

First Trimester Prenatal Care and Local Obstetrical Delivery Options for Women in Poverty in Rural Virginia

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Received date: September 01, 2016; Accepted date: September 27, 2016; Published date: October 04, 2016

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Abstract

Healthy People 2020 recommends improvements in rural women's health in the United States, and specifically, prenatal care. A rural Virginia health department requested this study to assess prenatal care and obstetrical delivery options for impoverished women in the Central Shenandoah Valley.

Births to resident mothers between 2000 and 2011 were examined by payer source, care source, first prenatal visit timing, and delivery location. Providers, public health nurses, and women were interviewed to assess barriers.

Resident women delivered 32,423 infants between 2000 and 2011. Prenatal care initiation differed by payer source and care source. Approximately 89% of privately insured patients initiated prenatal care in the 1st trimester, compared to 66% of Medicaid, and 57% of uninsured women. Approximately 80% of private care women initiated prenatal care as recommended; 50% of public care women did so. Overall 21% of Central Valley women were unable to obtain 1st trimester prenatal care.

Most obstetrical deliveries occur at two community hospitals. High risk deliveries are referred to a university hospital outside the region. Family practitioners are not credentialed for regional hospitals deliveries and provide no prenatal care. Most prenatal care is provided by four obstetrical practices.

Interviewees differed regarding barriers to timely prenatal care. Providers identified insurance and cultural barriers. Public health nurses viewed referral mechanisms, insurance, culture, pregnancy denial, and transportation. Women identified finances and culture as barriers, but described them in complex ways. Culture, in their view, constructs a financial barrier and one they worked hard to overcome. Transportation was not identified as a barrier but rather a matter of course in rural areas.

It is not surprising that impoverished women frequently fail to obtain timely prenatal care. Policy solutions to improve this situation include addressing financial barriers. However, given that impoverished women face many social barriers in addition to finances, solutions that enhance evidence-based case management and home visiting programs recommend to achieve the best outcomes.

Keywords: Poverty; Women; Delivery; Public health

Introduction

Rural residents are underserved in terms of numbers of health care providers as well as the number of preventive services they receive compared to urban residents [1]. The National Rural Health Association reports that rural residents in the U.S. have poorer health status, more chronic illness, and are less likely to be insured than their urban counterparts. There are fewer physicians and specialists in rural areas and barriers to care include distance, terrain, and lack of transportation. Lack of primary and specialty services affects rural women, with obstetrical specialists in particularly short supply. U.S. urban counties have an average of 35 obstetricians per 1,000 residences, compared to 2 per 1,000 residents in rural counties [2]. Rosenblatt [3] describes both the disparate number of providers, but

more importantly, a rural brain drain of specialists, in particular obstetrical providers. Hospital delivery services are subsequently lost after most providers leave the area.

Prenatal care is thought to be associated with improved birth outcomes and is recommended to begin in the 1st trimester of pregnancy. Early awareness of pregnancy is associated with receipt of 1st trimester prenatal care. High-risk mothers also tend to initiate care early, suggesting an active role in care-seeking by expectant mothers [4]. Healthy People 2020 advocates for a 10% goal for improvement in the number of pregnant women receiving early and adequate prenatal care from a 2007 overall U.S. baseline of 71% [5]. The Adequacy of Prenatal Care Utilization Index defines appropriate prenatal care as initiation of care in the 1st trimester of pregnancy, and one prenatal care visit per month through 28 weeks of pregnancy, followed by bi-monthly and weekly visits late in pregnancy [6]. A recent meta-

analysis, however, found that reduced prenatal visits in low-risk pregnancies did not increase adverse outcomes, although women were less satisfied with their care using a reduced visit schedule [7]. Initiation of prenatal care in the 1st trimester will be examined in this assessment as the controversy regarding numbers of visits defining adequate prenatal care is currently unresolved.

