INVESTIGATING THE SELF-REPORTED CLINICAL BREAST

EXAMINATION SKILLS OF NURSE PRACTITIONERS LICENSED IN

TWO MID-ATLANTIC STATES

by

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ABSTRACT

Title of Thesis: INVESTIGATING THE SELF-REPORTED CLINICAL

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The purpose of this study was to investigate whether relationships existed between the reported clinical breast examination skills of nurse practitioners and clinical specialty, years in nursing, age, and frequency of performing breast examinations. The specialties were adult, geriatric, family, and women's health. A non-experimental, cross-sectional, descriptive design was used for the investigation. The final sample was comprised of 495 participants, primarily women, who had been registered nurses for approximately twenty years and nurse practitioners for approximately eight years..

The number of breast examinations that participants performed in a month ranged between zero and 350 (M = 34.75, SD = 53.41) with women's health nurse practitioners reporting the greatest number (M = 103.54).

The Modified Breast Examination Skills Checklist and a demographic questionnaire were employed for data collection. The MBESC reported a Cronbach's alpha of 0.8345. Eighty-two per cent of the sample achieved a performance rating consistent with competency.

No differences in reported breast examination skills were found among the three specialties of nurse practitioners. Pearson Product-Moment correlations indicated weakly positive, but significant relationships between the number of breast examinations performed by nurse practitioners and reported breast examination skills (r =.16, df = 410, p = 0.0001), age and reported breast examination skills (r = .14, df = 411, p = 0.003), and years licensed as a registered nurse and reported breast examination skills (r = .16, df = 409, p = 0.001). No relationship existed between years licensed as nurse practitioner and reported breast examination skills.

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Chapter I

Introduction

Breast cancer is the second most common form of cancer among women in the

United States and was estimated to result in over 43,000 cancer deaths in 1998

(American Cancer Society, 1998). The major known risk factors tend to be biological

characteristics of the individual such as increasing age, personal or family history of

breast cancer, history of benign breast disease, presence of breast cancer genes, and

estrogen levels which cannot be modified to reduce the likelihood of developing this

disease. Unfortunately, there is no known prevention for breast cancer at this time and

survival is directly linked to the stage of disease at diagnosis (Harris, Lippman,

Morrow & Hellman, 1996; Reintgen, Cox, Greenberg, Baekey, Nicosia, Berman,

Clark & Lyman, 1993). Therefore, screening and early detection are essential to

identify breast cancer at an early stage when treatment is most successful for

extending life and reducing morbidity.

The American Cancer Society (1998) recommends the combined use of clinical

breast examination by a trained health care provider, breast self-examination and

mammography for early detection of asymptomatic breast cancer. Employment of

these modalities are endorsed by other research and professional organizations

including the American Academy of Family Physicians, the American College of

Obstetricians and Gynecologists, the American College of Surgeons, the National

Cancer Institute and the U. S. Preventive Services Task Force (U. S. Department of

Health and Human Services, 1994).

The financial drain of cancer on society is now over 100 billion dollars annually (American Cancer Society, 1998). The fight against escalating costs in medical care has prompted reform in the health care delivery system. General and family practice physicians have replaced specialists as front-line providers of care and the responsibility for cancer screening has shifted to them. Since the mid-sixties, however, medical schools have not been able to produce enough generalists to meet society's demand for primary care (Hoole, Pickard, Ouimette, Lohr & Greenberg, 1995). Consequently, nurse practitioners trained in primary care are being employed to fulfill this role as cost effective care providers capable of delivering high quality health care (Warren & Pohl, 1990; Leslie, 1995).

The U. S. Department of Health and Human Services (1994) has documented the role of primary care providers in health maintenance, health promotion, and disease prevention which includes early detection of cancer through physical examination. Nurse practitioners have been educated and trained to perform comprehensive health assessments on their patients, including the clinical breast examination, one component of a comprehensive physical exam (Seidel, Ball, Dains & Benedict, 1995). When clinical breast examination is performed in conjunction with mammography, this combination has demonstrated significant reduction in breast cancer mortality (Baker, 1992; Seidman, Gelb, Silverberg, LaVerda, & Lubera, 1987). Mammography alone has been shown to be highly sensitive for the detection of breast tissue masses, facilitating the identification of early breast cancers, however, false negative reports will occur in roughly 10% of all mammographic readings (vanDijck, Verbeek, Hendriks & Holland, 1993; Reintgen, Berman, Cox, Baekey, Nicosia, Greenberg,

Bush, Lyman & Clark, 1993). Therefore, clinical examination of the breast remains necessary in conjunction with mammography to assist in the definitive diagnosis of breast tumors.

Although nurse practitioners perform clinical breast examinations on their patients, a careful search revealed no published research which assesses their level of clinical skill with respect to the procedure. Given the importance of clinical beast examination in cancer detection, studies investigating the ability of nurse practitioners as primary care providers to perform this exam are needed at this time.

Throughout their training, nurse practitioners are expected to learn and practice correct technique for a complete and thorough physical examination, including mastering the technical skills needed to perform breast examinations. It is generally assumed by patients and other health care providers that nurse practitioners are capable of performing adequate physical examinations, however, it is unknown if they actually employ the skills they learned during training in their current practice. A systematic investigation of nurse practitioners' technique and thorough completion of clinical skills in breast examination would be desirable to fill this gap.

Purpose of the Study

The primary purpose of this study was to investigate the clinical breast examination skills of nurse practitioners. A secondary purpose was to see if the frequency of performing breast examinations, length of time as a nurse practitioner, or clinical specialty were factors in skill performance of breast examinations. Basic clinical skills serve as the foundation of a competent physical examination upon which health care professionals formulate clinical judgments (Seidel, Ball, Dains &

Benedict, 1995). As professional clinicians, nurse practitioners have a responsibility for evaluating their own behavior and skills to assure that patients, who may not be able to reliably evaluate such skills, are receiving optimal care (Fuhrmann & Weissburg, 1978). "Whether alone or in a team, professionals supervise themselves; therefore, they must understand the ramifications of their procedures and bear the consequences of each decision and activity in which they engage." (Fuhrmann & Weissburg, 1978, p. 139)

Significance of the Study

Missed or delayed diagnosis of breast cancer accounts for one of the most common causes of medical malpractice claims in the United States (Reintgen, Cox, Greenburg, Baekey, Nicosia, Berman, Clark & Lyman, 1992; Osuch & Bonham, 1994). Failure to verify patient complaints on physical examination, and misinterpretation of findings on physical examination constitutes common allegations filed by plaintiffs (Reintgen et al., 1994). Although the diagnosis of breast cancer can be challenging for the practitioner, screening guidelines have been established to improve cancer detection rates. Included in the established standard of care for breast cancer screening is an annual clinical breast examination by a trained health care provider.

Without investigating the clinical skills of licensed nurse practitioners, their techniques for physical examination cannot be effectively evaluated. Dunnington, Wright & Hoffman (1994) noted significant deterioration in learned physical examination skills among medical students as they progressed from preclinical to clinical practice arenas. In another study by Chalabian, Garman, Wallace & Dunnington (1996), the clinical examination skills of house officers performing breast

examinations on standardized patients were rated poor compared to medical students when evaluated objectively by trained observers. It is unknown if nurse practitioners also exhibit these behaviors.

Nurse practitioners, as providers of primary care and preventive services, must be aware of their strengths and limitations to assure patients and physician collaborators that they are capable of making accurate diagnoses and recommendations within their scope of practice. All health care providers need some type of ongoing evaluation or review system which documents the quality of services they provide along with a mechanism aimed at improving care (Hawkins & Thibodeau, 1996). The public, clients, employers, and reimbursement agencies demand that health care providers be accountable for their actions.

<u>Research Questions</u>

This study attempted to answer the following research questions:

1. What are the clinical breast examination skills of nurse practitioners?

2. Is there a relationship between the number of clinical breast examinations performed by nurse practitioners and nurse practitioners' performance rating of breast examination skills?

3. Is there a relationship between the number of years licensed as a nurse practitioner and nurse practitioners' performance rating of breast examination skills?

4. Does the clinical specialty of nurse practitioners affect their performance rating of breast examination skills?

<u>Conceptual Definitions</u>

Key concepts used in this study were:

1. <u>Nurse Practitioner</u>: a registered nurse who has successfully completed a formal education program that prepares registered nurses to perform an expanded role in the delivery of health care and satisfies applicable requirements for certification as a nurse practitioner in the state where services are rendered (Millonig, 1994).

2. <u>Clinical breast examination</u>: physical examination of the breast by a health care provider for the purpose of evaluating breast tissue (American Cancer Society, 1997).

3. <u>Clinical skills</u>: observational and/or technical maneuvers used to make diagnostic or therapeutic judgments.

4. <u>Competency</u>: the ability or capacity to perform a task according to predetermined criteria, deemed by experts as essential or critical for performing the task correctly (Sloan, Donnelly, Schwartz & Strodel, 1995).

5. <u>Clinical specialty</u>: the field of professional study in which a health care provider is trained, certified, and licensed to practice.

6. <u>Adult nurse practitioner</u>: an advanced practice nurse who has successfully completed a certification examination in the management of acute and chronic health issues affecting men and women over the age of 18.

7. <u>Geriatric nurse practitioner</u>: an advanced practice nurse who has successfully completed a certification examination in the management of acute and chronic health issues affecting men and women over the age of 65.

8. <u>Family nurse practitioner</u>: an advanced practice nurse who has successfully completed a certification examination in the management of acute and chronic health issues affecting individuals or family members from infancy to old age.

9. <u>Women's health nurse practitioner</u>: an advanced practice nurse who has successfully completed a certification examination in the management of acute and chronic health issues affecting women from menarche onwards.

10. <u>Performance rating</u>: a score which is calculated according to the reported frequency of performing specified clinical skills.

Delimitations

This investigation was designed to describe the clinical breast examination practices of nurse practitioners. It focused only on the technical skills considered essential for competent performance of the exam. Participation in the study was limited to nurse practitioners who provide care to female patients over 21 years of age including adult nurse practitioners, geriatric nurse practitioners, family nurse practitioners, and women's health nurse practitioners. Data were ascertained by means of a self-report survey. The target population consisted of all nurse practitioners licensed to practice in the state of Delaware or Maryland. It was beyond the scope of this study to investigate the patient interaction skills of nurse practitioners or their ability to detect lumps during the clinical breast examination.

Assumptions

Assumptions in the design of this study were:

1. Nurse practitioners are knowledgeable and trained in the performance of clinical breast examination.

2. The assessment of participants' clinical skills can be obtained through honest reporting of behavior.

3. The honest self-report of skills implies the performance of said skills in the practice of the respondent.

4. The number of years an individual has been licensed and certified to practice as a nurse practitioner is equivalent to their years of experience as a nurse practitioner.

<u>Summary</u>

In Chapter I, facts about the importance of clinical breast examination by trained health care providers were introduced. The research problem of the study was stated, as well as the purposes, significance, and delimitations of the study. Three research questions were posed, and the assumptions of the study were stated. Chapter II will review the relevant literature.

Chapter II

Review of the Literature

Chapter II will review relevant literature on clinical assessment and examination of

the breast by primary care providers. Studies investigating self-evaluation of behavior

and skills will be discussed first followed by a section on literature related to

objective measures of competency and the development of a reliable and valid

instrument for measuring clinical competency.

Self-Evaluation of Behavior and Skills

Costanza, Hoople, Gaw, and Stoddard (1993) surveyed 1500 internists, family

practitioners, and gynecologists in Massachusetts to investigate the cancer prevention

practices and continuing education needs of primary care physicians. Ninety two per

cent of the 488 physicians who completed the survey, indicated that they routinely

performed breast physical examinations on asymptomatic women, 50 years and older,

as a breast cancer screening practice. The term routine, however, was not defined as a

specific interval in years or months. Slightly more than half the respondents believed

a course emphasizing research, clinical evidence and practical knowledge about

cancer detection and prevention would be very helpful and 78% indicated that a

practical course designed to update or reinforce clinical skills in breast examination

would be somewhat to very useful. Although the response rate for returning the

questionnaire in the above study was only 33%, sample size was large enough

(n = 488) to reflect general attitudes or trends.

In another study, a telephone survey of primary care physicians was conducted on

389 internal medicine and family practice physicians in Minnesota to explore their

comfort and skill providing cancer prevention services to patients. When asked to rate their own behavior on a 5 point likert scale, 98% of female physicians reported being very comfortable performing clinical breast examinations on their female patients compared to 78% of male physicians. Perceived level of skill, however, was rated much lower by both sexes. Only 37% of female and 35% of male physicians considered their skills to be excellent when performing the exam (Lurie, Margolis, McGovern & Mink, 1998). Logistic regression, used to analyze relationships between the dependent variables, comfort and skill, and the independent variables, age, specialty, and sex of the respondent, indicated that older respondents were more likely to report high levels of comfort and skill with performing clinical breast examinations than younger respondents and females were substantially more comfortable examining women than males. No differences were identified by specialty. Although, data were obtained through a self-report of behavior which cannot be objectively verified, these results suggest that experience and gender of the practitioner may influence their personal feelings of comfort and perceived level of skill when performing breast examinations. It is unknown, however, if gender influences self-evaluation of skills or capabilities in sex sensitive examinations. In addition, use of the telephone to collect data may have resulted in biased responses if physicians felt uncomfortable admitting weaknesses to the researchers without anonymity.

