

# Healthcare Utilization in the Postpartum Period Among Illinois Women with Medicaid Paid Claims for Delivery, 2009–2010

Kristin M. Rankin<sup>1</sup> · Sadia Haider<sup>2</sup> · Rachel Caskey<sup>3,4</sup> · Apurba Chakraborty<sup>1</sup> · Pamela Roesch<sup>5</sup> · Arden Handler<sup>5</sup>

Published online: 23 June 2016  
© Springer Science+Business Media New York 2016

**Abstract** *Purpose* Postpartum care can provide the critical link between pregnancy and well-woman healthcare, improving women's health during the interconception period and beyond. However, little is known about current utilization patterns. This study describes the patterns of postpartum care experienced by Illinois women with Medicaid-paid deliveries. *Methods* Medicaid claims for women delivering infants in Illinois in 2009–2010 were analyzed for the receipt, timing and patterns of postpartum care, as identified through International Classification of Diseases Revision 9—Clinical Modification and Current Procedural Terminology© codes for routine postpartum care (43.4 % of visits), other postpartum services (e.g., depression screening, family planning), and other office visits for non-acute care. *Results* Over 90,000 visits to 55,577 women were identified, with 81.1 % of women experiencing any care during the first 90 days postpartum. Approximately 40 % had one visit, while 31 and 29 % had two and three or more visits, respectively. Thirty-four

percent had their first visit <21 days postpartum, while 56 % had the first visit between 21 and 56 days postpartum. Compared with non-Hispanic whites, African-Americans had lower rates of receiving any care (73.6 vs. 86.5 %), fewer visits (48.0 vs. 33.5 % with only one visit), and later first visits (13.6 vs. 7.3 %, >56 days). *Conclusions for Practice* The vast majority of Illinois women with Medicaid-paid deliveries interact with the healthcare system during the first 3 months postpartum, though not always for a routine postpartum visit. Strategies to optimize postpartum health should encourage a higher level of coordination among services and linkage to well-woman care to improve subsequent women and infants' health outcomes.

**Keywords** Postpartum care · Medicaid · Administrative claims data · Interconception care

## Significance Statement

*What is Already Known on this Subject?* Postpartum care can provide the critical link between pregnancy and well-woman healthcare. Increasing utilization of postpartum care is a promising strategy for improving women's health during the interconception period and beyond.

*What this Study Adds?* Patterns of care for Illinois women with Medicaid-paid deliveries indicate that women experience care in the postpartum period at higher rates and more frequently than was previously estimated, but not always for routine postpartum care. Strategies to improve postpartum health include coordinating across healthcare encounters in order to maximize potential benefits to women's health and linkage to well-woman care.

---

✉ Kristin M. Rankin  
krankin@uic.edu

<sup>1</sup> Division of Epidemiology and Biostatistics, University of Illinois at Chicago School of Public Health, 1603 W. Taylor St. (m/c 923), Chicago, IL 60612, USA

<sup>2</sup> Department of Obstetrics and Gynecology, University of Illinois at Chicago College of Medicine, Chicago, IL, USA

<sup>3</sup> Department of Internal Medicine, University of Illinois at Chicago College of Medicine, Chicago, IL, USA

<sup>4</sup> Department of Pediatrics, University of Illinois at Chicago College of Medicine, Chicago, IL, USA

<sup>5</sup> Division of Community Health Sciences, University of Illinois at Chicago School of Public Health, Chicago, IL, USA

## Background

Recent evidence supporting the importance of women's pre- and inter-conception health has led to prioritization of these time periods for interventions to improve maternal and child health (MCH) outcomes [4, 7, 19, 21, 23]. An important component of interconception care is postpartum care, which can provide the critical link between pregnancy and ongoing well-woman healthcare, especially among women who only first became engaged with the healthcare system during pregnancy or at delivery. The postpartum period is a challenging time for women due to emotional transitions associated with parenting a newborn, sleep deprivation, physiological changes, an increased risk for depression, and risk for rapid repeat pregnancy [12, 13], so the delivery of high quality postpartum care is essential. The American Congress of Obstetricians and Gynecologists (ACOG) and American Academy of Pediatrics (AAP) recommend scheduling a postpartum visit approximately 4–6 weeks after delivery to provide the opportunity to address health risks that may have risen or been exacerbated by pregnancy, to assess emergent risks such as postpartum depression, to address infant care issues such as breastfeeding and safe sleep, and to offer the opportunity to assist women to transition to a focus on preventive care including reproductive goals and birth spacing [2, 21]. Several current national initiatives aim to improve postpartum care [32]. A [15] goal focuses on increasing the receipt of postpartum visits with a health worker [15] and the Centers for Medicaid and Children's Health Insurance Program (CHIP) Services (CMCS) Maternal and Infant Health Initiative aims to increase the rate of postpartum visits by 10 % among women in Medicaid and CHIP in at least twenty states over a 3-year period [11].

As a result of this national conversation, the optimal timing, site, and content of postpartum care to meet women's needs are currently under consideration among MCH professionals. It is increasingly recognized that the recommendation of a 4–6 week postpartum visit is based on tradition rather than evidence [29]. Recommendations from other developed countries suggest that earlier and more frequent visits may be optimal [29], and several experts have advocated for similar guidelines in the U.S. [1, 3, 14, 20, 21, 26, 28].

