

DNP Portfolio Executive Summary  
Timothy S. Neilson, RN, MN, FNP-C  
Doctor of Nursing Practice Candidate, OHSU School of Nursing  
May 25, 2011

Contents of this DNP portfolio showcase a nursing professional with a diverse skill set. The clinician who entered this program was strictly an advanced practice nurse who cared for patients and occasionally shared knowledge with students. Examination of the curriculum vita (CV), clinical inquiry project (CIP), case studies, and scholarly papers will reveal the portfolio of a well-rounded clinician able to practice, research, innovate, and affect change on multiple health care fronts.

The CV reveals the clinician's ability to lead quality improvement projects that benefit rural populations as part of the DNP clinical residency. While the clinician who entered residency only saw the opportunity for strengthening clinical skills, the clinician who completed residency participated in a variety of health-related projects benefitting his patient population.

Development of a paper-based template system helped to ensure proper documentation and coding compliance, maximizing reimbursement for a small rural public health department. The positive fiscal results of this project led to county support for an electronic medical records (EMR) initiative that may further improve clinical documentation, health record management, communication among local health care entities, and interdisciplinary collaboration. Successful application to the National Health Services Corps (NHSC) for medically underserved site status has placed the clinician's rural health department on a website that allows more effective health professional recruitment and networking. Lastly, organization of a county-wide health fair helped to place health care information and services within reach of uninsured, underserved rural populations. Multi-disciplinary collaboration and community involvement has led to an event with over 50 participating vendors offering a variety of reduced cost and free services.

The CIP in this portfolio addresses the worsening primary care provider shortage in the United States and the recent release of the IOM Future of Nursing key principles. The evolution of the United States health care system is intensifying the call for NPs to be utilized in both outpatient and inpatient settings. This project measured the number of NPs with hospital privileges at critical access hospitals in eastern Oregon and utilized a survey design to gauge health care workers' perceptions of barriers to inpatient NP credentialing. Of the 23 NPs at outpatient rural health clinics and 136 total NPs working in rural eastern Oregon, only eight have been granted privileges at a critical access hospital. Assessment of perceived barriers to granting inpatient privileges to NPs revealed that physicians were most concerned with NP education, NPs and nursing staff with institutional bylaws, and administrators and board members with reimbursement. These data point to potential interventions for barrier rectification, but of crucial consideration is that specific barrier concerns varied between disciplines. While further research on these barriers and interdisciplinary recourse on the administration of inpatient health care is needed, the project revealed an opportunity to design inpatient models that will utilize NPs to the full extent of their education and training. The DNP is a clinician trained to identify opportunities for practice improvement from the inside of the health care system. Immersion in the health care system as a NP will provide the opportunity for ongoing translational research that may lead to interdisciplinary support for multi-level policy reform.

Case studies included in the portfolio demonstrate the ability of the DNP prepared clinician to consider the most current evidence in caring for patients with a variety of diagnoses across the lifespan. Scholarly papers demonstrate the global thought process of the DNP prepared clinician. The discussion of BPA and how it may affect the environment and human development, the dissection of the Stupak Amendment and how it affects national health care policy, and the consideration of cultural sensitivity in practice point to a clinician acutely aware of the many factors affecting the healthcare climate.

This portfolio reveals a skilled, ethical clinician poised to practice, innovate, and influence change for individuals, groups and populations at multiple system levels through professional leadership and interdisciplinary collaboration.

Running head: NP BARRIERS

Barriers to Inpatient Nurse Practitioner Credentialing in Rural Oregon

Timothy S. Neilson

Oregon Health & Science University

School of Nursing

## **Section I: The Clinical Problem**

### **Description and Significance of the Clinical Problem**

#### **Clear description of the problem.**

As the primary care provider (PCP) shortage in the United States increases, nurse practitioners (NPs) are increasingly being utilized to fill PCP needs in health care facilities and bridge the primary care gap. Although NPs are often employed in outpatient settings, the extent of their utilization as inpatient providers is not as well understood.

Eastern Oregon refers to any part of the state east of the Cascade Mountain Range, which runs the entire length of Oregon, north to south. It is a region in which many areas are considered rural or frontier, with a PCP shortage that is annually assessed and reported by the Oregon Office of Rural Health (ORH) in partnership with Oregon Health Sciences University (OHSU). The ORH's goal is to reduce health care disparities in rural Oregon. It gathers data throughout Oregon to identify areas with PCP shortages and other access barriers. These areas are considered underserved.

Extensive hours are a requisite for providing care to patients in underserved inpatient and outpatient settings; this leads to overburdened physicians. NPs are sometimes restricted to outpatient care, not allowing for full utilization of PCP resources in both the outpatient and inpatient settings. The extent of inpatient NP utilization and barriers to allowing NP privileges (also referred to as credentialing) in eastern Oregon's rural hospitals were explored in this project. The inquiry aims to provide data that may be considered in developing reform projects leading to a more complete utilization of primary care resources in shortage areas.

**Population.**

Eastern Oregon has 34 outpatient rural health clinics and 12 critical access hospitals; all are deemed primary care shortage facilities by the State of Oregon (OHSU, 2010a & 2010b). Communities that utilize these facilities contain a patient population that may be affected by inpatient NP utilization. The target population of the study is the administrators, board members, primary care providers, and nursing staff that serve these communities. All 34 clinics and 12 hospitals were targeted for the primary phase of data collection. Four critical access hospital administrators agreed to facilitate staff participation in the second phase of data collection.

**Epidemiology.**

Data addressing the number of NPs with hospital privileges in eastern Oregon communities, as well as nationally, are not readily available. The first portion of the data collection in this project focused on the current number and distribution of NPs in the communities that the 34 outpatient rural health clinics and 12 critical access hospitals serve. This assessment also includes the delineation of their outpatient and inpatient roles. These preliminary data provide a basic profile of inpatient NP utilization in eastern Oregon. This data collection step is followed by an assessment of perceived barriers to inpatient NP credentialing at four of the 12 critical access hospitals.

**Background knowledge.**

Although epidemiological data exist regarding PCP shortages and underserved populations nationwide (Bodenheimer & Phan, 2010), there is scarce research on the prevalence of NP inpatient utilization in these areas. Furthermore, the question of why NPs may not be utilized in shortage area hospitals lacks structured research. What is known is that there have traditionally been both cultural and practical barriers to integrating NPs into outpatient primary

care roles; these will be further discussed in the body of the paper (Main, Dunn, & Kendall, 2007). Barriers known to affect the delivery of outpatient care by NPs may help guide research on identification of similar barriers to the provision of inpatient NP care. This is an important step toward full utilization of the NP as a health care resource in areas with a PCP shortage.

### **Organizational/local knowledge.**

A literature review suggested that the utilization of inpatient NPs has not been adequately assessed in eastern Oregon. My experience as a clinician in a number of eastern Oregon areas is that NPs are widely employed in eastern Oregon outpatient clinics. Some outpatient clinics have even been independently founded and operated by NPs. However, I have also observed that most of these NPs did not have inpatient privileges at their local hospital, disallowing them from admitting, treating, discharging, and following up with their patients after discharge at the outpatient clinic. It was confirmed through initial parts of this inquiry project that many rural NPs do not have privileges in eastern Oregon hospitals; this study explores the perception of barriers to attainment of NP inpatient credentialing at eastern Oregon critical access hospitals.

### **Importance to advanced practice nursing.**

Studies addressing the barriers to NP practice in the outpatient setting have been performed. Concerns such as threats to physician job security, the scope and quality of NP training, structural barriers, and organizational barriers have been identified (Wilson, Pearson, & Hassey, 2002).

As outpatient practice barriers are discovered, steps have been taken to address them. This has resulted in the role of the outpatient NP, particularly in underserved rural communities, gaining an excellent reputation for meeting health care needs (Lindeke, Jukkala, & Tanner, 2005). There is an opportunity for a similar progression to evolve with the investigation of

barriers to NP inpatient credentialing. This project was designed to help build a framework for identification and reduction of NP inpatient credentialing barriers, citing the demonstrated need for PCPs in rural shortage areas and the Institute of Medicine (IOM) Future of Nursing Report (2010) as a catalyst for pursuing further inquiry and policy change. Promotion of NP utilization in both outpatient and inpatient settings is integral to the broader development of the professional NP role.

I am a NP actively practicing at an outpatient rural health clinic in eastern Oregon. In addition, I am a doctor of nursing practice (DNP) student engaged in a residency program at a critical access hospital in the same community. Professional and academic collaboration between local physicians and myself in both outpatient and inpatient settings gives me the unique opportunity to effectively lead this inquiry project.

**Desired outcomes with impact.**

Short term outcomes were focused on collecting data from 34 outpatient rural health clinics, 12 critical access hospitals, and more specific data from four critical access hospitals in a survey format. Hospital administrators, board members, physicians, nurse practitioners, and nursing staff comprised the survey participants. As outlined in the methods section of this proposal, the data were then reviewed to identify the most consistent themes in barriers to NP hospital credentialing.

Impact may eventually be felt in several ways. Common barrier trends may be ideological, curricular, fiscal, cultural, or legal in nature. Identified trends may act as an impetus for further exploration of specific concerns or the drafting of policy to address the more well-articulated barriers. It is important to note that the ultimate impact will be continuity of care for the patient. The NP will be able to follow the patient from screening and diagnostics to

admission, and then see the same patient in follow-up with no gaps in care. A more involved, better informed PCP is more likely to provide safe, effective care. If the community understands this concept, they may support the full utilization of NPs as well.

**Purpose statement.**

The purpose of this survey research project was to assess the extent of NP utilization in participating eastern Oregon critical access hospitals, then identify and describe barriers to granting NP inpatient privileges.

**Clinical inquiry questions.**

The following are questions to be addressed by this clinical inquiry project:

1. What is the prevalence of NPs with inpatient hospital privileges in eastern Oregon?
2. What are the barriers to granting NPs inpatient hospital privileges in eastern Oregon?

**Synthesis of Evidence****Introduction.**

Literature directly addressing the barriers to NP hospital credentialing is scarce. This section will discuss the key principles of the IOM Future of Nursing Report, address the extent of the PCP shortage nationally, explore the history of NP credentialing in Oregon, discuss the barriers to achieving NP integration into a broader PCP role, and outline the advantages associated with integrating NPs into such a role. This review of literature guided the development of an effective inquiry project that addressed inpatient NP credentialing barriers. This project was designed to act as a springboard for action based upon its findings, to spur further research, policy reform, curricular reevaluation, and professional recourse on the administration of rural inpatient health care.

**Critical synthesis of relevant literature.**

The IOM Future of Nursing Report (2010) has outlined four key principles to guide nursing's role in transformation of the United States health care system:

1. Nurses should practice to the full extent of their education and training.
2. Nurses should achieve higher levels of education and training through an improved education system that promotes seamless academic progression.
3. Nurses should be full partners, with physicians and other health care professionals, in redesigning health care in the US.
4. Effective workforce planning and policy making require better data collection and an improved information infrastructure.

These principles form a conceptual framework for assessing barriers to the advancement of nursing practice, particularly in underserved rural areas.

The population of the United States has reached over 300 million. Approximately 20% of these people live in primary care shortage areas (Bodenheimer & Phan, 2010). There were an estimated 400,000 primary care providers practicing in the United States in 2005; 100,000 of these were NPs or physician assistants (Bodenheimer & Phan, 2010). These data suggest that, in areas where NPs and PAs are not allowed hospital privileges, hospital administrators responsible for inpatient care provision may be overlooking a relatively large resource to help their physicians meet the health care needs of patients in underserved areas.

Despite sweeping changes in financing, technology, and clustering of health care services over the past 20 years, rural hospitals continue to suffer more financially than their urban counterparts (Ricketts, 2000). Resources for rural hospitals, including the number of available providers for direct patient care, remain insufficient. This may be a major reason that the health



care conditions of rural areas compare unfavorably with the rest of the nation (Ricketts, 2000).

Obtaining hospital privileges is referred to as credentialing. The credentialing process involves a review of the applicant's qualifications by a group of physicians in a hospital's department of medicine. This group of physicians then decides whether or not to grant privileges. Two primary levels of credentialing for nurse practitioners exist. Full privileges allow the clinician to admit, follow, and discharge patients independently. Associate or ancillary privileges allow NPs to care for patients in collaboration with a supervising physician and usually require co-signatures on notes and orders (Wright, 2001).

Advanced practice nurses in Oregon have been legally allowed by the state legislature to seek hospital privileges since the 1970s. The first group of advanced practice nurses to take advantage of this legislation was certified nurse midwives and they did so almost immediately (Wright, 2001). According to Oregon law, NPs are subject to the credentialing hospital's bylaws and must respect supplemental hospital policy that may limit the NP scope of inpatient practice or require physician monitoring (Wright, 2001). Because there has been legislation in place for nearly 40 years allowing NPs to pursue inpatient hospital privileges in Oregon, one must ask what barriers prevent them from doing so at the institutional level. Barriers to practice should be addressed from the perspective of physicians, nurse practitioners, staff nurses, hospital administrators, board members, and patients.

Wilson and colleagues (2002) conducted a study addressing physician concerns about NP practice in the United Kingdom. Findings suggest that physicians were troubled by the prospect of competition for their roles and salaries, the quality of NP training, the extent of NP scope, and structural and organizational barriers. A more recent study in the U.S. found that physicians who do not practice alongside NPs tend to have more of such negative generalized attitudes toward

NPs (Street & Cossman, 2010). A 2001 U.S. study revealed that NPs consistently experienced a poor understanding of their roles by physicians and hospitals, restrictiveness of the practice climate, a poor peer support group, and low salaries as barriers to practice (Lindeke et al., 2001). Wright (2001) suggests that confusion by staff nurses on the role of the inpatient NP may be a barrier. Patients did not seem to perceive as many barriers to NP practice; they preferred interaction with a NP over a physician in convincing numbers while the perceived quality of care remained comparable (Roblin, Becker, Adams, Howard, & Roberts, 2004).

The major advantage of credentialing the rural NP is the promotion of continuity of care across outpatient and inpatient settings. Credentialing can also improve the image of NPs among patients and colleagues, promoting full professional development of the NP role. Lastly, NPs can help share the hospital-based patient care workload in rural hospitals where physician availability is limited (Wright, 2001).

#### **Other sources of evidence.**

Blue Mountain Hospital (BMH) is a critical access hospital in John Day in eastern Oregon. A profile of this hospital—as an example of a target facility—and its physician utilization builds a fiscal argument for the inquiry project. The BMH emergency department (ED) is staffed 24 hours per day by nursing services and an on call physician. Inpatient services include obstetrics, neonatal care, intensive care, and medical/surgical care. Inpatient and outpatient surgical procedures, including endoscopy, are offered in on-site suites. BMH has an inpatient pharmacy as well as full service laboratory and imaging departments. Lastly, physical therapy, rehabilitation therapy, home health, and hospice services are offered on an outpatient basis.

BMH is medically staffed by seven local primary care physicians and one general

surgeon. Contracted primary care physicians, or locum tenens, are also relied upon heavily to share the burden of care provision; no locum tenens surgeons are utilized due to the low volume of emergent surgical cases. No non-physician providers are utilized for ED or inpatient care because Medicare reimbursement is only 85% of the physician rate unless physicians co-sign the notes; no bylaws are in place to support this practice.

In an interview with BMH Chief Financial Officer Sam Grant (2010), he stated that on Monday, Tuesdays, Wednesdays, and Thursdays, a single physician is designated as the on call provider for a 24 hour period. On Friday, Saturday, and Sunday, a single physician is designated as the on call provider for 72 hours unless shared call is prearranged for obstetrics. The on call provider is responsible for rounding on inpatients morning and evening; the average inpatient census at a given time is 3.5 patients. The on call provider must also evaluate all ED patients; BMH sees an average of 9 patients in the ED each day. The only general surgeon employed by BMH is on call for an average of 21 days out of each month; there is an average of 2.5 urgent or emergent surgical procedures performed monthly, though the surgeon is also on call for ED consults as needed. When the surgeon is not available, cases in need of consult and/or emergent surgery are sent to other facilities.

Nearly half of all BMH call days are taken by locum tenens. According to Mr. Grant, the wages of these physicians are consistently 60-75% more than their local counterparts. While net revenue is still positive with the current physician staffing system, this metric could be markedly improved by increasing the supply of local PCPs with hospital privileges to meet the health care demand of the community. Fixed costs for hospital supplies and nursing staff would remain constant. However, the variable cost of PCP labor would reduce the total cost of medically staffing the hospital if more local PCPs were utilized as a health care resource. One solution to

this problem would be the full or limited credentialing of local advanced practice nurses by BMH. This would allow advanced practice nurses to serve the community as ED and inpatient providers, helping to share the burden of hospital based care with primary care physicians.

### **Evidence table.**

A literature search was conducted using keywords NP, credentialing, inpatient privileges, and practice barriers in CINAHL and Ovid databases. There was little information about barriers to inpatient NP privileges or credentialing readily available, though outpatient barriers to NP practice have been researched more frequently. Appendix A contains a collective evidence table that summarizes the findings.

### **Summary.**

A demonstrated PCP shortage in the United States, particularly in rural Oregon, requires a full utilization of health care resources to reduce disparities. Oregon NPs are routinely employed in outpatient clinic settings; their role in inpatient settings has been slower to develop despite decades old legislation that allows them to apply for full hospital privileges. In order to fully utilize the PCP workforce in rural shortage areas, barriers to inpatient credentialing of NPs must be better understood. Only then can steps be taken to address the barriers at state, institutional, and community levels and fully utilize our primary care provider workforce in shortage areas.

## **Section II: Methods**

### **Clinical Inquiry Design**

This project used a descriptive study design, utilizing survey methods exclusively. All 34 outpatient rural health clinics and 12 critical access hospitals in eastern Oregon were selected for the initial data collection on NP utilization. A telephone survey of the outpatient rural health

clinics and critical access hospitals determined how many physicians and NPs operate within these institutions. Administrators for the affiliated critical access hospitals were then called and the number of NPs with privileges assessed. If spoken to directly during this call, the willingness of hospital administrators and personnel to participate in the second stage of the project was gauged. If not reached, a message was left explaining the project and requesting participation. Four hospitals were selected based on the willingness of administrators to help facilitate the project.

For the next phase of inquiry, a survey (Appendix B) was distributed to administrators, board members, physicians, and staff nurses at the chosen hospitals. NPs working at the designated outpatient rural health clinics were also included. Respondents were kept anonymous, identified only by professional title and age. Respondents were also asked if they work directly with a NP. A cover letter (Appendix C) describing the survey, its purpose, and participant rights and responsibilities was included. Based on the literature review, common barriers to NP integration were listed. Barriers were rated by respondents using a 1-5 Likert Scale, with 1 representing no perceived barrier and 5 representing a significant barrier. Lastly, an open ended question was included, allowing respondents to specify perceived barriers to NP credentialing that were not already listed in the survey.

These data were collected and synthesized to answer the two inquiry questions proposed. The first phase of data collection was purely quantitative and presented as a frequency analysis. In the second phase of data collection, opinions were collected using both quantitative (Likert) and qualitative (open-ended) formats. They were subsequently used to assess trends in opinions among respondents as outlined in the analysis section. Aside from a frequency analysis of responses to the Likert-scale questions, inferential bivariate analysis was utilized to identify

association of a respondent's title, age, or familiarity with NPs with a particular perceived barrier.

### **Setting**

Eastern Oregon was the setting for this project. Initially, inquiry was made by telephone only, beginning with all 34 outpatient rural health clinics. It was then followed by calls to the 12 critical access hospitals. Willingness of those polled to answer the surveyor's questions was a significant factor in the success of data collection. Prompt identification of the caller and concise questioning maximized respondent compliance.

Subsequently, the setting shifted to four critical access hospitals in eastern Oregon. Though willingness of hospital administrators to allow survey distribution at their facilities was evaluated early in the study, the willingness of individual participants to complete and return the survey material remained variable. Factors influencing an individual's decision may have included time (length, which was less than five minutes, and ease of completing the survey), the level of personal or professional interest in the study, and appropriate distribution of survey materials upon arrival at the facility. After survey completion, ease of returning the materials to the surveyor may have influenced how much data were returned for analysis. The entire process was kept as user-friendly as possible to maximize return; this mechanism of data collection made completion of the project in the suggested timeline feasible.

### **Sample**

The target population was the administrators, board members, clinicians, and nursing staff serving critical access hospitals and outpatient rural health clinics in eastern Oregon. All 34 outpatient rural health clinics serving these communities were included in initial data collection because they were telephoned with a simple question about their provider profile. Administrators

for the 12 critical access hospitals in eastern Oregon were then telephoned with a comparatively simple line of questioning. The focus was on whether or not NPs have hospital privileges and whether or not the administrators were willing to support a survey of their board and staff on perceived barriers to inpatient NP credentialing.

The second phase of data collection began after four hospital administrators agreed to support the inquiry project in their facilities. This sample included administrators, board members, active medical staff (excluding anesthesiology), and staff nurses within these hospitals. The number of surveys needed was based upon the facilities selected. All outpatient rural health clinic NPs, whether or not they had inpatient privileges, were also surveyed.

### **Description of Policy Being Evaluated**

This policy evaluation project focuses on the status of current inpatient credentialing policies in eastern Oregon critical access hospitals based on the distribution of NPs in rural eastern Oregon communities. After policy status and NP distribution were established, critical access hospital utilization of inpatient NP services in eastern Oregon was explored. Lastly, perceived barriers to inpatient NP credentialing were assessed from the perspectives of hospital administrators, board members, physicians, staff nurses, and inpatient and outpatient NPs. These data were analyzed to present a profile of NP distribution in eastern Oregon, inpatient NP utilization, and perceived barriers of inpatient NP utilization from the perspectives of key stakeholders.

### **Measures**

Descriptive data leading to simple frequency analyses dominate the results of the first phase of data collection. The second portion of the study relied heavily on Likert Scale data gathered utilizing a written survey (Appendix B) which also resulted in frequency analyses. The

design of this five minute survey was based on the literature review; face validity was assessed by two FNPs. To assist in the identification of statistical trends, age, professional title, and familiarity with NPs were gathered as demographic metrics. If significant trends emerge from data analysis that associates certain perceived barriers with the three aforementioned demographics, further research studies may be designed taking this data into consideration.

### **Data Collection Procedures**

The first phase of data collection began upon project approval and took 2 weeks, allowing for call backs as needed. The project investigator made telephone calls to clinics and hospitals in the manner described above, collecting the relevant data; a list of appropriate facilities is readily available on the ORH website (OHSU, 2010a and b). No names of individuals, facilities, or communities were attached to data during this portion of the study. Data were entered into PASW Statistics 18 software for later frequency analysis (SPSS, 2009).

The second phase of data collection began after the completion of the first phase. After the four participating hospitals were identified, the number of administrators, board members, physicians, and staff nurses was assessed. The number of NPs in the service areas of these hospitals was already known from the first phase of data collection. This was completed in 2 weeks, again, allowing extra time for call backs.

Assembly of the appropriate number of surveys (with cover letters, consent forms, and return envelopes) followed. The packets were assembled, mailed, and receipt confirmed over the course of two weeks. A predetermined contact person at each facility was responsible for confirming receipt and distributing the surveys appropriately. Subsequently, respondents were able to return their surveys directly with the provided postage paid return envelopes.

As surveys began to return over the following three months, data was entered into the



SPSS system for analysis. Any questions or concerns by respondents were addressed at this time as well. Again, there was no written record of identifying respondent information aside from age and professional title.

Data were collected until May 1, 2011 and analyzed during the fifth month, as outlined in the following analysis section. Synthesis, composition, and dissemination of results are in process, also detailed in the next section. Table I outlines the inquiry project timeline.

### **Analytic Methods**

The first set of data included the number of NPs employed at each outpatient rural health clinic, how many practice in eastern Oregon in all, and how many NPs have inpatient privileges at one of the 12 eastern Oregon critical access hospitals. The fiscal cost of this data collection was negligible.

The second set of data was analyzed using a demographic table of respondent age, professional title, and current work status with NPs was compiled. Age values were placed in a nominal system based upon the distribution of respondent ages. The following is an example: ages 20-29=1, ages 30-39=2, ages 40-49=3, ages 50-59=4, 60-69=5 and 70-79=6. Similarly, professional title was classified as physician=1, nurse practitioner=2, staff nurse=3, administrator=4, and board member=5. Lastly, the status of the respondent's current direct collaboration with a NP was classified as yes=1 or no=0.

Perceived barriers to NP credentialing received a nominal value in the SPSS system as well. Associated Likert Scale values (1-5 with 1=strong disagreement and 5=strong agreement) were entered to correlate with respective barriers, allowing for basic statistical analysis to be completed (mean, median, mode, and standard deviation of Likert scores for a perceived barrier). After these data were entered, bivariate analysis was performed to determine if there was any

association between perceived barriers and age ranges, professional titles, or NP familiarity. Again, there was a negligible fiscal impact for this portion of data entry and analysis.