When 165 primary care physicians in Texas answered a questionnaire about their breast and cervical cancer screening practices (Goldman & Simpson, 1994), all stated that they performed clinical breast examinations in their practice with 76% reporting that they do the exam yearly on women over 40 who have no specific breast

complaints. Eighty six per cent agreed that clinical breast examinations were an effective use of their time but only 59% felt the procedure was effective for detecting breast cancer at an early stage. Furthermore, only 52% felt comfortable that they performed the examination adequately. No further statistical analyses were implemented for additional insights.

In 1993, Wiecha and Gann studied provider confidence in breast examination using a Likert scale in a self-report survey. A small convenience sample of 37 residents, 23 clinical faculty, and nine nurse practitioners at the University of Massachusetts, Department of Family and Community Medicine participated in the study. Results indicated that half the respondents believed they were somewhat or moderately confident in their breast examination skills. Confidence in skills tended to increase as level of training increased, thus 18% of first year residents, 64% of 3rd and 4th year residents, and 74% of faculty reported high levels of confidence in their breast examination skills. Nurse practitioners, however, who underwent less training than physicians, reported higher levels of confidence in their breast examination skills than medical residents. Sixty six per cent of nurse practitioners indicated they were quite or extremely confident of their clinical breast examination skills. No one in the study revealed total lack of confidence when assessing their own level of skill.

Participants were also asked to rate potential behavioral factors believed to impair their performance of the clinical breast examination. Forty three per cent of the total sample, 20 residents, 6 faculty and 3 nurse practitioners (n = 29), reported at least some lack of confidence in their skills as a factor which affected their ability to do the examination. A moderate positive relationship was detected between the variables

lack of confidence in level of skill and lack of experience detecting breast lumps using a Spearmann rank sum coefficient procedure. This relationship was reported among all respondents. Although generalizability for a sample of 29 is not justifiable, results seem to imply that a relationship between inexperience and perceived lack of skill performing clinical breast examinations may exist.

Summary of Studies Related to Self-Evaluation and Skills

Studies which investigate clinicians' subjective reporting of behavior and skills suggest that primary care providers may benefit from further training and experience performing clinical breast examinations. Objective measures of breast examination skills, however, would provide greater validity into provider performance.

Objective Assessment of Clinical Competency

Li (1994) conducted an exercise to assess basic physical examination skills of 74 junior internal medicine residents and reported that 14% demonstrated inadequate skills while conducting a complete general physical examination on paid volunteers who acted as model patients. Using a 50 item checklist of essential "entry-level" physical examination skills taught to first year medical students at the Mayo Clinic, trained physician faculty observers evaluated each resident's performance. The maximum possible score that could be achieved was 100 and residents who scored above 89 were considered to possess adequate examination skills. Common deficiencies recorded in performance included errors in technique such as performing an examination out of logical sequence, and errors of critical omission such as failing to palpate axillary lymph nodes. A less frequently observed error was inadequate

breast examination (n = 5). The researchers, however, made no mention of reliability or validity of the instrument used in the study.

Dunnington, Wright, and Hoffman (1994) piloted the use of a competency-based clinical skills assessment program on 136 third year medical students enrolled in a surgical clerkship at the University of Southern California. This evaluation system was developed as a means of precisely measuring medical students' competency in physical examination, physician-patient interaction, and documentation skills. A trained observer, using a checklist of technical skills taught throughout a second year clinical medicine course at the same university, recorded students' performance of physical examination skills. The 44 item checklist focused on examination of the chest, abdomen, groin, genitourinary tract, and vascular system. Each student was given a copy of the skills checklist at the beginning of the clerkship and required to demonstrate competency in at least 75% of the items before completion of the clerkship rotation. Although students were informed of skill expectations, nineteen (14%) failed to demonstrate competency in 12 or more of the physical examination skills during their first attempt to pass this requirement. Students who did not achieve a passing score on their first attempt were allowed to repeat their skills demonstration at a later date until the minimum level of competency was achieved. All passed on their second attempt. There was no mention of reliability or validity related to this checklist by the researchers. Yet, a 14% failure rate to achieve competency in physical examination skills, presumed to have been learned in an earlier clinical medicine course, suggests either that some students may not retain skills learned from one year to the next, or that students may possess deficiencies in performance when these skills

are learned, or both. Physical examination skills, therefore, may need to be reassessed periodically to assure that they are performed correctly. Throughout this study, competency assessments of student performance were also being completed by faculty members making subjective evaluations on a traditional student evaluation form with well defined criteria for rating performance. Both methods of evaluating performance were analyzed using the Pearson product-moment correlation coefficient. Subjective ratings of student competency produced a strong positive relationship with the objective measures for physical examination and patient rapport skills, but, a very weak statistical relationship existed between subjective evaluations of physical examination performance and objective measures of physical examination competency.

Schwartz, Donnelly, Sloan, Johnson and Strodel (1994) evaluated clinical knowledge and skills performance of a small sample of sixteen senior general surgery residents using subjective ratings by faculty and objective ratings through structured examinations. Objective assessment of clinical performance was obtained using the Objective Structured Clinical Examination, a comprehensive structured checklist of specific tasks and application of knowledge which are valid and reliable indicators of competency during focused examinations on standardized patients. An objective assessment of clinical knowledge was measured by the American Board of Surgery In-Training Examination.

Subjective evaluations of residents' overall performance by faculty members, ranked students as average to outstanding for their level of clinical knowledge and application of skills. This coincided with performance on the American Board of

Surgery In-Training Examination which was above the national average. Scores from study participants ranged between the 58th and 91st percentile while the national median percentile rank was 56. Objective assessment of clinical skills, however, was relatively low with a mean total performance rating between 60% and 65% for satisfactory demonstration of indicated tasks or application of knowledge on the Objective Structured Clinical Examination. Pearson's product-moment correlation coefficients were calculated to determine relationships among the subjective and objective evaluation methods used. The results indicated that a strong relationship existed between the subjective evaluation of knowledge by oral examination and the American Board of Surgery In-Training Examination of knowledge. It appears that both subjective and objective measures of clinical knowledge are accurate assessments of residents' knowledge. However, no relationship was identified between the subjective evaluation of clinical skills by faculty and objective assessment of skills on the Objective Structured Clinical Examination. This may have indicated that the Objective Structured Clinical Examination evaluates clinical skills differently from faculty evaluations or that faculty evaluations of clinical performance are inflated.

Subjective faculty evaluations are the traditional method of evaluating medical students and house officers' performance throughout their education, even though this type of evaluation system has many sources of bias. Currently, the use of objective evaluation models, which can demonstrate reliability and validity, are gaining favor in medical education. The sample size used in this study, however, was too small to assume with confidence, the validity of the results.

Fletcher, O'Malley and Bunce (1985) investigated physicians' abilities, training and experience with detection of breast lumps in clinical breast examinations. Eighty physicians practicing in a university medical center were randomly selected from specialties of general medicine, family medicine, general surgery, and obstetrics and gynecology to complete questionnaires and demonstrate their ability to detect simulated lumps in manufactured breast models. In total, their education occurred in 43 different medical training institutions. All eighty physicians reported receiving some type of training for clinical breast examinations, yet 36% felt their medical school training for the exam was not adequate and 35% believed their residency training inadequately prepared them to perform the exam. Overall, 84% expressed some need to improve their abilities with clinical breast examination and breast lump detection. Ability to detect breast lumps was measured using five different breast models containing a total of 17 simulated lumps. On average, eight lumps (44%) were correctly identified. The average time spent searching for lumps was 1.9 seconds per model. A two-tailed ANOVA did not reveal variances among participants with regard to experience, specialty, or technique, however, physicians who used a consistent search pattern and were complete in their search tended to have higher breast lump detection rates. A strong correlation was present between lump detection and duration of search using Pearson's product-moment statistic. Researchers suggest that actual time spent examining patients' breasts may improve physicians' ability to detect breast lumps. With 84% of physicians indicating a need to improve their breast examination skills, efforts to enhance educational and training programs in physical examination of the breasts could impact clinical technique and influence duration of

the exam. Any alteration in training programs for breast examination, however, must be carefully evaluated to determine if change affects technical performance or accuracy in breast lump detection.

An objective assessment of clinical breast evaluation skills by Chalabian, Garman, Wallace and Dunnington (1996) at the University of Southern California compared the skills of 120 third and fourth year medical students who participated in a breast evaluation curriculum with 28 surgical house officers who received no additional training in breast examination. Performance was evaluated during a ten minute standardized clinical situation for suspicion of a breast mass on the Objective Structured Clinical Examination. Each physical examination checklist item was analyzed for differences between medical students and house officers using a Kruskal-Wallis one-way analysis of variance. No differences were identified with regard to interaction skills with patients. However, house officers' scores for demonstration of physical examination skills (mean 36.4) were much lower than medical students (mean = 72.7). Common performance deficiencies included absence or incorrect examination of axillary tissue, failure to do 2 of 3 skin inspection maneuvers, non-systematic palpation of tissue, absence of supraclavicular examination, and incorrect explanation of the examination to the patient.

Fourth year medical students in this study were reevaluated during a clinical practice exam prior to graduation and results compared to students graduating from other medical institutions who did not participate in a breast curriculum program. The USC graduates had the highest performance scores overall on the breast component of the examination. Analysis of physical examination skills in this study yielded results

which were similar to those previously discussed in this chapter. These results suggested that additional training in breast examination techniques improved competency of clinical breast examination performance.

Development of a Reliable and Valid Measure of Clinical Competency

The Objective Structured Clinical Examination (OSCE) is a relatively new tool developed by professors of medicine for evaluating postgraduate clinical performance. It is found to be a reliable and valid indicator of clinical competence (Sloan, Donnelly, Schwartz & Strodel, 1995). The OSCE is a comprehensive practical examination of clinical expertise which includes assessment of physical examination skills, interpersonal skills, technical skills, problem-solving abilities, decision-making abilities, and patient treatment skills. The entire instrument consists of 19 clinical problems, including a component on breast examination. Each clinical problem is divided into two parts. Part A involves a five minute interaction between examiner and patient in which the examiner is asked to obtain a history, perform a physical examination, perform a technical exercise, or give a second opinion. In Part B, examiners have five minutes to respond to questions related to the diagnostic work-up and treatment of the patient they previously examined. Performance and responses for both parts are recorded by trained observers on a checklist of objective criteria preset by experts in that clinical area.

Reliability of the Objective Structured Clinical Examination was assessed by Sloan, Donnelly, Schwartz, and Strodel (1995) using coefficient alpha (or Cronbach's alpha) for Part A, Part B, and the entire examination as it was administered to 56 surgical residents. Total scores obtained for each part as well as the entire

examination were used to calculate reliability coefficients. The reliability for Part A was $\alpha = 0.87$. The reliably for Part B was $\alpha = 0.83$. And, when Parts A and B were combined, the reliability for the entire exam was $\alpha = 0.91$.

Validation of the Objective Structured Clinical Examination was assessed in terms of construct validity (Sloan, Donnelly, Schwartz & Strodel, 1995) using the known groups technique approach. The examination was administered to three groups: senior residents, junior residents, and interns using the construct that experience influences clinical competence. In this procedure, a repeated measures analysis of variance was used to determine differences in performance among groups. The repeated measures indicated that performance varied according to level of training with senior residents performing better than junior residents and junior residents performing better than interns ($F = 53.87$, $df = 2, 53$; $p = 0.0001$). A Pearson Product-Moment correlation coefficient was calculated to determine the magnitude of a relationship between level of training and level of performance. A strong positive correlation was present between level of training and average score on the examination which also supported the construct ($r = 0.80$, $p = 0.05$). A Pearson Product-Moment correlation coefficient was calculated to determine if a relationship existed between scores on the Objective Structured Clinical Examination and scores on an American Board of Surgery In-training examination, a standardized test of basic science and clinical knowledge. A strong positive correlation was noted between the assessment of clinical performance and assessment of clinical knowledge ($r = 0.80$, $p = 0.05$).

Summary

In Chapter II relevant literature on clinical assessment and examination of the breast by primary care providers was reviewed. Both subjective and objective measures of clinical performance and competency were discussed. Self-reports of behavior and skills suggest that many clinicians lack confidence in their abilities to detect breast lumps and perform clinical breast examinations adequately. Physicians' perceptions of their own skills may be related to their experience with performing clinical beast examinations or their perception of training received in clinical breast examination. Responses also implied that primary care providers believe they need to improve their clinical breast examination skills and could benefit from practical courses in breast examination and breast lump detection.