To inform practice and policy recommendations related to the delivery of postpartum care, it is critical to first document how women actually utilize care during the postpartum period. Self-reported estimates of any "postpartum checkups" from the Pregnancy Risk Assessment Monitoring System (PRAMS) are 88.7 and 84.3 % among women overall and those with Medicaid-paid deliveries, respectively [8]. Using the Healthcare Effectiveness Data

Indicator Set (HEDIS) measure, which defines a postpartum visit as a visit between 21 and 56 days postpartum with documentation of a specific set of International Classification of Diseases (ICD) diagnosis and Current Procedural Terminology (CPT®) procedure codes, women with Medicaid-paid births in Illinois and elsewhere have historically had postpartum visit rates of approximately 60 % or lower (Illinois Department of Healthcare and Family Services, January 2014; [33]). Inconsistencies in estimates may be due to differences between self-report and administrative data ascertainment, or differences in how broadly postpartum care is defined. Medicaid claims data provide the opportunity to improve upon estimates of "any postpartum care" to include the timing and number of visits experienced by women throughout the postpartum period, which is useful for informing strategies to improve access and care delivery and ensure that women's needs are met.

The purpose of this study is to describe the patterns of postpartum care received by Illinois women with Medicaid-paid deliveries in 2009 and 2010. We utilize a broad definition of care, which encompasses health care encounters from the time after discharge from the delivery hospitalization through 90 days postpartum, a time period for which most women were eligible for some or all services in Illinois.

## Methods

The Illinois 2009 and 2010 Medicaid Analytic Extract (MAX) data [10] were obtained from CMS for women with a maternal delivery indicator for a livebirth or stillbirth between September 1, 2009 and August 31, 2010 who were not also enrolled in Medicare [22]. MAX data include person-level information on Medicaid eligibility, service utilization, and payment, derived from the Medicaid Statistical Information System (MSIS), the centralized system through which states submit data to CMS. IL MAX data for 2009–2010 did not include claims reimbursed by state funds only (e.g., for separate state CHIP program enrollees) since were not reported by IDHFS to the CMS MSIS prior to 2012.

Excluded from analysis were women with managed care encounter claims ( $n = 4110$ , 6.9 %) versus fee-for-service claims from traditional Medicaid, since encounter claims likely have incomplete data [5]. Also excluded were second deliveries to the same woman ( $n = 143$ , 0.2 %). The final analytic sample included 55,577 women. Birth record linkage was unavailable, so the delivery date was approximated as the first date of service for the delivery hospitalization.

Encounters for service dates during the first 90 days postpartum were identified using CPT© and ICD-9-CM codes. Claims were excluded if they occurred prior to delivery hospitalization discharge; if place of service was an inpatient hospital, emergency department, nursing facility, or independent lab; or if the service type was dental, lab/x-ray, capitated payments for primary care case management, or durable equipment only.

Postpartum care was defined more broadly than the HEDIS measure, which encompasses routine postpartum care, gynecological examinations, select contraceptive service codes, or pap smears [24]. Clinical encounters reflecting the following were included (See Table 1 for a full listing of codes):

1. Routine postpartum care (ICD-9-CM = V24.x or CPT© = 59430); or
2. Services recommended as part of postpartum care [2], including:
  - (a) Gynecological exam;
  - (b) Postpartum depression screening;
  - (c) Other screenings and risk assessments (e.g., pap smears, diabetes screening, preconception health, domestic violence);
  - (d) Vaccinations;
  - (e) Family planning services; and/or
  - (f) Counseling (e.g., tobacco and substance use).
3. Visits with ICD-9-CM codes for routine medical care, follow-up or aftercare (e.g., cesarean wound checks) or CPT© codes for preventive care, evaluation and management (E&M), consultation, or all-inclusive federally qualified health center (FQHC) visits. For E&M, FQHC, and consultation visits, we excluded those with a diagnosis code for an acute condition (15 % of all visits), such as a respiratory tract infection, that may have been the primary focus of the visit, rather than postpartum or preventive needs.

**Table 1** Selection criteria for care experienced during the 90-day postpartum period, with percent of visits defined by each criterion, overall and by timing of visit, among Illinois women with Medicaid-paid deliveries between Sept 1, 2009 and Aug 31, 2010 (n = 95,183 visits)

Category	Description	n (%) of visits	Timing of visit		
			<21 Days PP	21–56 Days PP	57–90 Days PP
			Row %	Row %	Row %
Routine postpartum care <sup>a</sup>	Routine postpartum care	41,746 (43.9)	15.0	73.5	11.5
Postpartum services <sup>b</sup>	Postpartum depression screening; other health screenings (e.g., diabetes); risk assessments (e.g., domestic violence); counseling (e.g., nutrition); vaccinations (e.g., influenza, Tdap); or family planning services	31,352 (32.9)	17.1	42.9	40.0
Office visits for non-acute care <sup>c</sup>	Visits for preventive care, general medical exam, E&M, consultation, aftercare, or surgical follow-up	22,085 (23.2)	28.8	36.8	34.3

All codes listed below starting with “V” are ICD-9-CM diagnosis codes and 5-digit numeric-only codes are CPT© codes