### **Ethics**

Anonymous surveillance of opinions through the mail did not present any physical or psychological dangers to participants. Furthermore, identifying demographic information on individual responses was restricted to age range, professional title, and NP familiarity. This metric cluster will ensure that individuals cannot be identified by demographic information alone during the synthesis and presentation of findings.

Benefits to participants include insight into professional and institutional cultures governing their practice systems. Adjustments made in these systems could improve fiscal gains, staff and practice design, and patient outcomes. Some participants may also benefit from becoming more self-aware of their attitudes toward various health care roles and responsibilities within their rural communities.

### **Dissemination Plan**

A written report of the inquiry project's findings will be disseminated to the aforementioned contact person at each participating institution after the final draft is completed. This includes each of the four studied hospitals and any community clinics that are unaffiliated with their respective local hospitals. The contact person at the institution will receive a cover letter, explaining that they may provide the report for review to any interested parties. Findings may also be presented at applicable health care conferences or in appropriate journals.

### Timeline for Project

The timeline for completion of this inquiry project was described in the data collection section and is outlined below in Table 1.

**Table 1**

*Inquiry Project Timeline*

Month 1-2
<ul style="list-style-type: none"> <li>• Obtain IRB Approval</li> <li>• First phase data collection and entry</li> <li>• Facility selection for second phase data collection</li> <li>• Population of respondent list</li> <li>• Survey packet assembly, mailing, and receipt confirmation</li> </ul>
Month 2-4
<ul style="list-style-type: none"> <li>• Survey completion</li> <li>• Second phase data collection and entry</li> </ul>
Month 5
<ul style="list-style-type: none"> <li>• Second phase data analysis</li> </ul>
Month 6
<ul style="list-style-type: none"> <li>• Composition and dissemination of results</li> </ul>

### References

- Bodenheimer, T., & Phamm, H.H. (2010). Primary care: Current problems and proposed solutions. *Health Affairs*, 29(5), 799-805.
- Grant, S. (2010, October 7). Personal interview.
- IOM (2010). *The future of nursing; Leading change, advancing health*. Retrieved from <http://www.iom.edu/Reports/2010/The-Future-of-Nursing-Leading-Change-Advancing-Health.aspx>
- Lindeke, L., Jukkala, A., & Tanner, M. (2005). Perceived barriers to nurse practitioner practice in rural settings. *Journal of Rural Health*, 21(2), 178-181.
- Main, R., Dunn, N., & Kendall, K. (2007). Crossing professional boundaries: Barriers to the integration of nurse practitioners in primary care. *Education for Primary Care*, 18(4), 480-487.
- Nurse Practitioners of Oregon (2011). *Legislative action update - May 3: Payment parity for nurse practitioners in independent practice (SB 858)*. Retrieved from <http://www.nursepractitionersoforegon.org/displaycommon.cfm?an=1&subarticlenbr=67>
- OHSU Office of Rural Health (2010a). *Oregon critical access hospitals*. Retrieved from <http://www.ohsu.edu/ohsuedu/outreach/oregonruralhealth/data/publications/upload/CAH-Map.pdf>
- OHSU Office of Rural Health (2010b). *Rural health clinics*. Retrieved from <http://www.ohsu.edu/ohsuedu/outreach/oregonruralhealth/clinics/upload/rhc-map.pdf>
- Peppler, L. (2011, March 30). Personal interview.
- Ricketts, T.C. (2000). The changing nature of rural health care. *Annual Review of Public Health*, 21, 639-657.

- Roblin, D.W., Becker, E.R., Adams, E.K., Howard, D.H., & Roberts, M.H. (2004). Patient satisfaction with primary care: Does type of practitioner matter? *Medical Care*, 42(6), 579-590.
- SPSS, Inc. (2009). PASW Statistics 18 (Version 18.0.0) [Software]. Available from <http://support.spss.com/ProductsExt/Statistics/Documentation/18/#UManuals>
- Street, D., & Crossman, J.S. (2010). Does familiarity breed respect? Physician attitudes toward nurse practitioners in a medically underserved state. *Journal of the American Academy of Nurse Practitioners*, 22, 431-439.
- Wilson, A., Pearson, D., & Hassey, A. (2002). Barriers to developing the nurse practitioner role in primary care: The GP perspective. *Family Practice*, 19(6), 641-646.
- Wright, W.L. (2001). Hospital privileges for NPs. *Advance for Nurse Practitioners*, 9(5), 22-23.

### Section III: Results

#### Sample

A sample of 173 physicians, NPs, staff nurses, administrators, and board members from four eastern Oregon critical access hospitals were surveyed to evaluate their perceived barriers to inpatient NP credentialing. In addition, all NPs from eastern Oregon outpatient rural health clinics were surveyed. The total number of respondents was 83; the sample profile is summarized in Table 2.

**Table 2**

*Sample Population by Title*

<b>Participant Title</b>	<b>Number (n)</b>	<b>Percentage</b>
Physician	13	15.7%
Nurse Practitioner	15	18.1%
Staff Nurse	27	32.5%
Administrator	13	15.7%
Board Member	15	18.1%
Total Participants	83	100%

The age range of participants was 23-75, with a mean age of 49 and standard deviation (SD) of 12.5. There were 58 participants (69.9%) who did not currently work with a NP; 15 of the remaining 25 participants were NPs.

Institutional contacts were the single largest facilitators of obtaining the sample; those who did not wish to participate in the project disallowed data collection for the entire institution. Specific reasons were not given or sought for those that did not participate; phone calls and emails were simply not returned.

Anonymous surveillance of opinions through the mail did not present any physical or psychological dangers to participants. Furthermore, identifying demographic information on individual responses was restricted to age, professional title, and NP familiarity. This metric cluster ensured that individuals were not identified by demographic information alone during the synthesis and presentation of findings. OHSU IRB approval was obtained prior to proceeding with the study.

### **Findings**

Of the 23 NPs at outpatient rural health clinics and 136 total NPs working in rural eastern Oregon (Peppler, 2011), only eight have been granted privileges at a critical access hospital. Six critical access hospitals allow NPs to practice in the hospital setting. These institutions utilize locum tenens no more than twice yearly to fill PCP staffing shortages. In contrast, the six hospitals that do not allow NP credentialing utilize locum tenens as often as weekly.

Barriers regarding education, physician willingness to co-sign notes, physician availability to co-sign notes, role confusion, reimbursement, and bylaws were explored across the sample's health care professions. Mean responses are summarized in Table 3. The absolute numbers of 'unsure' responses are also included for each perceived barrier.

**Table 3**

*Descriptive Statistics for Perceived Barriers and Absolute Count of ‘Unsure’ Responses: All Participants*

<b>Barrier</b>	<b>Mean</b>	<b>SD</b>	<b>Absolute Number of ‘Unsure’ Responses</b>
Education (N=83)	2.72	1.281	23
Physician Willingness (N=83)	3.04	1.120	28
Physician Availability (N=83)	2.58	1.149	23
Role Confusion (N=83)	2.42	1.072	21
Reimbursement (N=83)	3.17	.908	52
Bylaws (N=83)	3.39	1.208	26

Legend: 1=Strong Disagreement, 5=Strong Agreement

There was no significant correlation between respondents’ age or familiarity with NPs and their perceived barriers to inpatient NP credentialing. However, opinions differed across professions. Physicians were most concerned with education (3.92), NPs and nursing staff with bylaws (3.53 and 3.48, respectively), and administrators and board members with reimbursement (3.62 and 3.33, respectively). Mean responses by profession are summarized in Table 4.



**Table 4***Mean Response for Perceived Barriers: By Profession*

	Physicians (N=13)	Nurse Practitioners (N=15)	Nursing Staff (N=27)	Administrators (N=13)	Board Members (N=15)
<b>Education</b>	3.92	2.67	2.15	3.00	2.53
<b>Physician Willingness</b>	2.92	2.67	3.19	3.23	3.07
<b>Physician Availability</b>	2.77	2.80	2.41	2.38	2.67
<b>Role Confusion</b>	2.92	1.73	2.15	2.77	2.87
<b>Reimbursement</b>	3.38	2.80	2.96	3.62	3.33
<b>Bylaws</b>	3.46	3.53	3.48	3.23	3.13

Legend: 1=Strong Disagreement, 5=Strong Agreement

Physicians and NPs were noticeably different in their opinions on NP experience and education as a barrier to inpatient credentialing. Looking closer at the data by clustering agreement and disagreement metrics, it was noted that only one physician felt that NPs were well-prepared to practice independently in the hospital setting; 9 NPs felt that they were experienced enough to do so. These findings are summarized in Table 5.

**Table 5***Primary Care Provider Responses to Education as a Barrier to Inpatient NP Credentialing*

<b>Title</b>	<b>Strongly or Somewhat Disagree</b>	<b>Unsure</b>	<b>Strongly or Somewhat Agree</b>
Physicians	1	3	9
Nurse Practitioners	9	1	5

Legend: 1=Strong Disagreement, 5=Strong Agreement

The open-ended portion of the survey did not generate any barriers not already listed in the survey. However, there were many comments that provided qualitative insight into the complex, emotional nature of this topic. Examples are listed by profession in Table 6.

**Table 6***Survey Comments by Profession*

Physician	<ul style="list-style-type: none"> <li>• “Hospital medicine is not cookbook medicine. Training needs to be rigorous and medical based. Nursing models differ significantly.”</li> <li>• “I enjoyed working with NPs in the past.”</li> <li>• “I needed my medical school and residency experience to safely care for people sick enough to be in the hospital. I wouldn’t expect an NP to have that experience. Even now, I still call specialists for help.”</li> </ul>
NP	<ul style="list-style-type: none"> <li>• “The sickest patients are in the hospital; more liability...physicians and CEO reluctant to allow mid-level participation in inpatient work.”</li> <li>• “In my community, MDs make hospital policy and they want the income so I am not given privileges to hospitalize and follow my patients.”</li> <li>• “We have inpatient hospitalists who care for our patients.”</li> <li>• “Clinical training for NPs is lacking.”</li> <li>• “If a NP does not have the experiences/skills necessary for hospital practice then it would be nice to have an internship process available.”</li> <li>• “Many NPs prefer not to have hospital practice.”</li> <li>• “I am not interested in doing hospital practice because of the difficulty of finding a MD to co-sign, which we shouldn’t have to have anyways. It is the hospital policy that keeps the NPs out of the hospital.”</li> <li>• “NP training is focused too much on paperwork and theory rather than clinical skills and experience.”</li> </ul>
Staff Nurse	<ul style="list-style-type: none"> <li>• “I think especially in a rural area that NPs should be able to work in the hospital because our MD staff is low and it would be great to have a NP in the hospital.”</li> <li>• “The NP that I work with does not practice as an NP because it is too difficult for her to find her place. It appears that it would be quite difficult for a NP to work at the hospital.”</li> <li>• “NP’s are awesome!”</li> <li>• “Hard to know who to go to if you disagree with a NP decision in the heat of the moment. Love NPs in clinics, not so sure about in hospitals.”</li> <li>• “I believe having a NP working in our hospital setting could be beneficial to us in several ways.”</li> <li>• “Rural MDs are a jack of all trades, not so sure if NP would have educational depth to do this role.”</li> <li>• “Hx of working w/ NPs in busy ERs with 1-2 ER MDs. NP tx mostly fast track type pts, worked very well. A little more difficult in rural setting as usually only 1 provider in ER/MS area.”</li> <li>• “I have worked with NPs in Lakeview (OR) and it worked well.”</li> <li>• “I believe a NP would be valuable in the hospital setting. Have worked with amazing NPs in emergency rooms in past employment.”</li> <li>• “Would be a good change.”</li> <li>• “I have worked in other facilities that use NPs to see patients and cover the ER and my experience has been positive.”</li> </ul>
Administrator	<ul style="list-style-type: none"> <li>• “Family care is <u>not</u> IP care. <u>Really</u> big gap with pediatric acute/IP care vs. clinic care. Also legal/liability concerns.”</li> <li>• “We use and support NPs in our hospital...we are totally supportive of any professionals who practice within their scope of practice.”</li> </ul>
Board Member	<ul style="list-style-type: none"> <li>• “I don’t feel qualified to answer any of these questions.”</li> <li>• “I feel NP education is adequate to practice in a hospital facility, but would benefit from a 1 year internship prior to independent practice.”</li> </ul>

**Financial Considerations**

Financial considerations for the project itself were minimal. However, the most fiscally intriguing finding was that critical access hospitals utilizing NPs were less likely to need expensive locum tenens services. Future research projects could be focused on the fiscal impact of locum tenens use over local PCP (including NP) use in critical access hospitals.

Should lower NP inpatient reimbursement continue to be a concern in this respect, hospital administrators should be encouraged to find that physician willingness and availability to co-sign notes do not appear to be major barriers to addressing this issue. Enacting new institutional policy that would ensure maximum reimbursement while utilizing NPs in the hospital setting is certainly feasible.

**Situation Analysis**

The project yielded valuable data regarding the advancement of the NP role in the inpatient hospital setting. Though it was unfortunate that more institutions did not participate, there were enough responses to identify barrier trends that could spur future research on NP inpatient credentialing. Understanding that opinions regarding barriers vary across professions within the health care system is important to crafting effective intervention. All parties must be comfortable with the evolution of the health care model; simply enacting policy or legislation is not enough to advance the nursing profession.

The dynamic role of the DNP student in such a project reveals the need to act as clinical professional, investigative leader, sound researcher, and translational disseminator. Furthermore, the collaboration with inpatient and outpatient health care workers, physicians, other NPs, nursing staff, administrators, and board members nicely embodies the holistic, interdisciplinary nature of nursing's philosophy in one role.

**Outcomes**

Though no changes in processes of care and patient outcomes were immediately associated with the project, the data on perceived barriers to inpatient NP credentialing hint at potential interventions for rectification. Should education be a concern, two strategies may be employed; presenting updated advanced practice nursing curriculum to medical staff to aid in credentialing decisions or reevaluation of the curricular content in its entirety. Both MN and DNP curriculum should be addressed and interdisciplinary health care representatives should be included in this process. Barriers related to physician willingness/availability to co-sign chart notes or to bylaws allowing inpatient NP practice could both be addressed through institutional policy reform. Educating administrators on the cost of utilizing locum tenens vs. NPs would be valuable, as well, when considering a change in bylaws. Reimbursement barriers must be addressed at state and federal policy levels through the lobbying of nursing political action committees. Lastly, role confusion may be combated by the use of academic degree on professional letterheads and identification tags.

**Section IV: Discussion****Interpretation**

The most important finding of this project was that different stakeholders in the health care system hold differing views on the barriers to inpatient NP credentialing. Because of this phenomenon, key players may be reluctant to move toward NP credentialing if their respective concerns are not first addressed.

For example, an administrator or board member may not consider revising bylaws because he or she is most concerned with reimbursement. Until reimbursement legislation changes, the bylaws may remain the same; revision would be a waste of time and resources if the

bylaws will not be applied. Similarly, if reimbursement and bylaw concerns are rectified, the medical staff may still be reluctant to credential a NP because lack of education and clinical experience remain troublesome. Presenting medical staff with current nursing curriculum to help inform their credentialing decisions or curricular reform may be needed prior to any other intervention.

Which barrier must be addressed first? Which barrier precludes all of the rest? This study does not address such questions; future research is needed to identify the most sensible initial change in expanding the NP role in hospital settings with the hope that logical order will lead to more efficient policy evolution. Of note, the Oregon Senate passed SB 858 on May 3, 2011, which requires insurers to reimburse NPs in independent practice at the same rate as physicians when they provide the same services; the bill now goes to the House for consideration (Nurse Practitioners of Oregon, 2011).

### **Context**

Little existing data were able to contribute to the formulation of expected outcomes. However, it would be appropriate to predict that administrators and board members would be most concerned about the fiscal viability of any institutional decision. This was reflected in the data. In addition, it could be reasonably expected that physicians—who have more formal education than NPs—would be concerned about the education and experience of a professional with a similar scope of practice. This was also observed in the data. Lastly, the confidence of nursing professionals (both staff nurses and NPs) in their own skills and their rare reliance on direct reimbursement for pay could be predictive of a barrier unique to their perspective. Appropriately, facility bylaws seemed to be the primary barrier to expanding their practice.

**Limitations**

Again, there were no real expected outcomes so comparison to actual outcomes is limited. The sample size of the respondents was small (n=83); a larger sample size would yield more reliable results. Furthermore, only four of the twelve critical access hospitals were polled. In such small rural settings, clustering of ideologies can skew results.

Other limitations surround this project. Surveys are designed to ask respondents specific questions about specific topics. This limits the diversity of responses. The inability of the researcher to meet with potential participants personally because of their geographical distribution may have affected participation and response rate. The short time frame of data collection also may have limited the amount of responses gathered. Lastly, hospitals with more NP barriers may have been less willing to participate.

**Conclusions**

The formulation of the IOM Future of Nursing Report and its four key principles to guide the role of nursing in transformation of the health care system carries much responsibility. The first principle, practicing to the full extent of education and training, requires that institutional barriers to practice be removed. They cannot be removed without first being identified. This study represents a preliminary inquiry in a setting where NPs are not being utilized to their full capacity.

Identification of barriers to inpatient NP practice represents one method of data collection that applies to the next Future of Nursing principle: effective work force planning and policy making require better data collection and an improved information infrastructure. Evolution of the nursing role cannot proceed without nursing professionals developing these skills.

Once data is gathered and analyzed, others in health care must be included in effective work force planning and policy making. The third principle states that nurses should be full partners, with physicians and other health care professionals, in redesigning health care in the United States. This project certainly illustrated that different health care professionals hold different perspectives on health care evolution. Interdisciplinary collaboration is imperative to the evolution of health care.

Lastly, this project reflects physician concern over NP education and experience. The last Future of Nursing principle states that nurses should achieve higher levels of education and training through an improved education system that promotes seamless academic progression. It becomes clear that advanced practice nursing curriculum—including DNP core curriculum—should be presented and examined across disciplines to maximize the likelihood that full partnership is supported by all health care professionals.



# Barriers to Inpatient Nurse Practitioner Credentialing in Rural Oregon

Presented by: Timothy S. Neilson, RN, MN, FNP-C  
Date: May 25, 2011



# DNP Program Goals

- Role Definition
- Scope of Practice
- Help Locals
- Maximize Resources

# Population Focus

- Underserved Populations
  - Rural
  - Frontier
- Poor Access to Care
- Locum Tenens
- Local Care by Local Providers
- Barriers

# Inquiry Project

## Barriers to Inpatient Nurse Practitioner Credentialing in Rural Oregon

# Description of the Problem

- There is a growing primary care provider (PCP) shortage in the U.S.
- Are PCP resources being maximized?
- Nurse practitioners (NPs) may be an inpatient resource
- Extent of inpatient NP utilization and barriers to allowing NP privileges (credentialing) in eastern Oregon's rural hospitals were explored in this project

# Desired Outcomes with Impact

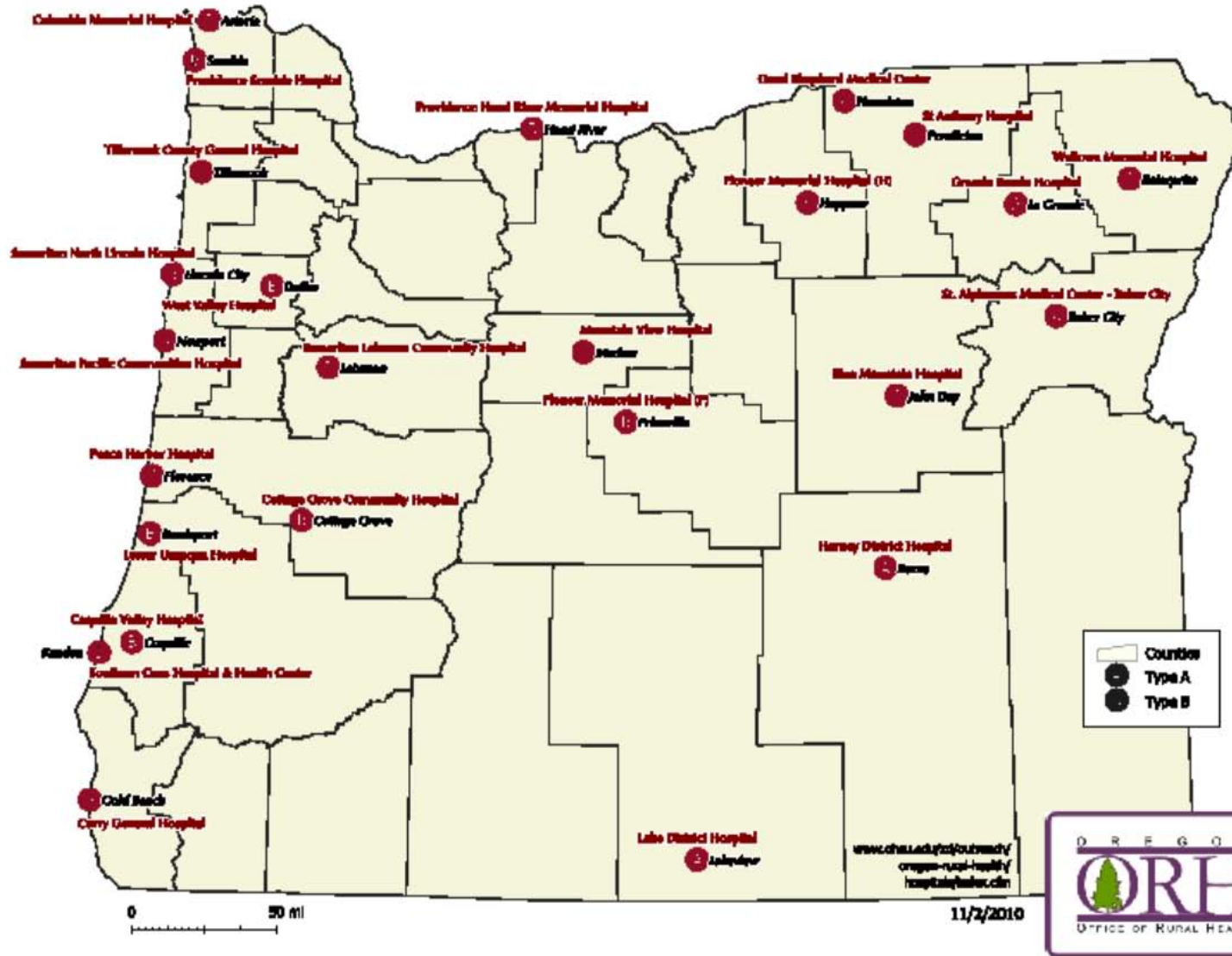
- Data:
  - NP utilization in the hospital setting in eastern Oregon
  - Barriers to NP utilization in the hospital setting
- Further research
- Improved patient care (continuity, quality, fiscal)

# Population and Epidemiology

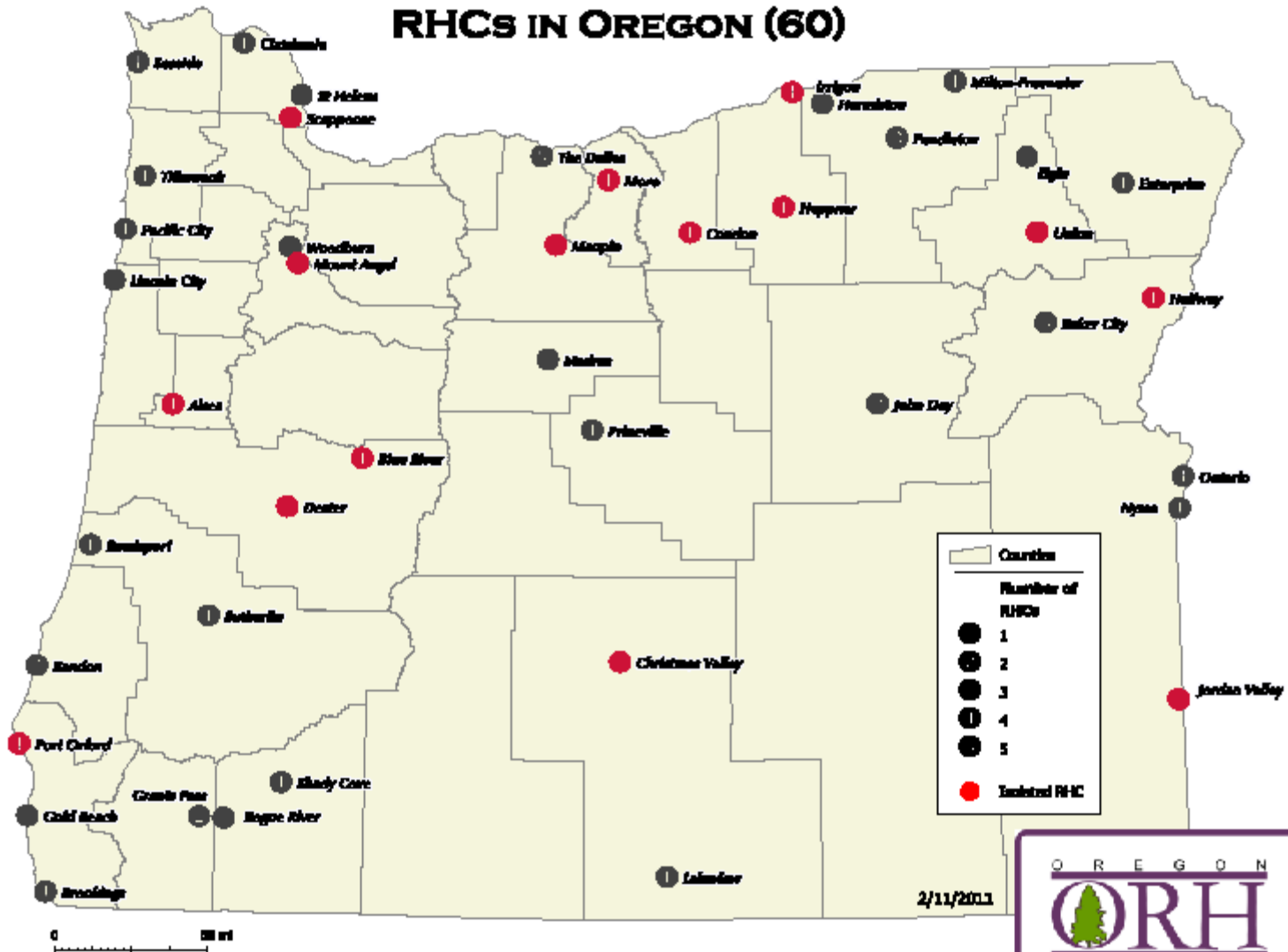
- 12 Critical Access Hospitals (CAHs)
- 34 Outpatient Rural Health Clinics (RHCs)
- Survey Participants
  - Physicians
  - NPs
  - Staff Nurses
  - Administrators
  - Board Members

# The CAHs

## OREGON CRITICAL ACCESS HOSPITALS



# The RHCs





# Background and Organizational Knowledge

- Scarce research on inpatient NP utilization and why they may not be utilized
- Outpatient cultural and practical barriers have been researched
- Personal observation and experience

# Importance to Advanced Practice Nursing

## IOM Future of Nursing Key Principles

1. Nurses should practice to the full extent of their education and training.
2. Nurses should achieve higher levels of education and training through an improved education system that promotes seamless academic progression.
3. Nurses should be full partners, with physicians and other health care professionals, in redesigning health care in the U.S.
4. Effective workforce planning and policy making require better data collection and an improved information infrastructure.