Studies which assessed clinical competency of physical examination skills suggest that subjective measures of clinical performance by medical faculty do not correlate with objective measures of clinical skills. Furthermore, medical students, residents, and practicing physicians all demonstrate common deficiencies in performance when skills are measured objectively. Physical examination skills, which are presumed to have been learned during physical examination courses, may not be retained by clinicians' following instruction. Examination skills, however, may improve with the intervention of additional training.

The Objective Structured Clinical Examination has been shown to be a reliable and valid method of evaluating clinical competence. As a multidimensional assessment tool, it provides unique insight into clinical performance during a controlled situation. This instrument not only provides information about the clinical

performance of individuals, it can also determine the quality of training programs by identifying overall weaknesses or deficits within a curriculum which may otherwise be overlooked on the basis of subjective information from faculty.

Chapter III will describe the methodology for conducting an assessment of nurse practitioners' clinical skills in breast examination.

Chapter III

Methodology

Chapter III will describe in detail the methodology for conducting this study. The strategies of this investigation, including the subjects, protection of human rights, and procedures for data collection will be discussed, followed by a description of the instrumentation. The variables of interest will be operationalized, the hypotheses stated, and data analysis for each hypothesis will be outlined. A summary of limitations in the study's design will also be addressed.

This study used a non-experimental, cross-sectional, descriptive design to answer the four research questions posed in Chapter I:

1. What are the clinical breast examination skills of nurse practitioners?

2. Is there a relationship between the number of clinical breast examinations performed by nurse practitioners and their performance rating of breast examination skills?

3. Is there a relationship between the number of years licensed as a nurse practitioner and their performance rating of breast examination skills?

4. Does the clinical specialty of nurse practitioners affect their performance rating of breast examination skills?

A self-reported questionnaire was employed to acquire data.

Subjects

The target population for this study consisted of nurse practitioners who provide primary care services in Delaware or Maryland whose practice included (but was not necessarily limited to) adult women. Participation in the study was limited to adult,

geriatric, family, and women's health nurse practitioners who possessed licensure in one of these practice areas. All advanced practice nurses licensed and certified as adult, geriatric, family, or women's health nurse practitioners in Delaware or Maryland were invited to participate. The total number of these practitioners was 1167. Names and addresses for this sample were obtained from mailing rosters purchased from each state's Board of Nursing.

The sample size required to detect significant results when subjects were divided into 3 independent groups or specialties (adult/geriatric nurse practitioners, family nurse practitioners, and women's health nurse practitioners), was determined using a power analysis table (see Appendix A). A medium effect ($\eta^2 = 0.06$) was estimated using Cohen's conventional values for ANOVA-type situations. In order to achieve a moderate power level (power = 0.70) with a 30% chance of making a Type II error for $\alpha = 0.05$, a minimum of 43 participants were needed for each group (Polit & Hungler, 1991, Table 22-10). In a three group study, the sample size for eta-squared at 0.06 was estimated as the median between $\eta^2 = 0.05$ and $\eta^2 = 0.07$. The total sample was planned to have at least 129 participants.

Protection of Human Subjects. Approval for this study was granted by the Human Volunteers Committee of Salisbury State University prior to the collection of any data. The rights of all prospective subjects were protected. All data were collected from written questionnaires which did not request sensitive information from the participants. Risk to the individual for participating in this study was therefore negligible. Each prospective subject was given full written disclosure of the study and had the right to refuse participation. Volunteers had the right to cease participating at

any time during the study. Each subject was treated equally and all responses were confidential and anonymous.

Procedures

Approximately 550 adult nurse practitioners, 60 geriatric nurse practitioners, 375 family nurse practitioners, and 175 women's health nurse practitioners were estimated by the researcher as qualified to participate in this study. Estimates were obtained by counting the number of nurse practitioners licensed in Delaware and Maryland who are certified in each of these areas. Nurse practitioners credentialed to provide services in two or more of the specified specialty areas were considered ineligible for participation in this study since their services could overlap and violate the condition of independence among groups.

Each subject received a packet containing a disclosure letter (see Appendix B), a questionnaire to ascertain demographic data of the participants (see Appendix C), a standardized questionnaire about clinical skills for breast examination (see Appendix D), and a stamped return envelope addressed to the researcher. The disclosure letter identified the researcher and described the study's intention, risk to the participant, time required to complete the forms (approximately 10 minutes), an assurance of confidentiality and anonymity, and the right of refusal to participate. Distribution of packets was accomplished through U.S mail. Return of the completed or partially completed questionnaires implied consent of the respondents.

All returned questionnaires were received by the researcher. Responses were coded manually, entered into a computer and stored on diskette. Only the researcher and the researcher's thesis committee had access to the completed questionnaires and data.

Upon completion of the research project, all questionnaires and the data diskette remained with the researcher.

Instrumentation

In this study, nurse practitioners' performance of clinical skills in breast examination were assessed using a modified version of the breast examination checklist adopted from Part A of the "breast component" of the Objective Structured Clinical Examination (OSCE). As discussed in Chapter II, the Objective Structured Clinical Examination (see Appendix E) has been demonstrated to be a reliable instrument for measuring the clinical performance of postgraduate medical students Sloan, Donnelly, Schwartz & Strodel, 1995) . Part A of the breast OSCE consists of two elements, a breast history checklist and a breast examination checklist. The breast examination checklist consisted of 12 technical maneuvers considered essential for complete and thorough examination of the breast. Content for the breast OSCE station was derived from content agreed upon as pertinent by the Breast Cancer Education Working Group of the University of Kentucky, Chandler Medical Center (Sloan et al., 1995). No separate testing of reliability or validity for the breast OSCE or the breast examination checklist had been published at this time.

Whereas the original checklist was an observational tool for faculty to evaluate students' demonstration of skills, the modified instrument for this study was a paper-and-pencil, self-report on performance. The 12 technical maneuvers were separated into 14 distinct skills or tasks required for competent breast examination. In the Modified Breast Examination Skills Checklist, participants were asked to report the frequency with which they perform each skill or task on a four point Likert scale

(always = 4, sometimes = 3, rarely = 2, never = 1). Varying or changing an instrument can contribute to measurement errors that introduce bias or distort accuracy of responses (Polit & Hungler, 1991), thus altering the reliability and quality of the instrument itself. The shortening of an instrument also diminishes reliability. For this reason, Cronbach's alpha, a conservative reliability indicator, was computed on the partial instrument (Modified Breast Examination Skills Checklist) to assess reliability under these conditions.

To affirm that content validity of the Modified Breast Examination Skills Checklist remained intact, a panel of three breast surgeons, board certified in general surgery, reviewed the self-report checklist and agreed that essential content for examination of the breast was included and deemed adequate.

Operational Definitions

The study variables of interest were operationalized as follows:

1. Nurse Practitioner: any registered nurse who is a licensed nurse practitioner according to guidelines established by the State Boards of Nursing in Delaware or Maryland.

2. Number of breast examinations performed monthly: the average number of breast examinations each participant reports that he/she performs on female patients each month.

3. Years licensed as a nurse practitioner: the number of years each participant reports that he or she has been licensed as a nurse practitioner in any state.

4. Adult nurse practitioner: any nurse practitioner who reports himself/herself licensed to practice as a certified adult nurse practitioner in the state of Delaware or Maryland.

5. Geriatric nurse practitioner: any nurse practitioner who reports himself/herself licensed to practice as a certified geriatric nurse practitioner in the state of Delaware or Maryland.

6. Family nurse practitioner: any nurse practitioner who reports himself/herself licensed to practice as a certified family nurse practitioner in the state of Delaware or Maryland.

7. Women' health nurse practitioner: any nurse practitioner who reports himself/herself licensed to practice as a certified women's health nurse practitioner in the state of Delaware or Maryland.

8. Performance rating of breast examination skills: the total score calculated on the Modified Breast Examination Skills Checklist.

9. Competency: obtaining a total score of 41 or better out of a possible score of 56 on the Modified Breast Examination Skills Checklist.

Hypotheses and Data Analysis

The Statistical Package for Social Sciences (SPSS) for Windows 95 (version 8.0), a computerized statistical analysis program, was used to analyze coded data collected in this study. Descriptive statistics were calculated for the demographic data including age of the participant, sex of the participant, years licensed as a registered nurse, years licensed as a nurse practitioner nurse, the number of clinical breast examinations performed monthly, and clinical specialty. The mean, standard

deviation, and range were also calculated for age of the participants, number of clinical breast examination performed monthly, years licensed as a registered nurse, and years licensed as a nurse practitioner.

Performance ratings for the 14 clinical skills and tasks of a breast examination were calculated for the sample as a whole and for each specialty.

Hypotheses

Each hypothesis was tested using an alpha level of 0.05.

Hypothesis I. There is a positive relationship between the number of clinical breast examinations performed monthly by nurse practitioners and the performance rating of breast examination skills by nurse practitioners.

A Pearson Product-Moment correlation coefficient was calculated to test the magnitude of this relationship.

Hypothesis II. There is a positive relationship between the number of years licensed as a nurse practitioner and the performance rating of breast examination skills by nurse practitioners.

A Pearson Product-Moment correlation coefficient was calculated to test the magnitude of this relationship.

Hypothesis III. There are no differences in the performance rating of breast examination skills among adult/geriatric nurse practitioners, family nurse practitioners, and women's health nurse practitioners.

Differences in the performance rating of breast examination skills between three independent groups (adult/geriatric nurse practitioners, family nurse practitioners, and

women's health nurse practitioners) were tested using a one-way Analysis of Variance (ANOVA).

Limitations

Several limitations existed in the design of this study. Important threats to reliability of the instrument may have occurred because the Modified Breast Examination Skills Checklist used to measure breast examination skills in this study was only a small component of a large and complex assessment tool, the Objective Structured Clinical Examination. In addition, the tool was altered from an observational instrument to a self-report survey. Changing the format of an existing instrument can influence its measurement capability and thus interfere with its reliability and validity (Polit & Hungler, 1991).

Response set bias is another potential source of measurement error in this study. Since this was a self-report survey, there is no mechanism to verify the veracity of responses from the participants. Some individuals may have felt obligated to report what they perceive as the most desirable response for each question in order to present a favorable image (Polit & Hungler, 1991). This phenomenon could cause misrepresentation of the actual behavior of individuals, thus inflating scores for breast examination performance and true measures of competency.

Sample bias may have also posed a threat to the external validity of this study as this was a sample of convenience. Further, subjects were assigned to groups based upon the clinical specialty of their licensure. Extraneous factors such as personal characteristics of the group, variations in training programs, employment opportunities, and continuing education in physical examination, diagnosis, and

treatment of breast disorders may have affected the reported performance of breast examination skills.

Summary

Chapter III presented the methodology for conducting this study. Descriptions of the sample, procedures, instrumentation, variables, hypotheses, statistical tests for data analysis, and limitations were given. Chapter IV will report results of the statistical analyses performed.

Chapter IV

Results

Chapter IV reports the results of the data analyses performed in this study. The discussion includes descriptive characteristics of the sample as a whole as well as characteristics for each group of nurse practitioners. This chapter also addresses reliability of the Modified Breast Examination Skills Checklist, performance on the Modified Breast Examination Skills Checklist, and testing of the study hypotheses stated in Chapter III. The Statistical Package for Social Sciences (SPSS) for Windows 95 (version 8.0) was used to analyze the data collected in this study. All inferential analyses were done at an alpha level of 0.05.

<u>Characteristics of the Participants</u>

A total of 1167 questionnaires were mailed to 560 adult nurse practitioners, 57 geriatric nurse practitioners, 378 family nurse practitioners, and 172 women's health nurse practitioners licensed in Delaware or Maryland. Five hundred sixteen responses (44%) were returned to the researcher. Of these, 495 were eligible for participation in the study. Inclusion in the study was limited to those who reported certification as an adult and/or geriatric nurse practitioner, a family nurse practitioner, or a women's health nurse practitioner. Individuals who reported no certification or certification in two or more of the above mentioned specialties (with the exception of adult and geriatric certification reported simultaneously) were eliminated from the sample.

The response rate from adult/geriatric nurse practitioners was 42% (258/617), the response rate from family nurse practitioners was 43% (161/378), and the response rate from women's health nurse practitioners was 44% (76/172). The final sample

(n = 495) consisted of 481 women (97.2%) and 14 men (2.8%). There were no male nurse practitioners in the specialty of women's health. Table 1 summarizes the reported characteristics for each specialty including age, years licensed as a registered nurse, years licensed as a nurse practitioner, and number of clinical breast examinations performed each month.

The respondents ranged in age from 26 to 72 years with a mean of 43.88 for the total sample and a standard deviation of 8.13. The mean age for adult/geriatric nurse practitioners was 44.69, the mean age for family nurse practitioners was 41.99, and the mean age for women's health nurse practitioners was 45.17.