Excluded were Evaluation & Management or T1015 visits associated with any diagnosis code for the following: Infectious and parasitic or communicable diseases (ICD-9-CM diagnosis = V01, V02, V09, and 001–139 except 042 for HIV); neoplasms (140–239); Respiratory Infections (460–466), Pneumonia and Influenza (480–488), Pregnancy with ectopic, molar or abortive outcome (630–639); Complications mainly related to pregnancy or prenatal care visit (640–679 with 5th digit of 1–3 indicating delivery or antepartum episode; V22–V23); Diseases of the skin and subcutaneous tissue (680–709); Congenital anomalies and infant conditions originating in the perinatal period assumed misapplied to maternal claim (740–779); Symptoms, signs, and ill-defined conditions (780–799); and, Injury and Poisoning (800–999)

E&M evaluation and management

<sup>a</sup> Routine postpartum care includes: V24.x or 59430 (Note: V24.0 was included as a likely mis-code of V24.1 or V24.2 since it occurred post-discharge outside the hospital setting. The distribution of timing postpartum was similar for visits with V24.0 coded as those compared with V24.1 or V24.2 coded)

<sup>b</sup> Exclusive of visits with a code for routine postpartum care; postpartum services include: gynecological exam (V72.3), postpartum depression screening (99,420, with HD modifier for the pregnant/parenting women’s program), family planning services (V25.x), pap smear [see HEDIS definition for list [24] ], and other preventive care, including vaccinations (V03.x–V06.x, V64.0, plus CPTs for flu and Tdap vaccines [27], domestic violence screening (V61.11, V61.12, V61.21, V61.22, V61.83), diabetes screening (82947, 82948, 82950–82952) and other screenings (V73.x–V82.x), risk assessments, including preconception care (99420, no HD modifier), and BMI assessment (V85.x) dietary and exercise counseling (V65.3), other counseling (V65.4), assessment of personal history (V10.x–V19.x) and social issues (V60.x, V61.x, V62.x, V69.x)

<sup>c</sup> Exclusive of visits with a code for routine postpartum care or a postpartum service; Office visits include preventive visits (99384–99386, 99394–99396), routine medical examinations (V7.0, V70.0, V70.3, V70.5, V70.8, V70.9), E&M visits (99201–99205, 99211–99215), consultations (99241–99245), all-inclusive clinic visits at a federally-qualified health center (HCPCS = T1015), and aftercare

The timing of each visit was estimated by subtracting the proxy delivery date from the service date, then categorized as <21 days, 21–56 days (for consistency with the HEDIS measure), and 57–90 days. In 2009–2010, Illinois Medicaid covered pregnant women with incomes  $\leq 200\%$  of the federal poverty level (FPL) through 60 days postpartum, after which they were automatically enrolled in Illinois Healthy Women (IHW), which covered family planning and related services, if they were ineligible for a higher coverage level). Cash assistance Medicaid recipients continued to have full Medicaid coverage beyond 60 days postpartum. This study included visits through 90 days postpartum since many women were eligible for some or all services beyond 60 days.

Receipt, frequency, and timing of visits in the first 90 days postpartum were estimated for each woman. An index was developed to describe the intersection of these variables across seven common patterns of care: no visits; 1, 2, or  $\geq 3$  visits with the first visit <21 days; and, 1, 2, or  $\geq 3$  visits with the first visit  $\geq 21$  days.

Maternal characteristics are limited in claims, but maternal age, race/ethnicity, geographic residence [30], and percent in the woman’s zip code living in poverty were examined. Data from the American Community Survey 2008–2012 file [31] were linked by zip code of residence at delivery for the poverty measure.

This study was approved by the Institutional Review Board of the University of Illinois at Chicago.

**Statistical Analysis**

Sociodemographic characteristics and postpartum care patterns are described for the sample, and univariate statistics were estimated for the timing of the first visit. Receipt, frequency, and timing of visits are estimated by maternal sociodemographic characteristics. Illustrative examples of each pattern of postpartum care are presented. All analyses were performed using SAS Version 9.4 (SAS Institute: Cary, NC, USA). Given the overabundance of power in this large sample, results were assessed for public health significance, defined for this study as differences of five percentage points or greater, in addition to statistical significance (Pearson’s Chi square tests).

**Results**

Using this method, 95,183 visits to 55,577 women were identified, with 43.9 % identified using criterion #1 (routine postpartum care), 32.9 % using criterion #2 (postpartum services), and 23.2 % with claims only meeting criterion #3 (non-acute office visits) (Table 1). Consistent

with clinical guidelines, routine postpartum visits more often occurred 21–56 days postpartum than other visit types. More than a third of other postpartum services and non-acute office visits occurred 57 through 90 days postpartum, compared to 11.5 % of routine postpartum visits (Table 1).

Illinois women with Medicaid-paid deliveries between September 1, 2009 and August 31, 2010 (n = 55,577) are described in Table 2. Almost 19 % were teens at delivery, while only 6.5 % were  $\geq 35$ . Non-Hispanic African-American and Hispanic/Latina women make up 32.5 and 20.3 % of the sample, respectively. The vast majority resided in an urban core and over a quarter resided in zip codes where  $\geq 20\%$  of residents had incomes below the poverty line.

