Health Care Feasibility Assessment in Columbia County: Vernonia Focus

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Table of Acronyms

ACO-Accountable Care Organization

AHEC-Area Health Education Center

CAH-Critical Access Hospital

CCO-Coordinated Care Organization

CC Rider-Columbia County Rider

CFHC-Coastal Family Health Center

DNP-Doctor of Nursing Practice

DO-Doctor of Osteopathy

FEMA-Federal Emergency Management Agency

FQHC-Federally Qualified Health Clinic

HCP-Health Care Provider

HRSA-Health Resources and Services Administration

IOM-Institute of Medicine

IRB-Internal Review Board

MUA-medically underserved area

MUP-medically underserved population

NP-Nurse Practitioner

OHSU-Oregon Health & Science University

ORH-Office of Rural Health

PA-Physician Assistant

PMG-Providence Medical Group

PPACA-Patient Protection Affordability Care Act

RHC-Rural Health Clinic

SBHC-School Based Health Center

VHB-Vernonia Health Board

Environmental Scan Summary

In response to the House resolution 3590 the Patient Protection Affordability Care (PPACA) which passed in 2010, previous legislation that supports the maintenance of primary health care in rural areas (RHC and FQHC) and specific challenges maintaining health care in rural communities, an environmental scan of Vernonia, Oregon under taken. The scan examined local and county barriers to sustainable primary health care, available resources, strategies used to maintain health care and makes recommendations to improve the feasibility of sustainable health care in this rural setting. The priority of this environmental scan was to examine the resources and barriers to sustainable care in Vernonia, Oregon and to share the findings with local and county stakeholders, with possible recommendations.

In this report, short term longer term strategies are identified, at the local, state, and national level, which could assist Vernonia and Columbia County to improve the ability to provide sustainable health care. In the short term, Vernonia/Columbia County should:

- Develop scholarships for local students interested in health careers.
- Address local debt reduction strategies for providers.
- Educate local and county stakeholders about provider scope of practice.
- Develop an organized recruitment package.
- Set aside funds for recruitment advertising.
- Build partnerships with educational facilities.
- Survey community members.
- Develop health care task force in Columbia County.

Long term policy recommendations at state and federal level:

- Change Federal RHC and FQHC requirements for physician oversight.
- Establish an effective rural clinical business model.
- Reduce barriers that prevent NPs from practicing to the full scope of their license.
- Expand autonomous nursing practice in more states.

The results of this study indicate that the ability to provide sustainable health care in rural communities is largely dependent on local community barriers and resources, population size, financial sustainability, business practice model and policy changes in other parts of the health care system. Recommendations are made for rural communities to work towards improving the feasibility of health care in remote populations through identifying location specific barriers available resources and development of community partnerships.

I: Introduction

Problem Statement

Vernonia experienced two floods within twelve years, which has resulted in a current Federal Emergency Management Agency (FEMA) requirement to relocate the town center out of the flood plain and improve the community's infrastructures. The current health clinic building owned by the Vernonia Health Board (VHB) sits at the bank of Rock Creek and FEMA requires vacation of the building by the close of 2012. The VHB contracts with health organizations or health care providers in private practice to provide health care in Vernonia. The board is comprised of eight local residents within the city limits, each with limited health care background. Currently, no other building in Vernonia meets building codes to house a health care clinic (J. Tierney, personal communication, December 29, 2011).

Purpose Statement

The purpose of this clinical inquiry project is to conduct an environmental scan/assessment of Vernonia to identify barriers and resources that factor into acquiring sustainable health care in Vernonia.

Clinical Inquiry Question

1- Is sustainable health care in Vernonia feasible?

Significance of Proposed Assessment

A limited number of studies exist on how to provide sustainable health care in rural locations. Advance practice nurses are expected to be the backbone of care in rural settings according to the Institute of Medicine Report (IOM, 2010). As a current NP living in a rural setting this practice gap needs further development. Currently, access to health care in Columbia County is severely limited in two out of three of the densely populated areas. No health services currently exist in Vernonia and although temporary services will start in March, 2012, permanent housing for these services has not yet been found. The purpose of this clinical inquiry project is to conduct an environmental assessment of Vernonia to identify barriers and resources that are central to providing sustainable primary health care services in Vernonia, Oregon. The findings of this inquiry project will fuel further research in sustainable health care models in rural settings that are cost effect and meet the needs of rural populations and may serve as a catalyst for policy reform on community and national levels.

II: Background and Significance

Geography

Vernonia is located in the upper Nehalem Valley with the Oregon Coast Range as a backdrop to the west. The old growth firs and cedars challenged early pioneer settlers in 1874, but soon became the lifeblood of Vernonia. Incorporated in 1891, the economy consisted of small family run farms, sawmills and supporting businesses until the railroad was built in 1922. The Oregon-American Lumber Mill, built in 1923 was one of the largest in the United States and earned Vernonia the title of "biggest little city in Oregon" due to the boom in population. In 1957, the mill closed and the population dwindled. Once a thriving metropolis with six car dealerships, large department stores, theatres, restaurants, hotels, multiple taverns and brothels it became an isolated rural community with population numbers averaging around 2000 over the past fifty years (Vernonia Pioneer Museum Association, 2010).

Vernonia is a geographically isolated town in the northwest coast range of Oregon. Vernonia is surrounded by mountain passes with elevation up to 1,400 feet. Access includes three state highways; highway 47 from Hillsboro/Forest Grove, Scappoose Vernonia highway from the Scappoose/St. Helens area and the Nehalem highway 47 from Astoria with an alternate access route to Clatskanie off of Hwy 47 north. Vernonia, a high valley, sits at 620 feet and traps many weather systems and precipitation. Any high water conditions/snow fall or wind leaves Vernonia isolated, completely cut off from surrounding communities or resources. Late fall through early spring storms result in frequent power outages and residents typically experience up to three weeks without electricity.

Transportation

Public transportation from Vernonia to larger population centers is extremely limited. The Columbia County Rider (CC Rider) system serves the county, but mainly serves commuters. CC Rider provides a shuttle type van that seats approximately 12 riders. Two shuttles per day travel out of Vernonia north to St. Helens and south to Hillsboro at 6:30 am and 4:30 pm (CC Rider, 2012). For the frail elderly or parents of toddlers these systems are far from ideal as they require the user to be absent from home and community for most of the day. Residents with health care appointments frequently need friends or partners to drive. Due to transportation issues, those with lower incomes who need well-child checks or routine primary care often postpone appointments or preventative care.

The community's geographic isolation, but proximity to the greater Portland Metropolitan area results in a large number of commuters. Over 50 percent of Vernonians travel 45 minutes or more to their places of employment which is nearly four times the national average (Census, 2010). However, the drive can be a dangerous one. The roads are not well maintained; do not have adequate shoulder or turn outs, lack vehicle escape ramps, often run close to the river with limited guard rail. Furthermore, most of the highways in and out of Vernonia lack reliable cell phone service. Wildlife, a significant road hazard, is frequently in the road which is consistent with a rural environment. Additional transportation barriers include mountains and fog. In addition, fully loaded log trucks, traveling at high speeds use these highways to transport the region's natural resource and this increases the number of accidents and risk for travel in this area (Ward, 2007).

Population

Oregon

Oregon is comprised of 36 counties with many that include pockets of rural communities or counties that are entirely rural (ORH, 2011). Health practice models developed in urban or suburban settings cannot adequately address the health care needs of rural residents (Long & Weinert, 2011). Rural communities require models unique to the rural community situation that focus on the special needs of the rural community, such as the community culture, attitude of independence, lack of access to specialty care/alternative care, and geography of the community (Weinert & Long, 2011).

Little data or theory base exist to guide nursing practice in rural populations and key concepts relevant to rural dwellers affect the feasibility of health care in these areas. These concepts include; health beliefs, isolation, distance, self reliance, lack of anonymity, outsider/insider and old timer/newcomer. Ethnographic studies suggest that rural populations have distinct health care needs that can be similar across companion rural communities with shared geography, climate, and industry, but significantly differ from urban and suburban cultures in health care needs and attitudes (Weinert & Long, 2011).*Columbia County*

ORH identifies Columbia County as a rural county with two sub county units, Clatskanie and Vernonia, that have critical health care needs and Vernonia is the most isolated (ORH, 2011). Columbia County, with the county seat located in St. Helens, has just over 49,000 residents. The major industries are agriculture, logging, fishing and tourism (Census, 2010). The county spreads over 657 square miles with an average of 75 persons per square mile (Census, 2010). The median household income is 55,290 dollars with an 88.3 percent high school graduation rate.

Vernonia

Today Vernonia has 3,709 residents with approximately 1,500 in the city proper (Census, 2010). The town is not ethnically diverse with a 96 percent white population, 25 percent live under the 200 percent federal poverty level and a third are under age 18 (Census, 2010). Logging remains an active industry in Vernonia and many logging dollars support the local infrastructure.

Demographics

The 2010 census data indicates that Vernonia demographics are: 29.9 percent under the age of 20, 18.6 percent between the age of 21 and 34, 13 percent between age 35 to 44, and 26.8 percent between the age of 45 to 64, 7.1 percent between the age of 65 to 74 and 4.6 percent who were 75 years old or older. The median age is 32.1 years with relatively equal numbers of male to female ratio. Vernonia residents are less educated than Columbia County residents and Oregonians. Vernonia residents who have a bachelor's degree or higher was 10.4 percent compared to 14.0 percent in Columbia County and 25.1 percent in Oregon (Census, 2010). Lack of education contributes to fewer economic opportunities, which may increase delays in health care and increase health disparities.

History of Health Care in Vernonia

Historically

Health care in Vernonia was provided by a local midwife and the occasional nurse during the pioneer days of Vernonia. With the building of the Mill in the 1920's, a country doctor had a home based practice and provided care in the community in trade for services until his death in the late 1950's (R. Wilson, Personal Communication-Vernonia Historical Center Curator, and January 30, 2012). Vernonains would commute into the Portland metroplex for health care, or manage their own health care after the demise of the town provider. However, midwives

retained a strong foothold in the community, but this limited practice scope did not meet the town's needs.

In 1981, the non-profit VHB formed with the purpose to provide basic health care to Vernonians (M. Krahn, personal communication, December, 20, 2011). Concerned individuals in the community identified a need for primary care services with focus on families who fall into low socioeconomic status or are uninsured. In 1985, Columbia County Public Health Department provided the first formal services. A county public health nurse traveled into Vernonia two to three days a week and provided care with emphasis on family planning, immunizations, and mother/baby services. The services were limited in scope and access and did not meet the needs of the population (no primary care services). In 1991, the board contacted the Tuality Health Care system to request assistance locating a health care provider willing to practice in Vernonia. Laura Nichols, PA moved to Vernonia and provided primary care five days a week and after hours as needed for 10 years.

Past Decade

In 2000, Nichols informed the board of her intent to retire in the upcoming year. VHB contacted Providence Medical Group (PMG) to request assistance with her replacement. In 2001, Dr. Phyllis Gilmore, MD a Providence employee, moved to Vernonia and practiced until her retirement in 2011. Dr. Gilmore had expected to share the practice with a nurse practitioner (NP), but Providence was unable to recruit and retain to the position (P. Gilmore, personal communication, February 2, 2011).

In the past twelve years the clinic building has been flooded twice (1996 & 2007). Providence repaired the building, but would not replace all of the medical equipment due to possible future flooding (x-ray machine). In 2010, the VHB requested funds from Providence to build a new clinic building in a new location, or bring an existing building that was out of the

flood plain up to code. Providence declined to invest in the community at this level (VHB, 2010). The relevance of this information pertains to the need/requirement to move central services out of the flood plain per FEMA mandate.

Past Year

The VHB requested assistance from Coastal Family Health Care (CFHC) in Astoria to help locate funding to build a federally Qualified Health Center (FQHC). The VHBs goal was to improve access to care for Vernonia residents, as well as to obtain a new clinic. The VHB felt that this was the only option to obtain a building as the current building is required to be vacated by December, 2012. The current PMG provider refused to be in the employ of a FQHC (she did not provide rationale) and tendered her resignation effective June, 2011. She abruptly left the practice early than scheduled for personal reasons in February, 2011. Furthermore, PMG decided to close the existing clinic based in part on the knowledge that the board was seeking an alternative model to care. Currently, many residents are fearful, angry and blame the VHB for closure of the clinic, which has left many Vernonians without convenient health care.

Currently

The most recent clinic closure was operated by PMG who closed on December, 2012. The Vernonia Health Board (VHB) owns the building and PMG donated all supplies and equipment except for computers when the clinic closed. The VHB, seeking a solution, has entered into a tentative agreement with an outside independent practitioner.

The new practitioner will use the VHB building, equipment and supplies to provide temporary services composed of preventative, primary, and limited urgent care services starting in March 2012. The provider will not provide chronic pain management, psychiatric medication management, or obstetric services. However, the provider plans to create a referral network for

these uncovered services, but this will require patients to travel outside Vernonia. The clinic intends to offer services three days a week from nine to five pm. The provider will not offer a sliding scale for uninsured patients.

The VHB or the practitioner can terminate the agreement with one month's notice. Unfortunately, these services are only a stop gap measure in an effort by the VHB to continue to provide some level of care in the community. Additionally, this measure will prevent financial impact to partner health care organizations in Vernonia (pharmacy and dental clinic) until a stable primary care clinic can be established.