Within the total sample, years licensed as a registered ranged from 2 to 48 years with a mean of 20.50 and a standard deviation of 8.48. Adult/geriatric nurse practitioners were licensed as registered nurses an average of 21.96 years, family nurse practitioners an average of 17.75 years, and women's health nurse practitioners were licensed as registered nurses an average of 21.42 years.

The sample mean for years licensed as a nurse practitioner was 8.29 (SD = 7.34) and the range extended from 4 months to 35 years. Those certified in adult/geriatric health had been nurse practitioners an average of 9.55 years. The mean for family nurse practitioners was 5.68 years and the mean women's health nurse practitioners was 9.57 years. The adult/geriatric group reported certification in their specialty an average of 3.87 years longer than family nurse practitioners. Women's health nurse practitioners reported certification in their specialty an average of 3.89 additional years.

Table 1

Characteristics of Nurse Practitioners by Clinical Specialty (n = 495)

		Nurse Practitioner Specialty		
		adult/geriatric	family	women's health
		$\underline{M}$	$\underline{M}$	$\underline{M}$
		(SD)	(SD)	(SD)
Characteristics of Nurse Practitioners	age	45 (8)	42 (8)	45 (8)
	years licensed as a registered nurse	18 (8)	18 (8)	21 (9)
	years licensed as a nurse practitioner	9.55 (7.73)	5.68 (6.12)	9.57 (6.99)
	number of clinical breast examinations performed monthly	22.84 (39.67)	21.41 (27.05)	103.54 (78.47)

Numeric values for the reported number of clinical breast examinations performed by the nurse practitioners in this sample was asymmetrically distributed. As a group, the sample reported that they perform between zero and 350 clinical breast examinations per month with a mean of 34.75 and a standard deviation of 53.41. The median score was 13 and the mode was zero [57 respondents (11.5% of the sample) reported that they never perform clinical breast examinations in their practice]. Adult/geriatric nurse practitioners reported performing an average of 22.84 clinical breast examinations each month and family nurse practitioners reported performing an average of 21.41 clinical breast examinations per month. Women's health nurse practitioners, however, reported performing an average of 103.54 clinical breast examinations each month.

Reliability of the Modified Breast Examination Skills Checklist

The Modified Breast Examination Skills Checklist used in this study consisted of fourteen statements describing skills or tasks considered essential for complete and thorough examination of breast tissue(see Appendix D). Participants were asked to report the frequency with which they perform each statement on a four point Likert scale. This self-reporting questionnaire was developed from the breast examination checklist used in Part A of the "breast component" of the Objective Structured Clinical Examination. The original OSCE, an observational tool, has been documented as a reliable and valid instrument for measuring clinical competency (Sloan, Donnelly, Schwartz, & Strodel, 1995). Cronbach's alpha was computed for the modified questionnaire used in this study. The reliability coefficient for the 14

statements on the Modified Breast Examination Skills Checklist was $\alpha = 0.8345$ (n = 413), showing moderately high-to-high inter-item reliability.

Performance Scores on the Modified Breast Examination Skills Checklist

Four hundred thirteen respondents completed the Modified Breast Examination Skills Checklist in full. Their scores ranged from 14 to 56 with a mean of 51.24 and a standard deviation of 4.91. For the purpose of this study, competency for performing a clinical breast examination was defined as obtaining a total score of 41 or better out of a possible score of 56 on the Modified Breast Examination Skills Checklist. Four hundred six (82%) of all respondents achieved a score within this definition of competency.

The performance ratings for the 14 clinical skills and tasks of a breast examination are summarized in Table 2 for the entire sample as well as each specialty. A breakdown of responses by clinical specialty on the Modified Breast Examination Skills Checklist is located on Table 3 and Table 4.

Hypotheses Testing

Hypothesis I. There is a positive relationship between the number of clinical breast examinations performed monthly by nurse practitioners and the performance rating of breast examinations skills by nurse practitioners.

A one-tailed Pearson Product-Moment correlation, computed between the number of clinical breast examinations performed monthly by nurse practitioners and the performance rating of breast examination skills by nurse practitioners indicated a weak positive correlation ($r = .16$, $df = 410$, $p = 0.001$).

Table 2

Performance Ratings on the Modified Breast Examination Skills Checklist (n = 495)

| | | Nurse Practitioner Specialty | | | | | | Group Total | |
| | | adult/geriatric | | family | | women's health | | | |
		Count	Col %	Count	Col %	Count	Col %	Count	Col%
	incomplete	54	20.9%	23	14.3%	5	6.6%	82	16.6%
	14	2	.8%	1	.6%	0	.0%	3	.6%
	17	0	.0%	1	.6%	0	.0%	1	.2%
	32	1	.4%	0	.0%	0	.0%	1	.2%
	37	1	.4%	0	.0%	0	.0%	1	.2%
	40	0	.0%	1	.6%	0	.0%	1	.2%
	41	1	.4%	2	1.2%	1	1.3%	4	.8%
	41	0	.0%	3	1.9%	0	.0%	3	.6%
	44	2	.8%	1	.6%	0	.0%	3	.6%
	45	5	1.9%	0	.0%	2	2.6%	7	1.4%
	46	9	3.5%	3	1.9%	0	.0%	12	2.4%
	47	7	2.7%	3	1.9%	1	1.3%	11	2.2%
	48	9	3.5%	5	3.1%	2	2.6%	16	3.2%
	49	9	3.5%	12	7.5%	8	10.5%	29	5.9%
	50	17	6.6%	13	8.1%	7	9.2%	37	7.5%
	51	21	8.1%	13	8.1%	7	9.2%	41	8.3%
	52	26	10.1%	18	11.2%	7	9.2%	51	10.3%
	53	28	10.9%	17	10.6%	14	18.4%	59	11.9%
	54	31	12.0%	25	15.5%	7	9.2%	63	12.7%
	55	16	6.2%	17	10.6%	10	13.2%	43	8.7%
	56	19	7.4%	3	1.9%	5	6.6%	27	5.5%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%

Table 3

Responses by Clinical Specialty on the Modified Breast Examination Skills Checklist
Questions 1 - 7 (n = 495)

| | | Nurse Practitioner Specialty | | | | | | Group Total | |
| | | adult/geriatric | | family | | women's health | | | |
		Count	Col %	Count	Col %	Count	Col %	Count	Col%
Question 1	always	222	86.0%	144	89.5%	72	94.7%	438	88.5%
	sometimes	9	3.5%	10	6.2%	3	4.0%	22	4.4%
	rarely	0	0.0%	1	0.6%	0	0.0%	1	0.2%
	never	2	0.8%	1	0.6%	0	0.0%	3	0.6%
	missing	25	9.7%	5	3.1%	1	1.3%	31	6.3%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 2	always	125	48.5%	88	54.7%	38	50.0%	251	50.7%
	sometimes	79	30.6%	50	31.0%	32	42.1%	161	32.5%
	rarely	24	9.3%	14	8.7%	4	5.3%	42	8.5%
	never	5	1.9%	4	2.5%	1	1.3%	10	2.0%
	missing	25	9.7%	5	3.1%	1	1.3%	31	6.3%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 3	always	158	61.2%	105	65.2%	45	59.3%	308	62.2%
	sometimes	45	17.4%	34	21.1%	21	27.6%	100	20.2%
	rarely	19	7.4%	12	7.5%	8	10.5%	39	7.9%
	never	9	3.5%	5	3.1%	1	1.3%	15	3.0%
	missing	27	10.5%	5	3.1%	1	1.3%	33	6.7%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Queestion 4	always	167	64.7%	111	68.9%	61	80.3%	339	68.5%
	sometimes	39	15.1%	25	15.6%	11	14.5%	75	15.1%
	rarely	14	5.4%	13	8.1%	2	2.6%	29	5.9%
	never	13	5.1%	6	3.7%	1	1.3%	20	4.0%
	missing	25	9.7%	6	3.7%	1	1.3%	32	6.5%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 5	always	228	88.4%	149	92.6%	75	98.7%	452	91.3%
	sometimes	4	1.6%	4	2.5%	0	0.0%	8	1.6%
	rarely	0	0.0%	1	0.6%	0	0.0%	1	0.2%
	never	2	0.7%	2	1.2%	0	0.0%	4	0.8%
	missing	24	9.3%	5	3.1%	1	1.3%	30	6.1%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 6	always	215	83.4%	144	89.5%	72	94.7%	431	87.1%
	sometimes	14	5.4%	8	5.0%	3	4.0%	25	5.0%
	rarely	0	0.0%	2	1.2%	0	0.0%	2	0.4%
	never	5	1.9%	2	1.2%	0	0.0%	7	1.4%
	missing	24	9.3%	5	3.1%	1	1.3%	30	6.1%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 7	always	204	79.1%	136	84.4%	66	86.8%	406	82.0%
	sometimes	20	7.8%	14	8.7%	5	6.6%	39	7.9%
	rarely	5	1.9%	3	1.9%	4	5.3%	12	2.4%
	never	5	1.9%	3	1.9%	0	0.0%	8	1.6%
	missing	24	9.3%	5	3.1%	1	1.3%	30	6.1%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%

Table 4

Responses by Clinical Specialty on the Modified Breast Examination Skills Checklist
Questions 8 - 14 (n = 495)

		Nurse Practitioner Specialty						Group Total	
		adult/geriatric		family		women's health			
		Count	Col %	Count	Col %	Count	Col %	Count	Col%
Question 8	always	178	69.0%	137	85.1%	69	90.8%	384	77.6%
	sometimes	21	8.1%	4	2.5%	2	2.6%	27	5.5
	rarely	4	1.6%	1	0.6%	0	0.0%	5	1.0%
	never	7	2.7%	2	1.2%	0	0.0%	9	1.8
	missing	48	18.6%	17	10.6%	5	6.6%	70	14.1%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 9	always	37	14.3%	14	8.7%	9	11.9%	60	12.1%
	sometimes	74	28.7%	49	30.5%	34	44.7%	157	31.7%
	rarely	64	24.8%	44	27.3%	25	32.9%	133	26.9%
	never	34	13.2%	35	21.7%	3	3.9%	72	14.5%
	missing	49	19.0%	19	11.8%	5	6.6%	73	14.8%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 10	always	178	69.0%	131	81.4%	62	81.6%	371	75.0%
	sometimes	27	10.4%	9	5.6%	9	11.8%	45	9.1%
	rarely	3	1.2%	1	0.6%	0	0.0%	4	0.8%
	never	3	1.2%	2	1.2%	0	0.0%	5	1.0%
	missing	47	18.2%	18	11.2%	5	6.6%	70	14.1%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 11	always	158	61.2%	106	65.8%	49	64.4%	313	63.2%
	sometimes	35	13.7%	24	14.9%	18	23.7%	77	15.6%
	rarely	13	5.0%	6	3.7%	4	5.3%	23	4.7%
	never	5	1.9%	8	5.0%	0	0.0%	13	2.6%
	missing	47	18.2%	17	10.6%	5	6.6%	69	13.9%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 12	always	182	70.5%	128	79.5%	61	80.2%	371	75.0%
	sometimes	13	5.0%	6	3.7%	5	6.6%	24	4.9%
	rarely	4	1.6%	6	3.7%	4	5.3%	14	2.8%
	never	11	4.3%	3	1.9%	1	1.3%	15	3.0%
	missing	48	18.6%	18	11.2%	5	6.6%	71	14.3%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 13	always	178	69.0%	125	77.6%	61	80.3%	364	73.6%
	sometimes	25	9.7%	14	8.7%	9	11.8%	48	9.7%
	rarely	2	0.7%	3	1.9%	0	0.0%	5	1.0%
	never	4	1.6%	2	1.2%	1	1.3%	7	1.4%
	missing	49	19.0%	17	10.6%	5	6.6%	71	14.3%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%
Question 14	always	171	66.2%	106	65.8%	53	69.7%	330	66.7%
	sometimes	33	12.8%	28	17.4%	16	21.1%	77	15.6%
	rarely	3	1.2%	6	3.7%	2	2.6%	11	2.2%
	never	3	1.2%	3	1.9%	0	0.0%	6	1.2%
	missing	48	18.6%	18	11.2%	5	6.6%	71	14.3%
Group Total		258	100.0%	161	100.0%	76	100.0%	495	100.0%

Hypothesis II. There is a positive relationship between the number of years licensed as a nurse practitioners and the performance rating of breast examination skills by nurse practitioners.

A one-tailed Pearson Product-Moment correlation was computed between the number of years licensed as a nurse practitioner and the performance rating of breast examination skills by nurse practitioners. No correlation was found between the variables (r =.05, df = 411, p = 0.165).

Hypothesis III. There are no differences in the performance rating of breast examination skills among adult/geriatric nurse practitioners, family nurse practitioners, and women's health nurse practitioners.

A one-way ANOVA was computed on the performance rating of breast examination skills of adult/geriatric nurse practitioners, family nurse practitioners, and women's health nurse practitioners revealing no statistically significant differences in the performance of breast examination skills among these three groups (F = 0.930, df = 2, 410, p = 0.396).