Rural mothers lack access to both 1st trimester prenatal care and local delivery services due to structural, financial, and healthcare system barriers. The National Rural Health Association, in a recent policy brief, reports that rural women's access to health care and preventive maintenance is, in general, limited by access to fewer resources [8]: Obstetrical providers often do not exist or are in extremely short supply in rural areas. Fewer obstetrical providers practice in inner-urban and rural areas [8,9]. While most American women receive prenatal care from obstetrical providers, rural women are reliant on more plentiful but still scarce family practitioners. Approximately 14% of all women receive care from non-obstetrical providers and the provider source varies by mothers' age, source of pay, and geography. Teens, Medicaid insured, non-insured, and small town or suburban women are more likely to receive care from non-obstetrical providers (20.5, 24.3, 23.1, and 22.4%, respectively) [10]. Both loss of obstetrical providers and transportation to distant urban providers is a substantial barrier to care and local delivery for rural women. Health departments and community health centers are often providers of last resort, but are also scarce, often do not bill Medicaid, and increasingly case manage and facilitate pregnant women's care rather than provide direct services. Rural Healthy People 2020, and the Association for Healthcare Research and Quality identify rural women's health as a high priority concern due to lack of resources and the disparate health status of these women compared to their urban counterparts [11,12].

Between 1985 and 2001, Medicaid as a payment source for pregnancy care increased from 17 to 41%, improving early pregnancy care for impoverished women substantially. Outcomes have not improved for all, however, and socioeconomic disparities in birth weights remain [13]. Although insurance status has improved dramatically, several studies find that rural women are more likely to initiate prenatal care late, and to have poorer outcomes [14,16]. Lower education, unplanned pregnancies, and poor transportation have all been associated with late prenatal care [17]. Barriers to local delivery, on the other hand, include systematic loss of obstetrical services in rural areas, and provider and staff shortages at rural hospitals [18,19]. Lack of access to obstetrical care in rural areas is associated with increased neonatal length of stay and hospital charges, also indicative of poorer birth outcomes among rural women [20].

Local delivery is dependent on hospital locale and credentialing mechanisms for providers. In many rural areas women rely upon family practitioners to provide prenatal and delivery services. Family medicine providers, however, have also declined in rural areas [21]. In a particularly prescient editorial, Rosenblatt noted that the closure of obstetrical services in hospitals is the final event in a chain of rural losses, including the abandonment of rural obstetrical practices, family practice loss of delivery credentials, and subsequent disparities in provision of services to rural women [3]. Rosenblatt's article is prescient in that he describes the exact sequence of events in one Valley county, ending with the loss of obstetrical services at the local hospital in 2010.

The Central Shenandoah Valley (the Valley) is located in the Shenandoah Valley of Virginia, between the Allegheny and the Blue

Ridge Mountains. The Planning District (6) and the Central Shenandoah Health District (CSHD) encompass five counties (Augusta, Bath, Highland, Rockbridge, and Rockingham), five cities (Buena Vista, Lexington, Harrisonburg, Staunton, and Waynesboro) and contain approximately 300,000 people. There are 7 health departments in the Valley which comprise the CHSD. Three of five counties (Highland, Bath, and Rockbridge) are considered medically underserved. Rockingham and Augusta Counties are home to the regions two community hospitals (critical access hospitals exist in Bath/Highland, and Rockbridge).

Objective

This study was requested by the Central Shenandoah Health District (CSHD). In an effort to better meet the needs of impoverished women, CSHD wished to understand barriers to prenatal care and the implications of limited local obstetrical delivery options in the Central Shenandoah Valley (the Valley). Historic vital statistics data were analyzed to gain a long-term picture of births, methods of payment, sources of care, and timing of initiation of prenatal care. Private providers, public health nurses, and a small sample of patients were interviewed to gain current qualitative perspectives on prenatal care services and delivery in the Valley. Barriers to recommended prenatal care were explored to gain insight into mechanisms to improve initiation of care in the first trimester.

Methods

Commonwealth of Virginia Vital Statistics were examined for births to mothers residing in the Valley between 2000 and 2011. Payer source, source of care, acquisition of prenatal care, and delivery location were identified for 31,386 resident mothers. Family medicine and obstetrical providers, public health nurses, and patients were interviewed in the Spring of 2014. An open-ended survey was employed with qualitative analysis of themes. A review of the literature was undertaken for context and to identify local policy solutions. Informed consent was obtained for all interviews and the Virginia Department of Health provided Institutional Review Board approval and oversight for this study. CSHD/Virginia Department of Health provided financial support to the main author to complete the study.