Challenges to Meeting Healthcare in Vernonia

Columbia County Critical Access Hospital

Mountain passes divide Columbia County into three distinct geographic locations. The geography directly affects how to meet the county's health care needs. In 2001, the Columbia Health District, ORH, Northwest Oregon Economic Alliance and Port of St. Helens funded a project known as the Columbia County Health Partnership. The objective was to improve the health status and health resources for residents in Columbia County. The twenty three member partnership met three times and reviewed key informant interviews, health statistics and health review documents. Additionally, they traveled to other rural communities that shared similar characteristics to St. Helens in order to identify possible solutions (Columbia County Health Partnership, 2002). After reviewing data, the committee decided that the county needed a critical access hospital (CAH). This is a hospital with limited services that offers 24 hour urgent/ emergency services, patient stay is limited to a maximum of 96 hours and is less expensive to operate compared to a full service hospital.

A bond measure to build this hospital (measure 5-123) was put before voters and passed in November, 2004. The measure created a health district with the purpose to construct and

operate a CAH. Columbia County residents within the health district (not Vernonia residents) received an annual tax increase of 38 cents per 1,000 dollars of a home's assessed value for this purpose. The partnership purchased property for the future hospital site and used funds to support the Columbia County Public Health Department. Plans to build and operate a CAH ceased after the 2010 election. In November 2011, measure 5-209 stopped the collection for the CAH, but no word of refunds or new CAH plans have emerged. Currently, allegations that measure 5-209 exceeded legislative authority and violated the State of Oregon's constitution are under review.

However, the CAH would not meet the needs of Vernonia residents due to its location. It is closer and safer for most residents to travel into Washington County for urgent/emergency care than to St. Helens. Moreover, I included this episode in Columbia County's recent history to illustrate the difficulties Columbia County has encountered in its attempt to provide healthcare to the region. In addition, Columbia County residents are disinclined to financially support health services after this episode and it is a loaded topic for Columbia County officials.

Multiple organizations and individuals have attempted to resolve the health care access issues in Vernonia and in Columbia County. The Program director for the Area Health Education Center (AHEC), Lisa Dodson, MD., and a member of the ORH, Justin Valley, question if one solution can work for the entire county, or if three location specific resolutions are needed for the major population centers, Clatskanie, St. Helens, and Vernonia (L. Dodson, personal communication, December, 4, 2011; J. Valley, personal communication, December, 22, 2011).

Schools

Families were moving out of Vernonia due in large part to the lack of adequate buildings for the youth to attend school, and lack of adequate school facilities prevented

recruitment/retention of health care providers to the Providence clinic. This loss of revenue has hurt the local economy. In response, state and local officials made rebuilding the schools a priority in Vernonia. In 2009, a 13milion dollar school bond was passed by the citizens of Vernonia to support building new schools (Oregon Solutions, 2012). Currently, the new schools in Vernonia are under construction, but the building has a short fall of eight million dollars with an opening date of September, 2012 (Vernonia School District, September 2011).

Political Climate

Three county commissioners govern Columbia County with each serving a four year term. Currently members include Tony Hyde from Vernonia, Earl Fisher from Clatskanie and Rita Bernhard from St. Helens. Commissioner Hyde's stated priority is funding for the new school, not seeking funding for health services (T.Hyde, personal communication, April, 17, 2011). Part of the commissioners' reluctance to pursue funding for health care is related to the collapse of the Columbia County Health District related to the CAH which left many constituents angry and confused. "We are [Vernonia] still searching for help to fund the schools" (T. Hyde, personal communication, April 17, 2011). At the state level, Senator Betsy Johnson has been pursuing funding streams for health care in Vernonia and has written letters of support for a FQHC. The senator has met with the VHB and continues to monitor the healthcare situation. However, Betsy Johnson will not publicly advocate for health care services until the schools in Vernonia are completely funded (B. Johnson, personal communication, January 23, 2012). At the time of this paper the political figures are concerned about taking any focus off of funding the schools.

Sustainable Model

To date, having a larger health care organization such as Tuality, Providence, and Columbia County who provide an employee health care provider (HCP) has been a successful model for continuity of care in Vernonia. HCPs who provide healthcare in Vernonia, and choose to live in Vernonia avoid the commute into Vernonia, a minimum of thirty miles. However driving, which may be an hour or more of drive time in good weather conditions has seemed to be a barrier. Two providers in the past thirty years have lived in Vernonia and each of these providers worked in Vernonia for ten years. The providers who have commuted into Vernonia have only worked an average of 12 months or less. When local HCPs chose to leave practice in Vernonia, key issues cited included lack of adequate elementary educational opportunities for their children and practice isolation. None of the previous health care providers chose a private practice model. In summary, the most successful healthcare model has been a larger health care entity satellite clinic.

Economics

The local community and the VHB lack the funds to finance or remodel a new building, without outside funding. Currently, schools in Vernonia and relocation of the public utilities are the towns' priorities. Community funding is currently tied up in increased utility rates and property taxes which are currently funding the school bond. In order to finance a new clinic building, financial sources need to be obtained. Consequently, the VHB applied for a 600,000 dollar Health Resources and Service Administration (HRSA) new access grant from the Federal Government in March 2011specifically to fund a new building out of the flood plain (VHB, March, 2011). Unfortunately, the grant was denied in September, 2011 (VHB, September, 2011). Although approached, the new practitioner is not interested in investing in or partnering with the VHB to build a new building (VHB, December, 2011).

Furthermore, the VHB is currently paying all expenses and utilities in trade for professional services however this cannot be sustained for more than six months with current resource streams. The incumbent practitioner has reported that he would be able to transition to paying expenses ***if*** the patient volume is stable and sustainable. How these variables will impact the ability of the VHB and the practitioner to maintain limited services in Vernonia is unknown. In addition, this plan will not provide access to care for many of the local residents of Vernonia and those without insurance will experience the greatest disadvantage under this plan. More information on economics is contained in appendix E.

Rural Considerations

Designation of Underserved Area

To date, Oregon has 131 rural service areas which have increased from 105 in 2008 (ORH, 2011). Columbia County has three distinct service areas separated by significant geography; Clatskanie, St.Helens/Scappoose, and Vernonia (ORH, 2011). The Office of Rural Health (ORH) designates the Vernonia zip code, 97064 as its own service area with a large medically underserved population (MUP) in a medically underserved area (MUA) (ORH, 2011). These underserved areas are defined as areas that contain a population of 800 to 1,000 or more people, are not smaller than a zip code and have contiguous geography (ORH, 2011). The ORH (2008) uses five variables to measure access to health services in rural areas; percentage of primary care visits met, ambulatory care sensitive conditions, travel time to nearest hospital, comparative mortality ratio, and incidence of low birth weight which is considered a better overall indicator than infant morbidity.

In the past, the clinics that have operated in Vernonia under Tuality and Providence health organizations have retained the designation as a Rural Health Clinic (RHC).

One requirement to operate as a RHC is a mid-level provider in the clinic at least 50 percent of the time (HRSA, 2006). Providence was unable to meet this requirement in the most recent clinic, thus Vernonia has lost the RHC status. Providers who serve in these areas qualify for loan repayment with current RHC status. As a result, there is no current loan forgiveness available in Vernonia without the RHC designation, which makes it difficult to attract and retain health care providers.

According to the ORH, the number of primary care visits needed in Vernonia was 9,935 in 2010, but only 4,133 were actually accommodated. Nearly 60 percent of primary care visits were unmet in Vernonia in 2010 -with Providence in full operation (ORH, 2011). This calculation includes a Western adjustment, which indicates the percentage of unmet need could have been higher (Hing & Burt, 2008). In addition, the closest (FQHC) is over thirty miles away, at least a forty five minutes travel time.

According to the numbers, many individuals in Vernonia are going unserved or underserved, and there is probably a correlation to the recent loss of RHC designation. The RHC status allows providers to be reimbursed at a higher rate Medicare/Medicaid rate. The PMG limited the number of Medicare/Medicaid patients due to loss of income on these patients, but if they had retained the RHC status this may have changed the financial outcomes for the clinic and Vernonians may have had health care today.

Cultural Consideration

Acknowledging that Vernonia is unique as a culture and making accommodations for the culture is an integral part of providing health care services in any rural community (Weinert & Long, 2011). Providence operated a clinic in Vernonia for the past ten years, but did not alter its

standard operating procedures to accommodate Vernonian culture or its unique health care needs (rural mentality, pharmacy access, distance or access to specialist care)

Vernonia residents rely on each other and posses a true sense of community. Vernonians are rugged, stubborn, and self reliant, with a close knit family feel at the heart of its culture which sets it apart from urban settings. In rural communities, outsiders must earn cultural competency and acceptance- it is not automatically granted. Residents in remote communities want and need health care services, but unfortunately health care services can fail in these communities due to outsider status. In small communities, the hiring practices of local residents can positively or negatively affect the ability of the clinic to stay in practice. Frequently, these cultural aspects are over looked on a balance sheet when considering if an area can maintain sustainable health care. Thus, these cultural aspects require careful examination before proceeding. Some models suggest that growing you're a local provider in these communities may work best (Weinert & Long, 2011).

III: Literature Review

Introduction

Studies' looking at the sustainable health care models in rural or remote locations in the United States constitutes a small body of literature. Other countries such as Canada and Australia with large numbers of rural populations have contributed a large portion of the data found in the literature, but this data has limited application in America's system of health care. This section will address the barriers that rural populations face in finding and implementing sustainable health care models for primary care services. The findings of this inquiry project will inform further research in sustainable health care models in rural settings that are cost effect and meet

the needs of rural populations. Hopefully this paper may serve as a catalyst for policy reform for the local community as well as national levels in the United States.

Search Strategy

A review of the literature was conducted accessing two electronic databases, CINHAL and MEDLINE (Ovid) using key words that included, rural, practice models, health care, rural populations, and sustainability. The search dates were from 1950 to 2011and included published studies with full text available in English.

Synthesis of Relevant Literature

In 2011, 28.1 million Americans lived in rural, remote or sparsely populated areas. Oregon census data indicates that 2.7 million inhabitants lived in rural locations in 2010 (CDC, 2010). The lack of standard definition in the literature makes comparative studies difficult to compare and further complicating the picture is that definitions change from federal, state, or county designation (Hunsberger, Baumann, Blythe & Crea, 2009). In this review, the focus is on rural populations with less than 10,000 individuals in a specific geographic designation. These populations often struggle to maintain medical services within their communities. “Ongoing evaluations of successful rural primary health care models that are sustainable in our rapidly changing health care environment are of key importance to meet the needs of this undeserved population” (Tham, Humphreys, Kinsman, Buykx, Asaid & Tuohey, 2011).

Many common factors influence the ability of rural communities to provide sustainable medical care and one of the largest indicators is the population base. Other key aspects beyond population base that affect sustainability include; viability of revenue stream, recruitment and retention, practice isolation, continuing education, community support, occupation and education opportunities for family members, school structure, flexibility of scheduling, and lack of

anonymity (Ellsbury, Baldwin, Johnson, Runyan, & Hart, 2002; Hunsberger et al.,2009; Humphreys, Wakerman, Wells, Kuipers, Jones, & Entwistle, 2008; Williams, Ehrlich, & Prescott, 2001).

Practice Models

The literature provides a few examples of successful practice models balanced against studies reporting on the factors that lead to closure of rural clinics, and delineates that in most cases it is not feasible to sustain health care services in rural communities without federal subsidizing (Baldwin & Rowley, 1990; Wright, 2009). According to Humphreys, Wakerman, and Wells (2006), sustainable models in the rural health literature represent health models that were community specific at one point in time, but lack a definitive conceptual framework that demonstrates how components translate into sustainability, or what really drives sustainability.

Wright (2009), evaluated factors associated with long term sustainability in four health centers. The findings indicated that these clinics needed approximately 40% of their budgets from grants and federal subsidies with the remaining 60% from generated income (Wright, 2009). In addition, these clinics had providers that were from the community, or another rural community, they served in the clinic as the health director and tirelessly advocated for the clinic in the community which facilitated strong community ties (Wright, 2009). The findings indicated that federal funding plays an integral role in sustainability due to serving a patient mix that is disproportionately low in income or uninsured (Wright, 2009).

Individual rural communities developed successful models indigenous to a community based on what worked locally separate from urban models based in theory on rural health care (Baldwin & Rowley, 1990). Practice model success is closely tied to the population base. Solo practice arrangements require a population base with a minimum of 1500 individuals but

financially stability is more consistently found in a population of 4000-6000 individuals. Although there is increasing recognition that rural residents cannot depend on the solo practice model-in populations between 1500-3000 they remain the primary model for health care, but have high rates of provider turnover and " burn out" (Baldwin & Rowley, 1990). The reasons for this arte discussed later in the paper.

Additional models that developed are consortium arrangements, National Health Service Corps, Urban and Academic Outreach Programs and hospital sponsorship as an alternative practice arrangement. Many of these models are partially funded/subsidized through government revenue streams and often rural communities are leery of accepting this type of model due to their beliefs about funding (Baldwin & Rowley, 1990; Bolin, Gamm, Vest, Edwardson & Miller, 2011; Wright, 2009). Additionally, loan repayment models such as the National Health Service Corps have high turnover rates and face local challenges due to insider/outsider beliefs of small communities (Long & Weinert, 2011).