Additional Analyses

A two-tailed Pearson Product-Moment correlation procedures demonstrated weak, but statistically significant positive relationships between performance rating of breast examination skills and age (r = .14, df = 411, p = 0.003) and performance rating of breast examination skills and years licensed as a registered nurse (r = .16, df = 409, p = 0.001).

Summary

In this chapter, results of the data analyses performed in this study were reported. Descriptive characteristics of all respondents were given as well as the characteristics of each clinical specialty. Reliability of the Modified Breast Examination Skills Checklist was computed and performance ratings summarized. Statistical analyses of the three hypotheses proposed in Chapter III were presented in addition to supplemental analyses. Chapter V will discuss the results of this study.

Chapter V

Discussion of Results

Chapter V will provide a descriptive summary and interpretation of the results

obtained in this study including integration of the findings with past literature and

their significance to the nursing profession. The discussion will also address

limitations and weaknesses of the study as well as identify directions for future

research in the areas of clinical breast examination and clinical competency of nurse

practitioners.

It was the primary purpose of this study to investigate the clinical breast

examination skills of nurse practitioners. A secondary purpose was to see if the

frequency of performing breast examinations, length of time as a nurse practitioner, or

clinical specialty were factors in skill performance of breast examinations. Reports

documenting nurse practitioners' competency performing clinical breast examinations

were lacking in the literature. This self-report of clinical skills provided a cost-

effective means with which to measure and evaluate the breast examination practices

of nurse practitioners licensed in the states of Delaware and Maryland.

Summary and Discussion of Results

The number of nurse practitioners who participated in this study was 495. The

response rates from each specialty group, adult/geriatric nurse practitioners, family

nurse practitioners, and women's health nurse practitioners, were similar at 42%,

43%, and 44% respectively.

Participants were primarily women in their early forties who had been licensed as

nurse practitioners approximately eight years. On the average, they had been

registered nurses an additional twelve years, thus having roughly 20 years of experience in the nursing profession. Family nurse practitioners were found to be slightly younger than adult/geriatric and women's health nurse practitioners and had a tendency to be licensed as registered nurses and nurse practitioners fewer years than adult/geriatric and women's health nurse practitioners. Although programs to prepare family nurse practitioners began during the early 1970's (Hawkins & Thibodeau, 1996), they may not have been easily accessible until a decade ago to nurses in all areas of Delaware and Maryland. The addition of family nurse practitioner programs at colleges in the rural areas of the mid-Atlantic states within the past seven years may have enticed younger nurses in these two states to pursue this advanced practice role.

Women's health nurse practitioners reported that they perform considerably more clinical breast examinations per month than adult/geriatric and family nurse practitioners. This, however, was to be expected since their patient population consists entirely of women.

Instrumentation. The Modified Breast Examination Skills Checklist, a paper-and-pencil self-report used to assess competency in clinical breast examination performance, was found to have a moderately strong inter-item correlation ($\alpha = 0.8345$). A reliability coefficient above 0.80 was considered adequate by this researcher and her committee for making inferences about self-reported skills in breast examination.

The Modified Breast Examination Skills Checklist was developed from a small section of an observational tool, the Objective Structured Clinical Examination, used to assess clinical competency in medical student. Several advantages occurred as a

result of altering this instrument from an observational tool to a paper-and-pencil self-report. Those benefits included reduction in both cost and time required to collect data on breast examination skills of nurse practitioners, the ability to offer complete anonymity to participants for their responses on the questionnaire, and the elimination of observer bias during the data collection process. Weaknesses, however, were also present with use of a self-report questionnaire. For example, confusing or misunderstood questions could not be rephrased and may have gone unanswered, control over who was completing the questionnaire could be exercised, and there was no means with which to assure honest reporting of responses. Although use of an observational tool would have improved the accuracy of recording breast examination skills, the cost and time required to implement this method of data collection was prohibitive to the researcher.

Of the 495 nurse practitioners who participated in the study, 82% scored 41 or higher on the Modified Breast Examination Skills Checklist, fulfilling the criteria for competency established in this study. However, 82 out of 495 respondents (16.6%) did not fully complete the questionnaire. Seven percent of the respondents only answered half of the items, questions one through seven. This could be attributed to the fact that the questionnaire was printed on both sides of one sheet of paper with seven questions on each side. Some respondents did not turn the questionnaire over to answer the last seven questions even though directions were present to do so. It could have been that the directions were not large enough to get respondents' attention. It could not be assumed that missing responses meant that they were not performed, nor could the opposite be assumed, therefore, omitted questions were lost to the analysis.

Thus, many respondents who did not achieve a score of competency, did not because they either omitted the questionnaire or did not complete enough items on it to achieve a score of 41 or better.

Of the 413 respondents who fully completed the Modified Breast Examination Skills Checklist, an overwhelming majority (98%) achieved a score of competency including all women's health nurse practitioners. This finding supports an assumption that nurse practitioners are knowledgeable and skilled in clinical breast examination through their report of competent skills performance.

The literature cites many reports of clinical inadequacy among medical students and practicing physicians (Lurie, Margolis, McGovern & Mink, 1998; Goldman & Simpson, 1994; Wichea & Gann, 1993; Li, 1994; Dunnington, Wright & Hoffman, 1994; Fletcher, O'Malley & Bunce, 1985; Chalabian, Garman, Wallace & Dunnington, 1996). However, the results of this study present a favorable analysis of nurse practitioners reported competency in clinical breast examination. It was an assumption of this study that respondents would provide honest reports of behavior, although information obtained through self-reporting could have been exaggerated. Nonetheless, scores on the Modified Breast Examination Skills Checklist indicate that nurse practitioners, especially those in women's health, report performing the essential skills of a breast examination. It could be that nurse practitioners, who are primarily women, are sensitive to breast examination for several reasons: 1) they are well trained in breast examination, 2) they retain their skills, 3) they have taught breast self-examination to their female patients, thus reinforcing skills. The variable, gender, may play a vital role in the reported measure of competency for clinical breast

examination. For example, female physicians have reported higher levels of skill and comfort performing clinical breast examinations than male physicians (Laurie, Margolis, McGovern & Mink, 1998). Perhaps female nurse practitioners share this finding.

The most frequently recorded response from all specialties for 13 of 14 questions on the Modified Breast Examination Skills Checklist was "always". The exception to this pattern occurred with question nine, which addressed palpating breast tissue with the patient in a sitting position, where only 12.1% of the sample reported that they "always" perform this skill. The response "sometimes" was recorded by 37.1% of the participants, the response "rarely" was recorded by 26.9% of the participants, and the response "never" was recorded by 14.5% of the participants. The fact that responses for question nine differed from the other 13 questions would seem to support the assumption that participants in this study were reporting their behavior honestly.

Palpation of breast tissue was also included in question eight, however it stated that the patient was to be placed in supine position. Some nurse practitioners may find it more difficult to palpate irregularities when breasts are pendulous, thus performing this task less frequently. Others may have felt that repeating the task of palpation in another position offered no additional information about the patient, therefore limiting the performance of this task. It is also plausible that nurse practitioners, who often work under time constraints per patient, are not afforded the luxury of performing similar clinical skills unless they feel it will help them make a definitive diagnosis. Perception that a physical examination skill is unnecessarily difficult or redundant could offer a rational explanation for responses to question nine.

Research Questions. This study was conducted to answer the following research

questions:

1. What are the clinical breast examination skills of nurse practitioners?

2. Is there a relationship between the number of clinical breast examinations

   performed by nurse practitioners and nurse practitioners' performance rating of

   breast examination skills?

3. Is there a relationship between the number of years licensed as a nurse

   practitioner and nurse practitioners' performance rating of breast examination

   skills?

4. Does the clinical specialty of nurse practitioners affect their performance rating

   of breast examination skills?

Three research hypotheses were tested in this study.

Hypothesis I. There is a positive relationship between the number of clinical

breast examinations performed monthly by nurse practitioners and the performance

rating of breast examinations skills by nurse practitioners.

A weakly positive, yet significant relationship, existed between these two

variables. This finding suggests that nurse practitioners who perform breast

examinations frequently also perform all skills essential to breast examination more

frequently or thoroughly. Individuals who often perform clinical breast examinations

in their practice, such as women's health nurse practitioners, may place greater

interest in learning about the diagnosis of breast diseases and could have received

additional training in breast examination beyond their basic nurse practitioner

education. Continuing education is a requirement for maintaining licensure as a nurse

practitioner and many employing institutions demand it as well. Costanza, Hoople, Gaw & Stoddard (1993) and Fletcher, O'Malley, & Bunce (1985) found that primary care providers felt that they could benefit from further training and experience with breast examination. Perhaps, nurse practitioners who perform numerous breast examinations felt the same way. As a result, to fulfill continuing education requirements, they may have sought additional training in breast examination. Chalabian, Wallace, Garman & Dunnington (1996) demonstrated that additional training in breast examination improved competency scores for the performance of breast examinations. Continuing education and training in breast examination reinforces the need for proper technique, and therefore could create higher performance rating scores on the Modified Breast Examination Skills Checklist.

Individuals who routinely perform numerous clinical breast examinations in their practice may also have greater exposure to the pathology of breast cancer. Women living in the United States have a one in eight lifetime risk of developing breast cancer which can be challenging to diagnosis by physical examination (American Cancer Society, 1997). As the number of breast examinations performed increases, so might the likelihood of finding an abnormality in breast tissue. The literature cites that physicians who are complete and consistent in their examination of breast tissue tend to have higher breast lump detection rates (Fletcher, O'Malley & Bunce, 1985). Perhaps, nurse practitioners who repetitively perform breast examinations become more meticulous in their performance of the examination to conclude a clinical impression, thus improving their level of competency.

Hypothesis II. There is a positive relationship between the number of years licensed as a nurse practitioners and the performance rating of breast examination skills by nurse practitioners.

Contrary to the prediction, no relationship existed between these two variables. The literature identifies conflicting reports between level of experience and physical examination skills. An association between confidence in breast examination skills and level of training among medical doctors was noted by Wichea and Gann (1993), yet other studies suggest that physical examination skills deteriorate over time (Chalabian, Garman, Wallace & Dunnington, 1996; Dunnington, Wright & Hoffman, 1994). This study detected no association between years of licensure as a nurse practitioner and performance of breast examination skills. Almost all participants who completed the Modified Breast Examination Skills Checklist achieved high scores. Regardless of years licensed as a nurse practitioner, almost everyone reported competent performance for clinical breast examination.

The assessment of competency, however, was ascertained by means of a self-report survey. One drawback to this method of data collection is the potential for distortion of responses. It is possible that some nurse practitioners in this study, either deliberately or unconsciously, exaggerated the frequency with which they perform the essential skills of a clinical breast examination, thus inflating the report of competency by everyone.

Even though no association between experience as a nurse practitioner and performance of breast examination skills was detected, two unpredicted variables, age and years licensed as a registered nurse, demonstrated weak associations with the

reported measure of competency. This was of interest because the majority of participants in this study were over the age of 40 and had been in the profession of nursing an average of 20 years. Age has shown an association with high reports of comfort and skill performing clinical breast examinations (Lurie, Margolis, McGovern & Mink, 1998) while studies detecting poor performance of clinical skills examined populations of medical students and residents who were relatively young in age (Li, 1994; Dunnington, Wright & Hoffman, 1996, Schwartz, Donnelly, Sloan, Johnson & Strodel, 1994). Perhaps age and registered nursing experience represent maturity or another variable associated with characteristics not directly measured in this or other studies that influence clinical competency.

Hypothesis III. There are no differences in the performance rating of breast examination skills among adult/geriatric nurse practitioners, family nurse practitioners, and women's health nurse practitioners.

There were no statistically significant differences in the reported performance rating of breast examination skills between these three specialty groups. As stated earlier, an overwhelming majority of those who completed the Modified Breast Examination Skills Checklist achieved high scores representing competency, thus minimizing the variability among scores. Long years in the nursing profession as registered nurses, however, may have been a factor in "flattening out" variability. Unlike medical students who enter their profession without prior experience, nurse practitioners must first become registered nurses before pursuing an advanced practice career. The training and socialization of nurse practitioners may have also been a confounding factor minimizing differences among specialty groups.

If examination of the breast was learned correctly during the training period and skills were retained and continued by the practitioner routinely, then all nurse practitioners, regardless of specialty, would report similar behaviors in practice. Among physicians, literature supports the finding that no differences occur among specialty groups when clinical breast examination skills are examined by self-report or observation (Lurie, Margolis, McGovern & Mink, 1998; Fletcher, O'Mallery & Bunce, 1985).

Implications for Nursing

The primary purpose of this study was to investigate and describe the clinical breast examination skills of nurse practitioners. A secondary purpose was to see if the frequency of performing breast examinations, length of time as a nurse practitioner, or clinical specialty were factors in skill performance of breast examinations. Evidence documenting nurse practitioners' clinical performance of breast examination was lacking in the literature. This study helped to fill that void.