Results

Births in the valley, 2000-2011

Between 2000 and 2011, the dates for which most complete vital statistics data were available, 32,423 resident women delivered infants. The birth cohort varied by year and by county during this time period, but remained relatively stable with a low of 2,907 in 2001, a high of 3,318 in 2007, and declining again to 3031 resident mothers delivering in 2011. The majority of births occurred to women resident in Augusta, Rockingham, and Rockbridge Counties; the birth cohort in Bath and Highland Counties is extremely small and there are no hospitals with obstetrical services there. Although Rockbridge County lost its local hospital obstetrical service in 2010 a dramatic decline in births in that county beginning in 2009 is not due to the lost services, but more likely to population loss and aging population. Augusta and Rockingham Counties both have community hospitals which provide delivery services.

Prenatal care in CSHD

Acquisition of prenatal care was examined by month of care initiated, source of care, and method of payment for resident mothers. Overall, the great majority of Valley mothers initiate prenatal care in the first trimester (Table 1). However, approximately 21% of mothers do not, a significant number in terms of Healthy People 2020 goals and recommendations to improve maternity care for rural women.

A contingency analysis was conducted to evaluate mother's source of care related to first prenatal visit in the first trimester of pregnancy (Table 2). Source of care and first prenatal visit were found to be significantly related (Pearson $\chi^2(4, 32226)=552.365, p=0.000$, Cramer's $V=0.131$). Expectant mothers under the care of a private provider had a higher proportion of first prenatal visits in the first trimester. It should be noted, however, that the Cramer's V size shows a weak (albeit significant) relationship between the two variables. Of note is the very small number of women seeking prenatal care at either the

Health Department (N=90) or a combination of both Health Department and Private Doctor (N=797). Both of these populations are likely to represent women in poverty, the focus of this study, and most likely to initiate prenatal care later than the first trimester.

First Prenatal Visit		
	N	Percent
First Prenatal Visit After First Trimester	6953	21.4
First Prenatal Visit in First Trimester	25273	77.9
Unknown	33	0.1
Total	32259	99.5

Table 1: Percent of CSHD resident mothers starting prenatal care in the 1st trimester.

Source of Care								
Prenatal Visit in 1 st Trimester		None	Private Doctor	Health Dept.	Other	Private Doctor and Health Dept.	c2	Cramer's V
							552.365***	0.131***
Yes	Count	0	24096	90	290	797		
	% within Source of Care	0%	-79.50%	-50%	-63.60%	-64.80%		
No	Count	69	6196	90	166	432		
	% within Source of Care	-100%	-20.50%	-50%	-36.40%	-35.20%		
Total Count		69	30292	180	456	1229	32226	

Table 2: CHSD resident mothers' prenatal care in the first trimester by source of care, *** $p<0.001$.

A contingency analysis was also conducted to evaluate whether a Valley mother's method of payment for care was related to first prenatal visit occurring in the first trimester of pregnancy (Table 3). The method of payment and the first prenatal visit were found to be significantly related (Pearson $\chi^2(3,32226)=3174.702, p=0.000$,

Cramer's $V=0.314$). Not surprising, the nature of the relationship was that expectant mothers who had private insurance had a higher proportion of first prenatal visits in the first trimester. Cramer's V was statistically significant at the 0.001 level with a moderate linear relationship between method of payment and first prenatal visit.

Method of Payment							
Prenatal Visit in 1 st Trimester		Medicaid	Private Insurance	Self Pay	Unknown	c2	Cramer's V
						3174.702***	0.314***
Yes	Count	6931	16517	1790	35		
	% within Source of Care	-65.80%	-89.30%	-56.60%	-87.50%		
No	Count	3595	1978	1375	5		
	% within Source of Care	-34.20%	-10.70%	-43.40%	-12.50%		
Total Count		10526	18495	3165	40	32226	

Table 3: CHSD resident mothers' prenatal care in the first trimester by method of payment.

Of note in Table 3 is again, the portion of women with either self-pay (presumably uninsured, $n=3165$) and Medicaid ($n=10526$) which

represents roughly one-third of the payer source (total $N=32226$). Medicaid is accepted by all obstetrical providers in the Valley, however,

many barriers prevent uninsured or Medicaid insured women from obtaining private obstetrical services.