Baldwin & Rowley (1990) showed that populations below a certain level require some level of public/private funding to establish and maintain a sustainable practice. The make or break point for a private practice to be self supporting falls somewhere roughly between populations of 2000-3000. Many rural communities are resistant to subsidy, but can recognize the importance of medical care in the community and that it feeds the local economy when community members access services in town (Baldwin & Rowley, 1990). Wakerman et al., (2006) supports these findings and delineates that alternate funding is crucial in the starting of a new clinic, but can be detrimental to sustainability over time.

A genuinely sustainable model is not one that is dependent on any one key element for survival. Many models can be sustainable for a period of time, but are often predicated on

retention of a specific provider, required amounts of federal funding, or a positive rural economy. Many communities grasp at quick fixes in an effort to keep or bring health care services into their communities, but these are not permanent measures. These quick fix overtures by well intentions citizens, health care leaders and policy makers fails to address the underlying causes of instability of health care in rural areas (Wesorick & Doebbeling, 2011). Models that are truly sustainable do not depend on any one element to stay in operation and can weather the changes in economy, personnel changes and flux in revenue streams. (Humphreys, Wakerman & Wells, 2006).

Rural Recruitment and Retention

Provider recruitment and retention can hinge on access to a critical access hospital (CAH) in these remote areas (Moscovice & Stennsland, 2002; Shreffler, Capalbo, Flaherty & Heggem, 1999). Many smaller communities closed the doors to their hospitals in the past decade and in their stead re-opened as CAH's or Medical Assistance Facilities (MAF) as an alternative to a full service hospital (Shreffler et al., 1999). The literature indicates that communities with these facilities aid in alleviating provider "burn out" (can share call), ability of community to recruit and retain primary care providers, and the revenue is retained in the county which indirectly benefits the rural communities that the CAH/MAF serve (Hunsberger et al., 2009; Sheffler et al., 1999).

Recruitment and retention is a discussion theme found across many studies that examine sustainability in the rural workforce. Generally, these studies fall into two broad categories; work related factors and personal community characteristics. Work related factors include professional isolation, lack of anonymity, proximity to consultants or referral services, continuing education/training, regular work hours, close proximity to hospital, and access to state of the art

equipment. Personal and community factors include, educational opportunities for family members, employment for spouse, quality of educational system, community acceptance/social ties, and proximity to family (Mathews, Seguin, Chowdhury, & Card, 2011; Williams, Ehrlich, & Prescott, 2001).

Gender and Rural Health Care Provider

Studies examining gender related and generational factors in the recruitment of providers in rural areas can provide valuable insight in the development of sustainable health care models. Mathews and colleagues (2011) reported that providers chose practice locations based on many factors, but the most important factors are personal/family and professional practice. Mature health care providers tend to place a higher priority on career/work first in contrast to new graduates that place a higher value on work life balance with emphasis on family first. (Mathews et al., 2011). Other key elements related to generation found that younger providers were more inclined to practice in rural locations with available locum tenens programs, access to specialists/referral networks, and reasonable on call schedules where as mature providers placed less emphasis on these factors (Mathews et al., 2011).

According to Mathews et al., (2011) and Ellsbury et al., (2001) males are more likely to practice as general practitioners, but many patients prefer female providers for certain types of medical care; prevention, some types of cancer screenings, and female adolescent care. Moreover, female providers are more inclined to discuss psychosocial issues than their male counterparts. However, female providers as a group tend to gravitate to multispecialty groups rather than solo practice and are more sensitive to cultural, social and professional isolation (Ellsbury et al., 2001). The studies by Ellsbury et al., (2001) and Mathews et al., (2011) highlight

the negative impact of awkward recruiting efforts or lack of recruiting efforts as a determining factor in choice of practice location (female providers are more sensitive to this issue). Other findings from this study indicate that providers raised in rural communities more frequently return to those communities *if* the community shows an interest during the provider while in training and actively works on recruiting the provider (Mathews et al., 2011).

Rural Culture Considerations

Rural communities are unique as an aggregate and each rural community is unique unto itself with its own culture. Often, "Grand master plans" proposed by state and federal agencies, larger health care organizations, or urban based practitioners that attempt to provide health care in these communities often fail because they neglect to accommodate the rural community (Baldwin and Rowley, 1990; MacLeod et al., 2008). Regional differences are so great from one community to another community that one model developed in one rural area may not work in another because of historical, religious, economic context, political, social, or geographic variations (Baldwin & Rowley, 1990). Therefore rural communities need unique rural health care models and urban models are proving unsustainable in rural areas (Tham et al., 2011).

Rural individualism, insider/outsider attitudes, lack of anonymity and continuing education are additional factors that affect sustainability. Providers in rural areas have difficulty accessing continuing education due to lack of provider coverage in their absence and travel distance to attend educational events/conferences (Hoffart, Schultz, Ingersol, 1995; Hunsberger et al., 2009). Personal and professional relationship boundaries blur in rural practice and some providers see this as an intrusion of personal time and space. It is difficult if not impossible attend to activities of daily living in a rural community without crossing paths with patients and

many patients seek medical advice, or open a dialog about their health care in public venues(Hunsberger et al., 2009; Long & Weinert, 2011; Scharff, 1998).

Self reliance and rugged independence indelibly mark rural communities and the concept of caring for one's self has ramifications related to providing health care in remote areas. This attitude affects the way care is accepted and utilized which directly affects survivability of health care in this population (Long & Weinert, 2011). Typically, individuals living in rural communities less than 10 years are still considered "outsiders" or "new comers" and must earn trust in these communities. It is not the nature of rural communities to roll out the welcome mat for outsiders even if they may possess a valuable/needed skill. This attitude from the community and how the provider addresses this cultural difference is a factor in providing sustainable health care (Long & Weinert, 2011).

Further investigation into models that meet the needs for rural community members is necessary to ensure equitable access to care and to reduce the widening gap in services between urban and rural populations (Tham et al. 2011). However, successful rural health care models are not commonly reported in the evidence base; however, but it is clear that a one size fits all method does not work in rural communities (Humphreys et al., 2008; Tham, et al., 2011).

Other Sources of evidence

The rural community of Vernonia Oregon is 45 miles (at least 60 minutes) from Portland, Oregon and requires traversing over a mountain pass in any direction to gain access to services outside the community. These mountain passes are significant because in the late fall through early spring they are at times impassable due to weather. The clinic that recently closed operated with one provider and was an example of a target clinic- that accurately reflects the lack of a sustainable rural health care model -which provided the basis for this clinical inquiry project.

The clinic saw patients from Vernonia, but roughly 1/3 of the patients seen were from surrounding smaller rural communities that also lacked without primary care in their communities. This catchment area into the Vernonia clinic, coupled with limited availability of the provider led to closure to new had enrollment of new patients that began in February 2011, until its closure in December 2011 (Vernonia Health Board, personal communication, 2011).

Stephen Van Rope, FNP, the sole provider from the closed clinic (Providence Group in Vernonia) reported that in a given day he only had time to see 15 patients because most of these patients had chronic/complicated health conditions, which led to extended visits. Van Roper stated, "The chronicity, complexity and time requirements for effective medical management are exponentially increasing, and it is more critical in rural communities. The medical model allocated visit time is too short, the patients too complex… patients encounter insurmountable barriers to access alternative resources outside their community. The clinic and patients are all on shoe string budgets. We need better management tools for chronic care in rural communities and a model that will work to maintain services for rural folks in general " (S.Van Roper, personal communication, October 12, 2011).

Robert Guisti, FNP, another previous provider in the Vernonia Providence Group Clinic in 2008, indicated that factors that influenced his willingness to practice in Vernonia were related to employment for his wife, the lack of adequate schools that affected the stability of the town, and the poor housing market in Vernonia. He bought a home in an adjacent community to protect his housing investment which led to a 35 minute commute into Vernonia. He stated, "The community was made up of hard working people who were close knit and they deserved health care, but the personal sacrifice was too great for my family at that time. After a year of practice

and commuting I choose a practice that was closer to an urban center instead of the difficult commute into Vernonia" (R. Guisti, 2012 personal communication).

IV: Methods

This project utilized interview methods exclusively. The three densely populated areas in Columbia County were chosen for data collection. Semi structured interviews were conducted with consenting key informants identified as stake holders in Columbia County. The stakeholders were identified through their political affiliation and community leadership. Contact was made by phone or e-mail to request participation.

The interviews were digitally recorded. The interviews took place between February 2012 and April 2012. Interviews took place in person or by phone and lasted approximately 30 to 60 minutes. Those interviewed were asked about their health care background, involvement with Vernonia, or Columbia County to date, and what they see as barriers and solutions to sustainable health care in Vernonia. Audio tapes were reviewed for reoccurring themes for the study.

An interview guide was used and themes identified. I did not use a formal qualitative narrative thematic analyses rather themes were identified by frequency and occurrence. As this scan could be considered an early pilot inquiry and environmental scans traditionally do not use this method until areas requiring deeper understanding are identified.

Timeline

November 2011-Complete
• Identify project • Formulate scope of project

- Build committee
- Submit committee form
- Attend all Vernonia Health Board Meetings
- Work on projects/assignments with Vernonia Health Board
- Windshield survey Vernonia
- Draft a Log book to record hours
- Assemble note books to track documents

December 2011-Complete

- Meet with committee to draft boundaries of project-Environmental Scan
- Draft CIP outline-have reviewed by committee
- Draft CIP document
- Meet with ORH/interview Justin Valley
- Continue meeting with VHB
- Continue on projects/assignments with board
- Document hours in Log

January 2012-Complete

- Submit first draft of CIP 1/9/2012 without literature review
- Meet with faculty advisor to review CIP document progress
- Complete literature review
- Write up Critical Decision Points for VHB (paying services for provider vs. loss of

capitol related to Providence equipment)

- Interviews with Marie Krahn/Bill Hack/Jim Tierney/ Ernie Smith/ Tony Hyde
- Transcribe notes from interviews
- Continue with VHB meetings
- Continue with assignments/projects with board

February 2012- In progress

- Meet with advisor 2/3/2012 to review progress before Proposal Defense
- Correct edits to first CIP draft
- Continue refining literature review
- Proposal Defense 2/10/2012
- Interviews with key informants in Vernonia
- Review interviews and document salient themes
- Continue with VHB
- Continue with assignments/projects VHB-move Dr. Miller in to clinic/press release/draft and sign contract with Dr. Miller
- Update CIP Log

March 2012

- Meet with Faculty advisor
- Re-Write CIP
- Interviews with key informants
- Listen to interviews to identify themes
- Continue with VHB

• Continue with assignments/projects VHB-update from Miller on clinic panel • Update CIP Log
April 2012
• Meet with advisor • Meet with Committee to review data • Results section of CIP • Draft Power Point • Continue with VHB • Continue with assignments/projects • Final Log Update
May 2012
• May 9nd Final Draft of CIP to Committee • Make any last minute changes to CIP and submit by May 9, 2012 to Sakai • Review Power Point with committee chair and make changes • May 24th, 2012 CIP defense

Results

Sample

A sample of 28 individual stake holders and policy makers were identified as qualified to evaluate their perceived understanding of the feasibility of sustainable health care in Columbia

County, with specific focus on Vernonia. Eight interviews (29 percent) were conducted with individuals from outside Columbia County who are involved in rural health care practice or practice model development for rural populations 26 of 28 (93 percent) of identified stakeholders and key informants were interviewed. The sample profile is summarized in appendix A.

Vernonia contacts were the largest contributors to the sample at 13 (46 percent). Two (7 percent) did not return e-mails or phone calls after three attempts and were excluded without an attempt to clarify their reason for not participating.

Interviews were completed face to face unless distance or time constraints presented a significant barrier with 76 percent of the interviews completed face to face. The committee agreed that an Oregon Health & Science University (OHSU) internal review board (IRB) approval was not needed for this study as all contacts were public officials speaking on the record.

Findings

Of the 26 key informants interviewed, roughly half had some level of health care background as health care providers. Others had backgrounds working in the health care industry. Themes were identified from the literature and concurrences identified and interviews. Themes were assessed for number of reoccurrences across and within interviews, and assessed for reoccurring themes (Table 1). Themes identified included: barriers to practice, isolation, personal autonomy, educational opportunities for family members, continuing education opportunities for provider, geography, social life, rural repayment, support services, community support, transportation, rural culture, practice models, urban vs. rural models, recruitment, and lack of peer recognition for rural practice. Thematic based chart appendix C. Responses are summarized by theme in Table 1.

TABLE 1

Practice Isolation This theme was mentioned by all health care providers in the sample, but not mentioned by non provider stakeholders as a factor in sustainability. Those in practice indicated that a lack of

collaborative network of providers in the office or in the area increased their level of stress for caring for rural populations. Comments included:

- "There is no one to bounce ideas off or to get a quick second opinion…"
- "It is easy to lose touch with how your colleagues practice…"
- "The level of isolation can be a mitigating factor in retaining a provider."