The findings indicate that a great majority of nurse practitioners trained in primary care report compliance with the skills required for competent performance of clinical breast examination. Assurance that clinicians are performing the examination competently may improve the chances for early detection of breast disease.

The literature shows that physicians in different specialties are knowledgeable about breast examination and routinely perform breast examinations in their practice (Lurie, Margolis, McGovern & Mink, 1998; Wichea & Gann, 1993; Fletcher, O'Malley & Bunce, 1985), however, they lack confidence in their ability to perform the examination adequately (Costanza, Hoople, Gaw & Stoddard, 1993). The nurse

practitioners in this study seem more uniform in their performance of breast examination than literature indicates in medical practice. Nurse practitioner education may provide a stronger foundation of clinical skills, especially with regard to breast examination, than medical programs. Or, nurse practitioners may be more conscious of performing breast examinations well because they are female and older as the results of this study indicate. For nursing, it would appear that being female and older has some positive impact on the ability to perform clinical breast examinations. In any case, nurse practitioners seem to be doing their job.

Limitations

Several limitations in the design of this study affect generalizability of the findings. Since this was a non-experimental descriptive study with no manipulation of variables and no controls, no causality could be concluded in the results. Furthermore, confounding variables not accounted for in the collection of data, such as basic education and employment experience, could have confounded results.

Sampling bias, recognized as a potential weakness in this study, makes invalid any generalizing of results to the population of nurse practitioners in the mid-Atlantic area because participants were self-selecting. No randomization to groups was done. Nurse practitioners were assigned to groups based upon their specialty certification. As a result, groups were not controlled for initial differences in factors such as personal characteristics of the group, variations in training programs, employment opportunities, and continuing education in physical examination, diagnosis, and treatment of breast disorders. That is to say, it was impossible to control for

differences among groups which could have occurred separately from the type of certification they possessed.

Another limitation of this study lies in the nature of the instrument. Although the Modified Breast Examination Skills Checklist demonstrated moderate inter-item correlation of clinical competency, the participants had all of the performance objectives in front of them as they answered the questionnaire. Those skills which may have been performed incorrectly or omitted altogether, could not be ascertained from this data collection method. Theoretically, the participants could have reported all of the skills and done none of them.

Additionally, over 15% of the study participants did not fully complete the Modified Breast Examination Skills Checklist. Many only completed half of the questionnaire, omitting seven questions which were printed on the back side of the paper. Missing responses could not assumed to be correct or incorrect, thus the data were lost to the analysis.

From another perspective, an assumption of this study was that self reported behavior implied honest responses from participants reflective of their performance in clinical practice. However, self reported behavior does not necessarily equal actual performance. Response set bias could have occurred among the participants, inflating results to create a favorable image to the researcher or to themselves. The best method to report skills performance is through expert observation, but this was not a feasible methodology for this study. There was no comparison between the self-report of skills and their actual performance, therefore, caution must be exercised when using these findings.

Although performance ratings on the Modified Breast Examination Skills Checklist were high with 13 of 14 skills reportedly performed "always" with every breast examination, question nine elicited few responses which were consistent with socially desirability. The fact that responses to question nine differed from the other thirteen questions might be considered an indicator of honesty among study participants, thus reducing the impact of response set bias. While the influence of response bias could not eliminated from the scaling procedure used in this questionnaire, question nine may have served as subtle means of minimizing its effect on the measurement of reported skills in breast examination.

Suggestions for Future Research

The results of this study provide a baseline of information about the reported performance of clinical breast examinations by nurse practitioners but it also raised other questions for future research. First, what would be the observed performance of clinical breast examinations skills among nurse practitioners, and do they differ among clinical specialties? Direct observation would not only provide information about actual behavior it would also serve as a means by which to effectively critique competency. Following the observation, trained observers could provide feedback about the examination, correcting mistakes or omissions in performance and reinforce proper technique. Comparing and contrasting actual differences in performance among specialties could provide nursing with valuable information about the training programs and clinical preparation of each specialty.

Second, how do reported behaviors of clinical breast examination compare with observed behaviors? Examining the relationship between actual and perceived performance would confer the accuracy of self evaluation.

Third, how do nurse practitioners' actual or perceived performance of clinical breast examinations compare with physicians or physician assistants? This analysis might provide insight into the clinical skills of both professions as well as compare and contrast differences in performance.

Other questions from this study arise from the relationship between age and years licensed as a registered nurse with reported performance of clinical breast examinations. The findings from this study invite further investigation to ascertain their impact upon skills performance.

Participants might also be asked additional information such as their employment setting, patient population served, training in clinical breast examination, or experience with breast cancer to ascertain greater detail about the population of nurse practitioners. This study could be replicated using a larger sample of male nurse practitioners to determine if any differences occur as a result of gender. It could also be replicated in other geographic areas to identify if differences in clinical practice occur as a result of regional location.

Summary

The population of nurse practitioners surveyed in Delaware and Maryland consisted primarily of women over the age of forty who had been in the profession of nursing roughly twenty years. Analysis of their breast examination skills indicated that almost all report compliance with the essential skills required for competent performance of

clinical breast examination. Reports that nurse practitioners are performing clinical breast examinations competently provides assurance that they are following a standard of care for breast cancer detection.

The Modified Breast Examination Skills Checklist used to survey nurse practitioners' reported performance of breast examination skills was found to have sufficient inter-item reliability for measuring self-reported competency in breast examination.

A weakly positive, but significant relationship was identified between the performance of breast examination skills and the number of clinical breast examinations performed by nurse practitioners. No association was identified between the performance of breast examination skills and years licensed as a nurse practitioner. However, weakly positive, but significant relationships were discovered between performance of breast examination skills and age, and performance of breast examination skills and years licensed as a registered nurse. It appears from this study that older nurse practitioners who repetitively perform breast examinations in their clinical practice may provide a more complete and thorough breast exam, although, the majority of nurse practitioners did report competent performance of the exam on the Modified Breast Examination Skills Checklist.

No differences in the performance of breast examination skills were identified among nurse practitioners certified in the specialty areas of adult/geriatric health, family health, and women's health.

Several limitations in the design of this study may have affected the findings. Weaknesses included lack of manipulation and controls to conclude causality,

selection bias of the sample, and use of a self-reporting instrument to obtain data. Suggestions for improving this study were provided along with ideas for future studies in the areas of clinical competency and breast examination.

Chapter V summarized and discussed the results of this study integrating the research findings with past literature. Implications of the findings to nursing practice were given, as well as, limitations and suggestions for future research.

Appendix A

Statistical Power Table for Various ANOVA Situations

Table 22-10. *Approximate Sample Sizes* Necessary to Achieve Selected Levels of Power for α = .05 as a Function of Estimated Population Values of Eta-Squared*

POWER	POPULATION ETA-SQUARED									
	.01	.03	.05	.07	.10	.15	.20	.25	.30	.35
GROUPS = 3										
.70	255	84	50	35	24	16	11	9	7	6
.80	319	105	62	44	30	19	14	11	9	7
.90	417	137	81	57	39	25	18	14	11	9
.95	511	168	99	69	47	30	22	16	13	11
GROUPS = 4										
.70	219	72	43	30	21	13	10	8	6	5
.80	272	90	53	37	26	17	12	9	7	6
.90	351	115	68	48	33	21	15	12	9	8
.95	426	140	83	58	40	25	18	14	11	9
GROUPS = 5										
.70	193	64	38	27	18	12	9	7	6	5
.80	238	78	46	33	23	15	10	8	7	5
.90	306	101	59	42	29	18	13	10	8	7
.95	369	121	72	50	34	22	16	12	10	8

* The values are the number of subjects *per group*.

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Appendix B

Disclosure Letter

Linda Smith
30312 Dagsboro Rd.
Salisbury, MD 21804

Dear Nurse Practitioner:

I am a graduate student at Salisbury State University in Salisbury, Maryland completing a Master of Science degree in nursing. Currently, I am conducting a research study to investigate nurse practitioners' clinical skills in breast examination and I am inviting nurse practitioners licensed in Maryland or Delaware to participate. The information derived from this study will be used to enhance the body of knowledge in advanced practice nursing.

My study includes 2 questionnaires which will require approximately 5 minutes of your time to complete. All responses will be confidential and anonymous. Your decision to participate in this study is strictly voluntary and you may withdraw from the study at any time. There are no physical, psychological, or economic risks which may be incurred as a result of participating in this study. Completion and return of the questionnaires in the envelope provided will imply your consent.

If you would like to know the results of this study or have further questions, you may contact me at the address listed on the top of this page or by e-mail at: jose@dmv.com.

Sincerely,

Linda Smith, RN
Graduate Nursing Student
Salisbury State University

Appendix C

Questionnaire of Demographic Data

Please take a moment to answer a few questions about yourself.

1. Please indicate your gender: Male   Female

2. Please indicate your age: _____

3. In what year did you receive your RN licensure? _____

4. How many years have you been licensed as a nurse practitioner? _____

    If less than one year, how many months? _____

5. Please circle the type of certification you hold as a nurse practitioner.

    Adult   Geriatric   Family   Women's Health   Other:_____

6. How many clinical breast examinations do you estimate that you perform

    monthly? _____

Appendix D

Questionnaire of Clinical Skills for Breast Examination

Given the constraints within your practice, please circle the response which most accurately reflects the frequency with which you perform each statement when conducting a clinical breast examination on your female patients.

1. Place the patient at ease.

      Always   Sometimes   Rarely   Never

2. Inspect the breasts with the patient in an upright or sitting position.

      Always   Sometimes   Rarely   Never

3. Document symmetry, skin, and nipple appearance of the breasts in your notes.

      Always   Sometimes   Rarely   Never

4. Use a two handed technique to palpate each breast. (Palpate breast tissue using the finger pads of one hand while stabilizing the breast with your other hand.)

      Always   Sometimes   Rarely   Never

5. Palpate all four quadrants of the breast equally and thoroughly.

      Always   Sometimes   Rarely   Never

6. Palpate the central subareolar area of each breast.

      Always   Sometimes   Rarely   Never

7. Check for nipple discharge.

      Always   Sometimes   Rarely   Never

8. Palpate each breast with the patient's elbow elevated or hand behind her head while she lies in supine position.

     Always   Sometimes   Rarely   Never

9. Palpate each breast with the patient in a sitting position.

     Always   Sometimes   Rarely   Never

10. Palpate each axilla thoroughly while making an effort to relax the patient's arm and chest wall muscles.

     Always   Sometimes   Rarely   Never

11. Palpate supraclavicular lymph nodes.

     Always   Sometimes   Rarely   Never

12. Document the lack or absence of a dominant mass in your notes when one is not palpable.

     Always   Sometimes   Rarely   Never

13. Document nodularity of breast tissue in your notes when identified.

     Always   Sometimes   Rarely   Never

14. Document tenderness of the breasts in your notes when identified.

     Always   Sometimes   Rarely   Never

Appendix E

The Objective Structured Clinical Examination

UK UNIVERSITY
OF KENTUCKY

Chandler Medical Center

Department of Surgery

Division of General Surgery
800 Rose Street
Lexington, KY 40536-0084
(606) 323-6346
FAX: (606) 323-6840
http://www.comed.uky.edu

September 22, 1998

Linda Anne Smith, R.N.
30312 Dagsboro Road
Salisbury, MD   21804

Dear Ms. Smith:

Thank you very much for your inquiry about the breast cancer Objective Structured Clinical Examination (OSCE). Please find enclosed the checklists for the breast examination and breast history stations for the Part A (patient interaction) and the Part B (non-patient interaction) sections. The content for the breast OSCE stations was derived from the content for the breast cancer Structured Clinical Instruction Module (SCIM) station checklists which was agreed upon as pertinent by the Breast Cancer Education Working Group as part of a study to develop and also evaluate the effectiveness of the breast cancer SCIM.

Also please find enclosed a copy of a 1995 article from the *Annals of Surgery* describing the OSCE (in which the breast examination station was included) that provides some of the other information that you requested.

Please let me know if you have any questions or if I may be of any other assistance. I apologize for the delay in getting this information to you.

Sincerely,

Margaret A. Plymale, R.N.