To quantify delivery options in the Valley, a descriptive contingency analysis was conducted to explore the proportion of births that occurred within the mothers' home county (Table 4). Predominantly, mothers in Augusta (85.7%) and Rockingham (98.8%) give birth within their own counties. Not surprisingly, both counties have hospitals with obstetrical services. For Rockbridge, approximately two-thirds of mothers gave birth within their county (65.7%), but the local hospital in Rockbridge County closed its obstetrical services in 2010, and local deliveries (obviously) dropped to zero.

From Table 4, it is clear that the vast majority of births to resident mothers occur at Valley hospitals, of which there are now two remaining with obstetrical services. The lesser proportion of births in Augusta County may reflect both a closer geography to and a closer relationship with, University of Virginia Health System (UVA), the major indigent care provider and the high-risk facility for the Valley catchment area. In addition, the Health Departments contract with UVA to deliver prenatal care via telemedicine for high-risk Medicaid and uninsured mothers, and these deliveries are expected and planned to take place at UVA. UVA is the only regional obstetrical provider offering services on a sliding fee scale.

Mother's Place of Residence at Time of Birth				
Child's Place of Birth		August a	Rockingham	Rockbridge
Augusta	Count	11303	184	1114
	% within Source of Care	-85.70%	-1.20%	-33.70%
Rockingham	Count	1844	15221	20
	% within Source of Care	-14%	-98.80%	-0.60%
Rockbridge	Count	37	1	2175
	% within Source of Care	-0.30%	0%	-65.70%
Total Count		13184	15046	3165

Table 4: Child's place of birth compared to mothers' place of residence.

Maternity care in the valley

Rockbridge County lost local delivery services at its sole hospital in 2010. Women in Rockbridge County now receive their prenatal care and deliver their babies at a community hospital in neighboring Augusta County; and at Roanoke City and UVA in Charlottesville, both outside the Valley proper. Two obstetrical practices from Augusta County recently began offering prenatal care in Rockbridge County, in competition with the Carilion system hospital in Roanoke. Family practices in the Valley lost credentialing for deliveries at the two Valley hospitals in Augusta and Rockingham Counties prior to 2002. In consequence, family practices stopped offering prenatal care in the Valley altogether. All private prenatal care and delivery services in the Valley are now offered exclusively by obstetrical providers (including midwives in practice with obstetricians in some counties) and local deliveries are performed at two hospitals in Augusta and Rockingham Counties.

The University of Virginia offers prenatal care to women with high-risk pregnancies via telemedicine at a Federally Qualified Health Center in Rockingham County (Harrisonburg City). These women deliver exclusively at UVA, over the Blue Ridge Mountains, a beautiful, but sometimes onerous, hour's drive away. The contribution of care and delivery services at the FQHC is small, however, with approximately 15 women seen via telemedicine in 2013, the majority of whom are uninsured and not eligible for private care because they are undocumented (illegal aliens).

All Health Departments in the Valley offer pregnancy confirmation, case management, and post-partum home visiting services. Prior to the UVA telemedicine contracted clinics, Health Department midwives and nurse practitioners offered prenatal care, with delivery at UVA. Currently, virtually all Health Department patients are now referred to private providers if they are Medicaid eligible or self-pay. Undocumented women, not Medicaid eligible, and unable to pay cash for private services, are managed via the UVA telemedicine clinic.

Prenatal care and barriers in the valley

To understand the context of care for pregnant women in CSHD and to elaborate barriers to improve services, a small sample of providers, public health nurses (PHNs), and public health department maternity patients were interviewed, using an open ended, semi-structured survey. The problem of timely prenatal care and local delivery in the Valley is well known beyond this sample, however. The hospital-based Community Health Needs Assessment for Rockbridge County, for example, chose the Healthy People 2020 objective to increase first trimester prenatal care as a priority problem. Significant transportation, specialty services, and financial barriers to care were identified [21,22], similar to findings here. Of note in this study, however, is the perspective of three Valley maternity patients and the contrasting notions of individual versus systems barriers noted by PHNs. In general, private obstetrical providers perceive fewer barriers to prenatal care than either patients or PHNs.