# Purpose Statement

The purpose of this survey research project is to assess the extent of NP utilization in four eastern Oregon critical access hospitals, then identify and describe barriers to granting NP inpatient privileges.

# Clinical Inquiry Questions

- What is the prevalence of NPs with inpatient hospital privileges in eastern Oregon?
- What are the barriers to granting NPs inpatient hospital privileges in eastern Oregon?

# Background Information

- Oregon NPs have been legally allowed by the state legislature to seek hospital privileges since the 1970s
- NPs are subject to hospital bylaws and must respect supplemental hospital policy that limits or disallows NP credentialing
- What other barriers are preventing the development of the inpatient NP role?

# Literature Review

- Physician Perspective:
  - Competition for roles and salaries
  - Quality of NP training
  - Extent of NP scope
  - Structural and organizational barriers
- NP Perspective:
  - Consistently experience a poor understanding of their roles by physicians and hospitals
  - Restrictiveness of the practice climate
  - Poor peer support group
  - Low salaries
- Staff Perspective:
  - Confusion by staff nurses on the role of the inpatient NP
- Patient Perspective:
  - Prefer interaction with a NP over a physician in convincing numbers
  - Perceived quality of care comparable
- Physicians who do not practice alongside NPs have more negative generalized attitudes toward NPs

# Other Sources

- Reimbursement
  - 85% for independent NP
  - 100% with physician co-signature
- Locum tenens utilization
  - Up to 75% more than local PCP

# Project Design and Setting

- Telephone survey of all 34 outpatient rural health clinics in eastern Oregon
- Telephone survey of all 12 critical access hospitals in eastern Oregon
- Willingness of hospital administrators and personnel to participate in the second stage of the project was gauged
- Of the 12 critical hospitals polled, four were willing to participate



# Sample

- Physicians
- NPs (RHCs and CAHs)
- Staff Nurses
- Administrators
  - CEO
  - CFO
  - HR Mgr
  - CNO
- Board Members

# Measures

- Number of NPs in:
  - CAHs
  - RHCs
  - Rural Eastern Oregon
- Locum tenens use
- Five minute survey

# Data Collection Procedures

- Survey distribution by mail
- Demographic questions:
  - Age
  - Professional Title
  - NP Familiarity
- Barriers assessed using 1-5 Likert Scale
  - Education
  - Physician Willingness
  - Physician Availability
  - Role Confusion
  - Reimbursement
  - Bylaws
- Open-ended question

# Analytic Methods

- Frequency Analysis
- Descriptive
  - Age
  - Profession
  - NP Familiarity
- Correlation
  - Age
  - Profession
  - NP Familiarity

# Ethics and Dissemination

- Ethics
  - No risk of physical or emotional harm
  - Identifying demographics
  - Insight
- Dissemination
  - Written report to contacts
  - Publication

# Timeline

- Month 1-2:
  - IRB approval
  - Telephone data and facility recruitment
  - Surveys
- Month 2-4:
  - Gather Surveys
  - Data collection and entry
- Month 5:
  - Second phase data analysis
- Month 6:
  - Composition and dissemination

# Sample

- Surveyed: 173
- Responded: 83
  - Physician 13
  - NP 15
  - Staff nurse 27
  - Administrator 13
  - Board Member 15

# Sample

- Age:
  - Range 23-75
  - Average 49
- NP Familiarity
  - 58 (69.9%) did not work with NPs
  - 15 of remaining 25 worked were NPs



# Findings

- 23 NPs at RHCs
- 136 NPs in rural eastern Oregon
- 8 privileged at CAHs
- 6 CAHs with NPs: locum tenens <2/yr
- 6 CAHs without NPs: locum tenens weekly

# Findings

- |                          |      |             |
|--------------------------|------|-------------|
| • Education              | 2.72 | (23 Unsure) |
| • Physician Willingness  | 3.04 | (28 Unsure) |
| • Physician Availability | 2.58 | (23 Unsure) |
| • Role Confusion         | 2.42 | (21 Unsure) |
| • Reimbursement          | 3.17 | (52 Unsure) |
| • Bylaws                 | 3.39 | (26 Unsure) |
| • No new barriers listed |      |             |

# Findings

- Physician Education (3.92)
  - NP Bylaws (3.53)
  - Staff RN Bylaws (3.48)
  - Administrator Reimbursement (3.62)
  - Board Member Reimbursement (3.33)
- 
- No significant correlation between age, title, or NP familiarity and any single barrier

# Findings

## *Primary Care Provider Responses to Education as a Barrier to Inpatient NP Credentialing*

<b>Title</b>	<b>Strongly or Somewhat Disagree</b>	<b>Unsure</b>	<b>Strongly or Somewhat Agree</b>
Physicians	1	3	9
Nurse Practitioners	9	1	5

# Financial Considerations

- Fiscal impact of locum tenens
- Reimbursement
  - Physician cooperation
  - Policy reform

# Situational Analysis

- All stakeholders must be involved
- DNP Role
  - Investigator
  - Collaborator
  - Disseminator
  - Clinician

# Outcomes

- Rectification
  - Interdisciplinary examination of the MN and DNP
  - Administrator education and institutional policy reform
  - State and federal lobbying
  - Title pride
- Further research
  - Barriers
  - Fiscal data

# Interpretation and Context

- Differing views among stakeholders
- Order of change
- Predictors:
  - Physicians
  - Nursing Profession
  - Administrators and Board Members



# Limitations

- Small sample size
- Clustering
- Survey design
- Geographical distribution
- Short time frame
- Hospitals without NPs

# Conclusion

## IOM Future of Nursing Key Principles

1. Nurses should practice to the full extent of their education and training.
2. Nurses should achieve higher levels of education and training through an improved education system that promotes seamless academic progression.
3. Nurses should be full partners, with physicians and other health care professionals, in redesigning health care in the U.S.
4. Effective workforce planning and policy making require better data collection and an improved information infrastructure.

# Program Competencies

- Practice within an advanced practice specialty in a professional, evidence-based, skilled, and ethical manner.
- Influence health and health outcomes of individuals, groups, and populations through clinical inquiry.
- Influence health policy and systems of care in the local, regional, state, national, and international forums.

# Future Plans

- Penitentiary
  - Consulting for EMR
- Grant County Public Health
  - EMR Implementation
- Be Vigilant
- Teach
- Community Service

# Emma, er...



# Emma





# Eastern Oregon



# Rugby





# Acknowledgements

- Advisors
  - Gary Laustsen, PhD, FNP-BC, RN
  - Joanne Noone, PhD, RN, CNE
- OHSU Employees
  - Anne Rosenfeld, RN, PhD, CNS, FAHA, FAAN
  - Michael Leo, PhD (Stats)
  - Linda Peppler, Office of Rural Health
- Survey Contacts
  - Barb Smith
  - Patti Alstott
  - Nicki Cross
  - Laurie Marcum
- Betty Gray Rural Health Scholarship

## Appendix A

### Collective Evidence Table

Synopsis			Findings		Clinical Applicability
Citation	Clinical Question	Design	Credibility	Sig.	Clinical Applicability
Author & Year	Hypothesis, Variables Under Study	Design Sample Population	Rigor in Data Collection & Analysis	Statistical & Clinical Significance	To whom and under what situations could findings apply?
Bodenheimer & Phamm, 2010	An analysis of the demographics driving the primary care provider shortage in the U.S. and proposed solutions to the problem.	Literature review and editorial.	N/A	No statistical significance; clinical significance at right.	Quality prospective study of the impending primary care shortage and what can be done to minimize its impact.
Lindeke, Jukkala, & Tanner, 2005	An analysis of NP perceptions of rural practice barriers.	This is a replication study designed to assess the evolution of NP perceptions to rural practice barriers (Previous studies in 1996 and 2001).	NPs (n=191) in Minnesota's state Board of Nursing database were polled. They were asked to complete a Barriers to Practice checklist.	No statistical significance; clinical significance at right.	Identifies NP-perceived barriers to clinical practice in rural areas. This is one population affected by integration whose opinions must be considered.
Main, Dunn, & Kendall, 2007	How can NPs be better integrated into primary care delivery?	Literature review and editorial.	N/A	No statistical significance; clinical significance at right.	Identifying practical and cultural barriers to NP integration into primary care roles is

					necessary for policy changes that will help them to achieve parity with physicians in care delivery.
Ricketts, 2000	Explains health care disparities for rural populations related to poor access, provider availability, and resource shortage.	Literature review and editorial.	N/A	No statistical significance, clinical significance at right.	Builds rationale for needed research and change in the current public health system as one way to decrease rural health care disparities.
Roblin, Becker, Adams, Howard, & Roberts, 2004	Does the type of primary care provider have any effect on patient satisfaction with care?	Retrospective study of patient satisfaction surveys in pediatric and adult medicine departments over a 4 year period.	Over 41,000 patient satisfaction surveys were reviewed for measures of practitioner interaction, care access, and overall experience. A logistic regression was performed to consider type of provider.	Statistically, patients preferred interaction with NPs and PAs over interaction with MDs. Care access and overall experience showed no statistically significant difference.	A study that suggests NPs can provide comparable care to MDs from a patient perspective. This is one population affected by integration whose opinions must be considered.
Street & Crossman, 2010	How do physician characteristics and close working relationships influence physicians' attitudes toward NPs?	Bivariate analysis of Mississippi Physician Workforce Study survey data examining physician characteristic	23.3% response rate, which translates to 563 physician respondents. Generalized physician attitudes toward NPs	Regression analysis suggested that physicians who practice alongside NPs and who have been in	Study suggests that physician familiarity with NPs may positively influence physician attitude toward NPs. Familiarity of

		associated with having NPs in practices and discrete NP-attitudinal items.	modeled using multivariate regression. High internal consistency was demonstrated.	practice longer had the most positive generalized attitudes toward NPs. Clinical significance at right.	physicians with NPs may be a useful variable in associating perceived barriers to NP inpatient practice.
Wilson, Pearson, & Hassey, 2002	Examines the attitudes of GPs toward the developing roles of NPs in the United Kingdom, including perceived barriers to role integration.	Focus group discussion for GPs; four groups of 6-8 GPs. Structured framework utilized to elicit opinions on integration.	Discussions were recorded and subject to content analysis by two independent assessors. Inter-rater reliability was high (K=0.921).	No statistical significance, clinical significance at right.	GPs are concerned with threats to their jobs and financial security, NP scope and capabilities, and structural and organizational barriers. This is one population affected by integration whose opinions must be considered.
Wright, 2001	Discussion of issues surrounding the credentialing of NPs.	Editorial.	N/A	No statistical significance, clinical significance at right.	A discussion of NP credentialing, common hospital credentialing structures, and responsibilities associated with inpatient privileges.

## Appendix B

### Survey Sample

1. What is your age? \_\_\_\_\_

2. What is your profession?

\_\_\_Physician \_\_\_Nurse Practitioner (NP) \_\_\_Nursing Staff \_\_\_Administrator \_\_\_Board Member

3. If you are not a NP, do you currently work directly with a NP in your primary job setting?

\_\_\_Yes

\_\_\_No

Please read the following list of potential barriers to NP inpatient credentialing. Rate how strongly you agree or disagree with their relevance to your hospital setting.

Perceived Barrier	Strongly Disagree	Somewhat Disagree	Indifferent or Unsure	Somewhat Agree	Strongly Agree
NP education and clinical experience is not sufficient to safely practice independently in the hospital setting.					
There is a lack of willingness of physicians to co-sign NP orders and notes in the hospital setting.					
There is a lack of availability of physicians to co-sign NP orders and notes in the hospital setting.					
There will be NP role and title confusion among staff and patients in the hospital setting.					
Reimbursement for NP hospital based services is inferior to reimbursement for physician services.					
There is a lack of current hospital policy or bylaws governing NP inpatient practice in the hospital.					

**Please add any other concerns not listed in the survey:**

## **Appendix C**

### **Cover Letter**

Dear Survey Participant:

Thank you for your interest in this survey project, entitled “Barriers to Inpatient Nurse Practitioner Credentialing in Rural Oregon.” The purpose of the survey is to explore physician, nurse practitioner, staff nurse, hospital administrator, and board member perceptions of potential barriers to integrating the nurse practitioner into hospital based care in rural Oregon. The hope is that these data can be analyzed to identify trends in perceived barriers and, ultimately, strategies to rectify such barriers so that maximum use of provider resources in rural Oregon can be developed.

Participation involves completion of a brief survey on the reverse of this page; the survey should take 5-10 minutes to complete. After you have finished the survey, simply place it in the postage-paid return envelope and mail back to the surveyor. If you have questions or concerns about the study, please contact Tim Neilson by email (neilson@ohsu.edu) or telephone (509-540-4725).

Before participating, it is important that respondents understand the following general principles that apply to all who take part in this project: (a) completion of the survey is entirely voluntary; (b) there are no risks anticipated for participants and there is no cost to participants; (c) participants will not benefit directly from taking part in this study, but knowledge from the study may be gained that might benefit others; (d) demographic information provided by participants will be reported as group data so that individual participants cannot be identified; (e) results of the survey will ultimately be made available to participants, may be presented at regional and national conferences, and may be published online or in appropriate health care journals.

All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject, you may contact, anonymously if you wish, the Oregon Health & Science Institutional Review Board at 3181 SW Sam Jackson Park Road, Portland, OR 97239-3098, by phone at 503-494-7887, or email at [irbmailbox@ohsu.edu](mailto:irbmailbox@ohsu.edu).

Running head: ATRIAL FIBRILLATION

New Onset Palpitations: A Case Study

Timothy S. Neilson

Oregon Health & Science University

School of Nursing

**Abstract**

Atrial fibrillation (AF) is a relatively common arrhythmia encountered by the family nurse practitioner (FNP) in outpatient clinics, emergency departments, and inpatient units. The FNP must be able to gather a relevant history, perform a focused exam, and order appropriate diagnostic tests to accurately diagnose, classify, and treat the patient with AF. Current diagnostic and treatment strategies are discussed in this case study in the context of new onset AF in a 61 year-old woman. This patient was encountered in the emergency department of a rural hospital. The patient was subsequently followed on an outpatient basis with input from cardiology. The literature review for this case was conducted using CINAHL and Ovid databases, utilizing various combinations of the following keywords: atrial fibrillation, AF, underlying disease, evaluation, treatment, and CHADS2 (congestive heart failure, hypertension, age more than or equal to 75, diabetes mellitus, and stroke or transient ischemic attack history). Reference lists for the resulting articles were further explored for relevant research.



## **Introduction and Background**

Atrial fibrillation (AF) is a relatively common arrhythmia characterized by ineffective atrial contraction due to chaotic atrial depolarization (Patterson, Wolfe, & Bower, 2010). It is more prevalent in men and incidence rises in both sexes with increasing age (Go et al, 2001). Failure to diagnose and treat AF leads to a higher incidence of stroke due to the formation of atrial emboli that may become systemic (Aronow, 2008). In addition, adverse cardiac events may be increased due to a rapid ventricular response to AF. This can also lead to tachycardia-related cardiomyopathy (Aronow, 2008). Increased mortality rates in patients with untreated AF result from these higher incidences of cerebrovascular and cardiovascular events.

The minimum evaluation of the patient with AF consists of a history, physical examination, specific laboratory diagnostics, and electrocardiogram (EKG), with echocardiogram after hemodynamic stabilization (Fuster, Ryden, & Cannom et al, 2006). Onset of symptoms, frequency and duration of symptoms, associated symptoms, and past treatment—as well as response—all contribute to the development of appropriate AF classification as outlined in Table 1 (Podrid, Zimetbaum, & Saperia, 2010). In addition, personal and family history can help the clinician determine if the AF could be secondary to an underlying disease process like diabetes or hypertension (Kannel, Wolf, Benjamin, & Levy, 1998). Gathering a social history is also important; those with a history of tobacco use have a higher incidence of AF (Kannel et al, 1998).

**Table 1**

*AF Classification*

Paroxysmal	Episodes terminate spontaneously in less than seven days, usually less than 24 hours.
Persistent	Episodes fail to spontaneously terminate in seven days, but may still do so. Cardioversion may be necessary. These patients often have paroxysmal events after initial conversion.
Permanent	Episode has lasted for more than one year; cardioversion has either been unsuccessful or not attempted.
Lone	Any type of AF that exists in patients with structural heart disease, usually applied to patients under 60 years of age.

Appropriate diagnostics also assist in the classification and treatment of AF. Certain underlying physiologic conditions may be correctable and lead to resolution of AF. Serum studies, including complete blood count (CBC), comprehensive metabolic profile (CMP), thyroid stimulating hormone (TSH), and Troponin I are indicated. Inflammation and infection can contribute to the pathogenesis of AF (Ichiki, Orihara, & Hamasaki, 2009). Electrolyte imbalances can lead to a variety of dangerous arrhythmias, including AF (Nishimura, Nakayama, & Ishikawa, 1996). Untreated or undiagnosed hyperthyroidism can also cause AF (Bielecka-Dabrowa, Mikhailidis, Rysz, & Banach, 2009). In addition to laboratory tests, an EKG must be performed to evaluate the electrophysiology of the heart and an echocardiogram to assess the structural condition of the heart. Ischemic heart disease, congestive heart failure, pericarditis, and valvular disease are all examples of clinically relevant pathologies that should be considered

because they can contribute to the development of AF (Nattel, Shiroshita-Takeshita, Brundel, & Rivard, 2005).

Treatment of AF has three main objectives: rate control, correction of the arrhythmia, and prevention of thromboembolism (Patterson et al, 2010). Control of the heart rate and rhythm is usually accomplished by using beta-blockers, calcium channel blockers, amiodarone, or digoxin (Patterson et al, 2010). If the heart does not respond to medications, electrical cardioversion or surgical ablation of accessory atrial pathways is considered. The CHADS2 (congestive heart failure, hypertension, age more than or equal to 75, diabetes mellitus, and stroke or transient ischemic attack history) scoring system helps identify the need for anticoagulation and direct its management based on the patient's co-morbidities (Table 2). A score of 0-1 indicates that aspirin therapy is sufficient, while a score of 2-6 indicates the need for warfarin in the absence of other contraindications (Patterson et al, 2010).

**Table 2**

*CHADS2 Scoring System*

<b>Risk Factor</b>	<b>Score</b>
Heart failure, past or current	1 point
Hypertension, treated or untreated	1 point
Age 75 years or above	1 point
Diabetes	1 point
Prior ischemic stroke, transient ischemic attack, or thromboembolism	2 points

Developing pharmaceutical treatments include a safer, more tolerable analogue of the highly effective anti-arrhythmic drug amiodarone and anti-arrhythmic drugs that selectively

affect the atria (Miranda et al, 2010). In addition, advances in ablation technology promote a safer, more effective procedure across age groups (Dewire & Calkins, 2010).

## **Description of Case**

### **History of Presenting Illness**

M.C. is a 61 year-old Caucasian woman who presents to the emergency department with palpitations for the past four hours. She describes a constant ‘fluttering’ feeling in her chest and throat. She has found no aggravating or alleviating factors.

### **Review of systems.**

- General: No fever, chills, fatigue, malaise, or weight loss
- Neurological: No headaches, dizziness, or visual changes
- Ears, nose, and throat: No recent URI, otalgia, congestion, or sore throat
- Cardiovascular: Positive for palpitations; no chest pain or pressure
- Respiratory: No cough, wheeze, or shortness of breath
- Gastrointestinal: No nausea, vomiting, diarrhea, constipation, or abdominal pain
- Genitourinary: No dysuria, hematuria, incontinence, or vaginal discharge
- Musculoskeletal: No arthralgias, myalgias, or peripheral edema

### **Personal medical history.**

- Hypertension
- Premature atrial and ventricular contractions (confirmed by Holter Monitor, 2010)
- Anxiety

### **Family history.**

- Brother died of myocardial infarction at age 55

**Social history.**

- 1-2 glasses of wine weekly
- No tobacco use
- No illicit drug use

**Medications.**

- Aspirin 81 mg po daily
- Lisinopril 20 mg po daily
- HCTZ 25 mg po qd
- Fish Oil 1200 mg po qd

**Allergies.**

- NKDA

**Physical Exam**

This is a healthy appearing 61 year-old female who is mildly anxious, but in no acute distress. She is alert and oriented x3, skin is warm pink dry and intact.

- Vital signs: BP 150/94, HR 91, RR 18, Sat 96% RA, T 98.5, Wt. 262 lbs
- Eyes, ears, nose, and throat: PERRLA, TMs pearly grey with clear canals, nasopharynx and oropharynx moist and pink without lesion or exudates; neck supple without masses or adenopathy
- Cardiovascular: irregularly irregular without murmur, gallop, or rub; peripheral pulses were weak and thready
- Respiratory: CTA bilaterally throughout all lung fields
- Extremities: warm, well-perfused, and without edema

### **EKG**

- Atrial fibrillation with ventricular rate of 91 beats per minute

### **Laboratory**

- CBC: Within normal limits (WNL)
- CMP: WNL except glucose elevated 113 mg/dL (nonfasting)
- TSH: WNL 1.75 uIU/ml
- Troponin I: WNL 0.00 ng/mL

### **Discussion Related to Literature Review**

M.C. was symptomatic only with her palpitations upon presentation, which in turn caused anxiety. She had been thoroughly evaluated by cardiology for palpitations six months earlier; a Holter Monitor revealed only benign premature atrial and ventricular contractions. She was not a candidate for symptomatic control of her palpitations because her baseline heart rate is usually 50-60, contraindicating beta blocker therapy. These palpitations had remained intermittent, transient, and self-limiting until hours before her presentation in the emergency department, at which time they became persistent and increasingly intense. According to the criteria presented in Table 1, the clinician classified her AF as paroxysmal.

The EKG revealed AF, but no evidence of ischemia or ventricular enlargement. Laboratory tests revealed no indication of underlying pathology such as infection, electrolyte imbalance, cardiac muscle damage, or thyroid dysfunction that could be causing AF. A recent echocardiogram revealed no structural cardiac pathology. Because the patient's only obvious risk factor for AF was hypertension, the clinician decided that this was the likely pathological culprit.

