was impractical. (0 pts)

7. Organization of the paper

The paper was organized in a logical fashion proceeding from clear definition of the problem through presentation and interpretation of the available literature to conclusions and recommendations. (7 pts)

The paper was somewhat organized but had sections misplaced. (4 pts)

The paper was highly disorganized and hard to follow; bounced around from one area to another. (0 pts)

8. Writing technique

The paper was well written; it showed correct spelling, punctuation and grammar. It was concise but included all essential information. (7 pts)

Paper contained errors in spelling, punctuation, or grammar or lacked expected conciseness to the point of being annoying. (4 pts)

Quality of written work was poor enough to interfere with reading. Included multiple errors in spelling, punctuation and grammar. (0 pts)

9. Search strategy

See following page.

LITERATURE SEARCH CRITERIA

	Accomplished (2 points each item)	Developing (1 point each item)
Choice of database	Searches recommended database(s)	Does not use appropriate resource(s)
Identification of search terms	Identifies appropriate keywords and subject headings	Identifies keywords or subject headings, but incomplete or inappropriate
Development of search strategy	Refines search strategy as necessary	Refines search but might have tried at least one more strategy
Use of Boolean operators	Appropriately combines terms using “AND” plus “OR” statements	Combines terms using “AND” plus “OR” statements but does so inappropriately or incorrectly
Application of limits	Uses appropriate limits	Limits too much or too little
TOTAL POINTS		

The following must be submitted with your search strategy for evaluation by Clinical Services Librarians:

- 1) A list of PICO elements;
- 2) A one-sentence statement of the question you are trying to answer;
- 3) The database(s) searched;
- 4) Your printed search strategy.

APPENDIX E

EVALUATION OF VERBAL DRUG INFORMATION PROJECT

1. ____ Understanding of problem (4, 2, 0)
2. ____ Background information (4, 2, 0)
3. ____ Evaluation of available literature (6, 3, 0)
4. ____ Organization (4, 2, 0)
5. ____ Ability to reach a valid conclusion and resolve the problem (6, 3, 0)
6. ____ Presentation technique (4, 2, 0)
7. ____ Timing (2, 1, 0)

____ TOTAL POINTS (30 points possible)

Comments:

Student name _____

Evaluator name _____

VERBAL DRUG INFORMATION PROJECT CRITERIA

1. Understanding of problem

Nature, scope, and importance of problem were clearly defined and presented. (4 pts)

Nature, scope and importance of problem might be clear to presenter but not clearly presented to audience. (2 pts)

Failed to define nature, scope or importance of problem or presenter did not understand them. (0 pts)

2. Background information

Background information was appropriate for the audience; essential concepts were included with no unnecessary material added. (4 pts)

Background information was appropriate for the audience but not completely presented or extraneous material was included. (2 pts)

Background information was not presented or was inappropriate for the level and needs of the audience. (0 pts)

3. Evaluation of available literature

Available literature on problem was described, results reported, and assessments of the quality of the literature were presented. (6 pts)

Available literature on problem was described, but student just reported results of studies with only minimal evaluation. (3 pts)

Student did describe available literature or did not comment on findings. (0 pts)

4. Organization

Presentation was organized in logical fashion, was easy to follow, and flowed smoothly from definition of problem through background information and assessment of available literature to conclusion. (4 pts)

Presentation was somewhat organized, but student tended to skip from one subject area to another. However, most essential features were presented. (2 pts)

Presentation was highly disorganized and almost impossible to follow. It left doubt in the audience's mind as to the nature of the problem and conclusions. (0 pts)

5. Ability to reach a valid conclusion and resolve the problem

Student was able to reach a valid conclusion based on and supported by a thorough evaluation of the available literature. Student reported this conclusion in a concise manner and made practical recommendations for resolution of problem. (6 pts)

Student did not reach conclusion based on evaluation of literature or did not make practical recommendations for resolving the problem. (3 pts)

Student did not reach a conclusion and the problem was not resolved; the student's conclusion was not based on the data presented and the resolution was impractical. (0 pts)

6. Presentation technique

Student appeared confident, could be heard and understood, used changes in voice tone to emphasize importance, was a convincing presenter. (4 pts)

Student failed to meet one of the expectations for full credit. (2 pts)

Student failed to meet two or more of the expectations for full credit. (0 pts)

7. Timing

Student completed presentation within the specified time. (2 pts)

Student exceeded time limit by ≤ 2 minutes (1 pt)

Student exceeded time limit by > 2 min. (0 pts)

APPENDIX F

REFERENCE CITATION FORMATS

Journal Articles

Standard journal article – List the first six authors followed by et al.

Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. *N Engl J Med.* 2002 Jul 25;347(4):284-7.

As an option, if a journal carries continuous pagination throughout a volume (as many medical journals do) the month and issue number may be omitted.

Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. *N Engl J Med.* 2002;347:284-7.

More than six authors

Rose ME, Huerbin MB, Melick J, Marion DW, Palmer AM, Schiding JK, et al. Regulation of interstitial excitatory amino acid concentrations after cortical contusion injury. *Brain Res.* 2002;935(1-2):40-6.