Lack of Personal Privacy

This theme was mentioned by all of the health care providers that have lived and practiced in the same rural location, but not mentioned by health care providers who do not live in the same community where they practice. It was not mentioned by non provider stakeholders as a factor in sustainability. Those in practice felt that there is no personal privacy for the practitioner or the practitioner's family when they live in the community where they practice. The lack of privacy was a barrier or benefit depending on the individual provider's perception. Comments included:

- "When we moved to town I had no idea that my food choices, if I frequented a bar, or what movies I rented would be noticed by the folks in town, or that judgments would be made about me as a provider based on these choices."
- "You and your family are always under a microscope."
- "You can't go anywhere in town or to a function without a member of the community wanting to talk to you about a health problem."
- "It can be a nuisance at times, but well worth feeling like one of the family, because you know the community would show up day or night to get your "ox" out of the mire as the saying goes."

Educational Opportunities for Family Members

This theme was mentioned by all health care providers and non provider stakeholders who lived

in a rural community and had school aged children, or by those individuals had who considered practicing/working in a rural community and had school aged children. Those health care providers and non health care providers with no school aged children consistently mentioned the quality and stability of the public school system as a key factor in sustainability for health care in Columbia County and Vernonia. Without a stable public school system, the community cannot sustain the population base necessary to make health care feasible in Vernonia. Comments included:

- "The school system is the anchor in small communities and without it the community dies. We have lost nearly 20 percent of school aged families due to inadequate schooling facilities and many more families planned to leave if we did not provide a new building."
- "If the citizens of Vernonia had not approved the school bond…school I would have closed my practice and moved my family."
- "…maintaining the public school base in Vernonia is the key to the survival of the town…"

Continuing Education Opportunities for Provider

This theme was identified by providers in rural settings without reliable access to locum tenens, but not mentioned by non provider stakeholders. Provider comments suggested that those in solo rural practice must choose between using their personal time, or closing the practice to obtain the continuing education to meet ongoing licensure requirements and to stay abreast of current practice to provide evidence based care. The providers indicated that they need reliable coverage in the practice location in order to obtain the requisite continuing education for their professional practice. Comments included:

- "…out of 365 days in a year I have been out of the clinic 20 days in the last year."
- "…I don't think that the community understands the importance of ongoing education …they just want the doors of the clinic open…"
- "…I use my personal time and money to attend education courses or the occasional conference…creates strain in my family relationships."

Geography

This theme was identified by all health care providers and non provider stakeholders in and outside Columbia County. The geographical barriers of Columbia County and Vernonia were known to those in the community and county. This theme was consistently identified across the sample as a barrier related to recruitment and retention. Comments included:

- "…the geographic isolation was too much for my family…I commuted in to work in the community."
- "…Vernonia is 28 miles from anywhere and at least 45 minutes in good weather…"
- "…flooding, power outages and trees down are part of the deal…"

Housing Market

This theme had two parts and was identified by many health care providers and non provider stakeholders who have lived in rural communities. Many comments were specific to Vernonia in relation to decline in property values since the flood in 2007. Provider concerns over investing in a home in a known flood area, the limited re-sale value and limited housing options available were key elements mentioned in the interviews. Comments included:

- "…I chose not to buy a house in Vernonia because of the depressed housing economy…I wouldn't be able to sell if working in Vernonia didn't work out…"
- "…doctors don't want to live in our housing options…they want nice upscale housing…with good resale option."
- "…[there is] limited new construction in Vernonia…"

Social Life

This theme was mentioned equally by health care providers and non provider stakeholders. Providers indicated that lack of cultural options in the rural setting was a deterrent to choosing to live and work in a rural setting as opposed to just working in the rural setting. In addition, developing social networks that excluded patients presented a challenge in a rural community. Comments included:

- "…the crossover from patient to best friend was challenging… many in your social group were also patients or friends of patients…"
- "…providers want down time and cultural [opportunities] such as theatre, art and fine cuisine, when they aren't working…"
- "…rural communities are good for a tractor pull, but not cultural events, or options..."

Rural Repayment

This theme was consistently mentioned by health care providers. Non provider stakeholders infrequently mentioned this theme and when questioned about their understanding of education debt, or repayment options most had little knowledge on the subject. Political leaders and health board members had a limited understanding about loan repayment. Recognition that they are competing for providers and that other communities may offer better salary, benefits and working conditions was limited. Comments included:

- "…providers make enough in their careers to pay back their debt…right?"
- "… Vernonia doesn't qualify as a rural designation…based on commuter time…"
- "We will lose mid-levels to the urban corridor without increased funding…"

Support Services

This theme was consistently mentioned by health care providers as a limitation for practice stability. Most stakeholders identified the need for support services or wrap around services as a key to building sustainable health care in Vernonia and Columbia County. Lack of a critical access hospital, a staffed and trained EMS, wellness centers, assisted living facilities, and home

health options were cited as factors that limit sustainable health care. In part, this also related to significant spending of local healthcare dollars outside of the county, which does not help to build services in the county. Comments included:

- "…the EMS in Vernonia is fast… [we need] a CAH that meets Vernonias needs."
- "…the county needs a CAH…using ER services spends valuable dollars outside our community…"
- "…these collaborative networks provide a safety net for practice…it's not a choice between support services or primary care…it's a synergy."

Community Support

This theme was infrequently mentioned by providers and non provider stakeholders. This theme was mentioned by providers with concern about patients willingness to utilize a local rural clinic instead of driving out of the community to seek care. Non provider stakeholders discussed this theme with reference to building networks in the community to support services with the local clinic. There were notable differences in ideas regarding effective community support, depending on the individual. Comments included:

- "…I guess my expectation was that local health providers and businesses would make an effort to introduce themselves to the clinic and me as a provider…no one ever made those efforts".
- "…we have a large commuter force in Vernonia…[it's] more convenient to seek care outside of Vernonia when you are out of town at work."
- "…you lose potential patients to urban centers due to commuting…"

Transportation

This theme was identified by most participants and closely identified in partnership with the geography theme. Most participants identified time and distance to drive as a barrier for providers to practice in Vernonia/Columbia County. The limited access to public transportation

was consistently identified by providers and non provider stake holders. Hazardous road conditions related to weather, sharing the road with the logging industry, road condition, (repair, limited guard rails, and no shoulder), lack of cellular coverage and increasing expense were factors mentioned. Comments included:

- "…the log trucks own the road with their speed and size…[trucks] come around corners over the line…"
- "…the commute chased off many would be providers…"
- "…hwy 47 is a killer and known to the Tuality and St. Vincent ER's."
- "In good weather conditions the highways in Columbia County require attention to driving…in bad weather the roads are dangerous due to trees, mudslide, etc…"
- "Cell coverage is spotty at best in most passes in Columbia County and limited again by your service carrier."
- "I never actively thought about barriers to gassing up my vehicle until I moved to Vernonia…power outages…limited hours of access and select locations in county for refueling…"

Rural Culture/Mentality

This theme was sporadically identified by providers and non provider stake holders. Participants comments revolved around the idea that the rural communities in Columbia County had inclusion and exclusion behaviors towards "new comers". Small and geographically isolated communities develop their own unique culture and readily identify those new to the community as outsiders or newcomers. It can take time to be accepted into the rural community. In addition, the mentality of rural residents towards primary care and usage of primary care was grouped in this theme and crosses over with the practice model theme. Many rural residents do not seek care until it is a dire necessity and will frequently refuse referral to urban services. Comments included:

- "People in the Vernonia community are welcoming, but there is a different mindset…"
- "Even though I lived in the community for five years, by many I was still

considered a newcomer…many of the roads and locations in town are named after founding pioneers with generations of community members still active in the community setting."

- "…people in this community seek care as a last resort…"
- "The idea of preventative routine care is lost on most with the mentality of -if it ain't broke don't fix it."

Practice Models

This theme was consistently mentioned by providers and not mentioned by non provider stakeholders. Those who have practiced in both rural and urban models noted a difference between practice models in these different locales. Providers noted that without available wrap around services (specialty referrals, continuing education, and alternative health care modalities) available in rural communities they spend more time locating services to meet the needs of the patient population and often are not successful. Some providers felt over burdened or experienced "burn out" in the rural setting due to being the only provider for the community. Providers mentioned concerns related to confidence in their practice ability. Comments included:

- "…in town [urban setting] I can refer a patient to a specialist with ease…"
- "…the only education my patients receive about their disease process is from me…no health educators available…"
- …rural residents do not access care in the same timeframe or for the same reasons that urbanites do…it's a different model of care…"

Urban Business Models vs. Rural Business Models

This theme was not mentioned directly by providers; however, their comments suggest that this them is a component of sustainable care. A few of the non provider stake holders identified this theme. The urban business models for health care practices that include; fees for no shows, cancelation of visit if ten minutes late with a fee, time limits on office visits, firing of patients if patient is non-adherent to care plans or deemed "difficult" and the numbers of health issues allowed during an office visit are practices that rural communities are unfamiliar with. Larger

health care corporations that open clinics in rural communities often do not adapt their business model to community expectations. These corporations often view other health care providers in the area as competition and do not attempt to form networks and to collaborate with community individuals. This competitive practice makes it difficult for small communities to support health services operating an urban business model. Comments include:

- "Providence was asked to help develop and staff the school based health clinics (SBHC) and they felt that this would undermine the financial viability of the Providence clinic…they viewed it as a threat…"
- "…the fee for service was more than most could afford without insurance…"
- "…we live in a place where barter is a form of payment…"
- "…Verdura is making connections and holding health education classes with the naturopath in the grange [community meeting hall]…"
- "…a metropolitan model doesn't meet the needs of this community…"

Recruitment

This theme was identified by health care providers and non health care providers. The providers listed poor recruitment tactics e.g. limited information on housing, schools, loan repayment, alternate employment opportunities for spouse, community support, clinic budget with payer mix, community practice expectations and travel. These recruitment issues were often incorporated by novice health boards, and seen as multiple barriers to recruitment. Clinics in rural locations face barriers to finding a rural practitioner due to limited or ineffectively applied funds for advertising for the position. This presents challenges for clinics trying to recruit a provider, and for a provider to find a rural location. Comments included:

- "We had been looking for a provider, but couldn't afford the fee to advertise on the Oregon Rural Health Site…"
- "… I took the job without really considering the travel time and how hard it was to get over the pass in the winter…[and the inclement weather] wind and when it rains…"

• "I thought the board would do more to support the provider in the community…" • "There are no cultural enticements for a provider…they want to get into practice, get a BMW, enjoy fine dining, theatre…all we can offer is salmon fest and the occasional tractor pull…"
Lack of Peer Recognition This theme was not identified by any health care providers or non health care providers in this study. It was identified in the literature.

Discussion

This study's important finding was that different stakeholders in Vernonia and Columbia County do not adequately understand the barriers to creating a sustainable health care system. With key stake holders unclear about how to create sustainable health care, they cannot effectively engage in pursuing avenues to create sustainable health care.

This study author, an OHSU doctor of nursing (DNP) student was invited to join the VHB in January 2011 and was an active member of the VHB before and throughout the duration of the study. The VHB was interested in developing a health care model that could improve health care access for Vernonia and meet pending building requirements.

I was participating in a clinical rotation in late 2011 in the Providence Medical Group clinic in Vernonia during the abruptly announced retirement of Dr. Gilmore which prompted Providence to make an executive decision to close the clinic by December 2011.

Prior to these events, the VHB knew that the health clinic building was scheduled for closure by the end of 2012 due to FEMA requirements. This led to the need to identify a new location and building for health care services. Providence had declined to assist VHB to build a new clinic after it became apparent that no properties in Vernonia met the building code

requirements for a clinic without considerable renovation expense. To address this development the VHB was pursuing an FQHC model, which had been initiated prior to the decision to close the clinic. The board was in the process of drafting a HRSA grant application under the category "new access point of care" to fund the FQHC model. The grant was submitted April 2011.

Context

Federal Level

In 1977 policy makers developed the Rural Health Clinic (RHC) model in an effort to meet the needs of rural and underserved areas. In 1989, the Federally Qualified Health Center (FQHC) model was developed as another option to meet health care needs of rural and underserved populations. In 2010, the Patient Protection and Affordability Care Act (PPACA) increased funding to the FQHC program and to physician training programs to increase the numbers of both.

The RHC and FQHC models were predicated on the ability to staff these clinics with lower cost NPs or PAs and include requirements for physician oversight. The degree of regulation and the physician oversight requirement are possible reasons why there was lower than expected implementation of these practice models and increased costs of operation. These factors may be the limiting factors for the ability of a rural community to afford to implement an RHC or FQHC. Importantly, funding was not significantly increased by the PPACA at the graduate nursing program level (See Appendix E).

State Level

The state has recently released the coordinated care organization (CCO) implementation timeline, and this is an additional confounder for sustainable health care in Vernonia and Columbia County. The effect of CCOs on rural practices and populations is uncertain at best. The state will identify a participating agency as the provider for the county's CCO, and the CCO will be responsible for ensuring access to all the Medicaid patients in a designated area. Medicare patients will be covered by the federally designated Accountable Care Organization (ACO). There is currently no coordination required between these two agencies and it is

conceivable that separate entities could be assigned to oversee Medicare and Medicaid patients further fracturing continuity and sustainability in rural areas.