M.C. was determined to be hemodynamically stable. Oral warfarin 5 mg was initiated at the suggestion of cardiology despite a CHADS2 score of one, for hypertension. Cardiology's rationale was that it was not clear how long the patient had been in AF. In addition, it was determined that her pulse rate of 90 may present a special treatment problem. This was not a dangerously rapid ventricular response, but it was well above the patient's baseline of 50-60 beats per minute. Therefore, it still constituted a reflex elevation in ventricular rate due to AF. If the rhythm was converted with a medication that significantly affected pulse rate as well, her ventricles may slow down too much and cause perfusion problems at the time of conversion. Low dose continuous release diltiazem 180 mg was selected with input from cardiology. M.C. was discharged in stable condition with instructions to follow-up for an INR, EKG, and outpatient appointment in three days.

At follow-up, it was determined that M.C. had converted to sinus bradycardia at 56 beats per minute; her blood pressure was improved at 132/76. Her INR was 1.3. She was asymptomatic. Based on a CHADS2 score of one (for hypertension), the FNP discontinued this patient's warfarin and placed her on a daily dose of aspirin 81 mg daily. The diltiazem was continued and an appointment with cardiology was made. The cardiologist maintained the diltiazem and aspirin dosing regimens, though continued to insist that warfarin was the correct initial choice. M.C. was instructed to follow-up in one month with her FNP, sooner as needed for new or recurrent symptoms.

It is important to note that this patient is uninsured and retired. She and her husband are anxiously awaiting enrollment into Medicare. They live off of a modest social security income and the FNP has always attempted to provide them with inexpensive care. Socioeconomic status can sometimes conflict with standard of care. The patient was reluctant to collaborate with

cardiology due to travel and mounting medical costs. The local hospital has a visiting cardiologist at regular intervals as well as patient assistance programs for those with limited incomes. The FNP was able to coordinate with the hospital, cardiology, and the pharmacy to substantially reduce both expenses and travel.

### **Summary**

The effective diagnosis and treatment of new onset AF is crucial to reducing morbidity and mortality. Primary care providers like FNPs can expect to encounter this relatively common arrhythmia in outpatient, emergency, and inpatient settings. A thorough history, exam, and relevant diagnostics all contribute to effectively diagnosing the patient. Adherence to current guidelines for classification of atrial fibrillation and candidacy for anti-coagulation is important to optimize outcomes. Lastly, collaboration to devise an individualized, affordable ongoing treatment plan for the limited income patient creates a dynamic that promotes trust and respect between the patient and his or her medical community.



## References

- Aronow, W.S. (2008). Etiology, pathophysiology, and treatment of atrial fibrillation: Part 1. *Cardiology in Review*, 16(4), 181-8.
- Bielecka-Dabrowa, A., Mikhailidis, D.P., Rysz, J., & Banach, M. (2009). The mechanisms of atrial fibrillation in hyperthyroidism. *Journal of Thyroid Research*, 2(1), 4.
- Dewire, J., & Calkins, H. (2010). State-of-the-art and emerging technologies for atrial fibrillation. *Nature Reviews Cardiology*, 7(3), 129-38.
- Fuster, V., Ryden, L.E., & Cannom, D.S., et al. (2006). ACC/AHA/ESC 2006 guidelines for the management of patients with atrial fibrillation: A report of the american college of cardiology/american heart association task force on practice guidelines and the European society of cardiology committee for practice guidelines. *Circulation*, 114(7), e257-354.
- Go, A.S., Hylek, E.M., Phillips, K.A., Chang, Y., Henault, L.E., Selby, J.V., & Singer, D.E. (2001). Prevalence of diagnosed atrial fibrillation in adults: National implications for rhythm management and stroke prevention. *Journal of the American Medical Association*, 285(18), 2370-5.
- Ichiki, H., Orihara, K., & Hamasaki, S., et al. (2009). The role of infection in the development of non-valvular atrial fibrillation: Up-regulation of toll-like receptor 2 expression levels on monocytes. *American Journal of Cardiology*, 53(1), 127-35.
- Kannel, W.B., Wolf, P.A., Benjamin, E.J., & Levy, D. (1998). Prevalence, incidence, prognosis, and predisposing conditions for atrial fibrillation: Population-based estimates. *American Journal of Cardiology*, 82(8A), 2N-9N.

Miranda, R.I., Simpson, C.S., Michael, K.A., Abdollah, H., Baranchuk, A.M., & Redfearn, D.P.

(2010). Advances in the treatment of atrial fibrillation. *Minerva Cardioangiologica*, 58(6), 637-48.

Nattel, S., Shiroshita-Takeshita, A., Brundel, B.J., & Rivard, L. (2005). Mechanisms of atrial

fibrillation: Lessons from animal models. *Progress in Cardiovascular Diseases*, 48(1), 9  
28.

Nishimura, M., Nakayama, K., & Ishikawa, Y. (1996). Cardiac arrhythmias caused by electrolyte

imbalance. *Nippon Rinsho*, 54(8), 2207-12.

Patterson, S., Wolfe, D.A., & Bower, B. (2010). Atrial fibrillation: A concise update on

treatment. *Advance for NPs & PAs*, 1(3), 20-24.

Podrid, P.J., Zimetbaum, P.J., & Saperia, G.M. (2010). *Overview of the evaluation and*

*management of atrial fibrillation*. Retrieved from

[http://www.uptodate.com/contents/overview-of-the-evaluation-and-management-of-atrial-fibrillation?source=search\\_result&selectedTitle=1%7E150](http://www.uptodate.com/contents/overview-of-the-evaluation-and-management-of-atrial-fibrillation?source=search_result&selectedTitle=1%7E150)

Running head: LYMPHADENOPATHY

Lymphadenopathy in a Teenage Boy: A Case Study

Timothy S. Neilson

Oregon Health & Science University

School of Nursing

**Abstract**

Pediatric lymphadenopathy is a complaint that will be encountered by the family nurse practitioner (FNP) in the outpatient setting. This finding can represent a condition as benign as seasonal allergies, an infection with the potential for serious complications, or a malignancy such as lymphoma. The FNP must be able to gather a relevant history, perform a focused exam, and order appropriate diagnostic tests to accurately diagnose and treat the cause of lymphadenopathy. Current diagnostic and treatment models are discussed in this case study in the context of an otherwise healthy 17 year-old male. This patient was encountered in a rural outpatient clinic. The patient was subsequently followed on an outpatient basis after consulting with a general surgeon. The literature review for this case was conducted using CINAHL and Ovid databases, utilizing various combinations of the following keywords: pediatric, lymphadenopathy, lymphoma, mononucleosis, cervical, and EBV. Reference lists for the resulting articles were further explored for relevant research.

### **Introduction and Background**

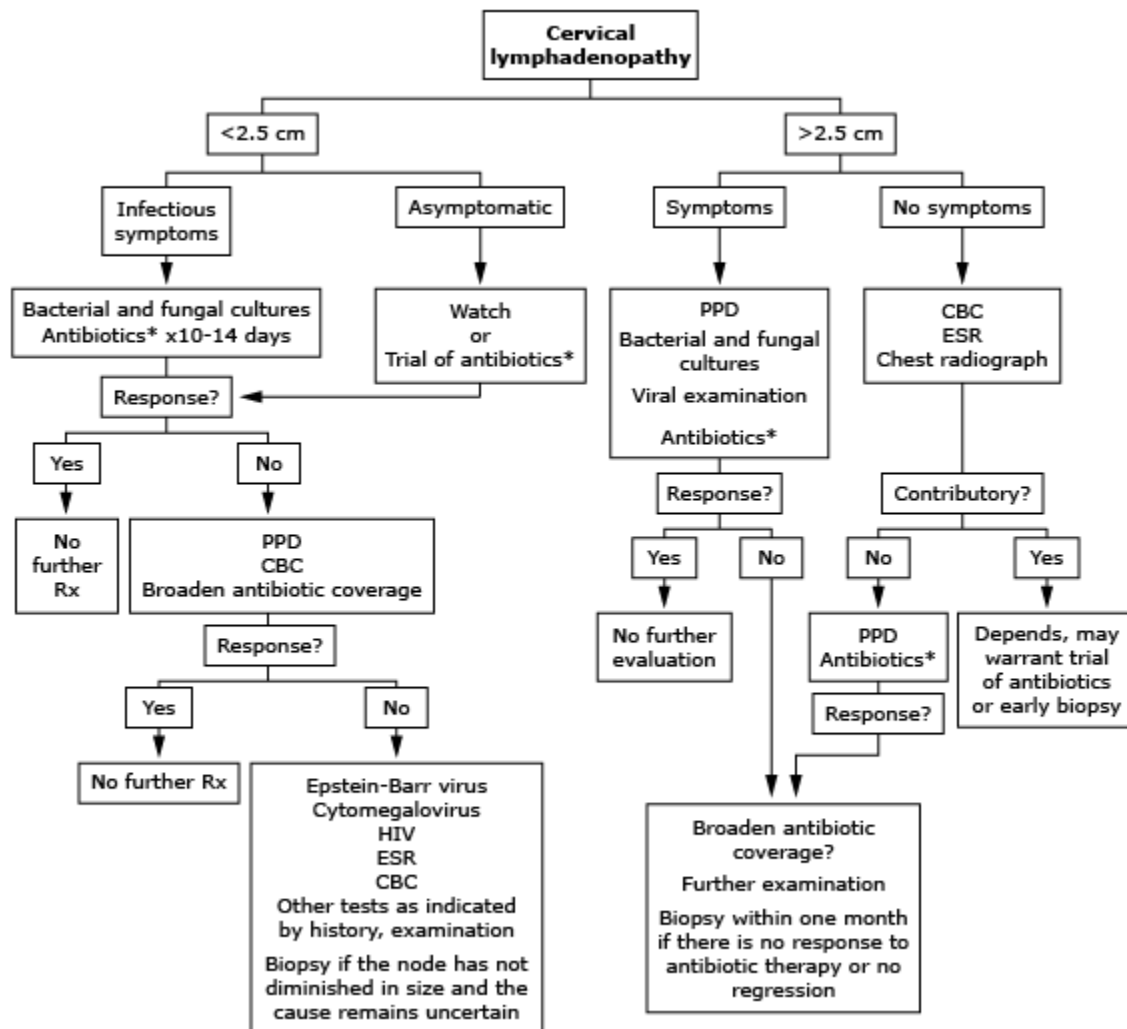
Pediatric lymphadenopathy can indicate a variety of disease processes, including infectious, reactive, and malignant etiologies (Vargas-Vallejo, Alvarez-Solis, Juarez-Quintal, Bulnes-Mendizabal, & Quero-Hernandez, 2007). These differential diagnoses must be considered during the history and physical to diagnose and treat the underlying cause in an appropriate and timely manner.

A thorough history of the pediatric patient with lymphadenopathy includes lymph node location, duration, size, laterality, and a relevant review of systems (McClain & Fletcher, 2010). Location may be paired with regional symptoms, such as cough or sore throat in the patient with cervical lymphadenopathy, to suggest an infectious etiology. Generalized constitutional symptoms such as fever and weight loss are more suggestive of malignancy. In addition, significant progression of lymphadenopathy in under than six months, lymph node size of more than three centimeters, and bilateral presentation are more likely to suggest malignancy in the pediatric patient (Vargas-Vallejo et al, 2007).

Personal, family, and social histories are of interest when assessing lymphadenopathy. A patient with a personal or family history of lymphoma is more likely to have a malignancy (Negri et al, 2006). Occupational pesticide exposure also increases the odds of developing a malignancy (Merhi et al, 2007). Lastly, exposure to infectious contacts could suggest a similar infectious disease in the presenting patient.

The physical exam and appropriate diagnostic tests are based upon the history. After patient report of size, location, and laterality is confirmed by exam, local cultures may reveal bacterial or fungal infection. A trial of antibiotics may help differentiate between infection and malignancy as well (Up To Date Online, 2010).

Serum testing for shifts in expected blood counts and differentials, elevated liver enzymes, and specific viral antibodies also help to narrow the diagnosis. In infectious mononucleosis, 42% of patients have leukocytosis, 89% have atypical lymphocytosis, and 58% have elevated liver enzymes (Grotto et al, 2003). Chest radiographs can demonstrate further lymphadenopathy in the chest or indicate granulomatous disease. Tuberculin skin testing can rule out a tuberculosis component. Ultimately, a biopsy of the affected lymph node may be needed to definitively diagnose the etiology of the lymphadenopathy. Table 1 outlines an algorithmic approach to cervical lymphadenopathy in children (Up To Date Online, 2010).

**Table 1***Approach to Cervical Lymphadenopathy in Children (Up To Date Online, 2010)*

CBC: complete blood count; ESR: erythrocyte sedimentation rate; PPD: purified protein derivative test for tuberculosis.

\* Empiric antibiotic therapy should include coverage for common pathogens such as group A streptococcus and *Staphylococcus aureus* (eg, clindamycin or trimethoprim-sulfamethoxazole (TMP-SMX) in areas with a high prevalence of community associated methicillin-resistant *S. aureus* (CA-MRSA) or a first-generation cephalosporin (eg, cephalexin) or amoxicillin-clavulanate in areas with a low prevalence of CA-MRSA).

According to Table 1, biopsy is the definitive test if other diagnostics and treatment measures fail. A variety of pathologies can be revealed from the biopsy of an affected lymph node. In one study, 239 children underwent peripheral lymph node biopsies for evaluation of nonspecific lymphadenopathy (Knight, Mulne, & Vassy, 1982). Table 2 shows the profile of results.

**Table 2**

*Results for Lymph Node Biopsies Performed on 239 Children with Peripheral Lymphadenopathy*

<b>Pathology Result</b>	<b>Percentage of Children in Study</b>
Reactive hyperplasia of undetermined etiology	52%
Granulomatous disease secondary to infection	32%
Neoplastic disease	13%
Chronic dermatopathic or bacterial infections	3%

### **Description of Case**

#### **History of Presenting Illness**

T.M. is a 17 year-old Caucasian boy who presents with his father to the outpatient clinic. He complains of swelling on the left side of his neck for the past three to four days. He describes sustaining an accidental puncture wound at the site nearly six weeks ago from a pair of garden shears. This wound healed without incident. He states that he has had no other symptoms besides what he considers to be the ‘annoying’ sensation of fullness on the left side of his neck. T.M. knows of no infectious or chemical exposures. His tetanus immunization is up to date.

#### **Review of systems.**

- General: No fever, chills, fatigue, malaise, or weight loss
- Integument: No rashes or lesions
- Neurological: No headaches, dizziness, or visual changes
- Ears, nose, and throat: No recent URI, otalgia, congestion, sore throat
- Cardiovascular: No chest pain or palpitations
- Respiratory: No cough, wheeze, or shortness of breath



- Gastrointestinal: No nausea, vomiting, diarrhea, constipation, or abdominal pain
- Musculoskeletal: No arthralgias, myalgias, or peripheral edema
- Lymph: No other swelling or lumps noted in the head, neck, axillae, or groin

**Personal medical history.**

- Negative

**Family history.**

- Negative (with father's input)

**Social history.**

- High school student who lives with his parents; he also performs ranch work
- No alcohol, tobacco, or illicit drug use

**Medications.**

- None

**Allergies.**

- NKDA, no known environmental allergies

**Physical Exam**

This is a very healthy, well-nourished appearing 17 year old male in no acute distress. He is alert and oriented x3, skin is warm pink dry and intact.

- Vital signs: BP 114/65, HR 62, RR 18, Sat 99% RA, T 99.2, Ht. 75", Wt. 204 lbs
- Eyes, ears, nose, and throat: TMs pearly grey with clear canals; nasopharynx and oropharynx moist and pink without lesion or exudate; tonsils 2+ without lesions; neck supple without masses; there is a three centimeter, firm induration inferior to the left ear at the angle of the mandible without erythema or local heat; a well-healed, 6mm scar remains from the puncture wound directly in the center of the

induration; there is no other cervical or occipital adenopathy

- Cardiovascular: heart rate and rhythm are regular without murmur, gallop, or rub
- Respiratory: CTA bilaterally throughout all lung fields, no axillary adenopathy
- Abdomen: BT activex4, no masses, tenderness, or organomegaly
- Extremities: warm, well-perfused, and without edema; no inguinal or epitrochlear adenopathy

### **Laboratory**

Day 1:

- Complete blood count (CBC): WBC within normal limits (WNL) 9400/mm<sup>3</sup>; neutrophils low 1700/mm<sup>3</sup>, lymphocytes elevated 6300/mm<sup>3</sup>, monocytes elevated 1000/mm<sup>3</sup>, atypical lymphocytes elevated 38%
- C-reactive protein (CRP): WNL 3.7 mg/dL

Day 2:

- Comprehensive metabolic profile (CMP): WNL except Alk Phos elevated 159 U/L, ALT elevated 92 U/L, and AST elevated 49 U/L
- Monospot: Positive

### **Discussion Related to Literature Review**

T.M. presented a clinical challenge because his history, exam, and diagnostics did not cleanly fit the profile of a single etiology. Inoculation with skin flora from the puncture wound six weeks earlier was the chief concern of the boy and his father, and was certainly a valid concern. However, in the absence of erythema, local heat, and reactive regional cervical lymphadenopathy, cellulitis was doubtful. In addition, the incubation period seemed far too long to suggest this diagnosis.

The relatively sudden (four day) emergence of the lymph node seemed too quick for malignancy. A unilateral presentation was also uncharacteristic of lymphoma. Lastly, generalized constitutional symptoms such as fatigue, weight loss, or night sweats were absent from the review of systems.

Considering regional system infection, a thorough history and exam revealed no findings to suggest local infection of the head and neck. No tenderness was found at the liver or spleen, which can be a finding associated with elevated liver enzymes in mononucleosis due to hepatosplenomegaly.

Lastly, T.M. and his father knew of no infectious exposures to suggest etiology. Though they could not rule out pesticide exposure because of the patient's ranch work and residence in a rural area, no specific direct contact could be recalled.

According to the algorithm presented in Table 1, the size of the affected lymph node (3.0 cm>2.5 cm) warranted a CBC, erythrocyte sedimentation rate (ESR), and chest radiograph. The CBC was significant for leukocytosis, specifically lymphocytosis. The clinician opted for a CRP over an ESR because the local rural lab stated that the ESR would have taken far longer. A chest radiograph was deferred until the initial diagnostics were available for review. Because the CBC was contributory, the patient was started on a regimen of Clindamycin 150 mg po qid and referred to a general surgeon the following day for consideration of biopsy.

Upon presentation at the surgeon's office, T.M. had no new complaints and had not started his antibiotics. The exam was unchanged except for some tenderness at the spleen. This finding prompted to surgeon to order more diagnostics, which showed elevated liver enzymes and a positive monospot. The surgeon discontinued the antibiotics and decided to forego biopsy. The patient and his family were educated about mononucleosis and the potential complications.

Follow-up was to be done in one month with the FNP, sooner for new or worsening symptoms.

At one month, T.M. returned to the clinic feeling well, with no complaints or lymphadenopathy. He stated that he became fatigued and developed a sore throat two days after the surgeon's evaluation. These symptoms persisted for one week, resolving with rest and fluids. A repeat CBC and CMP at this visit showed no abnormalities.

### **Summary**

Thoughtful and effective diagnostics in the pediatric patient with lymphadenopathy is important because of the wide variety of potential etiologies and the consequences associated with misdiagnosis. The FNP must be able to gather relevant information with a thorough history, exam, and judicious ordering of relevant diagnostics. Adherence to the suggested algorithm was thoughtful; an asymptomatic lymph node measuring more than 2.5 cm in diameter warranted a CBC, ESR, and chest radiograph. The preferred inflammatory marker in this case was a CRP due to the slow return of an ESR at this isolated rural lab. A chest radiograph was deferred until initial diagnostics returned. A contributory CBC suggested empirical antibiotics and potential early biopsy were appropriate; an appointment with a local surgeon was scheduled the following day and the option for a chest radiograph left to his discretion. A small difference in exam findings by the surgeon spurred further blood work that revealed mononucleosis as the diagnosis. Adherence to the standard of care and interdisciplinary collaboration in the rural health care community led to timely diagnosis and effective treatment for this patient.

### References

- Grotto, I., Mimouni, D., Huerta, M., Mimouni, M., Cohen, D., Robin, G., Pitlik, S., & Green, M.S. (2003). Clinical and laboratory presentation of EBV positive infectious mononucleosis in young adults. *Epidemiology and Infection*, 131(1), 683-9.
- Knight, P.J., Mulne, A.F., & Vassy, L.E. (1982). When is lymph node biopsy indicated in children with enlarged peripheral nodes? *Pediatrics*, 69(4), 391-6.
- McClain, K.L., & Fletcher, R.H. (2010). *Causes of peripheral adenopathy in children*. Retrieved from [http://www.uptodate.com/online/content/topic.do?topicKey=gen\\_pedi/6167&source=see\\_link](http://www.uptodate.com/online/content/topic.do?topicKey=gen_pedi/6167&source=see_link)
- Merhi, M., Raynal, H., Cahuzac, E., Vinson, F., Cravedi, J.P., & Gamet-Payrastre, L. (2007). Occupational exposure to pesticides and risk of hematopoietic cancers: meta-analysis of case-control studies. *Cancer Causes and Control*, 18(10), 1209-26.
- Negri, E., Talamini, R., Montella, M., Dal Maso, L., Crispo, A., Spina, M., La Vecchia, C., & Franceschi, S. (2006). Family history of hemolymphopoietic and other cancers and risk of non-hodgkin's lymphoma. *Cancer Epidemiology, Biomarkers, and Prevention*, 15(2), 245-50.
- Up To Date Online (2010). *Algorithm 3: Approach to cervical adenopathy in children*. Retrieved from [http://www.uptodate.com/online/content/topic.do?topicKey=gen\\_pedi/4914&selectedTitle=2%7E150&source=search\\_result](http://www.uptodate.com/online/content/topic.do?topicKey=gen_pedi/4914&selectedTitle=2%7E150&source=search_result)
- Vargas-Vallejo, M.P., Alvarez-Solis, R.M., Juarez-Quintal, M., Bulnes-Mendizabal, D.,

&Quero-Hernandez, A. (2007). Clinical factors that predict malignancy in cervical lymph node biopsies. *Revista Medica del Instituto Mexicano del Seguro Social*, 45(4), 389-94.

Running head: POLYCYTHEMIA

Secondary Polycythemia: A Case Study

Timothy S. Neilson

Oregon Health & Science University

School of Nursing

**Abstract**

Polycythemia is suspected in a patient with elevated hematocrit, hemoglobin, and/or red blood cell concentrations. These values appear on a complete blood cell count (CBC), a relatively common laboratory screening panel ordered by the family nurse practitioner (FNP) in a variety of practice settings. Polycythemia is classified by its underlying cause; the FNP must be able to gather a relevant history, perform a focused exam, and order appropriate follow-up testing to accurately diagnose, classify, and treat the patient with polycythemia. Current diagnostic and treatment strategies are discussed in this case study in the context of a 76 year-old woman presenting with progressive fatigue and comorbid weight loss. This patient was encountered in a rural outpatient clinic by her primary care provider, a FNP. The literature review for this case was conducted using CINAHL and Ovid databases, utilizing various combinations of the following keywords: polycythemia, secondary, hypoxia, hyperviscosity, phlebotomy, COPD, and smoking. Reference lists for the resulting articles were further explored for relevant research.



### Introduction and Background

A group of disorders classified as polycythemia is characterized by an increase in red blood cell concentration. Polycythemia can be caused by a direct increase in red blood cell mass (RCM), an isolated decrease in plasma volume, or a combination of both. The variants of polycythemia and their associated etiologies are summarized in Table 1 (Tefferi, Schrier, & Landaw, 2010). Secondary polycythemia will be the chief focus of this discussion.

**Table 1**

*Polycythemia Variants and Etiologies*

Variant	Etiology
Primary	Caused by an acquired or inherited mutation, leading to an abnormality within RBC progenitors that increases red blood cell mass (RCM)
Secondary	Caused by a circulating factor, most often erythropoietin, stimulating erythropoiesis and an ultimate increase in RCM (often a hypoxic response)
Relative	Caused by an isolated decrease in plasma volume, as in dehydration
Combined	Caused by both increased RCM and a decrease in plasma volume

Because the etiology of polycythemia can vary, so often does the patient's history of present illness. The family nurse practitioner (FNP) must have the knowledge to appropriately consider this condition when formulating a list of differential diagnoses. Furthermore, the test that reveals polycythemia, a complete blood cell count (CBC), is a part of routine diagnostic investigation in many health care settings; this makes the ability to recognize the condition important to the non-hematologic provider's role (Siegel & Petrides, 2008).