Organization as author

Diabetes Prevention Program Research Group. Hypertension, insulin, and proinsulin in participants with impaired glucose tolerance. *Hypertension.* 2002;40(5):679-86.

No author given

21st century heart solution may have a sting in the tail. *BMJ.* 2002;325(7357):184.

Volume with supplement

Geraud G, Spierings EL, Keywood C. Tolerability and safety of frovatriptan with short- and long-term use for treatment of migraine and in comparison with sumatriptan. *Headache.* 2002;42 Suppl 2:S93-9.

Issue with supplement

Glauser TA. Integrating clinical trial data into clinical practice. *Neurology.* 2002;58(12 Suppl 7):S6-12.

Volume with part

Abend SM, Kulish N. The psychoanalytic method from an epistemological viewpoint. *Int J Psychoanal.* 2002;83(Pt 2):491-5.

Issue with part

Ahrar K, Madoff DC, Gupta S, Wallace MJ, Price RE, Wright KC. Development of a large animal model for lung tumors. *J Vasc Interv Radiol.* 2002;13(9 Pt 1):923-8.

Issue with no volume

Banit DM, Kaufer H, Hartford JM. Intraoperative frozen section analysis in revision total joint arthroplasty. *Clin Orthop.* 2002;(401):230-8.

No volume or issue

Outreach: bringing HIV-positive individuals into care. *HRSA Careaction.* 2002 Jun:1-6.

Type of article indicated as needed

Tor M, Turker H. International approaches to the prescription of long-term oxygen therapy [letter]. *Eur Respir J.* 2002;20(1):242.

Lofwall MR, Strain EC, Brooner RK, Kindbom KA, Bigelow GE. Characteristics of older methadone maintenance (MM) patients [abstract]. *Drug Alcohol Depend.* 2002;66 Suppl 1:S105.

Article published electronically ahead of the print version

Yu WM, Hawley TS, Hawley RG, Qu CK. Immortalization of yolk sac-derived precursor cells. *Blood.* 2002 Nov 15;100(10):3828-31. Epub 2002 Jul 5.

Books and Other Monographs

Personal author(s)

Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.

Editor(s), compiler(s) as author

Gilstrap LC 3rd, Cunningham FG, VanDorsten JP, editors. Operative obstetrics. 2nd ed. New York: McGraw-Hill; 2002.

Organization(s) as author

Royal Adelaide Hospital; University of Adelaide, Department of Clinical Nursing. Compendium of nursing research and practice development, 1999-2000. Adelaide (Australia): Adelaide University; 2001.

Chapter in a book

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93-113.

Dictionary and similar references

Stedman's medical dictionary. 26th ed. Baltimore: Williams & Wilkins; 1995. Apraxia; p. 119-20.

Electronic Material

CD-ROM

Anderson SC, Poulsen KB. Anderson's electronic atlas of hematology [CD-ROM]. Philadelphia: Lippincott Williams & Wilkins; 2002.

Journal article on the Internet

Abood S. Quality improvement initiative in nursing homes: the ANA acts in an advisory role. Am J Nurs [serial on the Internet]. 2002 Jun [cited 2002 Aug 12];102(6):[about 3 p.]. Available from: <http://www.nursingworld.org/AJN/2002/june/Wawatch.htm>

Monograph on the Internet

Foley KM, Gelband H, editors. Improving palliative care for cancer [monograph on the Internet]. Washington: National Academy Press; 2001 [cited 2002 Jul 9]. Available from: <http://www.nap.edu/books/0309074029/html/>

Homepage/Web site

Cancer-Pain.org [homepage on the Internet]. New York: Association of Cancer Online Resources, Inc.; c2000-01 [updated 2002 May 16; cited 2002 Jul 9]. Available from: <http://www.cancer-pain.org/>

Part of a homepage/Web site

American Medical Association [homepage on the Internet]. Chicago: The Association; c1995-2002 [updated 2001 Aug 23; cited 2002 Aug 12]. AMA Office of Group Practice Liaison; [about 2 screens]. Available from: <http://www.ama-assn.org/ama/pub/category/1736.html>

Database on the Internet

Open database:

Who's Certified [database on the Internet]. Evanston (IL): The American Board of Medical Specialists. c2000 - [cited 2001 Mar 8]. Available from: <http://www.abms.org/newsearch.asp>

Closed database:

Jablonski S. Online Multiple Congenital Anomaly/Mental Retardation (MCA/MR) Syndromes [database on the Internet]. Bethesda (MD): National Library of Medicine (US). c1999 [updated 2001 Nov 20; cited 2002 Aug 12]. Available from: http://www.nlm.nih.gov/mesh/jablonski/syndrome_title.html

Part of a database on the Internet

MeSH Browser [database on the Internet]. Bethesda (MD): National Library of Medicine (US); 2002 - [cited 2003 Jun 10]. Meta-analysis; unique ID: D015201; [about 3 p.]. Available from: <http://www.nlm.nih.gov/mesh/MBrowser.html> Files updated weekly.