County Level

The county leadership is fragmented over how to proceed with obtaining care in Vernonia, or Columbia County. After failure of the CAH in St. Helens many of the county constituents do not trust the policy makers to make sound health care decisions for the communities in Columbia County. The failure of the FQHC grant in Vernonia has met with mixed responses from community members. Members of the Vernonia community are questioning the ability of the health board to make the best decisions for the Vernonia community and stakeholders outside the community have met with resistance when attempting to offer support to the VHB.

Vernonia

Vernonia's population is sufficient for a small individual practice serving 2500-4000 individuals. The practice may support one to three providers depending on the payer mix and the percentage of the population willing to utilize a community clinic. The budget in a rural setting more readily supports using midlevel (nurse practitioners and physician assistants) practitioners rather than physicians to remain economically viable.

Sustainable health care is unlikely if the financial model relies heavily on only one revenue source to continue to operate. Sustainable rural clinics have multiple funding streams, community networks and support, providers who live in the community or are from the community, and on collaborations with surrounding communities to share resources. When rural clinics base their ability to operate on a sole provider, or rely too heavily on a single funding steam, they are at risk when there are unforeseen changes in circumstances.

Since February 2012, Vernonia has had a health clinic that is operated by Dr. Miller, DO and staffed with one physician assistant employed by Dr. Miller. The clinic was opened February 20th, 2012 and recently went from three to four days per week of operation. The clinic filed their application for RHC status on February 21, 2012 with an average processing time of two to four months.

For the past 25 years, Dr. Miller has been the owner and operator of Verdura Family Wellness, a private medical practice in Hillsboro Oregon. Dr. Miller has signed a three month contract with the VHB to provide services in Vernonia. The VHB owns the clinic building and all equipment necessary for practice and the first three months of rent and utilities are covered by the VHB.

May 2012, the VHB will review the contract and anticipates signing a one year lease with Dr. Miller for medical services. Dr. Miller was approached by Columbia County public health in March 2012 with a request to consider being the hiring entity for the new SBHC in the new Vernonia School opening September 2012. In addition, discussion to request Dr. Miller to be in the CCO network of providers is in the planning process. If Dr. Miller does not want to be part of the CCO network, then patients in Vernonia who are covered by the Oregon Health Plan (OHP) would have to seek care outside of Vernonia. If Dr. Miller chooses not to be in partnership with the CCO, this places a hardship on a portion of the population in Vernonia that are already economically disadvantaged.

To date, Dr Miller has limited his personal capital investment in the clinic in Vernonia and has informed the VHB that he intends to open another full service clinic in Hillsboro in the summer of 2012, but intends to keep running the Vernonia clinic as a satellite clinic. He is building a collaborative network that includes the naturopathic physician in Vernonia and a mental health provider who travels to Vernonia one day per week to see patients in the clinic. This practice model supports Dr. Miller's practice values of holistic medicine, but may not meet the needs and desires of all Vernonia community members. (See Appendix D for influencing factors)

Interpretation

Stakeholders in Columbia County appear to need more education about the barriers in the county to obtaining sustainable health care. Most lacked an understanding of the different types of practitioners and their scope of practice. Most also lacked awareness of the challenges that providers face in rural settings and how local, state and federal policies interact to improve or exacerbate this situation, specifically, rural repayment and policies for RHCs and FQHCs.

There were challenges and benefits for me, as a local Vernonian studying this issue. In Vernonia, all of the key stakeholders knew me personally or knew me by name or reputation. This made it easier for me to get interviews with key stake holders. The community allowed me professional credibility and likely due to my insider status; many stakeholders were open and willing to provide information for the environmental scan. However, stake holders may have had unrealistic expectations for what I could and could not do to resolve the health care shortage in Vernonia. These expectations may have complicated some of my professional working relationships. Other stake holders outside of Vernonia have voiced an interest in the findings and have requested a presentation of the findings for their organizations.

The following is a list of barriers and resources specific to Vernonia and Columbia County, but may be applicable in other remote and rural populations with similar geography, industry and population base.

Barriers

- Columbia County has many individuals who have worked on health care sustainability in the past, and continue to do so at present. This may have created many back stories that continue to affect current health care policy work. In the past, the tumultuous working relationships between the county seat in St. Helens and the two small communities of Clatskanie and Vernonia has complicated efforts for the county to move forward to identify and implement health care solutions acceptable to the whole county.
- Currently, the health boards in Clatskanie and Vernonia do not understand the complexity of feasibility or sustainability issues that surround health care in rural areas, or how to recruit services. They are not familiar with the various scopes of practice and the clinic income necessary to sustain professional incomes and practice expenses. Additionally, the health boards were not knowledgeable about educational debt repayment options for practitioners working in Columbia County, nor did they understand the differences in services offered between RHCs and FQHCs. In some instances the boards did not understand that clinics in their area were eligible for RHC and FQHC status. Finally, the health boards did not

know where to advertise for a practitioner, and they do not have funds allocated for recruiting advertising.

- The failed attempt to development a CAH in St. Helens in 2002 and the loss of significant tax revenue led to many constituents in Columbia County unwilling to engage in further tax payer financed health care.
- The public failure of the CAH does not garner confidence from the state and federal policy makers that Columbia County can effectively manage health care issues in their county.
- In Vernonia, the health board has unintentionally alienated state officials and county officials. These officials will work with the VHB, but with reservations.
- The population of Vernonia is barely large enough to support a clinic, particularly with a large commuter population that can conveniently access health care services outside of Vernonia. Geographic isolation presents barriers for nonresident providers to travel to Vernonia.
- The housing market and standard of available housing for purchase by health care provider is limited. The majority of homes in Vernonia are older (+50 years), many in need of repair to meet code with few new homes being built. However, home prices and property tax in Vernonia are relatively inexpensive compared to surrounding counties. The presence of a flood plain and recent flooding in Vernonia directly affected the housing market. Providers express legitimate concern that it may be difficult to sell sale a home if the provider needs or decides to leave the community.
- Lack of well developed rural clinical business model. In the past, large organizations (Providence) have used a metropolitan business model to conduct business in Vernonia and it has not been sustainable.

Resources

- Governor Kitzhaber had issued executive order 10-07 that mandates all state and local organizations assist Vernonia with rebuilding its infrastructure after the most recent flooding.

- Past and current positive working relationship with Ford Family Foundation (possible revenue stream).
- Intel recruitment advertises Vernonia as a nearby community to potential employees.
- Health Board in Vernonia has a building and medical equipment and supplies available for use by provider and is currently working on developing a new clinic site to address flooding issue.
- Vernonia has plans to open a school based health center in the new school. This would provide care for all children of school age and provides the potential to expand, or use the school clinic as a clinic for the community.
- As a result of the floods, public relations and media attention have focused on Vernonia and the new school buildings. This media attention can be re-directed and used to increase revenue stream(s) to work towards more stable health care.
- Vernonia has a new school opening September 2012. The building is a prototype for green building practices with partnerships with Oregon State University and Portland Community College. This will increase the population of Vernonia by attracting families and college students. The partnerships with these college institutions will build bridges for other programs and industries which will increase the population.
- There is an Oregon Health & Science University (OHSU) clinic in Scappoose that has not been contacted as a health care resource stream. OHSU may partner with the VHB to help provide health care in Vernonia. Past OHSU history indicates that as an organization they will not aggressively insert themselves in a community, but will aid communities to develop health services.
- The Forest Health-Human Health Initiative developed in coordination with the Pinchot Institute will help family forest owners pay for health care with carbon credits instead of dollars. Funds raised through payments to the community health care clinic would come from a percentage of the carbon credit payments derived from Vernonia family forests and be earmarked for increasing access to medical care for the community (Matter, 2011).

- The willingness of the community to pull together to improve the community infrastructure for all citizens.

Strengths and Limitations

Strengths

The sample size was representative with an (n= 28), that included the majority of policy makers and key stakeholders in Vernonia and Columbia County.

Limitations

Limitations include cultural and interview biases. In a rural setting, the ideas of the selected stakeholders may differ from other constituents who may have completely different ideas. There is some suggestion that policy maker opinions may diverge from citizen's ideas about county health care.

In an effort to minimize potential confounders the participants were informed that their comments would be de-identified in the study. In a rural community it is challenging for respondents to trust that their comments will be protected and this may have moderated their responses, particularly since the interviewer was known to many of them. The participants were informed that the grouped, identified findings would be shared at the local and county levels which may have altered responses. The interviewer's position as an OHSU student may also have had an effect, since some of the stakeholders have political or financial ties to OHSU.

Using a semi structured interview style allowed flexibility for participants to share their thoughts and information more freely; however, a fixed questionnaire could have produced more quantitative data.

Significant changes in the health care system occurred during the implementation of this study. At the inception of the study, Vernonia had a clinic operated by PMG and the FQHC grant had been declined. As the study unfolded, PMG left Vernonia and the VHB had to make plans for health care without a FQHC plan and no immediate plan for a provider. A provider was

found to provide primary health care services in Vernonia. These changes may have had additional effects on the interviews.

The study's direction was a fluid target and changed rapidly as did the political climate that intersected in Vernonia, in the county and at the state level. As funding came through at the state level for the schools, the political climate changed and placed health care as a priority in Vernonia.

Recommendations

Short Term in County/Vernonia

These are goals or recommendations that the Vernonia community can plan and execute over the next six to twelve months. These recommendations have the potential to improve the chances of sustainable health care in Vernonia and Columbia County.

1. *Educate rural communities about provider scope of practice.*

   Provide education to rural community stakeholders about the scope of practice of mid-level providers. This could be accomplished through the Area Health Education Center (AHEC), Office of Rural Health (ORH), or as part of rural tract health education programs such as the Rural Tract Doctor of Nursing Practice programs offered at Oregon Health & Science University and University of Portland as well as by the Vernonia Health Board and local providers.

   The stake holders in these communities (health boards, city planners, mayors) are suboptimally aware of practice scope, but need this education in order to facilitate guiding and planning for medical care in these communities.

2. *Community development of local scholarships to sponsor providers.*

   In the rural community of Vernonia there are scholarships available for continuing education for high school student and some are available for

individuals returning to school. Many of these scholarships are available through local businesses and private benefactors. The majority of these scholarships do not require the applicant to specify a field of study. The VHB does not currently fund a scholarship. A scholarship developed in partnership with the VHB and the current health provider could support the development of a rural provider.

3. *Assemble recruitment package.*

   Health boards in the county could draft and assemble a recruitment package to attract a provider. This would include up to date information on aspects of the community such as, schooling, transportation, housing, cultural amenities, dining and the like. This could be a useful tool for health boards and provide concise up to date information about the community to the potential provider. This could facilitate a bridge with the new provider and the health board.

4. *Set aside funds for recruitment advertising*

   Health boards and rural communities could start a fund to raise money for advertising for and recruiting a provider. Communities would be better prepared to recruit a provider if they have prepared and had an understanding of available sources for advertising and the associated costs and could do so in a timelier more cost effective manner if funds were allocated in advance.

5. *Build partnerships with educational facilities*

   Vernonia has several universities nearby that can offer support by training students in Vernonia. Oregon Health and Science University has physician, nurse practitioner and physician assistant programs available. OHSU has a rural nursing tract already in place. Pacific University has physician assistant programs and both universities are reasonably accessible for student training.

6. *Survey community members*

   Survey community members to ascertain where they receive health care services and why. Information on what would entice patients to remain in the county for healthcare services would also be helpful. This type of survey was discussed prior to the CAH, but not undertaken. This project could help local and county policy makers make better informed health care decisions for the Vernonia and Columbia County.

7. *Develop health care task force in Columbia County*

   In Columbia County, many dynamic personalities within Public Health and in political positions are challenged to work together for the benefit of the county. Drafting a county-wide healthcare task force with required community representation from all cities in Columbia County may help move sustainable health care into center stage in the county and at the state, or national level.

Long Term at the Federal Level

A number of things that affect healthcare in Vernonia and Columbia County are not under direct local control. Better understandings of these policies may help provide more sustainable health care options in rural areas such as Vernonia and Columbia County. Constituents in Columbia County cannot directly make these changes to state and federal policy; however, they can show their support for policy changes by contacting their state representatives, senators, and governor with requests to support the following policy changes.

1. *Federal Policy - Change RHC and FQHC requirements for physician oversight.*

Lobby to change the RHC and FQHC physician oversight requirement. Garner support from nursing organizations to change this policy to enable more nurse practitioners to practice in rural areas without required bi-monthly physician oversight.

2. *Rural business model development*

   Identify the gaps in urban clinic business practice models that make application in rural areas result in loss of revenue. Draft and implement rural clinic business practice model for application in rural areas.

3. *Expand scope of NP practice in more states*

   Currently, Oregon is one of only four states that allow nurse practitioners to practice without physician oversight. To meet the demand for primary medical care in the rural areas across the United States we need more providers that can practice autonomously (IOM, 2010).

4. *Increase graduate level funding and loan forgiveness.*

   Supporting graduate nurse funding may improve the numbers of available nurse practitioners to practice in rural areas. In addition, and equally important is to increase the availability of loan forgiveness and rural repayment for nurse practitioners to encourage practice in MUP and MUA areas.