The recognition of polycythemia necessitates prompt treatment because complications can be disabling and, in some cases, fatal (Raval & Paul, 2010). Increased RCM leads to hyperviscosity of the blood; this decreases tissue perfusion, increases the risk of venous occlusive diseases, and may lead to cardiac or cerebrovascular arterial thromboembolic events (Schwarcz et al, 1993). Effective treatment of chronic polycythemia can prolong survival up to ten years (Marvi & Lew, 2011).

Therapeutic phlebotomy and low-dose acetylsalicylic acid are used in tandem to decrease the potential for thromboembolic complications in polycythemia (Lengfelder, Merx, & Hehlmann, 2006). However, frequent, repetitive phlebotomy can lead to metabolic complications such as iron deficiency anemia (DeFilippis, Law, Curtin, & Eckman, 2007). Baseline hematological values for each sex, summarized in Table 2, are important to consider when weighing the necessity for and therapeutic outcome of phlebotomy (Antle, 2010 and Up To Date, 2011). These values can be referenced while reviewing serial blood counts in the case description.

**Table 2**

*Normal Red Blood Cell Parameters in Adults*

Parameter	Women	Men
Hemoglobin	12.3-15.3 g/dL	14.0-17.4 g/dL
Hematocrit	36.0-44.0%	42.0-50.0%
Red Blood Cells	4.1-5.1 million/mm <sup>3</sup>	4.5-5.9 million/mm <sup>3</sup>
Platelets	150-400 thousand/mm <sup>3</sup>	150-400 thousand/mm <sup>3</sup>

Environmental causes of polycythemia must be controlled whenever possible to minimize the need for therapeutic phlebotomy. Carbon monoxide poisoning is a major cause of morbidity and mortality in the United States. The hypoxia caused by chronic exposure to carbon monoxide is one potential culprit of newly diagnosed secondary polycythemia. Common sources include car exhaust, inhaled smoke from wood burning stoves, malfunctioning heating systems, and tobacco smoke (Sen, Peltz, Beard, & Zeno, 2010). Identifying and eliminating the cause of the exposure can minimize both the recurrence of polycythemia and the complications from therapeutic phlebotomy.

### **Description of Case**

#### **History of Presenting Illness**

J.H. is a 76 year-old Caucasian woman who presents to the outpatient clinic with her daughter complaining of worsening fatigue over the past two months and a total unexplained weight loss of 34 pounds over the past six months.

#### **Review of systems.**

- General: No fever or chills; positive for generalized fatigue, malaise, and weight loss
- Integument: No rashes or skin changes
- Neurological: No headaches, dizziness, or visual changes
- Ears, nose, and throat: No recent URI, otalgia, congestion, or sore throat
- Cardiovascular: No chest pain or palpitations
- Respiratory: Chronic cough due to tobacco use; positive for exertional dyspnea
- Breasts: No skin changes, dimpling, or masses noted; no nipple discharge
- Gastrointestinal: No nausea, vomiting, diarrhea, constipation, melena,

hematochezia, or abdominal pain

- Genitourinary: No dysuria, hematuria, or incontinence; no vaginal bleeding or discharge
- Musculoskeletal: No arthralgias, myalgias, or peripheral edema

**Personal medical history.**

- Hypertension, well controlled
- Diabetes Mellitus Type II, well controlled
- Hyperlipidemia, well controlled
- Coronary artery disease (triple bypass surgery in 2005)
- Emphysema, moderate
- Osteoarthritis, generalized
- Yearly mammograms negative (due in three months); no longer has Pap exams due to no history of abnormal exams and advanced age

**Family history.**

- Noncontributory

**Social history.**

- Lives at home by herself, independent ADLs, dependent for transportation, uses an oil furnace and wood heat for fuel (residential carbon monoxide test performed by the local fire department was negative after visit)
- 1-2 12 oz beers daily
- Quit tobacco for 10 years after 50 pack year history; began smoking three packs of filter-less cigarillos per day about three months ago (daughter and provider were unaware of this change until today)

- No illicit drug use

**Medications.**

- Aspirin 81 mg po daily
- Niacin 500 mg po bid
- Lovastatin 20 mg po qd
- HCTZ 25 mg po qd
- Lisinopril 20 mg po qd
- Metoprolol 50 mg po bid
- Glyburide 5 mg po qd
- Methocarbamol 750 mg po tid prn
- Hydrocodone/acetaminophen 5/500 po q 4-6h prn
- Albuterol MDI prn (uses once weekly, according to patient)
- Daily OTC Calcium and Vitamin D supplement

**Allergies.**

- NKDA

**Physical Exam**

This is a relatively healthy appearing 76 year-old female who is in no acute distress. She is alert and oriented x3, skin warm, pink, dry, and intact.

- Vital signs: BP 116/57, HR 70, RR 18, Sat 95% RA, T 96.4, Wt. 196 lbs
- Eyes, ears, nose, and throat: PERRLA, TMs and canals clear, nasopharynx and oropharynx moist and pink without lesion or exudates; neck supple without masses or adenopathy
- Cardiovascular: HRRR without murmur, gallop, or rub

- Respiratory: decreased bilaterally with diffuse, mild expiratory wheeze
- Gastrointestinal: BT active x4; abdomen soft and nontender without masses or organomegaly
- Extremities: warm, well-perfused, and without edema

### EKG

- Sinus rhythm at 68 beats per minute

### Laboratory

- CBC: within normal limits (WNL) except as outlined in Table 3, which also includes follow-up serial testing after phlebotomy
- CMP: WNL except glucose elevated 128 mg/dL, BUN elevated 19 mg/dL, serum creatinine elevated 1.4 mg/dL
- HgA1c: WNL 5.7%
- Troponin I: WNL 0.00

**Table 3**

*Serial Complete Blood Cell Count Values*

Draw	Hemoglobin	Hematocrit	Red Blood Cells	Platelets
Initial Visit	18.8 g/dL	50.5%	6,080,000/mm <sup>3</sup>	153,000/mm <sup>3</sup>
Four Days Post-Phlebotomy	15.4 g/dL	43.6%	5,060,000/mm <sup>3</sup>	136,000/mm <sup>3</sup>
One Month Post-Phlebotomy	15.4 g/dL	41.7%	5,220,000/mm <sup>3</sup>	151,000/mm <sup>3</sup>

### **Discussion Related to Literature Review**

J.H. presented only with fatigue and weight loss. Despite the significant comorbid diseases of emphysema, coronary artery disease, hypertension, hyperlipidemia, and diabetes mellitus, these conditions had all been very well controlled over the past two years. Routine blood work to evaluate the complaint included a CBC; the RCM was significantly higher than the test drawn six months earlier. The balance of serum studies and the EKG were all within normal limits.

A new onset polycythemia in a medically stable patient at such an advanced age was suspicious for environmental exposure. The patient's heat sources were considered because the appointment occurred during the late winter months. Free carbon monoxide testing provided by the local fire department revealed no obvious problems. J.H. sheepishly confessed to resumption of smoking when questioned by her daughter and the provider. The preparation of the tobacco product (filter-less cigars) and the frequency of smoking (three packs daily; essentially constant smoking) made them especially intoxicating. The increase in environmental carbon dioxide levels led to a prolonged state of hypoxia, stimulating the production of erythropoietin and the development of secondary polycythemia. It was recommended that the offending agent, cigar smoke, be eliminated and the patient underwent a 500cc therapeutic phlebotomy. The patient was already taking a daily prophylactic aspirin due to her history of CAD.

J.H. eventually articulated that she gets very bored during the winter months. She relies exclusively on her daughter for transportation and social interaction while living in an isolated frontier home. Her social status led to the resumption of smoking as a way to 'keep her hands busy' and 'pass the day.' Unfortunately, it also led to a potentially life-threatening hematologic disorder. Furthermore, the resulting fatigue led to an unwillingness to prepare and eat meals;

gradual weight loss followed.

This patient certainly understood the serious nature of the condition; her daughter also recognized the value of her role as more than chauffeur. J.H.'s daughter took the initiative to arrange more social and family engagements for the patient. At one month follow-up, tobacco cessation had been achieved and hematologic studies revealed that the polycythemia had not recurred. The FNP resumed surveillance of the patient's primary diagnoses, which continued to be well-controlled.

### **Summary**

Effective recognition of polycythemia and identification of its etiology is crucial to appropriate treatment of the patient. Causative factors can be congenital, acquired, mutative, or environmental. Often, acquired environmental causes can be controlled by the patient with the help of the health care team and social support systems. This preventative treatment not only minimizes the chance of recurrent polycythemia, but eliminates costly and potentially harmful therapeutic phlebotomies.



### References

- Antle, E.A. (2010). Who needs therapeutic phlebotomy? *Clinical Journal of Oncology Nursing*, 14(6), 694-6.
- DeFilippis, A.P., Law, K., Curtin, S., & Eckman, J.R. (2007). Blood is thicker than water: The management of hyperviscosity in adults with cyanotic heart disease. *Cardiology in Review*, 15(1), 31-4.
- Lengfelder, E., Merx, K., & Hehlmann, R. (2011). Diagnosis and therapy of polycythemia vera. *Seminars in Thrombosis and Hemostasis*, 32(3), 267-75.
- Marvi, M.M., & Lew, M.F. (2011). Polycythemia and chorea. *Handbook of Clinical Neurology*, 100, 271-6.
- Raval, M., & Paul, A. (2010). Central venous thrombosis and venous infarction: Case report of a rare initial presentation of smoker's polycythemia. *Case Reports in Neurology*, 2(3), 150-6.
- Schwarcz, T.H., Hogan, L.A., Endean, E.D., Roitman, I.T., Kazmers, A., & Hyde, G.L. (1993). Thromboembolic complications of polycythemia: Polycythemia vera versus smokers' polycythemia. *Journal of Vascular Surgery*, 17(3), 518-23.
- Sen, S., Peltz, C., Beard, J., & Zeno, B. (2010). Recurrent carbon monoxide poisoning from cigarette smoking. *The American Journal of the Medical Sciences*, 340(5), 427-8.
- Siegel, F.P., & Petrides, P.E. (2008). Congenital and acquired polycythemias. *Deutsches Arzteblatt International*, 105(4), 62-8.
- Up To Date Online (2011). *Table 2: Normal values for red blood cell parameters in men and women*. Retrieved from

<http://www.uptodate.com/contents/image?imageKey=HEME%2F9648&topicKey=HEME%2F7075&utdPopup=true>

Running head: CELIAC SPRUE

Unexplained Weight Loss: A Case Study

Timothy S. Neilson

Oregon Health & Science University

School of Nursing

### **Abstract**

Celiac sprue (or simply, sprue) is a complex autoimmune disorder estimated to be present in one out of 133 patients in the United States. The condition is very likely to be encountered by the family nurse practitioner (FNP) in outpatient clinics. The FNP must be able to gather a relevant history, perform a focused exam, and order appropriate diagnostic tests to accurately narrow the patient's differential list and appropriately refer the patient for definitive diagnosis. Current diagnostic and treatment strategies are discussed in this case study in the context of gradual weight loss in a 21 year-old man. This patient was encountered in a rural Oregon outpatient health clinic. The patient was lost to follow-up because he was on break from college in Rhode Island and testing was performed the day prior to his return. The literature review for this case was conducted using CINAHL and Ovid databases, utilizing various combinations of the following keywords: diagnosis, treatment, sprue, celiac sprue, celiac disease, and gluten sensitivity. Reference lists for the resulting articles were further explored.

## **Introduction and Background**

Sprue is a complex autoimmune disorder affecting genetically predisposed individuals who ingest gluten. The subsequent immune response to the protein fractions of gluten, called gliadin, results in serious autoimmune villous injury. Villous shortening, villous flattening, and crypt hyperplasia lead to nutrient malabsorption and a variety of potential complications (Ensari, 2010).

The prevalence of sprue in the United States is estimated to be one out of 133 people (Fasano et al, 2003). Sprue was long thought to be a rare childhood disease, but is now known to develop at any time throughout the lifespan (Catassi et al, 2010). It is unknown what extrinsic or intrinsic factors trigger the immune response to gliadin and the development of sprue; current theories include infection, injury, surgery, pregnancy, and puberty (Fasano, 2006).

Susceptibility to sprue can be identified with genetic screening. Nearly 100% of patients affected by sprue have one or both of the genetic markers HLA-DQ2 and HLA-DQ8. These human leukocyte antigens are best used to rule the disease out rather than diagnose it (Mattias, et al, 2011). However, patients are not commonly screened for sprue. Instead, the primary care clinician is likely to encounter a patient presenting with diverse, longstanding multi-systemic complaints (Green et al, 2001). Symptoms can include weight loss, diarrhea, abdominal pain, flatulence, and bloating. A physical exam and specific diagnostics can reveal objective findings associated with sprue-related nutrient deficiency and other complications (Fasano & Catassi, 2001). Some of these are outlined in Table 1.

**Table 1***Potential Complications of Nutrient Malabsorption in Celiac Sprue*

<b>Nutrient</b>	<b>Associated Complication</b>
Iron	Iron Deficiency Anemia
Calcium and Vitamin D	Early Onset Osteopenia and Osteoporosis
Vitamin K	Increased Risk of Hemorrhage
Protein	Muscle Wasting
Other Vitamin and Mineral Deficiencies	Central and Peripheral Nervous System Disorders

If a thorough history and exam leads to suspicion of sprue, serologic testing is warranted. General health screening tests can indicate signs of nutrient deficiency, such as a complete blood count (CBC) reflecting iron deficiency anemia. Similarly, radiologic screening--if warranted based upon the patient's clinical presentation--may reveal osteopenia due to malabsorption of calcium and vitamin D (Holmes, Catassi, & Fasano, 2009).

Serologic antibody tests specific to gluten are collectively termed the celiac blood panel (CBP). This panel measures levels of tissue transglutaminase antibodies (tTG-IgA), endomysial antibodies (EMA), gliadin antibodies (AGA), and total serum IgA. A positive tTG-IgA requires an EMA-IgA to confirm results. A decreased total serum IgA requires measurement of tTG-IgG levels (McGowan, Lyon, & Butzner, 2008). The results of these tests are contributory to diagnosis, but do not confirm sprue.

Definitive diagnosis of sprue relies on two distinct criteria: biopsy evidence of villous damage by a gastroenterologist and dramatic response to a gluten-free diet (Upton, 2008).

However, a patient must be on a gluten rich diet (including breads and pastas) for up to 12 weeks to obtain accurate antibody and biopsy results. Approximately 75% of patients will seroconvert within two to four weeks of adherence to a gluten rich diet (Kelly, LaMont, & Travis, 2010).

Once the diagnosis of sprue has been confirmed by biopsy, gluten should be entirely eliminated from the patient's diet; even a small amount (including ambient particular contamination) can trigger an immune response. Because gluten is contained in wheat, rye, and barley, lifelong adherence to a gluten-free diet can be expensive, socially limiting, and very difficult. Primary food preparers must be educated in addition to the patient, gluten free food may cost extra at both grocery stores and restaurants, and social gatherings may not provide a gluten free option (Upton, 2008). Involvement of a dietician and resource referral to national celiac disease organizations can provide the necessary support for patients with sprue.

Poor adherence to a gluten free diet can lead to a number of long-term complications, the most serious of which are gastrointestinal malignancies. In addition, many autoimmune disorders have been linked to sprue. These are summarized in Table 2 (Tack, Verbeek, Schreurs, & Mulder, 2010).

**Table 2**

*Autoimmune Disorders Linked to Celiac Sprue*

<b>Common</b>	<b>Uncommon</b>
Dermatitis Herpetiformis	Addison's Disease
Insulin Dependent Diabetes Mellitus	Rheumatoid Arthritis
Liver Disease	Scleroderma
Systemic Lupus Erythematosus	Sjorgen Syndrome
Thyroid Disease	Turner Syndrome

## **Description of Case**

### **History of Presenting Illness**

M.B. is a 21 year-old Caucasian man who presents to the outpatient clinic with a complaint of gradual weight loss. The patient reports a total loss of 15 pounds during the past six months. M.B. has spent three of these months in Oregon and three in Rhode Island, where he attends college. M.B. is currently on a break from college and will be returning to school the following day, leaving little time for a thorough diagnostic work-up. This is his first visit to our clinic and he claims he has not been evaluated by a health care professional “since high school.”

### **Review of systems.**

- General: No fever, chills, fatigue, or malaise
- Neurological: No headaches, dizziness, or visual changes
- Ears, nose, and throat: No recent URI, otalgia, congestion, or sore throat
- Cardiovascular: No chest pain or palpitations
- Respiratory: No cough, wheeze, or shortness of breath
- Gastrointestinal: No nausea, vomiting, diarrhea, constipation, or abdominal pain; reports what he considers “normal” flatulence
- Genitourinary: No dysuria, hematuria, or incontinence
- Musculoskeletal: No arthralgias, myalgias, or peripheral edema
- Psychiatric: No depression, anxiety, or other mental health concerns; no history of eating disorder personally or in his family

### **Personal medical history.**

- Uneventful birth and healthy childhood



- Hyperlipidemia

**Family history.**

- Hx peptic ulcer disease (PUD) and myocardial infarction (MI) x1 in father, who is now 52 years old and well

**Social history.**

- 1-2 drinks weekly; variable between beer and liquor
- Two year history of smoking approximately one pack of cigarettes per week
- No illicit drug use
- Exercises 1-2 days weekly for 4-6 hours, hiking and climbing
- Appetite is reported as “consistently good.” Diet is characterized as containing “a lot” of grain/starches, vegetables, and sweets; marginal meat consumption; little dairy intake

**Medications.**

- None

**Allergies.**

- NKDA

**Physical Exam**

This is an unusually thin appearing 21 year-old male in no acute distress. He is alert and oriented x3, skin is warm pink dry and intact.

- Vital signs: BP 115/77, HR 89, RR 18, Sat 98% RA, T 98.9, Ht. 69”, Wt. 124#, BMI 18
- Eyes, ears, nose, and throat: PERRLA, TMs pearly grey with clear canals, nasopharynx and oropharynx moist and pink without lesion or exudates; neck

supple without masses or adenopathy

- Cardiovascular: HRRR without murmur, gallop, or rub
- Respiratory: CTA bilaterally throughout all lung fields
- Abdomen: BT active x4; abdomen soft and flat, no tenderness, masses, or organomegaly to palpation
- Extremities: good muscle tone, warm, well-perfused, and without edema of lymphadenopathy

### **Laboratory**

- CBC: Within normal limits (WNL)
- CMP: WNL
- Amylase: WNL 78 U/L
- TSH: WNL 2.48 uIU/mL
- Cholesterol: Total cholesterol elevated 258 mg/dL, HDL elevated 70 mg/dL, LDL elevated 154 mg/dL, Triglycerides WNL 61 mg/dL
- Serum H Pylori antibody: Negative
- CBP: IgA Total WNL 363 mg/dL, Tissue Transglutaminase IgA WNL 1.5 U/mL, Tissue Transglutaminase IgG WNL 3.6 U/mL, Gliadin IgA WNL 3.2 Units, Gliadin IgG WNL 2.0 Units
- Stool for RBCs, WBCs, O&P, Culture/Gram Stain, and C-Dif Toxin were all negative

### **Discussion Related to Literature Review**

The patient's presenting symptom of unexplained weight loss was not accompanied by any other positive findings in the review of systems. This led to the necessity of considering a

wide range of potential problems, including psychological disorders and malignancy. His age and noncontributory personal and family history made general health screening appropriate to narrow the list of differential diagnoses. The patient specifically asked for H. pylori testing due to his father's history of PUD, following the advice of a family friend with health care training. Atypical presentation of a gastrointestinal infection was also considered due to the patient's love for the outdoors, hiking, and camping.

The physical exam revealed a thin appearing, clinically underweight individual. Though each of the systems evaluated were within normal limits, his general appearance reinforced the need for laboratory testing. A CBP was also ordered because of his presenting symptoms and high grain and starch intake.

All of the patient's laboratory testing was negative except for his lipid panel; hyperlipidemia was known to be a preexisting condition. The stool and celiac testing had to be sent out of town due to the inability of a small rural lab to perform the tests quickly. Once all test results were available, the patient was contacted by the clinician in Rhode Island. He reported no new symptoms. Upon further questioning, however, the patient admitted that he had not been eating many grains or starches in the past month. This fact could have affected the accuracy of his CBP, which would have reflected falling antibody values due to dietary modification prior to testing. A false negative would be reported. The onset of weight loss over the past six months could also indicate that he had not had sprue long enough to affect his general health serologic testing.

The patient was encouraged to consult with his campus health care provider about his symptoms and the work-up in progress. He was instructed to expect a recommendation to reintroduce gluten rich foods into his diet and repeat the CBP in one month. The patient seemed

disinterested in pursuing further evaluation. He was educated about the potential complications of untreated sprue, including nonspecific liver diseases. Though no specific correlation between hyperlipidemia and sprue has been found, treating sprue may lead to better management of lipids. This was attractive to him because of his father's history of MI at a young age and his own reluctance to take statin medications. However, the clinician heard no more from the patient even after a follow-up phone call at one month.

### **Summary**

The effective diagnosis and treatment of celiac sprue is important to improve patient quality of life and reduce the risk of potentially life-threatening complications. Primary care providers like FNP's can expect to encounter this disease in the outpatient setting, but must be aware that presentations can be diverse. A thorough history, exam, and relevant diagnostics all contribute to effectively evaluating the patient. Collaboration with gastroenterology to confirm diagnosis and initiate treatment is also necessary. Lastly, the FNP must be prepared to provide support for the patient, maximizing adherence to a strict gluten free diet. Social barriers and financial constraints must be addressed so the patient has the greatest chance of living a symptom free, healthy life with minimal inconvenience.

### References

- Catassi, C., Kryszak, D., Bhatti, B., Sturgeon, C., Helzlsouer, K., Clipp, S.L., Gelfond, D., Pappa, E., Sferruzz, A., & Fasano A. (2010). Natural history of celiac disease autoimmunity in a USA cohort followed since 1974. *Annals of Internal Medicine*, 42(7), 530-8.
- Ensari, A. (2010). Gluten-sensitive enteropathy (celiac disease): Controversies in diagnosis and classification. *Archives of Pathology and Laboratory Medicine*, 134, 826-36.
- Fasano, A. (2006). Systemic autoimmune disorders in celiac disease. *Current Opinion in Gastroenterology*, 22, 674-9.
- Fasano, A., Berti, I., Gerarduzzi, T., Not, T., Colletti, R.B., Drago, S., Elitsur, Y., Green, P.H., Guandalini, S., Hill, I.D., Pietzak, M., Ventura, A., Thorpe, M., Kryszak, D., Fornaroli, E., Wasserman, S.S., Murray, J.A., & Horvath, K. (2003). Prevalence of celiac disease in at risk and not at-risk groups in the United States: A large multicenter study. *Archives of Internal Medicine*, 163(3), 286-92.
- Fasano, A., & Catassi, C. (2001). Current approaches to diagnosis and treatment of celiac disease: An evolving spectrum. *Gastroenterology*, 120, 636-51.
- Green, P.H., Stavropoulos, S.N., Panagi, S.G., Goldstein, S.L., McMahon, D.J., Absan, H., & Neugut, A.I. (2001). Characteristics of adult celiac disease in the USA: Results of a national survey. *American Journal of Gastroenterology*, 96(1), 126-131.
- Holmes, G., Catassi, C., & Fasano, A. (2009). *Fast facts: Celiac Disease*. Oxford, U.K.: Health Press Limited.
- Kelly, C.P., LaMont, J.T., & Travis, A.C. (2010). *Diagnosis of Celiac Disease*. Retrieved

from [http://www.uptodate.com/contents/diagnosis-of-celiac-disease?source=search\\_result&selectedTitle=3%7E150#H5](http://www.uptodate.com/contents/diagnosis-of-celiac-disease?source=search_result&selectedTitle=3%7E150#H5)

Mattias, T., Neidhofer, S., Pfeiffer, S., Prager K., Reuter S., & Gershwin, M.E. (2011). Novel trends in celiac disease. *Cellular & Molecular Immunology*, 8(2), 121-5.

McGowan, K.E., Lyon, M.E., & Butzner, J.D. (2008). Celiac disease and IgA deficiency: complications of serological testing approaches encountered in the clinic. *Clinical Chemistry*, 54, 1203-9.

Tack, G.J., Verbeek, W.H., Schreurs, M.W., & Mulder, C.J. (2010). The spectrum of celiac disease: Epidemiology, clinical aspects, and treatment. *Nature Reviews Gastroenterology & Hepatology*, 7, 204-13.

Upton, M.P. (2008). Give us this day our daily bread: Evolving concepts in celiac sprue. *Archives of Pathology & Laboratory Medicine*, 132(10), 1594-99.