Eighty-one percent of women (n = 45,080) had at least one encounter within the first 90 days postpartum (Table 3). Among those with visits, almost two-thirds had  $\geq 2$  visits and 33.5 % had their first visit <21 days postpartum. Only 10 % experienced their first visit >56 days postpartum.

**Table 2** Description of the sample of Illinois women with Medicaid-paid deliveries between Sept 1, 2009 and Aug 31, 2010 (n = 55,577 women)

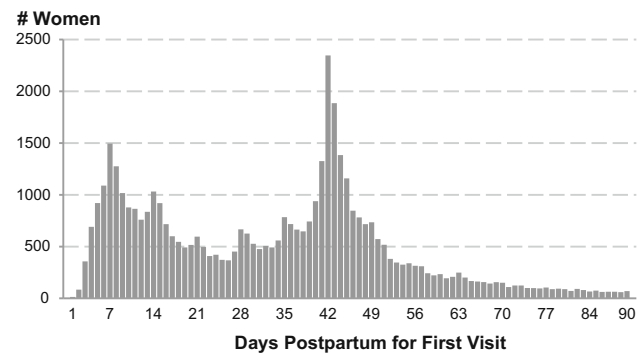
Maternal characteristic	No. (%)
Age group	
Less than 18 years	3060 (5.5)
18–19 years	7422 (13.4)
20–24 years	20,437 (36.8)
25–34 years	21,057 (37.9)
35 years or older	3601 (6.5)
Race/ethnicity <sup>a</sup>	
Non-Hispanic White	23,595 (44.8)
Non-Hispanic Black or African American	17,120 (32.5)
Hispanic or Latina	10,678 (20.3)
Asian/Pacific Islander	930 (1.8)
Other	352 (0.7)
Residence	
Urban core	42,595 (76.6)
Other urban	3508 (6.3)
Large rural city/town	4718 (8.5)
Small rural town	3581 (6.5)
Isolated rural	1175 (2.1)
% at or below poverty line in zip code of residence <sup>b</sup>	
0 to <10 %	20,046 (36.2)
10 to <20 %	19,357 (35.0)
$\geq 20\%$	15,961 (28.8)

<sup>a</sup> 2902 missing values

<sup>b</sup> 213 missing values

Figure 1 demonstrates the bimodal distribution of first visit timing. Peaks occur at approximately 1 and 6 weeks postpartum. After 8 weeks postpartum, the first visits decline, creating a long tail through 90 days postpartum.

Visit receipt, timing, and frequency did not vary by more than four percentage points across age groups and there was no observable pattern in rates by age. Postpartum care did, however, differ by race/ethnicity (Table 3). African-American women were least likely to receive any visits in the postpartum period (73.6 %), compared to 86.5 and 81.3 % in non-Hispanic white and Hispanic/Latina women, respectively. Among those with visits, 66.5 % of white women had  $\geq 2$  visits compared to 52 % of African-American women. Women living in urban core versus more rural areas were less likely to experience postpartum



**Fig. 1** Distribution of days postpartum for women's first experience with postpartum care, among Illinois Women with Medicaid-paid deliveries between Sept 1, 2009 and Aug 31, 2010 (n = 45,080 women with visits)

**Table 3** Receipt, number, and timing of visits during the 90 day postpartum period, overall and by sociodemographic characteristics, among Illinois women with Medicaid-paid deliveries between Sept 1, 2009 and Aug 31, 2010

Maternal characteristic	Visit receipt (n = 55,577)		Number of visits (n = 45,080 with visits)			Timing of first visit postpartum (n = 45,080 with visits)		
	No visits %	Any visits %	1 Visit %	2 Visits %	$\geq 3$ Visits %	<21 days %	21–56 days %	57–90 days %
All women	18.9	81.1	39.8	31.1	29.1	33.5	56.4	10.1
Age group								
Less than 18 years	19.5	80.5	37.8	33.4	28.8	33.6	54.7	11.7
18–19 years	21.2	78.8	40.4	31.7	27.9	32.7	55.9	11.4
20–24 years	18.4	81.6	39.5	31.3	29.2	33.3	56.9	9.8
25–34 years	18.2	81.8	39.6	30.8	29.6	33.9	56.4	9.7
35 years or older	20.1	79.9	42.0	28.8	29.2	33.9	56.7	9.4
Race/Ethnicity								
White, NH	13.5	86.5	33.5	31.6	34.9	35.3	57.4	7.3
African-American, NH	26.4	73.6	48.0	30.3	21.7	32.5	53.9	13.6
Hispanic or Latina	18.7	81.3	41.5	31.7	26.8	31.3	58.0	10.7
Asian/Pacific Islander	17.9	82.1	43.6	30.5	25.9	33.5	53.1	13.4
Other	17.9	82.1	40.1	30.1	29.8	35.0	53.6	11.4
Missing	19.3	80.7	42.2	29.5	28.3	31.7	57.1	11.2
Residence								
Urban core	21.5	78.5	42.8	30.8	26.4	33.7	55.1	11.2
Other urban	14.1	85.9	39.2	31.0	29.8	32.8	59.6	7.6
Large rural city/town	9.5	90.5	29.7	32.3	38.0	30.3	62.3	7.4
Small rural town	7.8	92.2	25.8	31.8	42.4	35.1	59.0	5.9
Isolated rural	9.5	90.5	27.7	34.8	37.5	38.8	56.5	4.7
% at or below poverty line in zip code of residence <sup>a</sup>								
0 to <10 %	15.7	84.3	37.1	31.5	31.4	34.0	57.5	8.5
10 to <20 %	16.5	83.5	37.0	31.4	31.6	34.2	56.7	9.1
$\geq 20$ %	25.8	74.2	47.0	30.3	22.7	31.9	54.5	13.6