Conclusions

The Vernonia community wants what the community cannot afford. The community wants a clinic with a provider available Monday through Friday. They would like a clinic to operate during standard business hours with optional later evening hours on some days and part-time on Saturdays. They want a clinic that accepts all forms of insurance, places no limitations on the number of Medicaid or Medicare and offers a sliding fee scale for those without

insurance. They want laboratory and imaging services, with physical therapy availability. It is unclear that there is sufficient population to support these goals and would at minimum require a commitment by the population to seek and use services in Vernonia instead of outside of the community.

Many of the key stakeholders understand that services may have to be limited, but believe that some level of care is sustainable in spite of constituent's desires. With flexibility, a basic level of care could be sustainable in Vernonia through use of a nurse practitioner as the sole or key provider and community partnerships with resources inside and outside the county.

Further study looking at rural practice models for small geographically isolated communities and development of rural health care business models is needed. Providing training for key stake holders in rural communities about barriers specific challenges for rural communities should be offered.

Dissemination

A written report with the clinical inquiry findings will be shared with the VHB, the Columbia County Commissioners, ORH and AHEC. Participants who requested the final report will receive a copy. In June 2012, presentation of the findings will be scheduled with organizations that requested the findings of the report. The report will also be shared with OHSU faculty and students. A copy of the findings will be available in the OHSU library. In addition, these findings will be submitted for publication in appropriate journals.

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(Appendix A)

Potential Interview List	Rationale for Interview
Vernonia	
Dr. Ken Cox	Superintendent of Vernonia School District 47J. Partnership with planning School Based Health Center.
Jim Krahn	President of Vernonia school board. Partnership with planning School Based Health Center
Ernie Smith	School board member. Private business owner and emergency medical service (EMS) member in Vernonia. Person of interest/influence in Vernonia. Partnership with planning School Based Health Center.
Marie Krahn	President of Vernonia Health board (VHB). Responsible for planning and maintaining services in Vernonia with the board.
Heather Lewis	Head of Vernonia Coalition and health care provider in private practice in Vernonia
Bill Hack	City Administrator –Strategic planning for Vernonia.
Tony Hyde	County Commissioner responsible for working on health care solutions for the county-political county leadership.
Jim Tierney	Director of Columbia County Action Team-connections to Governors office and many political officials. Resident of Columbia County/ Vernonia for 30 years. Has experience with designing sustainable projects in small rural populations.
Kim Tierney	Director of Multnomah County Public Health and resident of Vernonia past 30 years.
Chris Scheuerman, DDS	Private practice dental office in Vernonia in operation for 10 years.
Phil Darrah,RPH	Private pharmacy owner in Vernonia and owner of second pharmacy in Banks-both rural locations. Member of VHB.
Phyllis Gilmore, MD	Previous provider in Vernonia 2001-2011. Employed by Providence.
Josette Mitchell	Mayor of Vernonia.
Clatskanie	
Bill Dennis-Leigh, PA	Owns and operates a rural health care (RHC) clinic in Clatskanie for past three years.
Earl Fischer	County Commissioner
Diane Pohl	Mayor of Clatskanie
St.Helens	

Henry Heimuller	County Commissioner
Laura Jetmalani, PNP	Sole provider at the Sacagawea SBHC in St. Helens
Randy Peterson	Mayor of St. Helens
Sheri Ford	Program coordinator- Public Health Columbia County
Other Key Informants	
Senator Betsy Johnson	Senator for Oregon working on health care issues in Vernonia.
Lisa Dodson,MD	Director of Area Health Education Center (AHEC)
Kim Montee, MD	Operates RHC in Union
Paula Hester	Director of Oregon School Based Health Care Network (OSBHN)
Betsie Theilen	Program developer of the school based health center in St. Helens
Robert Giusti, FNP-C	Previous provider in Vernonia
Stephen Van Roper, FNP-C	Previous Provider in Vernonia
Justin Valley	Office of Rural Health (ORH)

(Appendix B)

Questions for Interview

1- What is your personal background/history in health care? Working in rural communities?

2- Briefly, why do you think Vernonia is having difficulty obtaining sustainable health care? Columbia County?

3- What should be done about achieving sustainable health care in Vernonia? Columbia County?

4- What alternatives would be acceptable to the Vernonia community?

5- Do you have any suggested resources or information on this topic?

(Appendix C)

Themes	Explanation of Themes
Practice Isolation	Lack of practice support from, or contact with other health care providers in area due to rural location
No Personal Autonomy	No private or personal life/every action is known to the community
Educational Opportunities for Family Members	State or condition of school organization/programs
Continuing Education Opportunities for Provider	Ability and access to continuing professional development-inability to leave practice related to practice coverage/distance to events/expense of education
Geography	Isolation, rough terrain, distance to services, entertainment, etc.
Housing Market	Re-sale value of home, or property. Concerns related to ability to sale home/property if unable to maintain employment in Vernonia
Social Life	Limited: cultural opportunities, entertainment in community, interacting with patient population
Rural repayment	Current status to receive repayment for working with medically underserved populations (MUP), or in medically underserved area (MUA). Concern related to clinic status as rural health clinic (RHC) to qualify for repayment.
Support Services	Hospital, specialist practice, EMS services, pharmacy, physical therapy, hydrotherapy, access to health fitness center or wellness center, respite care, Senior care facility, assisted living options, and home health care.
Community Support	Solidarity in the community –how well the community takes care of its members, or how the community pulls together to support community needs (schools, health services, parks/recreation, etc). Community demonstration of support for provider and clinic.
Transportation	Challenging commute, narrow shoulder on roads, limited cell service in remote area, exacerbated by the geography and high frequency of roads by logging industry.
Rural Culture/Mentality	Experience of not being accepted as part of the community also known as insider/outsider, or new comer/old timer theory. Working with a community with a different belief value system around health care and work compared to urban practices.
Practice models	Urban vs. Rural Practice Models; the experience of

	coming to a rural community expecting to use urban practice models and having to adapt practice models to rural community
Lack of peer recognition for rural practice	Feeling looked down on by urban colleagues who suggest that rural practice is not as difficult(lower level of acuity) compared to urban practice

(Appendix D)

Critical Decision Point for VHB December 2011

Conflict: Providence Health Organization tentatively planned to leave all equipment for the Vernonia health board (VHB) to use to re-open a clinic in Vernonia after Providence closed. Providence planned to take the equipment and supplies and place them in storage unless the VHB had made plans to re-open a clinic within the month after Providence closed. Providence indicated that they would return all the supplies and equipment if and when the VHB opened a new clinic. Providence has proved to be inconsistent in there dealing with the VHB and all board members were concerned about permanently losing the equipment and supplies as this would limit the VHB ability to re-open a health care clinic in Vernonia.

Decision Point: The VHB needed to find/partner with an organization or independent provider to re-open the clinic within 30 days after Providence leaves to ensure that the inventory reamained in Vernonia. Two options were proposed; partnering with Columbia County Public Health, or pursuing a contact by an independent practitioner in Hillsboro with a solo practice (Dr. Miller-Verdura Family Wellness).

Columbia County- would come in and re-open a clinic, but could not get a clinic open until April or May 2012. Columbia County Public Health would see all patients regardless of Insurance and offered a sliding scale for individuals without insurance.

Verdura Family Wellness- would come in and open a clinic by February 15, 2012. This practice will see limited numbers of Medicare and Medicaid, and does not offer a traditional sliding scale for those that are uninsured or underinsured. In addition, this practice model will not manage chronic pain patients or psychiatric patients.

Outcome: The board voted to pursue Dr. Miller to provide professional services in Vernonia in the VHB building. Dr. Miller indicated that he would be unable to pay rent or utilities for the first three months while he was building a practice and getting established in the community. The board agreed to this for a three month period with the caveat that the VHB would review the clinic profit margins.

Summary: The VHB agreed that it was worth the risk to partner with Dr. Miller to be able to procure ownership of the Providence Inventory. The expenses the VHB will cover for Dr. Miller over the 3 month period come to approximately 10,000 dollars juxtapose to the value of the inventory at 50,000 dollars. This inventory is valuable for the VHB to be able to move forward in procuring sustainable health care in Vernonia with Verdura Family Wellness or another health care entity.

(Appendix E)

Macroeconomics

This section provides a background on health care economic policy salient to current health care policy reform, directly affecting rural populations but does not attempt to provide a comprehensive comparison of Rural Health Clinic and Federally Qualified Health Center program.

Historical policy reform-The Rural Health Clinic Services Act.

In 1977 American policy makers acknowledged the significant gap in access to sustainable health care for rural populations resulting in an attempt to remediate the situation by drafting the Rural Health Clinic Services Act PL95-210 (Fogel & MacQuarrie, 1994; Jordan, 1978; Wassem, 1990). This Act recognized that physicians were not choosing to practice in rural areas. Historically, rural practitioners were paid less per visit by Medicare and Medicaid for the same service. This was based on the theory that rural providers could not provide the same level of care compared to urban providers due to limited access to specialists, support resources and fewer patient education opportunities (Bolin, 2011; Humphreys, 2006). Rural areas continue to receive a lower reimbursement rate; however, rural populations also have a higher percentage of patients, on Medicare and Medicaid, which inherently creates a reduced revenue stream for rural practitioners (Wasem, 1990; Ranney, 2002). As a result, physicians may attempt to reduce their revenue loss by limiting or refusing to see Medicare patients or practicing as a non-participating Medicare provider (Ranney, 2002).

In this Act, policy makers attempted to address these issues with two revolutionary concepts, 1) increase the amount of reimbursement in rural areas and 2) authorize higher reimbursement payments to midlevels (nurse practitioners and physician assistants) in rural clinics that meet a standardized set of health protocols (HRSA, 2006; Jordan, 1978). The difference between non-RHC primary care clinics and certified RHCs is that RHCs receive cost based reimbursement. This act authorizes equal or higher Medicare reimbursement to RHCs including midlevel reimbursement (Ranney, 2002). At that time, legislators envisioned that midlevel providers would become the backbone of primary care in rural America. However, in 2012 only about 3,800 rural health clinics are in operation in the United States and PL 95-210

has become known as "the sleeping giant of reimbursement" (Wasem, 1990.) One possible reason for low uptake rate of RHCs is related to difficulty for midlevels to practice in two different clinics to maintain economic stability. The RHC rules requires a midlevel be available in the RHC only 50 percent of the time, so if the model is adopted with practice hours focused on the physician receiving the full time employment then a midlevel may require two part time jobs to be economically stable. In addition, in states such as Oregon that allow independent practice for nurse practitioners, NPs may not choose to practice in an RHC under a physician because they can practice independently outside of the RHC environment.

RHC designation stipulates specific service location and staffing requirements. RHC clinics must be located in an area designated as medically underserved areas (MUA), or service a medically underserved population (MUP) and may qualify if located in a health professional shortage area (HPSA) as designated by the US Census Bureau (HRSA, 2006; Jordan, 1978; Wasem, 1990). In addition, state governors are empowered to make exceptions to the RHC designation mandate. Clinic locations can be an independent unit housed in a mobile or permanent building, an integral part of a hospital or skilled nursing facility, or a private or publicly owned for profit or not for profit. On occasion, a mobile van can be an RHC.

Additionally, specific staffing requirements must be met. These include a midlevel provider required on site 50 percent of all hours that the clinic is operational (Omnibus Budget Reconciliation Act [OBRA], 1989). The midlevel provider must also have an agreement, or contract with a physician to provide periodic review (every two weeks) of services, regular consultation and preparation of medical orders. RHC designation has been shown to increase net clinical income and provides a policy model that may be able to address the shortage of medical care for rural populations (Phillips, 1995).

Interim Policy Reform-Federally Qualified Health Center

The Federally Qualified Health Clinic program (FQHC) developed under the Omnibus Budget Reconciliation Act of 1989 (ORBA) and further expanded under the Omnibus Budget Reconciliation Act of 1990, is another attempt to address the gap in care for rural and uninsured individuals. Currently, there are three different FQHC clinic models, which include Health Centers, FQHC "Look alikes" and outpatient health programs operated under tribal

organizations. The FQHC model must offer primary care, mental health and dental health services as part of their comprehensive services. This plan provides for cost based reimbursement under Medicare and Medicaid in trade for a legislatively specified expanded scope of services (HRSA, 2006). "FQHCs receive cost-based reimbursement from Medicare based on the same payment principles as RHCs" (HRSA, 2006). In addition to cost- based reimbursement, FQHCs also receive a grant to provide the expanded scope of services, unlike RHCs that receive the cost based reimbursement alone.

The corporate structure, board of director requirements and clinical staffing requirements are different for FQHCs and RHCs. FQHCs do not require with a midlevel providers although they are permitted to use midlevels as part of the staffing component (HRSA, 2006). FQHCs must have a board or directors whereas RHCs have no such requirement. FQHC are non-profit, tax exempt or public agencies RHCs may include varied business models such as sole proprietorship, partnership, for profit or non-profit (HRSA, 2006).

Current Policy Reform

The Patient Protection and Affordability Care Act (PPACA) of 2010 is a federal health care reform law aimed at providing increased health care quality and improving health care access to uninsured Americans. A notable concern is that this act will result in 30 million newly insured entering the system without a concomitant plan to ensure adequate numbers of providers to meet this need (Baily, 2010). The PPACA acknowledges that access issues are more acute in rural areas. Few of the nation's medical professionals practice in rural areas, rural practitioners are aging into retirement without replacements, and fewer new trainees are choosing training in primary care, the most needed component of the rural health system. It is also acknowledged that access to medical care improves health outcomes, but what is less clear is how medical care may be an economic development strategy for rural communities.