Running head: TOURETTE SYNDROME

Management of Tourette Syndrome: A Case Study

Timothy S. Neilson

Oregon Health & Science University

School of Nursing

### **Abstract**

Tourette syndrome (TS) is a neurological disorder that may be encountered by the family nurse practitioner (FNP) in the outpatient setting. Hallmark symptoms include repetitive motor and vocal tics, but the disorder may also be associated with features of depression, anxiety, obsessive compulsive disorder (OCD), and attention deficit hyperactivity disorder (ADHD). TS symptoms can change as the patient ages. The wide variety of associated features and evolving developmental progression of TS can make diagnosis and treatment challenging. The FNP must be able to gather a thorough history, perform a focused neurological exam, and be prepared to collaborate with multiple specialists to accurately diagnose and treat TS. This case study discusses current diagnostic and treatment models in the context of an otherwise healthy 18 year-old male. This patient was initially encountered and is currently followed in a rural outpatient clinic. The literature review for this case was conducted using CINAHL and Ovid databases, utilizing various combinations of the following keywords: Tourette syndrome, diagnosis, treatment, and quality of life. Reference lists for the resulting articles were further explored for relevant research.



### **Introduction and Background**

Tourette syndrome (TS) is a genetic neurological disorder with hallmark symptoms of motor and vocal tics. Tics--defined as rapid, repetitive stereotyped movements or vocalizations--usually begin as simple motor tics in early childhood, and progress to more complex tics as the patient approaches adolescence (Leckman, Bloch, Scahill, & King, 2006). TS onset usually occurs prior to age 11, with tic severity peaking at approximately age 14. Males are three times more likely to develop the disorder than females. Tics must be present for more than one year to be diagnostic and it is important for a consulting neurologist to rule out other dyskinetic disorders featuring tics (Neuner & Ludolph, 2009).

Dysfunction of the basal ganglia is thought to be the primary etiology of TS-associated tics (Kenney, Kuo, & Jimenez-Shahed, 2008). This part of the brain plays a significant role in emotion and motor control. As a result, tics can become more frequent or severe during periods of emotional excitement or significant fatigue. Conversely, periods of goal-directed behavior, including activities that require heightened attention and fine motor or vocal control, will often diminish the severity of tics. Tics can wax and wane over the course of months and will typically resolve by age 20 (Leckman et al, 2006).

The patient with TS should not be evaluated and treated for tics alone. Though tics are the prominent, diagnostic symptom of TS, they rarely occur in isolation. Symptoms of other conditions associated with TS are often the greatest source of impairment. ADHD is the most common comorbid condition; OCD, depression, anxiety, and mood disorders can also present with TS (Neuner & Ludolph, 2009). It is believed that TS is a risk factor for development of these mental health disorders, so evaluation and treatment by a psychiatrist for associated psychopathology is an integral part of TS therapy. It is especially important because these

disorders can carry into adulthood long after tics have resolved (Pollak et al, 2009).

The complex combination of tics and TS comorbid psychological disorders can cause significant emotional, social, and academic problems for a patient (Erenberg, 2005). Given the diverse presentation and developmental evolution of TS, a wide range of treatments are utilized. Developing research continues to provide an opportunity to conceptualize and trial novel treatment strategies. Therapy can be cognitive-behavioral, pharmacological, or a combination of both strategies (Bloch, State, & Pittenger, 2011). Ultimately, the trajectory of care is dictated by the most incapacitating symptoms of the presenting individual. Thoughtful evaluation, reevaluation, and feature-focused treatment strategies can make a significant difference in a child's psychosocial function and quality of life (Kenney et al, 2008).

Behavioral and cognitive treatments for TS are based not only on the understanding of its pathology, but also on objective input from the patient's parents and teachers. Self-assessment by the pediatric patient has not been found to be helpful (Termine et al, 2011). Habit reversal therapy has been a consistently effective cognitive treatment for children suffering from TS (Du et al, 2010). Specific therapies designed to build self-esteem, enhance social skills, and encourage the pursuit of personal interests in children with TS is very important to their psychosocial development and functional capacity as adults (Bloch & Leckman, 2009).

Pharmacological therapy is tailored to the most prominent features of an individual's TS. Dopamine agonists and antagonists, alpha adrenergic blockers, selective serotonin reuptake inhibitors (SSRIs), and central nervous system (CNS) stimulants are all utilized in TS treatment (Jankovic, Nordli, & Dashe, 2010). TS features and their associated pharmacological treatment options are summarized in Table 1.

**Table 1***Tourette Syndrome Features and Pharmacological Treatments*

<b>Feature</b>	<b>Medication Class</b>	<b>Medications</b>
Generalized Tics	Dopamine Antagonists	fluphenazine, pimozide, and tetrabenazine
ADHD	CNS Stimulants	methylphenidate and dextroamphetamine
Impulse Control, OCD, and Rage Attacks	Alpha Adrenergic Agonists	clonidine and guanfacine
	SSRIs	fluoxetine and paroxetine
All Features	Dopamine Agonists	ropinirole

Timely and accurate diagnosis of TS and its comorbidities is vital to the selection of effective treatment modalities across the lifespan. The lack of knowledge about the expected course of TS among professionals and the public often delays crucial early intervention therapy. This can place the patient at a social and academic disadvantage during the crucial child and adolescent developmental stages (Mol Debes, Hjalgrim, & Skov, 2008).

### **Description of Case**

#### **History of Presenting Illness**

A.T. is an 18 year-old Caucasian man who presents at a rural outpatient clinic with complaint of symptoms related to Tourette syndrome. He was diagnosed at age 10 by a neurologist. He describes both vocal and motor tics that resolved around age 15. A special program was created for him at school, but the patient received no other therapy as his mother

was never willing to follow-up with his care. He only attended high school through 10<sup>th</sup> grade, after which he dropped out and left home because of strained relationships with teachers and his mother. A.T. describes anxiety and rage attacks related to self-consciousness and the way TS affected his ability to function socially and academically. He used to self-medicate with marijuana, but paroxetine has controlled these symptoms well for him over the past year.

Currently, the patient describes episodes of attention deficit characterized by inability to complete simple tasks or remember simple instructions. He is self-aware, but states that his aunt has brought the problem to his attention and supported his pursuit of treatment. A.T. has also noticed these symptoms as he pursues his GED. He does not wish to hurt himself or others and has never done so during a rage attack.

**Review of systems.**

- General: No fever, chills, fatigue, malaise, or weight loss
- Neurological: No headaches, dizziness, sensory dysfunction, visual changes, vocal or motor tics
- Ears, nose, and throat: No recent URI, otalgia, congestion, sore throat
- Cardiovascular: No chest pain or palpitations
- Respiratory: No cough, wheeze, or shortness of breath
- Gastrointestinal: No nausea, vomiting, diarrhea, constipation, or abdominal pain
- Musculoskeletal: No arthralgias, myalgias, or peripheral edema
- Psychiatric: No suicidal or homicidal ideations; reports poor attention and occasional rage attacks

**Personal medical and psychological history.**

- Negative except for Tourette syndrome

**Family history.**

- Negative (he is not entirely certain about this)

**Social history.**

- Lives with aunt and uncle, does household chores and cuts firewood for money, pursuing his GED
- Denies alcohol, tobacco; history of marijuana use (denies current use)
- No history of sexual or physical abuse; positive for emotional abuse from his mother

**Medications.**

- Paroxetine 20 mg daily

**Allergies.**

- NKDA

**Physical Exam**

This is a healthy appearing 18 year-old male in no acute distress. He is alert and oriented x3, pleasant; skin is warm pink dry and intact. Affect, eye contact, and interaction with provider are appropriate. Speech rate and pattern WNL.

- Vital signs: BP 119/74, HR 77, RR 18, Sat 97% RA, T 98.5, Ht. 65", Wt. 137 lbs
- Eyes, ears, nose, and throat: TMs pearly grey with clear canals; nasopharynx and oropharynx moist and pink without lesion or exudate; tonsils 2+ without lesions; neck supple without masses; there is no cervical or occipital adenopathy
- Neurological: CN II-XII grossly intact, negative Romberg and arm drift, rapid alternating movements intact; no motor or vocal tics observed
- Cardiovascular: heart rate and rhythm are regular without murmur, gallop, or rub

- Respiratory: CTA bilaterally throughout all lung fields, no axillary adenopathy
- Abdomen: BT activex4, no masses, tenderness, or organomegaly

### **Diagnostics**

- Not Applicable

### **Discussion Related to Literature Review**

A.T. was diagnosed at age 10 with Tourette syndrome by a neurologist, based largely upon the presence of vocal and motor tics. Once diagnosed, he was placed in a special education classroom and an individualized education program (IEP) was developed. He does not recall receiving any specific cognitive-behavioral therapy—though this was likely part of his IEP—or medication. A.T. remembers being in trouble often for being disruptive both at school and at home. This led to a difficult academic and personal life.

Although his tics resolved five years after diagnosis, A.T. had residual problems with attention, anxiety, and anger. He is unsure if these problems began before diagnosis or developed after, but he never received treatment and began to self-medicate with marijuana at age 14. A.T. eventually dropped out of school in the 10<sup>th</sup> grade and has lived with different extended family members since. He settled with his aunt and uncle one year ago, who are supportive and have encouraged him to seek help for his attention, anxiety, and anger problems.

Due to the unavailability of records and remote nature of his diagnosis, it is unknown if A.T. initially presented with psychological comorbidities in addition to tics. However, it is clear that his mental health history fits well with the overlapping features and developmental evolution of TS. Lack of complete diagnosis and treatment of TS and its features made academic and social life difficult for A.T. He eventually had to leave both high school and home as a teenager due to poor academic performance and strained family relationships. A.T. even began to self-

medicate with illicit drugs. These unfortunate events may have been ultimately due to a poor understanding of TS by teachers and family.

Once A.T. was brought into a supportive home environment and encouraged to seek help for continued mental health problems in the absence of tics, his quality of life began to improve. He no longer needed marijuana to help with anxiety and anger because of the efficacy of paroxetine. Managing these symptoms led to pursuit of both gainful employment and his GED. As he began to assimilate himself into environments requiring a higher level of social function, more deficits related to TS were exposed. The opportunity to treat them was presented.

The patient was started on dextroamphetamine/amphetamine (Adderall) 10 mg twice daily to treat features consistent with ADHD. He returned in two weeks and reported an improvement in both work and school related function. The medication was then increased to 20 mg twice daily and follow-up is pending.

It is not immediately clear whether this patient's ADHD, anxiety, and rage attacks are adult manifestations of TS or independent mental health diagnoses. Due to cost, A.T. is unwilling to see neurology or psychiatry to help further classify his symptom profile (neurology may have been of little help because physical symptoms had resolved during adolescence). Therefore, the clinician and patient continue to pursue feature-focused treatment to optimize social functioning. This approach is improving the patient's quality of life. Regular follow-up ensures that the option of consulting neurology and psychiatry—including the possibility of cognitive or behavioral therapy, if indicated—may be revisited as needed in the future.

### **Summary**

TS is a complex neuropsychological disorder that requires early diagnosis and intervention to maximize patient function. The wide variety of presenting features, aside from

the vocal and motor tics necessary for diagnosis, makes TS difficult to recognize. Neurology and psychiatry should be involved in diagnostic efforts so that all features are identified and treated. Cognitive-behavioral and pharmacological treatments can be utilized with good benefit. The most important factor, however, is feature-focused management and social support. Teachers and family must be educated on the evolutionary features of TS and the need for frequent reevaluation from diagnosis into adulthood. This will maximize the patient's potential to live a high-functioning, productive life based on the treatment of prominent features.



### References

- Bloch, M., State, M., & Pittenger, C. (2011). Recent advances in tourette syndrome. *Current Opinion in Neurology*, 24(2), 119-25.
- Block, M.H., & Leckman, J.F. (2009). Clinical course of tourette syndrome. *Journal of Psychosomatic Research*, 67(6), 497-501.
- Du, J.C., Chiu, T.F., Lee, K.M., Wu, H.L., Yang, Y.C., Hsu, S.Y., Sun, C.S., Hwang, G., & Leckman, J.F. (2010). Tourette syndrome in children: An updated review. *Pediatrics and Neonatology*, 51(5), 255-64.
- Erenberg, G. (2005). The relationship between tourette syndrome, attention deficit hyperactivity disorder, and stimulant medication: a clinical review. *Seminars in Pediatric Neurology*, 12(4), 217-21.
- Jankovic, J., Nordli, D.R., & Dashe, J.F. (2010). *Tourette syndrome*. Retrieved from [http://www.uptodate.com/contents/tourette-syndrome?source=search\\_result&selectedTitle=1%7E72#H10](http://www.uptodate.com/contents/tourette-syndrome?source=search_result&selectedTitle=1%7E72#H10)
- Kenney, C., Kuo, S.H., & Jimenez-Shahed, J. (2006). Tourette's syndrome. *Journal of Child Neurology*, 77(5), 651-8.
- Leckman, J.F., Bloch, M.H., Scahill, L., & King, R.A. (2006). Tourette syndrome: The self under siege. *Journal of Child Neurology*, 21(8), 642-9.
- Mol Debes, N.M., Hjalgrim, H., & Skov, L. (2008). Limited knowledge of tourette syndrome causes delay in diagnosis. *Neuropediatrics*, 39(2), 101-5.
- Neuner, I., & Ludolph, A. (2009). Tics and tourette's syndrome throughout the lifespan. *Nervenarzt*, 80(11), 1377-87.

- Pollak, Y., Benarroch, F., Kanengisser, L., Shilon, Y., Benpazi, H., Shalev, R.S., & Gross-Tsur, V. (2009). Tourette syndrome-associated psychopathology: Roles of comorbid attention deficit hyperactivity disorder and obsessive-compulsive disorder. *Journal of Developmental and Behavioral Pediatrics*, 30(5), 413-9.
- Termine, C., Selvini, C., Balottin, U., Luoni, C., Eddy, C.M., & Cavanna, A.E. (2011). Self-, parent-, and teacher-reported behavioral symptoms in youngsters with tourette syndrome: A case-control study. *European Journal of Pediatric Neurology*, 15(2), 95-100.

Running head: THE STUPAK AMENDMENT

The Stupak Amendment and Federal Funding for Abortion Services

Timothy S. Neilson

Oregon Health & Science University

School of Nursing

### **Abstract**

The United States (U.S.) government has made the legislation of policy that will provide universal health care coverage to all citizens a top priority. This plan is intended to improve access to health care services and pay for certain services either partially or in full. Attempting to decide which services to cover is the burden of the bill's authors. Minimizing the controversy that surrounds certain service inclusion is necessary to ensure timely passage of the bill as a whole. Abortion is a controversial service that is currently at the center of the federal insurance policy debate. The exclusion of medical and surgical abortion funding from the bill as outlined in the Stupak Amendment has been heavily scrutinized. This is due to the issue's unique fiscal, health care, social, and political implications. The bill, with inclusion of the Stupak Amendment, has passed the U.S. House of Representatives and is now being examined by the Senate. As complex as drafting a universal health care plan may be, addressing the coverage of a common but controversial medical procedure presents its own challenges. Other international, domestic, and institutional policies have already addressed this particular issue, focusing their respective policy rationales on a mix of social, fiscal, and medical criteria. Of paramount importance is the need to outline a policy that is as socially neutral on abortion as possible so that passage of the health care bill in its entirety is not hindered. This paper is an examination of the Stupak Amendment--which has already passed the House--and two alternatives using the Collins eight step health policy analysis tool.

### **Define the Context**

In 2005, 6.3 million of the 62 million American women of reproductive age (15-44) became pregnant; 66% of the pregnancies resulted in live birth, 19% in elective abortions, and 15% in miscarriage. Half of all pregnancies were unintended (Guttmacher, 2008).

In the U.S., the most recent data shows that 19.4 women per 1,000 have an abortion each year. Of those having abortions, 57% are in their 20s, 60% have one or more child, 86% are unmarried, 57% are economically disadvantaged, 88% live in metropolitan areas, and 78% report a religious affiliation. No racial or ethnic group forms the majority of this population: 41% are Caucasian, 32% African American, 20% Hispanic, and 7% are of other racial backgrounds (Guttmacher, 2008).

This data reveals that the pending decision on federal abortion coverage affects all women of U.S. citizenship regardless of age, marital status, race, culture, economic background, geographical location, and religious affiliation. The data also reflect that abortion is a medical procedure common enough to warrant consideration for insurance coverage.

The Guttmacher Institute (2008) reports that access to, cost of, and appropriate use of contraception has a distinct correlation to unintended pregnancy and, therefore, the rate of abortion. In 2000, 46% of U.S. women getting abortions were not using any form of contraception. In a poll of these women, many believed that they either did not need contraception or had specific concerns about their use that had not been addressed by health care providers. The remaining 54% of women were using contraceptives, but many admitted to difficulties with consistency and compliance (Guttmacher, 2008).

These statistics indicate that access to health care services impacts the initiation, maintenance, and proper use of contraception. Once universal coverage is initiated, whether or

not abortion is a covered service, access to care will improve for all populations. More specifically, women of child-bearing age will have improved access to contraceptive technology because federal funds may be coupled with state funding for this service (consistent with current policy); the cost of monitoring and supplies will be fully absorbed. According to the aforementioned Guttmacher statistics, this should continue to drive down the rate of unintended pregnancy and, therefore, the rate of abortion. How significant the decrease may be has not been explored. However, without *any* publicly funded family planning services, it is estimated that an additional 1.3 million unintended pregnancies would occur; half would end in abortion (Guttmacher, 2002).

In addition to health care indicators, the polarizing social stigma of abortion must be considered in the decision. According to an ABC News/Washington Post poll, 57% of citizens believe abortion should be legal in all or most cases. This number drops to 42% if the abortion is performed simply to end an unwanted pregnancy, to 23% for partial birth abortions, and to 11% for gestation of 6 or more months (Sussman, 2003). With such a wide variety of opinions on when and how abortion performance is morally acceptable, drafting a policy with language to satisfy the seemingly nonexistent majority becomes very difficult.

Alignment of voter and candidate ideologies plays a large role in elections, which places the burden of appropriately representing constituents on the bill's authors. With so many cross-cutting ideologies to satisfy, pressure mounts on these incumbent politicians to fight passionately for the issues that were central to their running platforms. Should the authors offend their loyal voters with inconsistency, they may not be reelected.

Lastly, preservation of continuity with existing federal law and insurance policy, or the status quo, is considered. The Hyde Amendment, introduced in 1974, prohibits the use of federal

monies for abortion funding; states must use their own money if they wish to cover the procedure for their residents (Bishops, 2009). Federal employee insurance, Medicaid, and the Veterans Health Administration (VA) do not currently fund abortions unless the Mother is in danger of death or in cases of rape and incest, in congruency with the Hyde Amendment (Reese, 2009). Variation from this status quo may cause an outcry among abortion opponents that spurs lengthy, exhaustive legal challenges. It may also trigger a call for sweeping changes in all existing federal programs by abortion proponents, carrying a huge fiscal and administrative price.

### **Define the Problem: The Legislative Task**

Abortion is a controversial medical procedure that has been legal in the U.S since 1973 (Guttmacher, 2002). As the U.S. government drafts a plan for universal health care coverage, the exclusion of abortion as a federally covered service in the Stupak Amendment is being examined closely. Congress must consider the welfare of U.S. women, the protection of human life (the definition of which varies widely among U.S. citizens as the pregnancy progresses from conception to delivery), the political livelihood of the bill's authors, and continuity of plan coverage across all federal health plans. Ultimately, the entire bill may face political gridlock if the abortion issue is not handled appropriately.

Failure to consider the welfare of women seeking abortion may result in the patients' financial hardship or unsafe care. Failure to protect the life of an unborn child, no matter how it is defined, is both a moral and political liability that extends to every politician and citizen; consequences cannot be measured. Failure to maintain the status quo could lead to a gargantuan legal, administrative, and fiscal impact on the government. Lastly, the failure to reach a consensus in a timely manner may prevent the entire bill from passing, leaving the uninsured without much needed coverage until abortion is satisfactorily addressed. This bill is an important

step in U.S. public policy to improve access to care for all populations and, therefore, reduce disparities.

### **The Search for Evidence: Existing Models**

Countries like Canada, Australia, and the United Kingdom have universal health care plans in place for their citizens. These models may be considered, in part, while drafting our own policy on abortion. In Canada, Medicare covers ‘medically necessary services’ without copayment. However, individual provinces and territories reserve the right to define these services differently since their own taxes largely fund the plan. Abortion is widely covered by Canada’s Medicare system (funded in large part by provincial and territorial funds), but criteria vary between states in regard to gestational age, medical and surgical methods, and the setting for the procedure (Canada, 2004).

Like the Canadian Medicare system, the Offender Health Care Plan utilized by the Washington State Department of Corrections covers inmate medical services that are ‘medically necessary.’ However, unlike the Canadian Medicare system, their criteria are well defined and utilized uniformly at all institutions. Services are considered medically necessary if the patient’s life is immediately threatened, if the ability to perform activities of daily living is affected or imminently threatened, or if intractable pain is present (Washington, 2008). By this rationale, abortion is not covered in this system unless the Mother’s life is threatened.

The Hyde Amendment, enacted in 1976, contains federal funding restrictions for abortion that have been consistently applied to Medicaid policy, the Veterans Health Administration (VA) policy, and the federal employee health plan. Many states provide abortion coverage to low-income Medicaid beneficiaries, but they must do so separate from federal services, utilizing their own funds. This 33 year old Amendment is largely responsible for defining the federal status quo



on abortion. Based upon its language, the listed federal programs do not currently fund abortions unless the Mother is in danger of death or in cases of rape and incest (Reese, 2009).

Language contained within the Stupak Amendment, introduced by Bart Stupak (D-Michigan), is congruent with that contained in other U.S. federal insurance policies, though it does not employ any language that relates to medical necessity. It is also based upon the Hyde Amendment:

- (a) In General—no funds authorized or appropriated by this Act (or an amendment made by this Act) may be used to pay for any abortion or to cover any part of the costs of any health plan that includes coverage of abortion, except, in the case where a woman suffers from a physical disorder, physical injury, or physical illness that would, as certified by a physician, place the woman in danger of death unless an abortion is performed, including a life-endangering physical condition caused by or arising from the pregnancy itself, or unless the pregnancy is the result of an act of rape or incest.
- (b) **OPTION TO PURCHASE SEPARATE SUPPLEMENTAL COVERAGE PLAN**—Nothing in this section shall be construed as prohibiting any nonfederal entity (including an individual or a State or local government) from purchasing separate supplemental coverage for abortions for which funding is prohibited under this section, or a plan that includes such abortions, so long as—(1) such coverage or plan is paid for entirely using only funds not authorized or appropriated by this Act; and (2) such coverage or plan is not purchased using—(A) individual premium payments required for Exchange-participating health benefits plan towards which an affordability credit is

applied; or (B) other nonfederal funds required to receive a federal payment, including a State's or locality's contribution of Medicaid matching funds.

(c) OPTION TO OFFER SEPARATE SUPPLEMENTAL COVERAGE OR

PLAN—Notwithstanding section 303(b), nothing in this section shall restrict any nonfederal QHBP offering entity from offering separate supplemental coverage for abortions for which funding is prohibited under this section, or a plan that includes such abortions, so long as—(1) premiums for such separate supplemental coverage or plan are paid for entirely with funds not authorized or appropriated by this Act; (2) administrative costs and all services offered through such supplemental coverage or plan are paid for using only premiums collected for such coverage or plan; and (3) any nonfederal QHBP offering entity that offers an Exchange-participating health benefits plan that includes coverage for abortions for which funding is prohibited under this section also offers an Exchange-participating health benefits plan that is identical in every respect except that it does not cover abortions for which funding is prohibited under this section.

Lawmakers have international, domestic, and existing federal models—as well as an existing constitutional Amendment that spans decades—to consider while formulating abortion language in the current draft of the U.S. universal health care coverage bill. Each model offers a unique way to care for a woman's physical welfare, maintain fiscal responsibility, allow states and provinces an opportunity to care for their citizens differently, and to cater to the variable public opinion on this controversial procedure.

### **Consideration of Different Policy Options**

The current status quo, based primarily on language outlined by the Hyde Amendment and articulated in federal insurance policy guidelines, is widely considered to be abortion neutral. The general, nonpartisan opinion on the health care plan is that it should continue to be abortion neutral. However, the partisan definition of ‘abortion neutral’ varies considerably in Congress (Reese, 2009). The following outlines two options presented to Congress to address abortion neutrality and a third that would explicitly make medical and surgical abortion a federally covered service.

Language attempting to address abortion neutrality was initially authored by Lois Capps, a Democratic House Representative from California. House Democrats seemed largely satisfied with the effort. The Capps language states that “the money contributed by individuals would be credited toward abortion while the money from the federal government would not.” Unfortunately, many pro-life politicians and lobbies viewed this proposal merely as clever accounting and correctly stated that the language allowed private plans purchased with federal subsidies to cover abortion. By this rationale, the federal government would still be paying for abortion services, though indirectly (Reese, 2009). This language is in violation of the Hyde Amendment.