__Breast History -- Part A__   __Resident #__

Not Done/Done/Done Well

1. Places patient at ease..0........1.......2

2. Asks age of patient..0........1.......2

BREAST SYMPTOMATOLOGY:
3. Presence of pain/tenderness/nature of pain/cyclic variation..................0........2........4

4. How/when lump noted..0........2.......4

5. Patient's description of lump...0........1........2

6. Change in mass over time..0........2......4

7. Trauma history...0........1........2

8. Nipple discharge...0........1.......2

PREVIOUS BREAST HISTORY:
9. History of breast cancer/biopsies/cyst aspirations..........................0........1.......2

10. Breast self-examination...0........1.......2

RISK FACTORS:
11. Family history of breast cancer ....0........2........4

12. History of GYN cancer...0........1.......2

13. BCP/Estrogen use..0........1........2

14. GYN history (menarche, no. of pregnancies, age at first pregnancy, etc.)0........1....... 2

OTHER PERTINENT MEDICAL DATA:
15. Caffeine use/smoking history/alcohol use.................................0........1........2

16. Current medications/other medical illnesses...............................0........1........2

		Not at All				Very Much
17.	Interacted effectively with the patient.(Patient)	0	1	2	3	4
18.	Interacted effectively with the patient.(Faculty)	0	1	2	3	4
19.	Organized Approach	0	1	2	3	4

Not Competent/Competent
20. Competent...0.................1

	Poor	Average	Outstanding
21. Overall Evaluation	0........1.......2.......3........4		

Breast Examination -- Part A   Resident # _____

		Not Done/Done/Done Well

1. Places patient at ease...0........1.......2

2. Takes time to inspect...0........1.......2

3. Comments on symmetry, skin and nipple appearance.......................0........1.......2

4. Uses two hand technique to palpate breast ....0.......2........4

5. Palpates all four quadrants of the breast adequately.........................0........1.......2

6. Palpates central subareolar area and checks for nipple discharge............0........1.......2

7. Palpates with elbow elevated and supine position...........................0........1.......2

8. Palpates breast in sitting position as well as supine..........................0........1.......2

9. Notes lack of dominant mass...0.......1.......2

10. Notes nodularity and tenderness consistent with fibrocystic...............0........2.......4
    breast disease

11. Palpates axilla thoroughly and makes effort to relax muscles...............0........1.......2

12. Palpates supraclavicular nodes ....0........1.......2

	Not at All			Very Much

13. Interacted effectively with the patient.(Patient)..............0........1......2........3........4

14. Interacted effectively with the patient.(Faculty)..............0........1......2........3........4

15. Organized Approach...0.......1......2........3........4

	Not Competent/Competent

16. Competent...0.................1

	Poor	Average	Outstanding

17. Overall Evaluation..0........1......2.......3........4

Breast Examination -- Part B

1. You palpate no breast masses. A mammogram is done next (see attached mammogram #1). Describe the findings on mammogram.

2. Describe your recommendations to this patient.

3. What percent of palpable breast cancers are associated with negative mammograms? (i.e. no cancer evident on mammogram)?

4. A 45 year old patient presents with a 5.5 cm breast mass that is associated with dimpling of the overlying skin. The tumor is not fixed to the chest wall and no skin ulceration, edema, erythema, or satellites are seen.

   What is the T stage?

   What physical exam findings make the patient N2?

5 List ten well established risk factors that predispose to the development of breast cancer:

Resident # _____

Mammogram -- Part B

1. Examine **mammogram #1**. What is your diagnosis and why?

2. After examining **mammogram #2**, what treatment is appropriate? (Patient has breast pain. Physical exam is unremarkable.)

3. Examine **mammogram #3**. What is your diagnosis and why?

4. Examine **mammogram #4.** What is your diagnosis and why?

5. Examine **mammogram #5**. What is your diagnosis and why?

Resident # _____

Part A Abdomen History Station

A=NOT DONE   B=DONE POORLY   C=DONE WELL

1. Asks for vital signs (P120 R20 BP 110/80 T38)

2. Inspects abdomen (verbalizes pertinent negative findings)

3. Notes flexed hips and knees

4. Checks Psoas Obturator signs

5. Auscultates abdomen

6. Percusses abdomen

7. Light palpation of entire abdomen

8. Deep palpation of entire abdomen

9. Checks for guarding (notes voluntary guarding)

10. Checks for rebound tenderness

11. Interacted effectively with the patient   **A=Not at all   B=Somewhat   C=Done well**

12. Competent   **A=Not Competent   B=Competent**

13. Overall eval of student   **A=Poor B=Below average C=Average D=Above average E=Outstanding**

PART B ABDOMEN PHYSICAL STATION

1. List the most common causes of large bowel obstruction.

2. List Ranson's criteria for acute pancreatitis.

3. Describe how Ranson's criteria correlate with prognosis?

Part A Hypercalcemia Station

A=Not done   B=Done poorly   C=Done well

1. Asks about fatigue

2. Asks about anorexia

3. Asks about weight change

4. Asks about bone pain

5. Asks about muscle weakness

6. Asks about abdominal pain

7. Asks about constipation

8. Asks about polyuria/polydipsia/ nocturia/hematuria

9. Asks about ulcer history/ pancreatitis history

10. Asks about renal stone history/ renal disease/renal colic

11. Asks about hypertension

12. Asks about mental changes (depression, etc

13. Asks about cancer history

14. Asks about neck symptoms (neck mass, swallowing difficulty, voice change)

15. Asks about history thyroid disease

16. Asks about family history of endocrine disease

17. Asks patient about medications (prescription and over the counter, past medical history)

18. Interacted effectively with the patient   **A=Not at all   B=Somewhat   C=Very much**

19. Competent   **A=Not Competent   B=Competent**

20. Overall eval of student   **A=Poor B=Below average C=Average D=Above average E=Outstanding**

HYPERCALCEMIA STATION
PART B

1. What is the most likely explanation for this patient's hypercalcemia? **(Item 1)**
   a. metastatic cancer
   b. hyperthyroidism
   c. primary hyperparathyroidism
   d. prolonged immobilization
   e. Fanconi's anemia
   f. milk-alkali syndrome
   g. sarcoidosis
   h. vit D intoxication
   i. lymphoma

2. What additional lab study would best confirm the Dx in this patient? **(Item 2)**
   a. metastatic bone survey
   b. chest /abdomen CT scan
   c. I131 Scan
   d. technetium scan
   e. serum vit D level
   f. 24hour urine for phosphate
   g. serum parathormone level
   h. bone scan
   i. neck MRI

3. What are your management recommendations to this patient? **(Item 3)**
   a. repeat calcium in 3 months
   b. cisplatin chemotherapy
   c. neck exploration
   d. reassure and see in 6 months
   e. metastatic work-up
   f. CT directed FNA
   g. kidney transplant

4. Of the following diagnoses, which is not a cause of hypercalcemia **(Item 4)**
   a. metastatic cancer
   b. hyperthyroidism
   c. primary hyperparathyroidism
   d. prolonged immobilization
   e. Fanconi's anemia
   f. milk-alkali syndrome
   g. sarcoidosis
   h. vit D intoxication
   i. lymphoma

5. The most common cause of hypercalcemia in hospitalized patients is: **(Item 5)**
   a. metastatic cancer
   b. hyperthyroidism
   c. primary hyperparathyroidism
   d. prolonged immobilization
   e. Fanconi's anemia
   f. milk-alkali syndrome
   g. sarcoidosis
   h. vit D intoxication
   i. lymphoma

6. Which of the following abnormalities on the Chem 20 is not consistent with primary hyperparathyroidism? **(Item 6)**
   a. high serum calcium
   b. low phosphate
   c. high alkaline phosphatase
   d. low chloride/ phosphate ratio (<33)
   e. elevated chloride

24 year old male presents to your emergency department 15 minutes after being involved in a motor vehicle accident. His last set of vital signs were: BP 80/60, HR 130, RR 32 shallow and sonorous. He is unconscious and responds with flexion posturing to deep stimuli. He has had oxygen applied by mask at 15 liters/minute and has been placed on a long backboard. How are you going to manage this patient?

	Not Performed			Performed Well	
Assesses airway	0	1	2	3	4
Stabilizes neck	0	1	2	3	
Intubates patient:					
oral tracheal	0	1	2	3	
nasotracheal	0	1	2	3	4
surgical cric.	0	1			
Listens for breath sounds	0	1	2	3	
Checks for tracheal deviation	0	1	2		
Checks for JVD	0	1	2		
Diagnoses left tension PTx	0	1	2	3	4
Insert chest tube/needle	0	1	2	3	4
Reassesses breathing	0	1	2		
Reassesses vital signs	0	1	2		
Checks pulse/cap refill	0	1	2	3	
Begins IVs	0	1	2	3	
Large volume fluid resus.	0	1	2	3	4
Considers sites of blood loss	0	1	2	3	4
Checks pupils	0	1	2	3	
Checks motor	0	1	2	3	
Hyperventilates patient	0	1	2	3	4
Exposes patient	0	1	2		
Proper order of exam	0	1	2	3	4
Global exam performance	0	1	2	3	4

Overall Evaluation

Not at all   Very Much

Organized approach to performing the physical.........0.................1...................2..................3....................4

Interacted effectively with the patient......................0.................1...................2..................3...................4

                         Poor   Average   Outstanding

Overall Evaluation...0.................1...................2..................3...................4

Competent...NO..YES

This patient has airway compromise requiring intubation, tension pneumothorax, ruptured spleen with a massive hemothorax, and a moderately severe closed head injury. Proper management should follow the ATLS primary survey "ABC's" Total possible score is 45.

Part A Thyroid Station

This patient comes to you referred with a possible goiter. Please obtain a focused history and physical exam. Verbalize your findings.

HISTORY   A=Not done   B=Done poorly   C=Done well

2. Asks age of patient

3. Details regarding nodule (location, duration, changes over time)

4. Asks about pain

5. Asks about change in voice

6. Asks about problem swallowing

7. Asks about difficulty breathing

8. Asks about family history

9. Asks about neck irradiation

10. Asks about prior thyroid disease/surgery and synthoid use

11. Asks about symptoms of hypothyroidism

12. Asks about symptoms of hyperthyroidism

13. Interacted effectively with the patient   A=Not at all   B=Somewhat   C=Very much

14. Competent   A=Not Competent   B=Competent

15. Overall evaluation of student   A=Poor B=Below average C=Average D=Above average E=Outstanding

PART B THYROID STATION

1. What is the nature of the neck mass?
    a. normal exam
    b. cervical node
    c. diffuse goiter
    d. thyroid nodule, solitary
    e. laryngeal mass
    f. multinodular goiter

2. What 2 tests would be most appropriate in the work-up of this patient?
    a. serum thyroglobulin
    b. FTI, TSH
    c. thyroid ultrasound
    d. incisional biopsy
    e. calcitonin level
    f. fine needle biopsy
    g. thyroid stimulating antibodies
    h. CT scan

    I. MRI
    j. CBC
    k. CXR
    l. Serum calcium

3. Of the following, what items are associated with increased likelihood of thyroid cancer in a patient with a thyroid nodule.
    a. old age
    b. young age
    c. "cold" on radio-iodine scan
    d. "warm" on radio-iodine scan
    e. radiation exposure
    f. family history of thyroid cancer
    g. hypothyroid
    h. hyperthyroid
    i. vocal cord palsy
    j. presence of palpable neck nodes
    k. MEN I history
    l. MEN II history

4. Of the following items, what are associated with medullary thyroid cancer of the thyroid?
    a. most common type of thyroid cancer
    b. usually sporadic
    c. usually familial
    d. MEN I associated
    e. MEN II associated
    f. produces thyroglobulin
    g. produces CEA
    h. produces calcitonin
    i. arises from follicular cells
    j. 40-60% 10 year survival
    k. 10-20% 10 year survival
    l. 80-90% 10 year survival
    m. chemotherapy effective
    n. I 131 effective
    o. rare in males
    p. thyroid lobectomy sometimes adequate for treatment
    q. lymphadenopathy unusual

Part A Vascular Station

A=NOT DONE   **B=DONE POORLY**   **C=DONE WELL**

1. notes hair growth pattern

2. notes presence/absence of ulceration

3. notes pallor on elevation

4. notes dependent rubor

5. Auscultates abdomen for bruits

6. Ausculates for femoral bruits

7. Palpates abdomen for AAA

Palpates pulses:
8. Femoral right

9. Femoral left

10. Popliteal right

11. Popliteal left

12. Post Tibial right

13. Post Tibial left

14. Dorsalis Pedis right

15. Dorsalis Pedis left

16. Interacted effectively with the patient   **A=Not at all**   **B=Somewhat**   **C=Very much**

17. Competent   **A=Not Competent**   **B=Competent**

18. Overall eval of student **A=Poor** **B=Below Average** **C=Average** **D=Above Average** **E=Outstanding**

Part B Vascular Station

Question 1. (Items 1 to 8) Based on your physical examination of this patient, the character of the patient's pulses were: (Assign a,b or c for each of the items 1 to 8)

<div style="text-align:center">

a= Normal   b=Diminished   c= Absent

</div>

Item 1. Right femoral
Item 2. Right popliteal
Item 3. Right dorsalis pedis
Item 4. Right posterior tibial
Item 5. Left femoral
Item 6. Left popliteal
Item 7. Left dorsalis pedis
Item 8. Left posterior tibial