NH non-hispanic

<sup>a</sup> 213 missing values



care (78.5 vs. >90 %, respectively). Women in urban cores also had the lowest proportion with multiple visits and highest proportion with a first visit >8 weeks postpartum. Finally, women residing in areas with ≥20 % of residents below the poverty line had lower receipt, frequency, and early (<21 days) first visit rates, than counterparts in less impoverished areas. All associations were statistically significant at  $p < 0.0001$ .

Table 4 shows the proportion of women in each category of an index variable capturing the number of visits and timing of the first visit, including illustrative examples of six archetypical women. Very few women experienced only one visit during the first 3 weeks postpartum (4.2 %). An additional 23 % of women attended an early visit, plus at least one more visit during the first 90 days postpartum. Over one quarter (28.1 %) had only one visit at ≥21 days postpartum, the most common pattern described. Of this group, seventy-six percent had visits explicitly coded as routine postpartum care (criterion #1), compared to 56 % among women with one visit <21 days.

Among all women with their first visit <21 days postpartum, visit indications were largely for aftercare and surgical follow-up, breastfeeding issues (e.g., mastitis), chronic conditions (e.g., anemia), and postpartum

depression screenings. Table 4 presents three examples of indications for early visits (Women # 1, 3 and 5). Women with early depression screenings and no other indication on that service date, such as Woman #4, were likely screened at their infant’s well baby visit or another setting, per IDHFS reimbursement policy [16]. Several women with three visits, such as Woman #6, received routine postpartum care in the 4–6 week window, then had subsequent visits for IUD insertion and follow-up for IUD checking, removal, or reinsertion or other preventive care.

**Discussion**

Increasing receipt of postpartum care is a major national priority for improving women’s and infant health outcomes, linking women to well-woman care, and improving women’s health in the interconception period and beyond. This study sought to describe patterns of care in the postpartum period for women served by Illinois Medicaid to inform strategies for improving the capacity of postpartum care to meet women’s complex and varied needs during this vulnerable period. Results suggest that 81 % of women with Medicaid-paid deliveries in Illinois in 2009–2010 had

**Table 4** Postpartum visit patterns and illustrative examples of each pattern, among Illinois women with Medicaid-paid deliveries between Sept 1, 2009 and Aug 31, 2010 (n = 55,577 Women)

Postpartum care categories	No. (%)	Woman no.	Visit 1		Visit 2		Visit 3	
			Timing (days PP)	Visit description	Timing (days PP)	Visit description	Timing (days PP)	Visit description
No visit	10,497 (18.9)							
1 Visit, <21 days	2307 (4.2)	1	6	T1015: Removal of sutures				
1 Visit, ≥21 days	15,614 (28.1)	2	46	T1015: Routine PPC				
2 Visits, first visit <21 days	4997 (9.0)	3	10	E&M visit: Mastitis	48	Routine PPC		
2 Visits, first visit ≥21 days	9025 (16.2)	4	30	PPD screening only	40	Routine PPC; Diagnoses for sebaceous cyst and major depressive disorder		
≥3 Visits, first visit <21 days	7802 (14.0)	5	7	E&M visit: Anemia	40	Routine PPC	67	Preventive visit: flu vaccine
≥3 Visits, first visit ≥21 days	5335 (9.6)	6	34	Routine PPC; STD screening	41	IUD insertion	81	Preventive visit: Gyn. exam, pap smear, IUD checking, removal or reinsertion

PPD postpartum depression, PPC postpartum care, T1015 all-inclusive clinic visits at a federally-qualified health center, E&M evaluation and Management

at least one encounter with the health care system during the first 90 days postpartum. In addition, almost half of all women had two or more encounters, and over a quarter experienced their first visit within the first 3 weeks postpartum.

Consistent with numerous other health status and health services outcomes [25], postpartum care utilization is characterized by racial/ethnic and socioeconomic disparities, with African-American women and those living in high poverty communities experiencing the lowest rates of any and early visits. These disparities are evident even among women with equalized access to health insurance through Medicaid. It is clear that targeted efforts are needed to improve receipt of postpartum care among African-American and low-income women. Further research with a more robust data source is needed to identify modifiable factors at the health system, provider, and patient levels that contribute to disparities to ensure the effectiveness of targeted strategies for improving utilization among African-American and impoverished women.