The PPACA includes some provisions for training, education and recruitment of rural physicians through the following programs; rural physician training grants, National Health Service Corps, new primary care residency programs with priority for those who are affiliated with Area Health Education Centers and Rural Graduate Medical Education. The law also includes provisions to expand other types of medical professionals needed in rural communities

including nurse practitioners, dentists, and behavioral health professionals, but the majority of the funding is directed toward increasing primary care physicians (Bailey, 2010). It is not clear that these, provisions will directly develop more rural providers, but they may improve the ability of rural communities to attract and retain the limited number of providers interested in rural practice.

In addition, the PPACA authorized 34 billion dollars in additional funding for the FQHC program with hopes that rural communities can build more healthcare capacity (Bailey, 2010). The law includes expansion of rural medical facilities and services including rural emergency services, rural critical access hospitals, grants to institutions of higher education for the training of providers for rural areas and participation on the 304B Prescription Drug Discount Program as a means to increase medical services in these areas. In addition, a 10 percent Medicare incentive payment is authorized for primary care physicians, nurse practitioners and some other health care professional practicing in a HPSA that meet specific practice requirements (Bailey, 2010).

There are barriers in federal policy reforms that have resulted in lower than ideal implementation rates for RHCs and rural FQHCs. For example, many states allow a scope of practice and autonomy for a nurse practitioner that is broader than that of a physician assistant, yet these federal models still require nurse practitioners to have physician oversight. These policies and models under utilize the nurse practitioner scope of practice and specifically limit autonomous practice by requiring physician oversight. Interestingly, the RHC requirement stipulating the presence of a midlevel for at least 50 percent of operating hours has been a barrier to development of RHCs due to shortage of willing midlevel practitioners, while the FQHC model which has no requirement to use midlevel providers has made more extensive use of midlevel providers, particularly NPs.

Microeconomics

This section includes information pertinent to Vernonia, Oregon and does not provide a comprehensive review of all the microeconomic factors affecting practice models in rural areas. Budget examples are specific to Vernonia Health Board (VHB).

Research by Seigal and colleges (1977) suggests that a nurse practitioner can provide sustainable and cost effective health care to a population of 2500-4000 individuals depending on

certain variables (Nicoll, 1979). Most variables related to financial viability are fixed, which increases the need for maximum reimbursement and cost savings focused on keeping expenses low. The community must be willing to seek care from and support an NP practice. Government or other non-clinical funding (health district, grants, RHC, FQHC) is usually necessary for providing a sustainable model in a rural setting.

In communities struggling to maintain sustainable health care every dollar is critical in balancing a clinic budget. Physician salary expectation for a full time primary care position is at least 160,000 dollars and can be considerably more depending on experience and practice location (ACP, 1995). A physician salary can be twice that of a NP and the physician oversight requirement in an RHC model does add to the cost. Scope of practice issues and productivity are also considerations. Physicians more frequently demonstrate willingness to perform procedures, which currently still bring in higher fees than cognitive medicine and may increase the market penetration and generally see a higher volume of patients than NPs. Supporting a higher physician salary can however reduce the sustainability of a rural clinic unless equivalent increases in scope of practice and productivity are maintained. However, recent research shows that physicians have not demonstrated better health outcomes over NP practice in spite of higher pay (Mundinger et al., 2000). Table 1 includes important factors to consider when choosing a rural clinic location.

The recent closure of the Providence Medical Group (PMG) Clinic in Vernonia provides some examples of missed opportunities to balance the clinic budget that may have contributed to its closure. The clinic opened in 2001 as an RHC with a full time physician who had relocated to the community. The MD earned an average annual salary of 180,000 dollars with benefits. Additionally, to meet the RHC requirements a NP was hired at 0.5 FTE for 45,000 dollars with benefits. The NP did not relocate to the community and the clinic experienced high turnover rate of the NP position with more than five providers in a three year period none of whom moved into the community. Within five years after the clinic opened they lost the RHC status because they could not retain a NP. This led to a loss of cost based reimbursement leading to a reduction in clinical revenue from Medicare and Medicaid patients. In 2010, the clinic was able to retain a NP full-time, but did not re-seek RHC status and lost the advantage of higher Medicare and Medicaid reimbursement rates.

When considering how to operate a sustainable rural clinic, program utilization, anticipated number of visits per year and market penetration must be measured. Calculations from the ORH (2011) estimates that a rural health clinic can be reasonably expected to attract only 50 percent of a population within a 5 mile radius and somewhere between 5 and 10 percent of the population in distance of 5 to 7.5 miles. Those who live beyond the 5 mile radius may chose to drive to a clinic that is closer to an urban center with more resources (medical and non-medical) available rather than to drive farther into a more isolated community with fewer resources, such as Vernonia. Rural clinics staffed with non-physician providers average 1.85 annual visits per person per year for all ages. Population age distribution can also be a major contributor to clinic sustainability. Older populations contribute a greater number of office visits per person per year. Market penetration is based partly on advertising strategies that appeal to the rural consumer; however, word of mouth referral by patients has a greater impact than in urban models (Weinert & Long, 2011).

The availability of other primary care providers in a rural community with limited population must not be overlooked. Ideal areas for rural clinic start up or expansion include those with few existing providers who do not accept Medicare or Medicaid are nearing retirement age or are not taking new patients.

Surveying a community prior to initiating health care services can shape the sustainability of the services. Assessing the level of community support, the level of support from key community leaders and the willingness of the population to utilize particular services or practitioners (such as a nurse practitioner) improves viability of a clinic. Rural communities may or may not support use of a non-physician provider, and this variable alone could prevent a clinic from surviving in a rural setting. This strategy was not utilized prior to opening the PMG in Vernonia nor prior to passing the bond to collect tax money for the now defunct critical access hospital (CAH) in St. Helens (CAH, 2001).

Table 1

Factors to Consider When Choosing a Rural Clinic Location

Factor

1.	Population within 5 mile radius	At least 2500-4000 people
2.	Average age of population	The older the population, more visits per year
3.	Availability of other primary care providers	Greater than 20 miles between client & provider
4.	Community support	Expressed willingness to use a NP

Table 2 provides a sample calculation of estimated annual revenue with an average office visit of 85 dollars. The estimated population catchment area from Vernonia with a 7.5 mile radius is 4100 persons with only 11% of the population over 65 on Medicare (FQHC, 2011).

Table 2

Sample Calculation of Estimated Revenue

[Population in 5 miles x market penetration]	+	[population in 5-7.5 miles x market penetration]	x Utilization rate	= Projected annual utilization rt
(4000 x 50%)	+	(2000 x 7.5%)	x 1.85	=3978

Projected annual utilization rate	x average charge per visit	x collection rate	= estimated annual operating income
3978	x $85.00 (Medicaid rate)	x 85%	= $287,410

The following is a sample budget with rationale based on one NP in solo practice without federal grants as revenue streams which would improve the feasibility of a sustainable clinic. Table 3 offers a first year's sample budget in Vernonia with use of the current clinic location and supplies. The numbers are current and were drafted in December 2011 by the VHB as the operating budget for the clinic, to include utilities, insurance, taxes and building expenses.

Rental

The average price per square foot of rental space for commercial space is a dollar a square foot, but most comparable spaces in Vernonia are renting for .50 cents to .75 cents per square foot (Oregon Realty, 2012). Unfortunately, in March 2012, there are limited buildings available that are out of the flood plain and meet building code requirements for a clinic at this time.

Technology

Currently, there are grants available for purchasing an electronic medical record system and the cost is variable depending on the system, the options and the support chosen for the system. Purchase price can range from $850.00 up to $40,000 exclusive of operational costs. There are free online EHR (PracticeFusion.com) options that may be used to start up a clinic and purchase of a more complex system can take place as the need arises. Factors to consider when choosing a system are compatibility with hospital network systems and providers in the area. At this time, two systems are in use in the partner hospitals which are Epic and Centricity, with more hospitals transitioning to Epic. The cost for these EHR systems is at the high end of the market.

Utilities & phone

This area is powered by Western Oregon Electric Cooperative (WOEC) and has an electric rate twice the rate in the in the Portland Metroplex. Rates are the highest in the state and were increased in January 2012 to recover costs of moving the facility out of the flood plain. Heating with natural gas would reduce costs over electric heat. Water and sewer rates in Vernonia are comparable to rates around the state. Currently the only telephone service carrier in Vernonia for land line is Frontier, and wireless is AT&T. [Table 3]

Clinical Supplies

The Vernonia Health Board retained all clinical supplies and equipment from Providence with an estimated inventory value around 53, 000 thousand dollars. These supplies and equipment are available to a new provider reducing start up costs for a provider operating within the VHB. An independent provider not affiliated with the VHB would incur costs of supplies and equipment. It may be possible to secure grant money to purchase these items. Donations of used equipment can also keep costs down.

Contract Laboratory

The budget would include 1000 dollars for lab services. There would be limited on site draws for standard labs for primary care management and labs would be drawn by a medical assistant. A courier service would pick up once a day. Patients would be directed to lab locations

and billed directly from the lab. The fee in the budget would cover the clinic's basic contract for courier service and internet link to access lab information.

Staff Insurance

Staff health insurance plans range from 176 dollars to 650 dollars per employee per month (Kaiser, 2012). The budget allows up to $1000 per month for two employees. This budget would likely not cover family members, leaving employees needing family coverage with significant out of pocket expense. Not providing family health insurance coverage would also make the clinic less desirable, since competing health systems may offer that benefit. Under the federal PPACA, health exchanges will increase the available options and health care coverage will be required for all.

Taxes & Miscellaneous

Other expenses related to cleaning, document shredding, trash services, and building maintenance are delineated in table 3.

Salary

The average starting wage for a new NP graduate in the Portland area is approximately $90,000 with benefits, with moderate variations and those in rural practice closer to $60,000 depending on the practice model and location (Salary.com, 2012). A primary care physician salary ranges from $130,000- to $190,000 with benefits depending on experience (Butterfield, 2011). An NP operating in RHC status would also need to negotiate a fee for the required physician oversight and collaboration in an RHC but requires less oversight than a physician assistant (PA). Salary for a medical assistant ranges from$35,000-$45,000 depending on experience. It may be possible to reduce this cost by hiring an inexperienced receptionist or medical assistant and offering on the job training.

Summary

Salary expenses make it appear more cost effective to have a NP own or staff a small clinic in a rural area compared to a physician run clinic in the same setting. Use of a physician assistant is limited due to the increased physician supervision requirements.

Table 3

First Year's Sample Budget

Item	Allotments
Nurse Practitioner Salary	80,000
Physician Salary (contractual oversight/part time)	20,000
Medical Assistant Salary	40,000
Mortgage/Rent ($1200.00 a month)	14,400
Utilities and Phone (WOEC 400/mo, NW natural $150/mo, water & sewer $110/mo, phone with four lines/ 1 dedicated to fax/ $400/mo) = $1,060	12,720
Clinical Supplies & Equipment (current clinic is stocked) allow $5000/per year for restock and repair of equipment.	5,000
Office Supplies and Postage (650/mo)	7,800
Contract Laboratory (Quest Lab Service)	1,000
Billing Service (OCHIN 4,668/mo)	56, 021
Health Insurance	12,000
Practice Insurance (NSO)	1,000
Insurance and property taxes on current clinic building (Flood, building & property, director & officer = $3,600 per year) Appraised value $225,000 x 0.01624= $3653.46	7253.00
Miscellaneous (trash ($135/mo, building cleaning $900/mo, shredding $70/mo, and building maintenance $200/mo, alarm system $32/mo, generator/emergency supplies30/mo)	16,404

= $1,367	
Total Expenses	$ 273,598

Evidence Table

(Appendix F)

Authors/Design	PURPOSE	SUBJECTS	INTERVENTIONS/ Methods	Topic	RESULTS	CONCLUSIONS	COMMENTS
1-Wright, B. (2009) Care in the county: A Historical Case Study of Long-Term Sustainability in 4 Rural Health Centers	To identify factors that contribute to sustainable primary care clinics in rural populations	4 rural primary care programs : 467 were originally (in operation more than a year) selected out of 640 that were selected to study 40 programs were selected for site visits	Multi-case design to identify factors associated with long-term sustainability in rural areas-thematic analysis of data from the National Evaluation of Rural Primary Care Programs	Sustainability of rural clinics	Program origins, community demographics, community perception and attitude towards the program, Program interactions within the community environment (collaboration with a hospital) clinical recruitment and retention, clinicians 'perceptions of and attitudes towards the community, revenues and funding, and actions taken to	6 domains of Sustainability: Political, institutional, financial, economic, client and workforce.	• Long term organizational sustainability is the result of a complex combination of forces/processes inside and outside of the organization. • Tireless dedication of PCP to advocate for clinic • Federal funding integral part due to patient mix that is disproportionately low income, uninsured-self sufficiency may be unattainable goal.