Valley providers

Twenty-eight obstetrical/gynecological physicians in nine practices were listed with the Virginia Board of Medicine in the Valley in 2014. Most of these practices do not provide delivery services, and few provide prenatal care. Two practices deliver the majority of Rockingham County infants at the Sentara Health System Hospital in Harrisonburg (at the time of this study, the hospital was a long-time community hospital, not yet owned by Sentara). Two practices deliver the majority of Augusta County infants at the community hospital there. One Augusta County obstetrician holds clinics in Rockbridge County and delivers in Roanoke, outside the Valley. Both Augusta County obstetrical practices have recently opened clinics in Rockbridge County with providers commuting a day or two each week to provide prenatal services there. Obstetrical practices in Rockingham and Augusta Counties include midwives.

Until approximately 2001, Valley women could receive their prenatal care at family medicine practices (of which there were 38 listed by the Board of Medicine in February, 2014) but when the two major hospitals stopped credentialing family medicine physicians for hospital deliveries, those practices universally stopped providing prenatal care services as well. The UVA Family Medicine Department, provides prenatal care and delivery services, but not in the Valley.

UVA is the high-risk catchment hospital for the Valley and has a contractual relationship with CSHD Health Departments to provide prenatal care via telemedicine for uninsured and Medicaid mothers. UVA is the only facility that provides financial assistance using sliding scale fees based on income and it does not require payment before services are initiated. Mothers who receive prenatal care via telemedicine do so up until bi-weekly and weekly prenatal care visits are required, late in pregnancy, at which time they must travel to Charlottesville, a ½ to 2 h drive away from their homes the Valley. These women are expected to deliver at UVA, although some Health Departments provide mothers with hard copies of their records in the event of precipitous delivery in the Valley.

Interviews were conducted with providers at two of the four major obstetrical practices in the Valley (one in Rockingham and one in Augusta County). Both practices accept Medicaid and uninsured patients including women who transfer care after confirming pregnancy at the Health Department. One obstetrical practice refers all Medicaid insured patients to in-practice mid-wives. Another limits Medicaid patients to one per physician. For Medicaid eligible women, proof of eligibility is required to make an initial prenatal care appointment at all four practices. In two practices, appointments may not be made until Medicaid is obtained.

From the perspective of Valley private obstetrical providers, barriers to timely prenatal care include lack of insurance, including Medicaid, and cultural beliefs. One provider did not believe there were significant barriers to 1st trimester prenatal care in that practice. That practice also provides transportation assistance, reminders and follow-up calls. Local delivery was not perceived as a problem because these providers deliver the majority of the county birth cohort at the two Valley hospitals. Source of payment, however, is clearly associated with prenatal care in the first trimester. Private providers acknowledged the difficulty of acquiring Medicaid and accessing their practices: “patients must have applied and have a reasonable chance of acquiring Medicaid to start care, or pay cash up front.”

A not uncommon issue in the Valley is that of mothers ineligible for Medicaid because they are not citizens. For undocumented women who pay out of pocket for prenatal care, all private providers require a \$200 deposit for prenatal care, and quarterly payment of the remaining \$750-1000 delivery fee. Women in arrears for past services or unable to make quarterly payments are not allowed to make future appointments.

Cultural beliefs were also seen by providers to affect timely entry into prenatal care, but only for Hispanic women. No provider mentioned an effect of local rural culture or cultural shifts in the Valley as affecting access to or acceptance of prenatal care.

The role of the public health department

CSHD is the prenatal care provider of last resort in the Valley. Depending on services available from private providers in each county, Health Department and therefore PHN roles differ substantially. Nurse practitioners provide prenatal care in some counties while pregnancy confirmation and education, case management and referral, and post-partum care programs exist to some extent at every Health Department. To gain an understanding of the context of care for women in poverty in the Valley, at least one public health nurse was interviewed at each Health Department.