The House floor amendment introduced by Bart Stupak contains more specific, strict language. It outlines a policy that forbids federal funds from going to any health plan that covers abortion services, except in the case of rape, incest, or to save the Mother’s life. It allows states to retain the autonomy to add money from their own budgets for abortion coverage, as 17 states do already (Guttmacher, 2008). Women may also opt to purchase supplemental plans that cover abortion as long as federal money is not utilized to do so. This is congruent with both Canada’s

Medicare system, which allows provincial and territorial funding of abortion services if those governments choose to allow it, and the Hyde Amendment. The Stupak Amendment comfortably passed the House vote by a count of 240 to 194 and is now being considered by the Senate (Reese, 2009).

The final option to be discussed has not been formally introduced in Congress: federal monies may be used to cover all medical and surgical abortions. As reviewed in the context, many factors influence public opinion on the acceptability of abortion on a case by case basis; it would appear from public polls that voters would not approve of sweeping federal abortion coverage. Lawmakers must represent voter ideologies as best they can, and a blanket policy defeats this goal. In addition, if abortion is to be covered with federal monies, policy makers would have to include specific guidelines for gestational age, type of abortion, setting, a list of risks to unborn children and Mothers (ranging from genetic risk of syndromes like Down's to mortal Maternal danger), and other criteria. Considering the extreme variability in public opinion, delving into the articulation of such a policy may be lengthy, expensive, and significantly delay the passage of the health care bill as a whole.

### **Projecting the Policy Outcomes**

Language introduced by Capps in an attempt to keep federal policy abortion neutral was based on the Hyde Amendment and existing Medicaid, VA, and federal worker health insurance policies. However, on the subject of funding sources, Capps' non-committal language regarding the designation of federal funds for abortion services could spell trouble. Federal monies given to states or used to subsidize private insurers could leak back into accounts used to pay for abortion. This qualifies as federal funds indirectly paying for abortion services. While this may simply be an accounting debate, it could be argued that the literal interpretation of the Hyde Amendment

makes the language unconstitutional. Legal battles, with significant federal fiscal and administrative costs, would certainly follow.

The Stupak Amendment ameliorates the perceived accounting loophole in the Capps language by articulating that no federal monies can be recycled into state or private insurer budgets to cover abortions. It also follows Hyde Amendment language, which allows federal monies to be used for abortion only in the cases of rape, incest, or mortal danger to the Mother. By both rectifying the accounting debate and reiterating the treatment criteria of the Hyde Amendment, the status quo is effectively maintained. Because of the precedent to this policy choice in existing federal programs, public outcry and legal battles would be minimized. The abortion policy offered to U.S. citizens would be the same as that currently offered to veterans, Senators, and House Representatives.

The decision to include abortion services in the bill certainly caters to the health needs of U.S. women by providing a commonly utilized health care service in a relatively safe environment. Inclusion of abortion coverage, however, is not consistent with current federal health care policies. In addition, patient eligibility criteria would be a perpetually disputed item among policy makers, state officials, providers, and patients. This option would seemingly be the most difficult to draft, defend, and enforce from moral and legal perspectives.

### **Applying Evaluative Criteria**

Five criteria are cited by Collins to be utilized in evaluating the interventions proposed: relevance, progress, efficiency, effectiveness, and impact (2005). The three options discussed will be evaluated using these criteria.

In terms of relevance, the Capps proposal contributes to the health needs of the target population. It relies on the concept of improved contraceptive access and monitoring to reduce

the number of unintended pregnancies and, therefore, abortions. It relies on state and private insurers to fund the procedure if needed, but they may use federal subsidies. In this sense, it is inconsistent with current federal insurance policies. The progress is difficult to gauge because the language was never enacted; it was expected to raise concern about continuity of federal policy and congruency with the Hyde Amendment. The efficiency of the intervention would be in question because federal subsidies in state or private insurer budgets that are used for abortion may leave them asking for more funding from taxpayers and beneficiaries for other health care services. The effectiveness of the intervention attains the objectives of limiting federal funding for abortion, but not entirely excluding it. Overall, the language impacts U.S. women of all socio-economic backgrounds by guaranteeing them access to care, though it will be up to the states or private insurers to finance abortion services.

The Stupak Amendment has a similar relevance to the Capps language, but is consistent with current policy. Likewise, projected results, efficiency, and effectiveness are expected to be on par with current federal insurance policies. Lastly, the Stupak Amendment essentially maintains the status quo from an impact perspective. It not only extends access to care to all U.S. women, it also offers alternatives for abortion funding to U.S. women of all socio-economic backgrounds through state and private insurers. This comes with a condition: no federal subsidies may be included in this resource pool.

Should abortion be covered, no matter the inclusion criteria, the health needs of the target population are met directly. However, it is not consistent with current policy. Furthermore, the priority is to pass the entire health care bill in a timely manner; debate over its inclusion would preclude efficient passage of the entire piece of legislation. Actual results cannot be compared with projected results. Resource expenditures in fighting legal objections to the apparent

violation of the Hyde Amendment, as well as those needed to reform all federal policy to be uniform, would be considerably larger than maintaining the status quo. The effectiveness of the policy, however, would meet the simple objective of the intervention: fund abortion federally. The catch to this statement is that inclusion criteria would likely muddy the definition of abortion funding and mitigate overall efficacy. The impact on overall health of the target population would be improved; less than 0.5% of women obtaining legal abortions experience a complication. Furthermore, the risk of death associated with abortion is 10% of that associated with childbirth (Guttmacher, 2008). Access to and funding of abortion would be guaranteed to U.S. citizens.

### **Weighing the Outcomes**

When comparing the three alternatives, the Capps proposal seems to differ from the Stupak Amendment only in the articulation of federal subsidies being unavailable for indirect funding of abortion services. This maintains the status quo and is in alignment with the Hyde Amendment. There has been no significant public outcry or legal battle in regard to this 33 year old law. It seems that the small Stupak modification would be as abortion neutral as possible and not significantly delay the entire health care reform bill from passage into law. This has already been shown as a likely scenario when it passed the House of Representatives.

Covering any portion of abortion services not articulated in the Hyde Amendment, however, would involve drafting a new policy from scratch with no real domestic precedent. Definition of inclusion criteria would be fiercely debated in the public, media, and in Congress; we see from public opinion polls that agreement on criteria would be nearly impossible. In addition, there would be legal basis to challenge the policy as unconstitutional due to its apparent conflict with explicit language in the Hyde Amendment. Even if found to be constitutional, the

length of time needed to address the conflict may prevent passage of the health care bill as a whole, leaving the uninsured with continued poor access to health care. Eventually, existing federal insurance policies would then likely have to conform to the new federal abortion policy. Overhauling these existing federal policies would reintroduce the same moral, legal, and fiscal complications.

### **Making the Decision**

The urgency of instituting universal health care coverage for U.S. citizens is obvious in the current political agenda. Though debate will inevitably remain, the clarity of language regarding abortion coverage, based on clear precedent, must leave little opportunity for misinterpretation, ambiguity, or the exploitation of loopholes. Should it be unclear or drastically different from the status quo, the entire bill passage will be delayed.

The strict language in the Stupak Amendment, based upon the Hyde Amendment and other federal insurance policies, is the most consistent, responsible choice. If abortion service is federally funded, policy makers would have to include specific guidelines for gestational age, type of abortion, setting, a list of risks to unborn children and Mothers (ranging from genetic risk of syndromes like Down's to mortal Maternal danger), and other criteria. Managing specific criteria in multiple applications would be cumbersome and only increase the controversy. Furthermore, as debate pressed on, the entire health reform package would be blocked. Should it eventually pass, other federal policy must be reevaluated and changed to establish an entirely new status quo.

### **Conclusion**

Abortion service availability and affordability is a very real part of the U.S. health care picture. The debate over whether to include coverage for the service in the new health care plan



is affected by many issues. What are the health risks, minor or major, to the Mother and unborn child in every unique situation? What impact will inclusion or exclusion have on the safety of U.S. women? Should taxpayer money be used to cover a socially controversial procedure? Should the status quo be maintained, or is it time for a change? Why? The most responsible decision that Congress could make is to maintain federal policy precedent at this time, as outlined in the Stupak Amendment. Should they try to get creative on such a passionate issue, blockage of the entire health care reform bill is a high risk. There are uninsured people in America that are in desperate need of care; debating a single issue with clear legal and policy precedent should not prevent them from receiving health care.

### References

Bishops press obama to strike senate provision allowing federal abortion funding. (2009).

*Foxnews*. Retrieved from <http://www.foxnews.com/politics/2009/11/20/christian-leaders-issue-conscience-pledging-protect-religious-freedoms/>

Canada's healthcare system: Medicare. (2004). Retrieved from

<http://www.hc-sc.gc.ca/hcssss/medi-assur/index-eng.php>

Collins, T. (2005). Health policy analysis: A simple tool for policy makers. *Public Health*, 119 (3), 192-196.

Guttmacher Institute. (2009). *Facts on induced abortion worldwide: In brief*. New York, NY: no author.

Guttmacher Institute. (2008). *State facts about abortion: Oregon*. New York, NY: no author.

Guttmacher Institute. (2002). *Facts on induced abortion: In brief*. New York, NY: no author.

Reese, T.J. (2009). Beyond abortion to universal care: This catholic's view. *Newsweek*.

Retrieved from

[http://newsweek.washingtonpost.com/onfaith/georgetown/2009/11/health\\_care\\_moves\\_beyond\\_abortion.html](http://newsweek.washingtonpost.com/onfaith/georgetown/2009/11/health_care_moves_beyond_abortion.html)

Stupak, B. (2009). HR 3962-Revision 108. *DocStoc*. Retrieved from

<http://www.docstoc.com/docs/15284081/Stupak-Amendment-to-HR-3962-Rev-108>

Sussman, D. (2003). Conditional support poll: Thirty years after roe vs. wade, american support is conditional. *ABC News*. Retrieved from

[http://abcnews.go.com/sections/us/DailyNews/abortion\\_poll030122.html](http://abcnews.go.com/sections/us/DailyNews/abortion_poll030122.html)

The George Washington University Center for Global Health. (2000). *Health policy analysis in a nutshell*. Washington D.C.: Rodriguez-Garcia, R.

The Washington State Department of Corrections. (2008). *The Offender Health Plan*. Olympia, WA.

Running head: BISPHEENOL A

Epigenetics and Bisphenol A

Timothy S. Neilson

Oregon Health & Science University

School of Nursing

### **Abstract**

Bisphenol A (BPA) is a synthetic estrogen that has been used in the manufacture of consumer goods for 60 years. Its ingestion has been linked to a wide variety of health care risks across generations, making it a popular epigenetic topic. Despite the growing body of research confirming its dangers and the leadership of foreign governments in its ban, the United States FDA has been slow to recognize BPA as hazardous. The FDA originally considered only two studies, both funded by lobbies that advocate BPA use, in its decision not to act on potential dangers of BPA exposure. It is currently reconsidering regulation of BPA based upon a larger body of research. The following is a discussion of the ubiquitous nature of BPA, the literature and popular press coverage surrounding its perceived public health dangers, the need for proactive government involvement in its regulation, and associated implications for clinicians and disparate populations.

## Introduction

The perspective of environmental science and its association with public health outcomes, particularly in disparate populations, is changing as the field of epigenetics garners more attention among researchers. The field of epigenetics addresses the impact of environmental changes on the genetics of human beings across generations. From an environmental health perspective, chemicals utilized in the development of novel products are increasingly being found to have an adverse effect on the environment and the health of the public. If the safety of these chemicals is examined, it is sometimes researched in an incomplete or biased manner. Certain chemicals may then be assumed safe for industrial use based upon research reviewed by the United States Food and Drug Administration (FDA). The result of this premature scientific and legal presumption of safety may lead to significant public health risks for current and future generations.

Bisphenol A (BPA) is a synthetic chemical that is used in the production of polycarbonate plastics, epoxy resins lining tin cans, and even dental sealants. It has been in use since the 1950s and is now considered a ubiquitous component of the human body and the material environment (Vogel, 2009). The term “environmental endocrine disruptor” was coined by scientists in 1991; it applies to a class of hundreds of chemicals, including BPA, that act as agonists or antagonists to multiple endocrine receptors. These include estrogen, androgen, and thyroid hormone receptors (Vandenberg et al, 2009). Potential identified health consequences of even low dose endocrine disruptor exposure include reproductive anomalies, behavioral disorders, obesity, breast cancer, and prostate cancer (Vogel, 2009).

The manner in which BPA has been researched and how it has been defended in published material leads to a significant concern of industrial bias. The FDA bases its consumer

safety decisions on such research. Both the potential for skewed results and the failure of the FDA to examine a large body of research raises questions about what steps should be taken to better protect the public's health (Vogel, 2009). In addition, after a chemical has become as widespread as BPA, leadership in policy development is needed to ensure that manufacturers are doing their part to protect the public.

When determining industrial chemical safety, the dynamic between researchers, lawmakers, manufacturers, and regulators must be examined. If research and development is done hastily or carelessly, a significant public health threat could result. This affects all populations but, in the case of BPA, may weigh more heavily on the socioeconomically disadvantaged. In addition, from an epigenetic perspective, the types of health problems caused by a chemical like BPA can span generations.

### **Literature Review**

Epidemiologists suggest that the quantity and quality of human sperm has decreased over the past 60 years. Over the same period, the rate of male genital tract defects, testicular, prostate, and breast cancer has increased. Ironically, the same phenomena have been witnessed and documented in wildlife species. The introduction of hormonally active synthetic chemicals like BPA coincides with the same 60 year time period; this correlation, made by epidemiologists, has spurred research on the effects of BPA in the womb, on children, and on adults (Maffini et al, 2006).

BPA is one of the most prevalent and thoroughly studied environmental endocrine disruptors. However, research on these chemicals as a whole is in its infancy, rendering popular press sources necessary for a complete literature review. Originally developed as a synthetic estrogen in the 1930s, its medical uses are poorly documented. However, because it has been a

key component of plastic manufacture since the 1950s, BPA has become ubiquitous; 93% of tested individuals are found to have some level of BPA in their urine (Carey, 2009). BPA is not just found in children and adults that interact with it environmentally. A recent study showed that 90% of newborn cord blood tested positive for BPA, suggesting that exposure and adverse health effects can start in the womb (Kissinger, 2009a). The reported levels of BPA in human fluids are higher than the concentrations reported to stimulate molecular changes in vitro and match the level needed to cause adverse effects in animal models (Vandenberg, 2007).

The average human processes 6 pounds of BPA each year (Kristoff, 2009). BPA finds its way into the human body in a variety of ways. It can leach into food from the linings of tin cans and polycarbonate plastic bottles or into saliva from dental sealants, at which point it is directly ingested (Rubin et al, 2001). BPA can also be inhaled or absorbed through the skin (Carey, 2009). In one study, researchers collected air, water, dust, hand wipe, and diet samples in a North Carolina daycare. This study estimated that 99% of BPA exposures are from direct ingestion (EWG, 2007a). BPA that is ingested directly is attached to a transporter molecule that renders it inactive as it is transported through the body. However, once it reaches endocrine receptors, the chemical is reactivated (Carey, 2009). The exact mechanism of BPA's effects in the human body has been the subject of much research and, as a result, significant controversy (Wetherill et al, 2007).

Starting in the womb, BPA harms cytotrophoblasts, the stem cells in the placenta that nourish the developing fetus. Concentrations of BPA that are a hundredth of what is found in the blood of pregnant women can adversely affect the development of the fetus (Derfel, 2009). Female rats exposed to BPA from day six of pregnancy through the period of lactation had offspring that exhibited a significant increase in body weight. This phenomenon continued into



adulthood. Female offspring exhibited dysfunction of two different sex hormones in adulthood. The exposure to pregnant rats was simply through drinking water (Rubin et al, 2001). At the cellular level, exposure to BPA in the womb was found to remove protective molecules that normally control when certain genes are activated in certain tissue. This caused genetically identical animals to develop differently not only in the womb, but across the lifespan (Dolinoy et al, 2007).

There is further endocrinological concern that BPA and other environmental endocrine disruptors may affect sexual differentiation. In one study, female rats were exposed to a BPA dosage below the human tolerable daily intake level during the fetal and suckling periods. Their offspring were examined in regard to the sexual differentiation of open field behavior and centers of sexual development in the brain. It was found that BPA made open field behaviors nearly indistinguishable between sexes and changed central sexual development structures without directly affecting reproductive structures (Kubo et al, 2003). This reinforces the wide variety of effects BPA can have in the womb.

While it is known that prenatal exposure to BPA doses results in various morphological and functional alterations in humans, it is difficult to gauge how much of BPA's adverse effects stem from prenatal exposure and how much is due to from environmental exposures outside of the womb. Researchers seem confident that childhood and adult exposure to BPA affects the male reproductive system, neurobehavioral processes, and metabolic function. There is a call for further research, however, regarding the effects of childhood and adult BPA exposure on the female reproductive system and the immune system (Richter et al, 2007).

One recent study suggests that BPA exerts a wide variety of metabolic effects that can stimulate inflammatory chemicals in the body, like interleukin-6 and tumor necrosis factor alpha.

The involvement of these chemicals is widely implicated in obesity and metabolic syndrome. The same study identifies several different types of estrogen receptors in human adipose tissue cells, giving researchers a potential mechanism of action for BPA as a mediator for these diagnoses (Ben-Jonathan et al, 2009).

A potential link between BPA and cancer risk was discovered incidentally by a group of researchers in 1993. This group of scientists was using polycarbonate flasks to house yeast-growing media and found an 'estrogenic substance' that they initially thought was being produced by the yeast. It was discovered, however, that the autoclaving procedure was allowing BPA to leach into the media and distilled water used in the experiments, disrupting results as an estrogen mimic. BPA was found to increase the proliferation of mammary cancer cells during the experiment; further, its action was blocked by tamoxifen, a medication used to fight metastatic breast cancer. The research team warned others of potential experiment contamination, but also had the foresight to state that "it remains to be determined whether BPA derived from consumer products manufactured from polycarbonate could significantly contribute to the pool of estrogenic substances in the environment" (Krishnan et al, 1993). More specific studies would follow.

A 2002 study conducted by Haighton et al. addressed the emerging concern about consumer exposure to BPA. Results suggested that consumer and environmental exposure was 'trivial' and very unlikely to pose a carcinogenic risk. However, more recent studies are building a body of research that suggests a link between BPA and certain types of cancer. Maffini et al. found that BPA causes physiological and functional abnormalities in the female genital tract, mammary glands, and prostate that may predispose the tissue to earlier onset of disease, including cancer (2006).

Because of the high rate of BPA exposure through consumption, researchers have begun to explore what causes leaching of the chemical from packaging into consumer goods and which foods contain the most BPA. At the molecular level, the polymers of BPA are susceptible to hydrolysis, the key mechanism that allows leaching into foods and into the environment (vom Saal & Hughes, 2005). A study by Cao & Corriveau (2008) found that BPA migration increased exponentially over time if polycarbonate baby bottles and reusable water bottles were heated to 70 degrees Celsius. The acidity of the food in packaging that contains BPA also has an effect. Tomatoes, which are highly acidic, draw enough BPA from can liners to have a significant metabolic effect on consumers (Vaccariello, 2009). Whole tomatoes, sun dried tomatoes, diced tomatoes, and tomato sauces and pastes are all common foods on supermarket shelves.

A recent Consumer Reports study tested an array of brand-name canned foods and found BPA in nearly all of them. The report in its December 2009 issue found relatively high levels of BPA in Progresso vegetable soup, Campbell's condensed chicken noodle soup, and Del Monte Blue Lake cut green beans. In addition, the canned liquid version of Similac Advance infant formula and canned Nestle Juicy Juice both contained significant levels of BPA (Kristoff, 2009). This suggests that not only the packaging of these products can introduce BPA to an infant or child, but their baby bottle or sippy cup introduces a second dose. If the baby formula is heated, another dosing mechanism is introduced.

The literature available regarding BPA seems to be scientifically thorough. The sources of BPA and its migratory or leaching potential is being examined. Animal studies in the field and in controlled settings both suggest adverse effects, but the extent of these effects is still being investigated. Studies addressing the exact mechanisms of action at certain exposure levels, based

upon the route of exposure, and associated health outcomes are ongoing. As recently as 2008, widely circulated journals like the Journal of the American Medical Association (JAMA) suggested that humans with elevated serum BPA levels have a higher risk of cardiovascular disease, diabetes, liver enzyme abnormalities, and miscarriages (Kristoff, 2009). Though not yet fully understood, the body of research to date certainly justifies precaution at the very least on the part of manufacturers, consumers, government officials, and regulators.

### **Topic Discussion**

BPA and its potential for adverse health effects have drawn the attention of researchers, consumers, manufacturers, the government and its regulatory bodies, and the media. The issue has been considerably divisive in some areas of the scientific and industrial worlds. When examining how BPA's safety has been studied, defined, and defended, the polarizing nature of the subject is evident. However, an accurate understanding of BPA and its effect on public health is necessary for education of the aforementioned stakeholders. Rigorous epidemiological studies with no conflict of interest are necessary to present a clear, unbiased picture of the health issues surrounding BPA so that relevant policy can be drafted and enforced by government agencies (Vandenberg et al, 2009).

A primary issue in the current BPA debate addresses the influence of plastics lobbies and BPA makers on FDA decision making. The FDA's previous BPA ruling relied on only two studies, both of which were paid for by BPA makers. Furthermore, e-mails procured by a major Wisconsin newspaper revealed that the FDA's ruling was partially drafted by plastics industry lobbyists. The same set of e-mails revealed that industry scientists relied on the lobbyists for instruction on research methods, information on legislation updates, and media coverage (Kissinger, 2009b).

Structured research methods have also revealed as suspicious for bias. A recent report funded by the American Plastics Council, but performed by the Harvard Center for Risk Analysis, found that evidence for adverse effects of low dose BPA exposure is weak. The study, however, only considered 19 studies and took over two years to be produced. An up-to-date literature review of 115 in vivo studies (none more recent than 2004) found that the opposite was true: 94 of the studies reported significant effects from low dose BPA exposure. In addition, over 90% of government funded studies to date have reported significant adverse effects from low dose BPA exposure. This is in sharp contrast to industry funded studies, none of which have reported such effects (vom Saal & Hughes, 2005).

The reasons behind the difference in findings have been blamed on everything from obvious ignorance of methodology by industry funded research to the use of animals that are inappropriately suited for estrogenic response (vom Saal & Hughes, 2005). In addition, very little industry funded research has been based on levels of BPA in canned food, which has been found to be the most significant source. The two studies that were referenced by the FDA in its BPA safety determination were both industry funded (EWG, 2007a). The FDA is currently reviewing its decision based on a larger body of research and a new ruling is expected soon (Carey, 2009).

BPA is not merely a domestic problem; it is produced at a rate of 6.4 billion pounds per year worldwide. In 2007, Canada became the first country to officially implicate BPA as hazardous to human health. In 2008, the Canadian government banned the use of BPA in baby bottles and volunteered to host an international meeting of experts on the controversial subject (Derfel, 2009). A group of scientists from several universities in the United Kingdom have advised the nation's Health Secretary to halt the use of BPA in any consumer product that is intended for children. They cite both compelling research and the international trend toward such

action. The apparent focus on infant on child products is due in part to British researchers who state that humans who are not fully developed cannot effectively clear the chemical from their systems (Reuters, 2009). However, it is clear from the literature review that adults can also be affected by environmental exposure.

The BPA issue is not only being fought among health advocates and environmental groups. Retailers like Staples are acting as intermediary between concerned consumers and manufacturers. Not only are they asking that BPA be eliminated from the products they stock, they are demanding information on other chemicals that are commonly sold to consumers (Carey, 2009).

As scientists, environmental groups, and health advocates have called for BPA to be banned, the FDA has been slow to respond. In the interim, state governments in Massachusetts and Connecticut have passed legislation similar to that adopted in Canada. The city of Chicago and two counties in New York State have followed suit. In anticipation of the spreading ban, however, most major baby bottle manufacturers have stopped using BPA. However, this leaves other polycarbonate plastic manufacturers and food packaging industries continuing to use BPA in the production of their consumer products. Congress has seen several laws introduced to ban BPA in all food and water contact items, but the legislation has been largely ignored (Kissinger, 2009a). Even if a new ruling from the FDA or a new restrictive law from Congress is not passed, environmental groups like the Breast Cancer Fund, Environmental Working Group and the Natural Resource Defense Council say they will demand a public health warning be included on packaging or products that contain BPA (Kissinger, 2009b).