					sustain the program when faced with the possibility of closure.		
2-Bolin, J., Vest, J., & Miller, T. (2011). Patient-Centered Medical Homes; Will Health Care Reform Provide New Options for Rural Communities and Providers?	Discussion on patient centered medical homes (PCMP) and the correlations to the Patient Protection & Affordability Care Act of 2010 (PPACA) that relate to rural health providers.		none	Rural health care opportunities		Without funding(federal) and improved payment (reimbursement), establishment of PCMH in rural /underserved areas would be prohibitively expensive-but PPACA provides key provisions that make delivery of PCMH services in rural/underserved areas supportable and affordable	• Medicaid assistance- 2703 & 3502 • Medicaid payment section 3502 & 4103 • Community based collaborative care networks for low-income populations section10333-RHC/FQHC • Patient navigator programs 3510 • Workforce training and loan forgiveness 5101 to 5601 • Establishing quality measures sections 3001 and 3013 Current recession create challenges for states' ability to support loan forgiveness and educational programs-reducing numbers of providers
3-Tham, R., Humphreys, J., Kinsman, L., Buykx, P., Asaid, A., & Tuohey, K. (2011). Study Protocol: Evaluating the	Examine sustainability, transferability of health care given health policy environments in rural		Audits, community surveys, interviews and focus group discussions to evaluate trends/behaviors and beliefs	Sustainability of health care	Ongoing monitoring and evaluation of successful rural health service models is needed to provide evidence of what makes a primary	By not under taking comprehensive longitudinal research to identify "what works well, where and why "increases the risk	• Traditional urban health models proving to be unsustainable • Need new models to provide equitable care for rural populations compared to urban • Evidence base for rural health service design remains sparse.

impact of a rural Austrailian primary health care service on rural health	communities				health care service sustainable and effective to keep policy makers and other rural health services up to date	of a widening gap of health differentials between urban and rural communities	
4-Humphreys, J., Wakermen, & Wells, R. (2006). What do we mean by sustainable rural health services?	Report- examine drivers of sustainable health care and how they inter-relate- call for systematic evaluation of components for sustainable rural health care			Sustainable health care	System based solutions to sustainability - what is known- importance of sustainable health care and what is not known – how various components contribute to sustainable services.	Sustainable model is not one that is dependent on any one key element (PCP) places sustainable services at risk/ nor propped up by goodwill gestures by community or continued use of locums	• Stop gap workforce measures fail to address the factors determining why rural communities are underserved, or unserved. • Why retention of providers is threatened • Sustainability implies a capacity to persist into the future in the face of economic downturn and change
5- Wesorick, B.,& Doebbeling, B. (2011) Lessons From the Field	Create and sustain places to work and receive care- improve quality and continuity of care	Shared learning with international consortium of over 276 rural, community and university clinical		Management tools /why quick fixes do not work	When gap exists between what is believed and what is lived affects morale level of care work culture and outcomes. Interdisciplinary	Cannot bridge gap between the reality of clinical practice and a vision for what clinical practice could be without intimately knowing reality of clinical practice in	• Quick fixes are not sustainable • American recovery and reinvestment act of 2009 plus quick fix mentality drive change mentality. • Interdependent dimensions • Polarity management- harness tension to build better outcome

		settings.			Health informatics model	rural settings.	
6- Williams, J., Ehrlich, P., & Prescott, J. (2001). Emergency Medical Care in Rural America					25% of US population lives in a rural area Long hours and heavy demands placed on rural PCP cause burnout/professional isolation, limited access to ongoing education	Practice models in urban area are uniquely differently than practice models in rural/remote areas with limited resources.	• Quality of the area's education system affects retention/recruitment • Recruitment and retention fall onto two categories- work-related factors and personal community factors • Managed care has moved away from capitated arrangements toward preferred provider organizations- unlikely that private managed care will continue to expand into rural areas
7-Bailey, J. (2010). Health Care Reform, What's in It?	Examine health care issues in rural America	Policy analyses	none	PPACA policy and program funding designations	Increased funding for health care	Will not create new rural providers, but may help retain or attract PCP's to rural area due to repayment	Inclusive detailed charts on defined funding provisions. The law only gives Congress authorization to appropriate funds – not direct funding. Places rural access in a weak spot for health care access- nice words on paper
8-Health Resources and Services Administration. (2006). Comparison of the Rural Health Clinic and Federally Qualified Health	Comparison of FQHC and RHC	Program comparison	None	Economic and program	Detailed comparison of both programs	Both can improve rural access and improve sustainability through federal funding dollars- limited by practice	Detailed comparison of requirements with chapter by chapter break down of programs – large PDF 50 pages. Nice acronym chart possibly include in CIP

Center Programs.						requirements	
9-Ellsbury, K., Baldwin, L., Johnson, K., Runyan, S., & Hart, G. (2001). Gender-Related Factors in the Recruitment of Physicians to the Rural Northwest.	Examines differences in female and male physicians with factors that influence their choices to practice in rural locations	Cross-sectional study of a mailed survey in rural locations with populations of less than 10,000 in six pacific Northwest areas.	None	Gender relationship to the influences in rural practice	Response rate was 61% with 77 men and 37 women. Indicates that women were more likely to base rural practice decisions based on spouse/personal partner, flexible scheduling, family leave, availability of child care, and interpersonal aspects of recruitment.	Important in recruitment of both men and women to highlight the positive aspects of the community and to assist the providers spouse/partner.	Important to look at community aspects and to put a recruitment package together that will focus on opportunities for partner of provider, flexible work schedule and daycare options.
10-Fagnan et al 2011 Turning on the Care Coordination Switch in Rural Primary Care	Examine care of office based nurse care management in medium to lager rural primary care practices.	45 patients over 6 clinics. Three clinics were family practice and three pediatric based. The client patient populations in the clinics	Utilized CM+ care coordination model	Patient and clinic improvement in satisfaction scores.	45 pre-intervention interviews and 36 post intervention interviews. Transcribed and thematic were seen in the following categories: Patient barriers	The change is hard, requires time, and is supported by practice. Report identified prominent barriers and facilitators to implementing CM+ in rural	Barriers to care in rural settings were listed as limited patient resources, technical barriers with getting IT access and running EMR or using as teaching aid, lack of support from clinic administration/management, resistance to change and time needed for change, limited clinic resources, and finding the right person for NCM role.

		ranged from 6000 to 12000			with social resources, transportation, insurance coverage, and health literacy. Access to care, Inadequate provider supply in rural area and amount of time for visit.	practice	
11-Hunsberger, M., Baumann, A., Blythe, J., & Crea, M. (2009). Sustaining the Rural Workforce: Nursing Perspectives on Work life Challenges.	Examine whether nurses receive the support and resources necessary to meet the challenges of rural practice.	Semi-structured interviews with 21 managers and 44 staff nurses in 19 rural hospitals in Ontario, Canada	none	Rural work force training	The availability of resources impacted the perception of manageability or being over whelmed	Health care providers felt powerless and overwhelmed without adequate resources	In rural setting it is necessary to provide adequate resources and care provider input with options to reduce work force turn over. Developing effective collaboration models within and outside the community is important.
12-Nicoll, J. (1979). A Nurse-owned Rural Health Clinic Environmental Scan	Examine feasibility of nurse practitioner operated rural primary care clinic in populations of 2500-4000.	Comparison of one private owned and operated clinic with several governmental funded community	Compared funding streams and generated revenue from both practice models	Health care economics and rural primary care practice model	Equation to calculate variables	NP lead rural primary care clinic is viable in a 2500-4000 population, but many variables related to payer mix and RHC status directly	With governmental assistance, many remote/sparsely populated can receive services. These efforts will rarely be cost effect, so budgets need to be realistic and use cost effect lean measures consistently. RHC status makes this most attractive for NP's but reimbursement practices for Medicare and Medicaid patient's limits the draw for solo practice

		clinics				affect feasibility	physicians opening the door for more NP practices. Barrier is RHC rule that requires physician supervision-could use policy reform. • Nice list of practice recommendations • Sample first year budget • Sample equation for calculating estimated annual revenue Table 2
13-Phillips, D., & Kruse, J. (1995). Economic Viability of a Model Rural Family Practice Established a faculty run rural practice to transition to residency training location.	Determine financial viability of such a model and to determine the practices financial effect on the sponsoring hospitals within 30 miles.	One clinic and the hospitals within 30 miles of clinic- did not include expense analyses for "second level" care.	Cost analysis from months 7-18 of operation-including analyses of charges generated at the sponsoring hospitals.	Health economics	Generalizability of model, economic feasibility of rural practice, and positive financial impact on sponsoring hospitals	Study indicates that governmental reimbursement mechanisms adversely affect the financial viability of rural practice- , may be disincentive for physician to begin practice in rural area due to higher rates of Medicare 7 Medicaid patients. RHC status benefit. Multiplier effect discussed.	Possible to partner with local hospital as revenue to stream as hospitals benefit due to multiplier effect. For every 1 dollar spent in the rural clinic upwards of 6-9 dollars are captured at the hospital due to referral services. Significant positive benefit for health care facilities to which patients are referred. Use of mid-level practitioners to achieve the RHC status may substantially improve the financial stability of a rural practice.
14-Humphreys, J., Wakerman, J., Wells, R., Kuipers, P., Jones, J., 7 Entwistle, P. (2008). "Beyond	Systematic review of research on work force supply, retention,	Survey methods of clinics in rural and urban	none	Work force retention, recruitment and development.	Discuses models and how to adapt some models.	Indicates that there are federal or macro challenges that affect the ability of models	Need to examine macro policy to ensure the ability of rural clinics to survive. These policies that are designed to aid rural areas are not always on point and may need

workforce": a systematic solution for health service provision in small rural and remote communities.	recruitment, and rural support/resources.					/clinical practice at the micro level.	modification.
15-Macleod, M., Martin, R., Banks. K., Morton, M., vogt, C., & Bentham, D. (2008). Nursing Leadership.	Systematic policy review, analysis of RN database, national survey of 3,933 RNs, & interviews with 152 RNs from provinces and territories.	Survey methods and interviews	none	Work force retention and recruitment	RN input is needed in regional healthcare design and program development with consideration for rural and remote practice to provide high quality care.	Need to seek input of those in these service areas to implement changes and to improve practice satisfaction.	• Create distance proof responsive management structures • Make resources more available find new ways to make more resources accessible • Recognize the uniqueness of rural practice and support it adequately • Involve rural communities in designing their own services and programs.
16- Shreffler, M., Capalbo, S., Flaherty, R., & Heggem, C. (1999). Community Decision-making about critical access hospitals: Lessons learned from Montana's medical assistance facility program.	Examine rural community decision making about CAH converting to a MAF	Descriptive multi-case study design interviews with community members	none	Policy examination of CAH and MAF in rural/remote locations	Found that services that made provisions and basic services more sustainable and stable were supported by community members	Study suggests that programs that maintain and support for non-physician providers are or should be focus in rural locations.	Study informs rural decision makers about CAH and policy makers, national health and decision makers and researchers on the topic of CAH and mid-level provider practice support.
17-Scharff, J.	Examine	Semi-	none	Rural aspects of	34 nurses as well	Burden of self	Newcomer and old timer aspects

(2010). The distinctive Nature and Scope of Rural Nursing Practice: Philosophical Bases	aspects of rural practice from rural perspective	structured interviews		practice	as rural informants,	education is greater in rural setting than in urban	discussed.
18-Moscovice, I., & Stensland, J. (2002). Rural Hospitals: Trends, Challenges, and a future research and policy analysis agenda.	Examine the expense, structure and role of the rural hospital	Review of literature relevant to topic	none	CAH and rural hospital trends	CAH is central hub of rural communities and services need to be adopted to the community need	Adoption of services to community to overcome economic challenges of area	A one size fits all mentality doesn't work and modifications by population and geography must be made.
19-Mathews, M., Sequin, M., Chowdhury, N., & Card, R. (2011). Generational differences in factors influencing physicians to chose a work location in Rural or Remote Health.	Examined factors that influence work location of providers	Semi-structured qualitative interviews were conducted.	none	Rural provider choice based on generational differences.	48 providers interviewed	Younger providers those graduated in 1980's to 1990's placed higher value on work life balance as opposed to duty to community	Younger providers desire more balance and are not as tied to duty as a reason to take or keep a position, providers want flexibility in practice hours and days.
20-Weinert, C. & Long, K. (2011). Rural Nursing: Developing the Theory Base Nursing. In C. Winters & H. Lee,	Re-evaluation of nursing theory foundation	Target population Montana, 8 year study with qualitative and	none	Rural practice theory development	Rural define health differently, self reliance, and generalizability affected.	Findings can be gener4alizable in rural areas with similar population and industry to a degree	Rural culture and history can affect sustainability of health care in rural area

Rural Nursing: Concepts, Theory and Practice, 3rd Ed., New Your, NY: Springer.		quantitative					
21- Weiner, C & Long, K (1989). Understanding the Health Care Needs of Rural Families.	To evaluate the health care preferences of rural people	Interview and survey methods-6 year study using qualitative and quantitative methods	none	Rural practice theory and survey of what rural residents want	Found that those living in rural areas feel more social support than those in urban areas. Rural respondents appear to report less depression	Outsider insider theory. Services must be tailored to rural community. Offering clinic hours during peak times in rural economy is self defeating.	Could be under reporting mental illness may actually be higher in rural area. Sense of belonging.