While current clinical guidelines recommend a 4–6 week postpartum visit [2], these results suggest that women's actual care patterns vary, likely reflecting differential needs during the postpartum period. It is important to acknowledge that the ACOG/AAP guidelines do suggest that care interval may be modified for women with complications, and recommend a visit in the first 7–14 days for women experiencing a cesarean section or severe complications [2]. Despite this, the HEDIS measure for postpartum care has been defined narrowly to include only the period between 21 and 56 days postpartum and specific diagnosis and procedure codes. The broader definition utilized in this study of non-acute care received between hospital discharge and 90 days postpartum resulted in a much higher estimate of receipt of care than a 2010 estimate of the HEDIS measure for IL Medicaid (81 vs. 58.8 %, respectively) (Illinois Department of Healthcare and Family Services [17]). The consistently low HEDIS estimates for Medicaid women have led to concern that low-income women do not seek postpartum care or experience barriers preventing them from attending a visit. However, the findings of this study suggest that all but nineteen percent of women encountered the healthcare delivery system at least once in the first three months postpartum for reasons other than acute illness.

The challenge posed to the healthcare delivery system is to ensure that women's encounters with the healthcare system during the postpartum period are maximized and, to the extent possible, inclusive of the full complement of services needed to ensure that women's postpartum healthcare needs are addressed. Unfortunately, this study was not able to ascertain the extent to which all

recommended aspects of postpartum care (i.e., content of care) were addressed at identified visits, since billing data rely solely on providers coding for reimbursable services. For example, in this study, having a claim for a postpartum depression screen qualified as postpartum care per criterion #2, but through examination of the raw data, many of these screens were the only service on that date. These could represent depression screenings that occurred at the infant's Well Baby Visit (WBV) [16], a setting in which women do not receive other aspects of postpartum care. However, innovative efforts to co-locate additional services for women at the WBV, such as family planning referrals or services [6, 34], hold promise for integrating maternal and infant care and offering women more convenience in the postpartum period.

The higher estimates for receipt of care in this study, compared to HEDIS estimates, was largely the result of expanding the 21–56 day period to include any visits post-discharge through 90 days postpartum. The length of the "postpartum period" is not well-defined, but women still have documented needs as of the third month postpartum and beyond [21]. For Medicaid women in particular, receipt and timing of care has historically been tied to coverage. Since the 1990s, many women with Medicaid coverage for pregnancy lost coverage 60 days postpartum; however, in 2009–2010 in Illinois, over 50 % of women remained eligible after 60 days postpartum [17]. In addition, postpartum women losing Medicaid coverage were automatically enrolled in IHW, Illinois' family planning waiver, which covered important preventive care, including screenings and contraceptive counseling. As a result of the Patient Protection and Affordable Care Act (ACA), many more women will remain Medicaid-eligible after 60 days post-delivery in states, including Illinois, that expanded Medicaid eligibility to 138 % FPL or because they have coverage through the marketplace. In states that offer this expansion of coverage, the healthcare delivery system has increased leverage to ensure that women receive the postpartum and interconception care they need.

Despite calls for earlier and more postpartum visits [1, 3, 14, 20, 21, 26, 28], and the actual patterns of care revealed in this study, many state Medicaid programs, including Illinois, reimburse providers for only one traditional 4–6 week postpartum visit per woman [18]. The results of this study suggest that providers may already be meeting women's needs for earlier and more frequent visits, but are billing many of these as traditional office visits and other postpartum services, rather than billing for multiple routine postpartum visits, to ensure they are reimbursed. This has implications for Medicaid policy changes related to reimbursing for more than one postpartum visit. It appears that, in Illinois, Medicaid is already paying for more than one visit in the postpartum period for

almost half of eligible beneficiaries, so costs may not rise substantially if the policy is changed to explicitly reimburse for more than one routine postpartum visit per woman.

While access to multiple postpartum visits should be increased, women not desiring or needing more than one visit should not be unduly burdened to return for more. In this study, some of the individual patterns for women receiving three or more visits suggested that women may have been required to return on multiple occasions to have all of their needs met. For example, Woman #6 had a routine postpartum visit at the recommended time, with STI screening, then returned 1 week later to have an IUD placed (presumably after she was confirmed negative for STIs). Clinical guidelines have since changed regarding the need for a negative STI screen prior to IUD insertion [9], so women should be offered a same-day IUD at the postpartum visit if they so desire and are otherwise eligible. Clearly, efforts to improve postpartum care should strive for increased flexibility to meet women's varied needs in the most convenient way possible [29].

To the authors' knowledge, this is the first study using claims data to examine patterns of timing and frequency of care in the postpartum period among women with Medicaid-paid deliveries. This was possible because the Illinois Medicaid program does not bundle reimbursement for prenatal, delivery, and postpartum care with global obstetric CPT© codes, as is the case in many other state Medicaid programs. Therefore, dates for all clinical encounters in the postpartum period were available. Other strengths of this study include its population-based focus and the large sample size of low-income women with Medicaid-paid deliveries in Illinois.

This study was also subject to limitations, including timeliness of the data. At study start, MAX data were only available through 2010. In addition, claims reimbursed by state funds only (e.g., for separate state CHIP program enrollees) were not reported by IDHFS to the CMS MSIS prior to 2012, so do not appear in 2009–2010 MAX files. Therefore, the deliveries reported here are a subset of those paid by IDHFS and do not generalize to the entire population of Medicaid deliveries. Nonetheless, women eligible due to a disability, poverty, or the pregnancy expansion to 200 % FPL make up the bulk of Medicaid-paid deliveries and are represented. The data quality for Medicaid eligibility categories was deemed insufficient for describing postpartum visit rates by eligibility category and over five percent of the sample was missing race/ethnicity. The data quality of non-missing data for race/ethnicity and other demographic variables is unknown. Further, the first date of the delivery hospitalization was used to proxy the delivery date, which may impact the timing of care estimated. Finally, as mentioned previously, the content of care is

incomplete in claims data due to reliance on billing for reimbursable services and information about the quality of care is unavailable. Future quantitative and qualitative studies are needed to assess the content and quality of postpartum care, especially among women served by Medicaid.