As government and private groups at every level worldwide decide how to proceed with BPA regulation, it is important to consider how it may be avoided. In 2007, the Environmental

Working Group performed an independent review of BPA contamination and offered strategies for avoidance. Canned foods, in particular, were worrisome. All six brands of spaghetti and ravioli that were tested contained measurable levels of BPA. Five of six cans of baked beans had measurable levels of BPA. Lastly, two of six cans of infant formula contained BPA (EWGa, 2007). The group's suggestions to minimize BPA exposure included the following:

1. Sensitive groups such as kids and pregnant women should limit canned food consumption.
2. Beverages appear to contain less BPA residues, while canned pasta and soups contain the highest levels; rinsing canned fruit or vegetables with water prior to heating and serving could lessen BPA ingestion.
3. Soft or cloudy-colored plastic does not usually contain BPA. When possible, it is best to avoid recycling label #7 plastics. Plastics with the recycling labels #1, #2 and #4 on the bottom are safer choices and are unlikely to contain BPA.
4. Choose powdered infant formula, which is less likely to have BPA in its packaging and is more diluted with tap water prior to ingestion. If the baby needs liquid formula, look for types sold in soft plastic or glass containers.
5. Find baby bottles in glass versions, or those made from the safer plastics including polyamine, polypropylene and polyethylene. Bottles used to pump and store expressed breast milk by the brand Medela are labeled BPA-free.
6. Many metal water bottles are lined with a plastic coating that contains BPA. Look for stainless steel bottles that do not have a plastic liner (EWG-2 2007).

While these suggestions are certainly helpful, populations with a low socioeconomic status may have trouble adhering to the guidelines. Often the beneficiaries of canned food drives, they are at risk of exposure to large amounts of BPA from charitable organizations. Even lower middle class families may not be able to afford BPA free alternatives. For example, BPA free Bionaturae tomato sauce costs \$2.99 for a 7 oz. serving. Hunts tomato sauce, cited by the Consumer Reports study as containing BPA, costs only \$.73 for 6 oz. (Vaccariello, 2009). This makes their purchase four times as expensive, which is not sustainable. Without government regulation, it may cause a significant financial hardship for lower income populations to avoid BPA. Based on the literature, the health of the affected disparate populations suffers now, and into the next generation.

The emerging epigenetic consequences of BPA and other potentially harmful chemicals on the public's health change how clinicians approach their patients. In particular, clinicians like DNPs who are trained in the philosophy of preventive care must adjust their risk assessment protocols. There are no direct BPA-associated physical symptoms. BPA, instead, leads to disease patterns with their own symptom profiles. Before these diseases occur, a DNP must make a patient aware of hazards in his or her own environment. Since the effects of BPA can start in the womb and carry through generations, early intervention is crucial. An expectant Mother and Father, especially, must be advised on the ubiquitous nature of BPA and how to protect their family from the chemical. They must begin immediately because, once the child is born, the parents must know how to continue protecting their family from the effects of BPA. This education will certainly become a part of my own professional practice as well as my personal lifestyle choices.



### **Conclusion**

Bisphenol A (BPA) is a synthetic estrogen that is used in the production of polycarbonate plastics, epoxy resins lining tin cans, and dental sealants. It has been in use since the 1950s and is now considered a ubiquitous component of the human body and the material environment. It can lead to both morphological and functional problems in humans and animals, primarily in the reproductive and immune systems. These adverse effects can start in the womb and be passed to future generations. BPA and other similar chemicals have not been well regulated and now pose a significant public health threat.

Regulation of chemicals begins with quality research on the subject. The FDA has seemingly relied on a small, biased body of literature when gauging the safety of BPA in consumer products; foreign governments leading incremental BPA bans rely on a wider spectrum of research. The larger body of research has created public worry domestically and lead states, counties, and cities to initiate their own legislation. The resulting patchwork of regulations creates an even larger problem for the federal government as it reexamines its decision on BPA safety. Until research is adequately examined, consumers must do their best to avoid BPA. This will prove difficult for populations of low socioeconomic status because they cannot often afford more expensive, BPA-free alternatives.

Despite hesitation from the federal government based on questionable research and limited cost-effective alternatives to BPA consumer goods, clinicians can play a significant role in protecting their patients through risk assessment and education, especially among expectant families. More research, aimed at articulating the effect of BPA pharmacokinetically in specific populations at specific exposure levels, may be needed to convince manufacturers and the government to regulate BPA and other hazardous chemicals.

### References

- Ben-Jonathan, N., Hugo, E.R., & Brandebourg, T.D. (2009). Effects of bisphenol A on adipokine release from human adipose tissue: implications for the metabolic syndrome. *Molecular and Cellular Endocrinology*, 30, 49-54.
- Cao, X.L., & Corriveau, J. (2008). Migration of bisphenol A from polycarbonate baby and water bottles into water under severe conditions. *Journal of Agricultural and Food Chemistry*, 256, 6378-81.
- Carey, J. (2009). Getting to the bottom of plastic bottle risks. *Business Week*. Retrieved from [http://www.businessweek.com/magazine/content/09\\_49/b4158052774264.htm](http://www.businessweek.com/magazine/content/09_49/b4158052774264.htm)
- Derfel, A.(2009).Chemical BPA may harm developing fetus, quebec study suggests. *Canada*. Retrieved from <http://www.canada.com/health/Chemical%20harm%20developing%20fetus%20Study/2322801/story.html>
- Dolinoy, D.C., Huang, D., & Jirtle, R.L. (2007). Maternal nutrient supplementation counteracts bisphenol A-induced DNA hypomethylation in early development. *Proceedings of the National Academy of Sciences*, 104, 13056-13060.
- Environmental Working Group. (2007a). Bisphenol A: toxic plastics chemical in canned food: canned food test results. *EWG*. Retrieved from <http://www.ewg.org/node/20933>
- Environmental Working Group. (2007b). Bisphenol A: toxic plastics chemical in canned food: consumer tips to avoid BPA exposure. *EWG*. Retrieved from <http://www.ewg.org/bisphenol-a-info>
- Haighton, L.A., Hlywka, J.J., Doull, J., Kroes, R., Lynch, B.S., & Munro, I.C. (2002). An evaluation of the possible carcinogenicity of bisphenol A to humans. *Regulatory*

*Toxicology and Pharmacology*, 35, 238-54.

Kissinger, M. (2009a). BPA found in 90% of newborns. *JSOnline*. Retrieved from

<http://www.jsonline.com/watchdog/watchdogreports/78384027.html>

Kissinger, M. (2009b). FDA likely to delay ruling on BPA. *JSOnline*. Retrieved from

<http://www.jsonline.com/watchdog/watchdogreports/78108852.html>

Krishnan, A.V., Stathis, P., Permuth, S.F., Tokes, L., & Feldman, D. (1993). Bisphenol-A: an estrogenic substance is released from polycarbonate flasks during autoclaving.

*Endocrinology*, 132, 2279-86.

Kristoff, N.D. (2009). Chemicals in our food, and bodies. *NYTimes*. Retrieved from

[http://www.nytimes.com/2009/11/08/opinion/08kristof.html?\\_r=1&hp](http://www.nytimes.com/2009/11/08/opinion/08kristof.html?_r=1&hp)

Kubo, K., Arai, O., Omura, M., Watanabe, R., Ogata, R., & Aou, S. (2003). Low dose effects of bisphenol A on sexual differentiation of the brain and behavior in rats. *Neuroscience Research*, 45, 345-56.

Maffini, M.V., Rubin, B.S., Sonnenschein, C., & Soto, A.M. (2006). Endocrine disruptors and reproductive health: the case of bisphenol-A. *Molecular and Cellular Endocrinology*, 254-255, 179-86.

Reuters. (2009). Call to ban BPA baby bottle after 'compelling' breast cancer link. *News*.

Retrieved from <http://www.news.com.au/breaking-news/call-to-ban-bpa-baby-bottle-after-compelling-breast-cancer-link/story-e6frfku0-1225805691216>

Richter, C.A., Birnbaum, L.S., Farabollini, F., Newbold, R.R., Rubin, B.S., & Talsness, C.E. (2007). In vivo effects of bisphenol A in laboratory rodent studies. *Reproductive Toxicology*, 24, 199-224.

Rubin, B.S., Murray, M.K., Damassa, D.A., King, J.C., & Soto, A.M. (2001). Perinatal exposure

- to low doses of bisphenol A affects body weight, patterns of estrous cyclicity, and plasma LH levels. *Environmental Health Perspectives*, 109, 675-80.
- Vaccariello, L. (2009). The 7 foods experts won't eat. *Shine*. Retrieved from <http://shine.yahoo.com/channel/health/the-7-foods-experts-wont-eat-547963/>
- Vandenberg, L.N., Hauser, R., Marcus, M., Olea, N., & Welshons, W.V. (2007). Human exposure to bisphenol A (BPA). *Reproductive Toxicology*, 24, 139-77.
- Vandenberg, L.N., Maffini, M.V., Sonnenschein, C., Rubin, B.S., & Soto, A.M. (2009). Bisphenol-A and the great divide: a review of controversies in the field of endocrine disruption. *Endocrine Reviews*, 20, 75-95.
- Vogel, S.A. (2009). The politics of plastics: the making and unmaking of bisphenol A "safety." *American Journal of Public Health*, 99, S559-S566.
- vom Saal, F.S., & Hughes, C. (2005). An extensive new literature concerning low-dose effects of bisphenol A shows the need for a new risk assessment. *Environmental Health Perspectives*, 113, 926-33.
- Wetherill, Y.B., Akingbemi, B.T., Kanno, J., McLachlan, J.A., Nadal, A., & Sonnenschein, C. (2007). In vitro molecular mechanisms of bisphenol A action. *Reproductive Toxicology*, 24, 178-98.

Running head: CULTURAL COMPETENCY

Cultural Competency Training to Reduce Health Disparities

Timothy S. Neilson

Oregon Health & Science University

School of Nursing

### **Abstract**

Rectifying cultural disparities to improve patient outcomes is a complex subject with an interesting history. Though largely ignored in formal research, modular development, and education until the 21<sup>st</sup> century, the impact of disparities on quality of care was well articulated in the Institute of Medicine's 2003 report *Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare*. The report called for a multi-level strategy and intervention approach to help reduce disparities and improve outcomes. The ubiquitous presence of disparities in health care can be seen in research, administration, policy, and practice. Spanning all forums is the notion of cultural competence among health care workers. Cultural competence in the healthcare setting has been examined by medical and sociological theorists, who have developed models to help researchers, health care workers, and academics become aware of subtle stereotypes that may influence their body of work. Further, academic institutions as well as practice facilities have worked to implement these models in curricula dedicated to reducing disparities in their settings by promoting cultural competence among their students and professionals. These efforts are well-intentioned and appropriate, but cultural competence must also be encouraged among the patient population. Just as health care workers face a diverse population base, patients will face health care workers with cultures different from their own. While structured cultural competency courses for disparate populations would be inappropriate considering many cannot even *access care* easily, promoting an environment of cultural humility can help ease tension in the clinic setting. More research on the methodology needed to reach this goal is fundamental in reducing disparities.

### **Introduction**

Cultural diversity presents unique challenges to health care workers across the United States in every discipline and setting. While stark clinical proficiency is necessary for safe, effective care, cultural competence is often overlooked even though its role in advocating effectively for disparate populations is well documented. Health care workers must be aware of their own worldviews, including the risk of stereotyping and embracing stigma, as well as their patients' innate tendency to do the same. Cultural competence is acquiring cultural information and then using that knowledge to be a patient advocate (Breier-Mackie, 2007).

Walker (2007) reminds us that 30% of the United States population is composed of non-Hispanic whites. By 2050, this number will grow to 50%. Currently, 90% of nurses are Caucasian. Given the growing diversity in the general population of the United States and the relative homogenous racial composition of the nursing workforce, it is clear that nurses as well as other health care staff must acquire the skill to provide culturally competent care across the lifespan. Any patient could walk into any setting at any time; the culture of the staff they will encounter is equally unpredictable.

The holistic nature of patient care plans, which must include care of the patient's physical, psychological, social, emotional, and spiritual components, makes patient-centered care a priority. When cultural variation across this spectrum is introduced, it creates an incomprehensible number of potential pitfalls (Maier-Lorentz, 2008). In addition, variations in the health care staff's cultural expression create the opportunity for even more clashes, thereby crippling communication, advocacy, and the potential for optimal quality of care (Kim & Flaskerud, 2007).

The introductions of culturally competent models that can serve as a framework for curricular development in the academic and professional setting are helping to rectify health disparities. However, the reciprocal nature of cultural competence between patients and health care staff must be further explored. The burden of achieving and maintaining cultural competence cannot be solely borne by clinicians and researchers.

It is well known that disparate populations have difficulty accessing care; this paper discusses the phenomenon of impaired care delivery once it is accessed due to poor patient-provider communication.

### **Context**

The challenge of addressing health disparities is not new to the nursing profession. During the Crimean War, Florence Nightingale was concerned with the connection between poverty, illness, and early death. She endeavored to rectify disparities using a multi-systems approach. Nightingale chose to utilize charity, technology in the form of sanitation, and social change. This illustrates a small historical portion of the long-standing global relationship between socioeconomic status and health status (Flaskerud, 2007).

In modern medicine, disparities in health care delivery were largely a medical model afterthought until the Institute of Medicine's (IOM) 2003 report--titled *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*--was issued (Walker, 2007). Echoing Florence Nightingale's approach, the report called for a multi-level strategy and intervention approach to rectifying disparities. One part of this strategy called for the cultural competence of anyone involved in healthcare provision; this effort is vital to eliminating disparities (Munoz, DoBroka, & Mohammad, 2009).



Interventions aimed at addressing cultural competence among health care workers can occur at any time during their development, from curricular efforts during certificate or undergraduate programs to continuing education for seasoned professionals. In 2000, three years prior to the IOM's landmark report, the National Center for Cultural Competence advocated for the cultural competence of researchers and practitioners as necessary components in the effort to eliminate health disparities among racial and ethnic groups (Flaskerud, 2007).

Even as cultural competence became a more valued component of health care and research, institutions have been slow to develop supportive programs. Students, staff, and researchers cannot be expected to pursue competence on their own. It is the responsibility of academic institutions, the government, and individual clinics and hospitals--both public and private--to assist these key role players in becoming culturally competent. Not only should leaders within these organizations be able to recognize disparities, they should dedicate a portion of their resources to providing the opportunity for healthcare workers to become more culturally competent (Aponte, 2009). This approach can be termed servant leadership, which eventually translates into bedside patient advocacy.

Structured programs should be designed to focus on risk reduction, vulnerability, and promotion and protection of human rights. Many models have been proposed to address the formulation of culturally competent curriculum, most focusing on information, education, testing, intervention, and treatment. However, health care workers must also learn to respect the fact that many people have been socially cast in inferior roles from birth while others have acquired subordinate status as a result of their lifestyle choices (Flaskerud, 2007).

When shaping culture, factors that are out of an individual's control that may influence their cultural affinity and, therefore, their likelihood of becoming a part of a disparate population,

will still be up for unique interpretation; this must also be considered in the approach to nursing care. Healthcare staff should feel empowered to inquire about the unique interpretations of an individual's belief system rather than focusing heavily on classroom material (Kleiman, 2006). Composition of culturally competent plans of care must begin with adaptation to the cultural setting rather than a defined set of rules in the care setting that is designed to homogenize the response to illness of patients and their families across all cultures (Stewart-Amidei, 2006). As the notion of cultural competence began to gain momentum, models were developed to form the framework for building such competence.

### **Theoretical Models**

The Sunrise Model (Leininger, 2002) centers on the multiple cultural influences that may confront a health care worker when dealing with health, illness, and death. These include technology, religion, philosophy, kinship, values, beliefs, life ways, politics, legal system, economics, education, world view, social structure, healthcare traditions, and education. A model with so many components may seem overwhelming to those developing culturally competent curriculum and, in turn, cumbersome to clinicians.

The Transcultural Assessment Model, offered by Giger and Davidhizar (2002), is more concise, but may be oversimplified. Only six cultural phenomena are addressed: communication, space, social organization, time, environmental control, and biological variations. Curriculum and, therefore, assessment strategies employed by health care staff are based on these six components. It may not be a complete model.

In Campinha-Bacote's (2002) model of care, the development of culturally competent skills by the health care provider is rooted in five assumptions:

1. Cultural competence is a process, not an event.

2. Cultural competence consists of five constructs: cultural awareness, cultural knowledge, cultural skills, cultural encounters, and cultural desires.
3. There are more variations within ethnic groups than across ethnic groups (intraethnic variations).
4. There is a direct relationship between the level of competence of healthcare providers and their ability to provide culturally responsive healthcare services.
5. Cultural competence is an essential component in rendering effective and culturally responsive services to culturally and ethnically diverse clients.

Camphinha-Bacote's primary emphasis lies in the assertion that cultural competence is an ongoing process rather than a destination to be reached. As the climate of society changes and cultures evolve, healthcare staff must remain flexible and continue to hone their culturally competent skills. They must work within the cultural context of the patient (Cutilli, 2006). This multi-faceted, evolution oriented model creates the opportunity for a better structured curricular effort.

### **Culturally Competent Curriculum**

The aforementioned models were developed to introduce cultural competency to students studying health care as well as seasoned professionals. If a health care worker received formal schooling prior to 2003, the chances are not good that cultural competence was addressed in depth as a part of their curricula. The following is a discussion of cultural competence programs for healthcare workers across the learning lifespan.

The American Association of Colleges of Nursing, in their 2008 statement on cultural competency in baccalaureate nursing education, attempt to provide a framework that helps

nursing students develop essential competencies for providing care transculturally (Munoz et al., 2009). Campinha-Bacote's philosophy on cultural competence is often used as a theoretical framework to develop academic and continuing education curriculum. Munoz (2009) describes a multidisciplinary teaching model developed from this philosophy that is consistent with university level mission statements. It is designed to prepare students in both service and administrative healthcare roles to better care for an increasingly diverse society. The five components of cultural awareness, cultural knowledge, cultural skills, cultural encounters, and cultural desire were used to guide material development. Bennett's six developmental stages of intercultural competence helped to outline the benchmarks. The written reflections of students indicated a consistent growth in the development of cultural knowledge, skills, and desire.

Once in the health care field as a professional, there are many institutions striving to implement culturally competent programs as continuing education. These have proven to be effective. In a study of rural RNs undergoing a 90 minute cultural competency course, pre and post test data revealed that their cultural sensitivity nearly doubled (Lee, Anderson, & Hill, 2006). At the Center of International Health at Region's Hospital in St. Paul, Minnesota, Walker (2007) describes the development of programs for all medical staff based on her own model. She begins by emphasizing the need for staff to know who they are caring for; the foundation is laid by collecting and utilizing demographic data sets as a part of the electronic medical record (EMR). Next, staff must know how they are caring for patients. This strategy involves self-awareness of safe, timely, effective, efficient, equitable, patient-centered care. Lastly, as disparities are identified through the first two steps, staff must know what actions to take to reduce them. For example, they must employ evidence based research; resources may be shifted from the hospital to community outreach programs to address problems with care access rather

than adding a physician to clinic or hospital staff. Additional staff does not always lead to better care because some patients simply do not have good access to care.

In addition to programs for medical staff, Walker (2007) notes that all new nurses receive culturally competent training at orientation. Some nursing units also assemble their own task force to address gaps in culturally competent care. Lastly, non-English speaking patients are invited to submit evaluations of the interpreter service at discharge. Walker describes the goal of this program as creating professionals who can function transculturally in the global village that is Region's Hospital's patient base. Specific pre and post-test data to qualify or quantify progress is not identified in Walker's submission.

It is important to note that continued development of institutional as well as academic programs for cultural competency not only benefits the learner, but it will also enrich the knowledge base of those leaders creating the curriculum.

### **Conclusion**

While efforts are being made to assemble modular frameworks on which to hang culturally competent curriculum for health care staff, Cooper & Roter (2003) discuss a different view on the interpersonal dynamic of care delivery and how it may contribute to ethnic disparities. Many studies have addressed the technical and systems approach to addressing disparities in healthcare; but few have addressed the responsibility of those seeking care in making cultural competency reciprocal. This is a new trajectory in cultural competency that should be further explored if the aim is to truly reduce healthcare disparities through quality communication between health care staff and clients.

Social factors, including gender, age, literacy, social class, and health status all influence verbal and nonverbal communication during a clinic visit. Clinicians have been encouraged to

pursue a patient-centered style of communication, which is widely variable, dependent upon clinician and patient race and ethnicity. Academic and CME courses for clinicians have focused on cutting disparities utilizing this strategy. Cooper & Roter (2003) correctly argue that communication is reciprocal; patients must be as aware of their beliefs and attitudes as clinicians. The reciprocal approach to communication during the process of care delivery is important in that a markedly fewer number of studies exist that focused on social cognition and stereotyping by *patients*.

The message of this article is that patients and providers must be partners, investing in a communication process that will maximize patient compliance and outcomes based on ethnic-neutral expectations by both. They must acknowledge mutual ethnic ignorance, leading to increased competency. They must exercise self-awareness and cultural humility. The clinician and client must establish a working interpersonal relationship that maximizes outcomes independent of social, cultural, or ethnic variables.

Future research should expand to include the patient in fostering culturally competent communication through awareness, tolerance, and acceptance. As part of cultural competency curriculum, health care workers can learn strategies to incorporate into their visits that will empower the patient and encourage a *mutual* cultural understanding. In this manner, the skill of interaction and sensitivity becomes reciprocal at the bedside, ultimately resulting in a stronger provider/patient bond and a better quality of care. Together, patients and health care staff can learn to value diversity and respective cultural strengths, leading to reduced disparities and better patient outcomes.

### References

- Aponte, J. (2009). Addressing cultural heterogeneity among hispanic subgroups by using campinha-bacote's model of cultural competency. *Holistic Nursing Practice*, 23(1), 3-14.
- Breier-Mackie, S. (2007). Ethics connection. cultural competence and patient advocacy: The new challenge for nurses. *Gastroenterology Nursing*, 30(2), 120-122.
- Campinha-Bacote, J. (2002). The process of cultural competence in the delivery of healthcare services: A model of care. *Journal of Transcultural Nursing*, 13(3), 181-184.
- Cooper, L.A. & Roter, D.L. (2003). Patient-provider communication: The effect of race and ethnicity on process and outcomes of healthcare. In B. Smedley, A.Y. Stith, & A.R. Nelson (Eds.), *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care* (pp. 552-593). Washington, D.C.: The National Academies Press.
- Cutilli, C. C. (2006). Do your patients understand? providing culturally congruent patient education. *Orthopaedic Nursing*, 25(3), 218-226.
- Flaskerud, J. H. (2007). Cultural competence: What effect on reducing health disparities? *Issues in Mental Health Nursing*, 28(4), 431-434.
- Giger, J.N., & Davidhizar, R. (2002). The giger and davidhizar transcultural assessment model. *Journal of Transcultural Nursing*, 13(3), 185-188.
- Kim, S., & Flaskerud, J. H. (2007). Cultural competence column: Cultivating compassion across cultures. *Issues in Mental Health Nursing*, 28(8), 931-934.

Kleiman, S. (2006). Discovering cultural aspects of nurse-patient relationships. *Journal of Cultural Diversity*, 13(2), 83-86.

Lee, C. A., Anderson, M. A., & Hill, P. D. (2006). Cultural sensitivity education for nurses: A pilot study. *Journal of Continuing Education in Nursing*, 37(3), 137-141.

Leininger, M. (2002). Culture care theory: A major contribution to advance transcultural nursing and practices. *Journal of Transcultural Nursing*, 13(3), 189-192.

Maier-Lorentz, M. (2008). Transcultural nursing: Its importance in nursing practice. *Journal of Cultural Diversity*, 15(1), 37-43.

Munoz, C. C., DoBroka, C. C., & Mohammad, S. (2009). Development of a multidisciplinary course in cultural competence for nursing and human service professions. *Journal of Nursing Education*, 48(9), 495-503.

Stewart-Amidei, C. (2006). Culturally competent care. *Journal of Neuroscience Nursing*, 38(4), 205.

Walker, P. (2007). When global is local: The culturally competent organization. *Creative Nursing*, 13(1), 4-5.





**DNP Clinical Inquiry Project Report &  
DNP Portfolio Approval**

Student Name: Timothy S. Neilson, RN, MN, FNP-C

Degree: Doctor of Nursing Practice

Title of Study:

**Barriers to Inpatient Nurse Practitioner Credentialing in Rural Oregon**

APPROVED:

Committee Chair: Gary Laussen, PhD, FNP-BC, RN Signature:  
(name and credentials)

Committee Member: Joanne Noone, PhD, RN, CNE Signature:  
(name and credentials)

Committee Member: N/A Signature:  
(name and credentials)

Michael R. Bleich, PhD, RN, MPH, FAAN  
Dean, School of Nursing Signature:

Date: May 25, 2011

*Submit completed original form to the Graduate Program office.*

Revised 4/2009