Pregnancy testing, risk screening and facilitation of referral and services is the primary obligation of PHNs for pregnant women. PHNs

often serve as advocates and, as such, offered a number of insights into the barriers their patients encounter to timely prenatal care. Barriers identified were both individual problems for women (motivation/denial, transportation), or systematic issues (insurance, referral, social support). Culture as a barrier was described as a complex mix of individual AND systems influences.

Denial of pregnancy or late diagnosis, was seen as a common problem. Youth, lack of pre-conceptual health education, and misunderstandings related to fertility after long-acting birth control use, were also issues. Lack of social support and poor health literacy were also barriers to timely prenatal care.

All public health nurses noted fragmentation of care due to finances and insurance coverage. Patients with outstanding balances at private practices may not, for example, start care even if they are eligible for Medicaid until that balance is paid.

Culture was noted as a complex barrier to care. Hispanic women, especially those recently emigrated, often lack knowledge of the importance of prenatal care and are unaware of health department services. For Hispanic women, however, pregnancy may also open doors to social support not previously experienced, especially if mothers receive case management services or attend Centering Pregnancy Care at one of the private providers.

Culture and finances were also related in a complex fashion: one public health nurse felt that while non-Hispanic rural women are inclined to play the system to get care, Hispanic women pay their bills. Cultural shifts noted by another PHN in the most remote Valley county have also resulted in women refusing case management and a preference for private obstetrical care to avoid the perceived stigma of being a health department patient. Cultural, family and social support influences combined as well to form barriers.

For patients with private providers, public health nurses believe that travel is also a barrier. Health department patients are contracted to University of Virginia (UVA) for telemedicine, solving some barriers to access for 1st and 2nd trimester prenatal care, although transportation may become an issue in the 3rd trimester when in-person visits are required. Delivery also occurs at UVA, which can be a 3 h drive from the most distant regions of CSHD.

Perspectives of valley maternity patients

Gaining access to women in poverty for this study was difficult. Due to Medicaid and referral mechanisms to private providers, health departments no longer care for the majority of these women, although they represent the population “at risk of risk” according to one public health nurse, and most benefit from the extended services provided by health departments (services which are not available from private providers). Three Health Department clients were interviewed, however, and provided rich description of the barriers they face, giving insight into some solutions.

Individual behaviors related to pregnancy denial were identified as barriers to care for some patients, both by private providers and by PHNs, although patients themselves more frequently identified systematic barriers to care. These barriers included financial issues and transportation, in addition to physiologic issues related to pregnancy diagnosis. Two of the three women interviewed experienced complicated pregnancies that were not diagnosed till near the end of first trimester, resulting in late prenatal care.

Financial barriers were directly related to access to prenatal care for all three women. One woman had an unpaid bill with a private provider from an earlier pregnancy that barred her from making a 1st trimester prenatal appointment. Eventually, she chose to go to UVA where she had access to sliding fee scale services. She was not eligible for Medicaid because she is undocumented. Undocumented and uninsured women “have to pay out of pocket and can’t get care except emergencies.” UVA is the only provider in the region that employs a sliding fee scale and requires financial screening once regardless of services sought which may make that system easier to navigate than private providers in the Valley.

One woman told a particularly poignant story of accessing prenatal care. She had two previous children, and as an undocumented patient, understood the financial requirements in the private care system. In Spanish, she matter-of-factly related that she failed to receive care in the 1st trimester because she had to work three more weeks to earn the \$200 down payment for private services. Immediately after doing so, she was able to make an appointment, in the 2nd trimester of her pregnancy.

Another woman interviewed chose to go to UVA for her second pregnancy due to a prior difficult experience with private providers in the Valley. She had been late into prenatal care and didn’t initially qualify for Medicaid. She eventually qualified, but her high-risk pregnancy was not diagnosed by the private provider to whom she was referred in the 2nd trimester. She was transferred in labor to UVA, with a catastrophic birth outcome she attributes to negligent care in the private sector. As a result of this experience, she went to the health department for her subsequent pregnancy (in 1st trimester), established care and delivered her most recent infant successfully at UVA.

Two of the women interviewed became UVA advocates directly related to their high-risk pregnancies, although financial barriers were the original impetus for both to seek care there. Providers and PHN interviews did not illuminate risk as a barrier to local delivery but rather focused on UVA contractual requirements and financial barriers. In contrast to the provider and PHN identified transportation barrier, the few women interviewed referred to transportation as a minor issue, and two were enthusiastic about prenatal care and delivery at UVA, some distance away. One mother stated “everything is easier there,” while the other said she was “much more confident” at the University than the community hospital.