2. You would conclude that the anatomic location of this patient's occlusive disease is (choose up to three, items 9 to 11):

a.Right iliac stenosis
b.Right iliac occlusion
c.Right superficial femoral artery stenosis
d.Right superficial femoral artery occlusion
e.Right tibial occlusive disease
f.Left iliac stenosis
g.Left iliac occlusion
h.Left superficial femoral artery stenosis
i.Left superficial femoral artery occlusion
j.Left tibial occlusive disease

3. You are given the following pressures, obtained from another patient you are seening in consultation.

	Brachial	Dorsalis pedis	Posterior tibial
Right	160mm Hg	80	70
Left	150	75	120

What are the patient's ABIs (ankle brachial indices)?
Item 12. **Right**   Item 13. **Left**

a=2.29
b=2.00
c=1.88
d=1.25
e=0.80
f=0.75
g=0.53
h=0.50
i=0.47
j=0.44
k=none of the above

UNIVERSITY OF KENTUCKY
DEPARTMENT OF SURGERY
OSCE EXAMINATION
Anatomy Station
A-A

3/94   (Place name tag here)

PART A

Identify the following anatomical landmarks on this patient:

                                    Not done   Done poorly   Done well

Outline the borders of the posterior
   triangle of the neck.......................0..........2............4

The Course of the spinal accessory nerve....0..........2............4

The cricoid cartilage.......................0..........2............4

Location of the marginal mandibular branch
   of the facial nerve......................0..........2............4

Location of the mental nerve ....0..........2............4

Location of a spigelian hernia..............0..........2............4

Tendon of extenor pollicus longus...........0..........2............4

Course of the sural nerve...................0..........2............4

Location of the lateral femoral cutaneous
   nerve of the thigh.......................0..........2............4

Origin of the adductor longus...............0..........2............4

                              Poor   Average   Outstanding
Overall Evaluation.................0.......1......2........3.........4

Competent..............................NO...............YES

Overall by the patient: Poor   Outstanding
Interpersonal evaluation...........0.......1.........2........3........4

Part A Urology Station

A=NOT DONE   **B=DONE POORLY**   **C=DONE WELL**

1. Asks about the bleeding (color, duration, frequency)

2. Asks about pain when you urinate (flank pain, abdominal pain, suprapubic pain)

3. Asks when do you notice the blood in your urine (at the beginning, during the entire stream, or at termination)

4. Asks if you ever passed blood in your urine before

5. Asks about infections (bladder, kidneys, prostate, including sexually transmitted diseases)

6. Asks about kidney stones (history of)

7. Asks about blood thinning medications (e.g. aspirin, coumadin)

8. Asks about other medications

9. Asks about smoking history

10. Asks about specific abdomen physical examination results (flank tenderness, abdominal masses, abdominal tenderness)

11. Asks about specific prostate physical examination results (prostate nontender, prostate no nodules)

12. Interacted effectively with the patient   **A=Not at all   B=Somewhat   C=Very much**

13. Competent   **A=Not Competent   B=Competent**

14. Overall evaluation of resident **A=Poor B=Below average C=Average D=Above average E=Outstanding**

PART B UROLOGY STATION

Urinalysis: Too numerous to count red blood cells; 0-3 white blood cells per high power field.

BUN=15, creatinine=1.1

Intravenous urography: (see films)
Urinary cytology: (atypical cells)

(CHOOSE ONE ANSWER FOR EACH QUESTION)

1. What test or procedure do you now wish to perform?
   a. CT scan abdomen
   b. ultrasound of bladder
   c. cystostomy
   d. shock wave lithotripsy
   e. pelvic exenteration
   f. external beam radiation to bladder
   g. cystoscopy
   h. electrohydraulic lithotripsy
   i. ultrasonic lithotripsy
   j. radical cystectomy
   k. partial cystectomy

Part A Plastic Station

1. Asks age of patient
   A=NOT DONE   B=DONE POORLY   C=DONE WELL

2. When mole first noted/how noted

3. Color/ description of mole

4. Size/ change in size over time

5. Associated pain/ itching

6. Presence of bleeding/ulceration

7. Other skin lesions, "lumps"(i.e. nodes) elsewhere

8. Sun exposure/history of sunburns/occupation

9. Previous cancer history including skin cancer

10. Family history

11. Systemic symptoms(weight loss, cough, headache, GI dysfunction)
(Exam reveals a 2cm incision overlying the midleft sternocleidomastoid muscle. No nodes are palpable and the remainder of the exam is entirely normal.)
Treatment Recommendations:
12. Explains that additional appropriate tests are needed (chest xray, CBC, hitachi)

13. Explains that outside slides will need to be reviewed

14. Advises wide excision with an appropriate margin (1cm)

15. Explains that elective lymph node dissection is unnecessary

16. Interacted effectively with the patient   A=Not at all   B=Somewhat   C=Very much

17. Competent   A=Not Competent   B=Competent

18. Overall eval of student   A=Poor   B=Below average   C=Average   D=Above average   E=Outstanding

PART B PLASTIC STATION

1. Identify any of the following lesions that can mimic a malignant melanoma.(Choose up to7, Items 1to 7)
   - a. cutaneous hemangioma
   - b. pigmented basal cell carcinoma
   - c. actinic keratosis
   - d. dyrplastic nevus
   - e. follicalities
   - f. seborrheic keratosis
   - g. scar
   - h. compound nevus
   - i. neuroma
   - l. inclusion cyst
   - m. wart
   - n. fibroma
   - o. vitiligo
   - p. pruritus ani
   - q. paget's disease
   - r. squamous cell carcinoma

2. Name any risk factors up to 8 associated with malignant melanoma. (Items 8 to 15)
   - a. history of mild sunburns
   - b. history of severe sunburns in childhood
   - c. fair skin
   - d. brown eyes
   - e. blue eyes
   - f. green eyes
   - g. red hair
   - h. brown eyes
   - j. latitude of dwelling place
   - k. family history
   - l. history of head & neck cancer
   - m. history of basal cell carcinoma
   - o. tan poorly
   - p. tan easily
   - q. trauma
   - r. young age
   - s. smoking
   - t. alcohol

3. Poor prognostic signs for malignant melanoma include all of the following except: (Item 16)
   - a. aneuploid DNA content
   - b. thickness greater than 4mm
   - c. nodal metastasis
   - d. age less than 40
   - e. adrenal metastacis
   - f. satellite nodules
   - g. presence of ulceration

4. Which of the following biopsy methods for diagnosing a suspicious mole on the left forearm is inadvisable? (Choose one, Item 17)
   - a. wedge biopsy
   - b. excisional biopsy with narrow margin (1mm)
   - c. Shave biopsy
   - d. Punch biopsy

5. All but one of the following represents a type of melanoma. (Item 18)
   - a. Lentigo maligna
   - b. superficial spreading
   - c. nodular
   - d. acral-lentiginous
   - e. Spitz nevus

6. Ten year survival for patients with melanoma, metastatic to regional nodes (all comers) is generally about: (Choose one, Item 19)
   - a. 5-10 %
   - b. 20 %
   - c. 40 %
   - d. 60 %
   - e. 70-80 %

7. Common clinical sites of metastasis include all but: (Choose one, Item 20)
   - a. skin and subcutaneous tissue
   - b. nodes
   - c. gastrointestinal tract
   - d. lungs
   - e. kidneys
   - f. liver
   - g. adrenals

8. Concerning elective lymph node dissection, there is no role in which of the following situations:(Choose one, Item 21)
   - a. 1.1 mm melanoma
   - b. 1.6 mm melanoma
   - c. 3.1 mm melanoma
   - d. 3.8 mm melanoma
   - e. 2.45 mm melanoma
   - f. 4.3 mm melanoma

Part A CT Station

A 25 year old male has come to you complaining of difficulty breathing. You are to obtain a focused history from this patient.

A=NOT DONE   B=DONE POORLY   C=DONE WELL

2. elicits history of precipitating event

3. duration of symptoms

4. previous occurrences

5. severity of SOB

6. pain associated with SOB

7. aggravating factors for pain/SOB

8. alleviating factors for pain/SOB

9. quality of pain (pleuritic)

10. history of recent trauma

11. pain or swelling in legs

12. presence of sputum

13. recent cough / fever

14. smoking history

15. Interacted effectively with the patient   **A=Not at all   B=Somewhat   C=Very much**

16. Competent   **A=Not Competent   B=Competent**

17. Overall eval of student   **A=Poor   B=Below average   C=Average   D=Above average   E=Outstanding**

PART B CT STATION

1. What are your top 3 diagnoses, beginning with the most likely?

    a... pneumonia
    b. arthritis
    c. thoracic outlet syndrome
    d. acute bronchitis
    e. pericarditis
    f. Appendicitis
    g. pancreatitis
    h. TB
    i. pneumothorax
    j. rib fx
    k. hemothorax
    l. atelectasis

    m. osteochondritis
    n. dissecting aortic aneurysm
    o. pleurisy
    p. lung cancer
    q. musculoskeletal pain
    r. pleural effusion
    s. acute cholecystitis
    t. myocardial ischemia
    u. pleuritic infection
    v. myocardial infarct

2. Which physical examination maneuvers and diagnostic test(s) would you require to confirm your diagnosis? (select all appropriate)

    a. O2 saturation
    b. TB skin test
    c. LDH isoenzymes
    d. CK isoenzymes
    e. aortogram
    f. A-9
    g. PT,PTT
    h. chest palpation
    i. vital signs
    j. pulmonary angiography

    k. lung auscultation
    l. arterial blood gas
    m. CXR
    n. sputum C&S
    o. ventilation /perfussion scan
    p. CBC with differential
    q. chest inspection for wounds
    r. fremitus A&P
    s. chest percussion
    t. doppler of UE/LE

3. Now review the x-ray. NOTE: After reviewing this information you may not change your answer in questions 1 and 2. What is your working diagnosis? (choose one)

    a...LLL pneumonia
    b. arthritis
    c. thoracic outlet syndrome
    d. acute bronchitis
    e. RUL pneumonia
    f. Appendicitis
    g. pancreatitis
    h. TB
    i. pneumothorax
    j. rib fx
    k. hemothorax
    l. atelectasis

    m. osteochondritis
    n. dissecting aortic aneurysm
    o. pleurisy
    p. lung cancer
    q. musculoskeletal
    r. pleural effusion
    s. acute cholecystitis
    t. myocardial ischemia
    u. pleuritic infection
    v. myocardial infarct

4. Define your treatment plan for this patient. Identify all pertinent items.

    a. ABG's
    b. chest tube placement
    c. EKG and holter monitor
    d. search for tumor
    e. elevate legs
    f. heparin for 2-3 days, then Coumadin for 3-4 months
    g. pain medication
    h. Ibuprofen and send home
    i. O2
    j. heparin 5000u IVP, then 1000u/hr drip
    k. bedrest
    l. admit to hospital
    m. place chest tube to underwater seal
    n. thoracentesis
    o. IV antibiotics
    p. incentive spirometry
    q. chest physical therapy

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1999   M. S.   **Salisbury State University**, Salisbury, MD
Nursing: Family Nurse Practitioner

1990   B. S.   **Salisbury State University**, Salisbury, MD
Nursing

1982   B. S.   **Salisbury State University**, Salisbury, MD
Biology

CLINICAL EDUCATION:

600 hours   **Nanticoke Memorial Hospital**, Seaford, DE
Emergency Department
Functioned as a nurse practitioner under the preceptorship of a Board Certified Emergency Physician. Exposure to all levels of emergency medicine. Experience included diagnosis and treatment of urgent and non-urgent medical conditions as well as performing minor surgical procedures and interpretation of 12 lead EKG's and radiographic images.

WORK EXPERIENCE:

1991 - Present   **Nanticoke Memorial Hospital**, Seaford, DE

1996 - 1999   Clinical Leader, Operating Room
Responsible for managing the daily activities of a 5 suite operating room and 4 bed PACU. Coordinate staffing and OR procedures, facilitate educational programs, direct the orientation of new employees, update and revise perioperative policies, procedures, and protocols as needed. Compile reports of utilization within a block scheduling system.

1991 - 1996   Staff Nurse, Operating Room
Assumed duties of scrub and circulating nurse. Specialties included: general surgery, vascular & thoracic, ent, dental, orthopedic, podiatry, ob/gyn, plastics, and urology.

1989 - 1990	**Peninsula Regional Medical Center**, Salisbury, MD
1990	Staff Nurse, Intensive Care Unit

           Primary nursing of acute, critically ill patients within a cardiothoracic and Level I trauma center. Experienced with interpretation of EKG's, cardiovascular monitoring with Swan Ganz catheters, intracranial pressure monitors, and care of patients requiring mechanical ventilation.

1989   Nurse Extern, Intensive Care Unit

           Duties of acute care nursing performed under the direct supervision of a registered nurse preceptor.

1989   Nurse Technician, Coronary Care Unit

           Performed nursing assistant and unit secretary duties.

PROFESSIONAL MEMBERSHIPS:

American Academy of Nurse Practitioners
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INTERESTS:

Enjoy the beach, swimming, and golf.