Despite these limitations, administrative claims databases provide a powerful data resource for monitoring patterns of care among postpartum women. Their use should be maximized to further describe the complex patterns of care experienced by women across states and payers, and to measure the effect of these different patterns on subsequent MCH outcomes. These efforts would be greatly enhanced if state Medicaid agencies and private insurers that use global CPT© codes to reimburse for perinatal care unbundled these services for reimbursement so all service dates can be captured for each woman. In addition, birth certificate linkage to claims data would allow for more accurately estimating date of birth, and access to a broader set of sociodemographic correlates of care, measured with a higher level of quality.

## Conclusion

Patterns of care experienced by Illinois women with Medicaid-paid deliveries indicate that the vast majority of women interact with the healthcare system at least once, and often more than that in the first 3 months postpartum. Along with expert opinion that the recommended number of visits should be increased with the first visit earlier in the postpartum period [1, 3, 14, 20, 21, 26, 28], the patterns of care shown here suggest that women may benefit from Medicaid reimbursement policy modifications to the traditional 4–6 week postpartum visit in order to accommodate earlier visits. A better understanding of the content and quality of, and women's satisfaction with, postpartum care would supplement these findings and enhance the relevance of clinical and policy responses to achieve the Triple Aim of improved efficiency, patient experience and population health. Strategies to improve postpartum care utilization and quality should encourage a higher level of coordination among services and linkage to well-woman care to improve subsequent health outcomes for women and infants.

**Acknowledgments** This research was funded by the Maternal and Child Health Bureau of the Health Resources and Services Administration (HRSA/MCHB 1 R40MC26821-01-00: SDAS). The authors would like to acknowledge their partners at the Illinois Department of Healthcare and Family Services, Linda Wheel, Gwen Smith, Julie Doetsch and Patricia Murphy, for collaborating to interpret the findings and provide the policy context for this work. The authors would also like to acknowledge Dr. Heike Theil De Bocanegra from the



University of California San Francisco (UCSF) and Monica Barr, formerly at UCSF, for suggesting use of an expanded definition of care in the postpartum period, which greatly influenced this research.