Discussion

The majority of Valley mothers receive prenatal care in the 1st trimester, however, 21% do not. In the Valley, receipt of prenatal care varies by source of payment and type of provider. Uninsured and Medicaid insured women receiving services at the Health Department represent women in poverty and are most likely to fail to receive timely prenatal care.

A number of systematic barriers face women in poverty wishing to receive prenatal care in the 1st trimester and to deliver their babies in the Valley. Most obvious is the loss of obstetrical providers in the region. The loss of delivery credentials for family practice providers in the two full-service hospitals is significant as is the subsequent loss of prenatal care services formerly provided by family practitioners. One county also lost its sole obstetrical service during the time under review. Women who are insured and who have ample transportation resources are less affected by these losses than are women who are

uninsured or on Medicaid. Financial barriers are significant and are influenced by billing practices and Medicaid eligibility which can delay 1st trimester care substantially. Several assumptions, however, may be incorrect regarding barriers to care for women in poverty in the Valley.

An assumption of this study was that access to 1st trimester prenatal care and local delivery are desirable and result in improved maternal and infant outcomes. Some controversy exists, however, regarding these assumptions. Guillory found that impoverished women in rural areas who receive early prenatal care may not experience improved outcomes [4]. Researchers attribute this result to improved high risk screening and entry into early prenatal care for those women most likely to experience adverse birth outcomes. Not intuitively, the phenomenon of poor outcomes associated with earlier prenatal care indicates a success of the public health system, which has a primary obligation to screen for pregnancy and either provide care, or facilitate entry into the private care system for high risk mothers. Increasing fragmentation of services and loss of rural providers, however, is a threat to the successful scenario depicted by Guillory in which high-risk mothers are identified, obtain early prenatal care, and experience better, if not always the best, outcomes. As one PHN in this study lamented, they used to be “my maternity caseload, I visited them and I tracked them. Now they become the private providers’, not mine. So many people going in so many different directions, I can’t keep track of them!”

A second assumption of this study was that delivery outside the Valley is undesirable. The few mothers interviewed, however, stated an extreme preference for delivery services at the indigent provider outside the Valley, were highly satisfied with their care there, and were willing to overcome significant obstacles to get to those services. While PHNs seemed to view the contractual obligation to refer high risk women to UVA for care with reluctance, they might find confidence in their patients’ viewpoint. Women seem satisfied with the service and even seek it out. This type of referral also comes automatically with the case management, education, and social support PHNs provide and which may be more important to women in poverty and infant outcomes than a local delivery. Access to early prenatal care is only one aspect contributing to good outcomes. Local delivery may not be at all contributory. The larger roles in poor outcomes played by social support, economic and educational advantage, and discrimination remain [23]. These factors are difficult for private providers to overcome, or indeed to recognize, but are directly within the purview of the public health system core functions and essential services, and ameliorated through case management and nurse home visiting programs.

A related, and also questionable, assumption was revealed by providers and PHNs themselves, in some cases, with respect to women in poverty. Providers and PHNs often tend to blame the victim when they ascribe individual barriers of motivation, pregnancy denial and even transportation to women in poverty. In this study, two high risk mothers describe planning and preferences for care, and a will to overcome extreme barriers to get care when the well-being of their babies appeared to be at risk in the local care system. Individual barriers including motivation, pregnancy denial, and transportation most certainly prevent some women in poverty from obtaining timely prenatal care, but they may represent the most obvious, not the most important, barriers.

Implications

Several policy solutions could be taken by CSHD Health Departments to improve prenatal care and access for women in poverty, based on the interviews and data collected here, as well as from the existing literature:

1. Enhance pre-conceptual health programs to foster early pregnancy identification. Doing so will help to normalize the PHN case management role, in particular for teen mothers or those identified as adopting a rural cultural perspective eschewing “outside” help;
2. Market pregnancy testing and maternity services to women in poverty to ensure early recognition of pregnancy, access to care, acquisition of Medicaid insurance, and risk screening and intervention;
3. Ensure adequate resources are devoted to telemedicine clinics at the Health Departments. Mothers interviewed valued this service and it is the only care model in the Valley that ensures case management for high risk mothers;
4. Explore possibilities to rekindle family practice prenatal care services and delivery credentialing at Valley hospitals;
5. Ensure PHN case management and navigator positions are adequately staffed, funded and trained to accommodate the volume of high risk mothers in the Valley; and
6. Consider expansion of evidence-based nurse home visiting programs for high risk pregnant women. Nurse Family Partnerships are evidence-based programs that improve at-risk pregnancy, maternal, and young child outcomes for women in poverty and are currently funded under the Affordable Care Act, as are other promising programs. Women in poverty are the target population for both nurse home visiting programs and the Health Department. If the preceding recommendations have the effect of enlarging the Health Department client base, expansion of nurse home visiting and maternity case management services may be necessary and desirable outcomes.

It is not surprising that women in poverty may fail to receive prenatal care in the 1st trimester. By definition they are higher risk than women of ample means who are able to seek the best care and choose appropriate delivery services without concern for location or finances. Health Department patients in this study, however, were not passive service recipients or reluctant advocates. They expended tremendous effort to obtain appropriate care for themselves and their infants, often with the help and support of PHNs. Pregnancy testing, risk screening, facilitation of referral, case management, and home visiting services are primary obligations of PHNs who assist, in particular, women in poverty. The complex relationship that has come about from the loss of rural providers, preferential referral of Medicaid patients to private providers with limited capacity to manage them, and rigid financial requirements in the private sector, has resulted in fragmentation of services and late access to care for women in poverty in the Valley. The primary obligations of the Health Department, however, likely contain the solutions to the problem of late access to care because they are designed to assist, in particular, women in poverty, and to address the particular social risks inherent to families in poverty.

Limitations and Assumptions

This study was intentionally designed to elicit the experiences and opinions of providers, PHNs, and Health Department clients. Two of

the four major obstetrical practices were interviewed to gain the perspective of those who provided most of the prenatal care and delivered most of the Valley birth cohort. Those chosen may not represent the majority viewpoint, although every effort was made to elicit alternative perspectives.

PHNs are most likely to come in contact with women in poverty—the focus of this study—and at least one nurse from each county was interviewed. Given that Medicaid now insures approximately 1/3 of pregnant women in Virginia, and that women with Medicaid may go directly to a private provider without making contact with the health departments, the PHN perspective may be less robust than in the past when they frequently provided prenatal care to all women in poverty.

Interviewing public health department patients was more difficult than initially assumed. Individual health department caseloads are quite small in rural counties, and the two most rural counties had no pregnant or recently postpartum clients to interview. Coordinating access to patients and informed consent was also difficult. In total, three recently postpartum mothers were interviewed for their perspectives on barriers to timely prenatal care and local delivery options in the Valley. Nevertheless, these three represented very different viewpoints and experiences, lending an unexpected depth to the findings.

Individual behaviors and choices by mothers-to-be was assumed to be a primary barrier to timely entry into prenatal care. Substance abuse among expectant mothers was proffered initially, for example, as an increasing barrier to 1st trimester prenatal care in the Valley. The methods employed in this study were not adequate to uncover this phenomenon, however. Vital Statistics data is unreliable to identify substance abuse, and patient interviews were unlikely to reveal stigmatized behaviors. Interviews with PHNs illuminated very few substance abuse issues, although these mothers are most likely to come to the attention of PHNs due to the character of their caseloads, intimacy with the community, and their professional advocacy role in relation to women in poverty.

Adequate prenatal care is defined by The Adequacy of Prenatal Care Utilization Index and includes initiation of care in the 1st trimester of pregnancy, and one prenatal care visit per month through 28 weeks of pregnancy [6]. A recent meta-analysis, however, found that reduced prenatal visits in low-risk pregnancy did not increase adverse outcomes, however, women were less satisfied with their care using a reduced visit schedule [7]. Prenatal care in the 1st trimester was examined in this assessment as the controversy regarding numbers of visits defining adequate prenatal care remains unresolved.

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