## References

- Albers, L. L. (2000). Health problems after childbirth. *Journal of Midwifery & Women's Health*, 45(1), 55–57.
- American Academy of Pediatrics and American College of Obstetricians and Gynecologists. (2012). *Guidelines for perinatal care* (7th ed.). Washington, DC: ACOG.
- Apgar, B. S., Serlin, D., & Kaufman, A. (2005). The postpartum visit: Is six weeks too late? *American Family Physician*, 72(12), 2443–2444.
- Atrash, H. K., Johnson, K., Adams, M., Cordero, J. F., & Howse, J. (2006). Preconception care for improving perinatal outcomes: The time to act. *Maternal and Child Health Journal*, 10(5 Suppl), S3–S11. doi:10.1007/s10995-006-0100-4.
- Byrd, V. L. H., & Hedley Dodd, A. (2015). *Assessing the usability of encounter data for enrollees in comprehensive managed care 2010–2011*. (No. Brief 22). Mathematica Policy Research. [https://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/Downloads/MAX\\_Encounter\\_Brief\\_2010\\_2011.pdf](https://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/Downloads/MAX_Encounter_Brief_2010_2011.pdf).
- Caskey, R., Stumbras, K., Rankin, K., Haider, S., & Handler, A. (2015). Pediatrician utilization of a reproductive life plan tool at the well-baby visit: A pilot project. *Presented at the APHA 143rd Annual Meeting and Expo*, Chicago, IL. Abstract retrieved from <https://apha.confex.com/apha/143am/webprogram/Paper333420.html>.
- Centers for Disease Control and Prevention. (2006). Recommendations to improve preconception health and health care—United States: A report of the CDC/ATSDR preconception work group and the select panel on preconception care. *MMWR - Morbidity & Mortality Weekly Report*, 55(RR-6), 1–22.
- Centers for Disease Control and Prevention (CDC). (2007). Postpartum care visits—11 states and New York City, 2004. *MMWR. Morbidity and Mortality Weekly Report*, 56(50), 1312–1316. doi:10.1037/e723842007-002
- Centers for Disease Control and Prevention (CDC) (2010). *U.S. medical eligibility criteria for contraceptive use, 2010*. *MMWR, Recommendations and Reports*, June 18, 2010 / 59(RR04);1–6. Retrieved from [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5904a1.htm?s\\_cid=rr5904a1\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5904a1.htm?s_cid=rr5904a1_e).
- Centers for Medicare & Medicaid Services. (2013). *Medicaid analytic eXtract (MAX) general information*. Retrieved from <http://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MAXGeneralInformation.html>.
- Centers for Medicare & Medicaid Services. (2014). *CMCS maternal and infant health initiative: Improving maternal and infant health outcomes in medicaid and CHIP*. Retrieved from <http://www.medicare.gov/Medicaid-CHIP-Program-Information/By-Topics/Quality-of-Care/Downloads/Maternal-and-Infant-Health-Initiative.pdf>.
- Declercq, E. R., Sakala, C., Corry, M. P., Applebaum, S., & Herrlich, A. (2014). Major survey findings of listening to mothers(SM) III: Pregnancy and birth: Report of the third national U.S. survey of women's childbearing experiences. *The Journal of Perinatal Education*, 23(1), 9–16. doi:10.1891/1058-1243.23.1.9.
- Dennis, C. L., & Dowswell, T. (2013). Psychosocial and psychological interventions for preventing postpartum depression. *The Cochrane Database of Systematic Reviews*, 2, CD001134. doi:10.1002/14651858.CD001134.pub3.
- Goulet, L., D'Amour, D., & Pineault, R. (2007). Type and timing of services following postnatal discharge: Do they make a difference? *Women and Health*, 45(4), 19–39. doi:10.1300/J013v45n04\_02.
- Healthy People 2020. (2013). *Maternal, infant and child health objectives*. Retrieved from <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=26>.
- Illinois Department of Healthcare and Family Services. (2004). *Informational notice: Screening for perinatal depression*. Retrieved from <http://www.hfs.illinois.gov/html/112904screening.html>.
- Illinois Department of Healthcare and Family Services. (2014). Report to the general assembly. PA 93-0536.
- Illinois Department of Healthcare and Family Services (2015). *Informational Notice: Postpartum Visits and Perinatal Care Transitions*. Retrieved from <http://www.hfs.illinois.gov/assets/092915n1.pdf>.
- Institute of Medicine. (2011). *Clinical preventive services for women: Closing the gaps*. Washington, DC: National Academy of Sciences.
- Jacobson, B. B., Brock, K. A., & Keppler, A. B. (1999). The post birth partnership: Washington state's comprehensive approach to improve follow-up care. *The Journal of Perinatal & Neonatal Nursing*, 13(1), 43–52.
- Lu, M. C., Kotelchuck, M., Culhane, J. F., Hobel, C. J., Klerman, L. V., & Thorp, J. M, Jr. (2006). Preconception care between pregnancies: The content of prenatal care. *Maternal and Child Health Journal*, 10(5 Suppl), S107–S122. doi:10.1007/s10995-006-0118-7.
- Mathematica Policy Research. (2014). *Medicaid analytic extract inpatient (IP) record layout and description 2012*. Centers for Medicare & Medicaid Services.
- Moos, M. K., & Cefalo, R. C. (1987). Preconceptional health promotion: A focus for obstetric care. *American Journal of Perinatology*, 4(1), 63–67. doi:10.1055/s-2007-999739.
- National Committee for Quality Assurance. (2010). *Healthcare effectiveness data and information set (HEDIS): Prenatal and postpartum care*. (No. Volume 2). HEDIS. <http://www.ncqa.org/portals/0/Prenatal%20Postpartum%20Care.pdf>.
- Nelson, A. R., Smedley, B. D., & Stith, A. Y. (2002). *Unequal treatment: Confronting racial and ethnic disparities in health care (full printed version)*. Washington, DC: National Academies Press.
- Piejko, E. (2006). The postpartum visit—Why wait 6 weeks? *Australian Family Physician*, 35(9), 674–678.
- Priorityhealth.com. (2015). Vaccine and vaccine administration billing. <http://www.priorityhealth.com/provider/manual/billing-and-payment/services/vaccines>.
- Speroff, L., & Mishell, D. R, Jr. (2008). The postpartum visit: It's time for a change in order to optimally initiate contraception. *Contraception*, 78(2), 90–98. doi:10.1016/j.contraception.2008.04.005.
- Stumbras, K., Rankin, K., Caskey, R., Haider, S., & Handler, A. (2015). A review of current guidelines, recommendations, and interventions related to the postpartum follow-up visit, Submitted to Special Issue dedicated Postpartum Health and Wellness. *Maternal and Child Health Journal* (forthcoming).
- University of Washington Rural Health Research Center. Rural-urban commuting area codes (RUCAs). Retrieved from <http://depts.washington.edu/uwrucal/>.
- U.S. Census Bureau. Poverty status in the past 12 months: 2008–2012 American Community Survey 5-year estimates. Retrieved from <http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>.
- Verbiest, S. (2014). *AMCHP Postpartum think tank meeting: Setting the stage*. Retrieved from <http://www.amchp.org/>

- [programsandtopics/womenshealth/Focus%20Areas/Documents/Postpartum%20Think%20Tank%20Slides.pdf](#)
33. Weir, S., Posner, H. E., Zhang, J., Willis, G., Baxter, J. D., & Clark, R. E. (2011). Predictors of prenatal and postpartum care adequacy in a medicaid managed care population. *Women's Health Issues: Official Publication of the Jacobs Institute of Women's Health*, 21(4), 277–285. doi:10.1016/j.whi.2011.03.001.
  34. Zuckerman, B., Nathan, S., & Mate, K. (2014). Preventing unintended pregnancy: A pediatric opportunity. *Pediatrics*, 133(2), 181–183.