

Cross-border Prenatal Care Utilization: Using Design Thinking to Drive Improvements in Birth Data Quality

A TECHNICAL BRIEF on the California Initiative of the Border States CoIIN

First Trimester Prenatal Care and Social Determinants of Health

Accessing early and ongoing prenatal care is critical for healthy moms and babies. Prenatal care initiated in the first trimester has been linked to a decrease in several negative birth outcomes, including preterm births, low birth weight and infant mortality.¹

High quality, respectful prenatal care obtained throughout pregnancy – at a time when many women may have more frequent contact with health care than any other time in their lives – can also help to establish a strong relationship of trust with a health care provider that can benefit both mother and baby well beyond the pregnancy. Moreover, frequent contact with the health care system during pregnancy and the perinatal period offers important opportunities to identify and address other health factors and related social determinants of health that can impact the health and well-being of the entire family across the life course. For this reason, reducing disparities in prenatal care access and utilization is of critical importance for mitigating life-long inequities in the social determinants of health.

Prenatal Care Utilization in the U.S. Mexico Border Region

In counties along the U.S. border with Mexico, the reported rates of early and adequate prenatal care (a national benchmark that measures timing and frequency of prenatal visits)² are much lower than the national average, and lower than non-border counties within the same states.³

The Border States CoIIN

(Collaborative Improvement & Innovation Network), led by PCI, worked with cross-sectoral teams across four U.S. states between 2017 and 2020 to achieve a common aim: to increase early prenatal care utilization by 10% among women in targeted impact areas of California, Arizona, New Mexico and Texas through the development of place-based improvement strategies that address the social determinants of health.



First Trimester Prenatal Care

(National Healthy People 2020 Objective: 80.5%)

ARIZONA (2017) ^a	68.3%
Santa Cruz County (2017-2018)	51.0%
CALIFORNIA (2016-2018) ^b	83.9%
Imperial County	49.8%
NEW MEXICO (2017) ^c	63.8%
Doña Ana County	57.8%
TEXAS (2017) ^d	63.3%
Val Verde County	41.6%

Figure 1. Map of U.S.-Mexico Border Region and Early Prenatal Care Disparities

Sources: Aa. Arizona Dept. of Health Services, Population Health and Vital Statistics Reports: Live Births According to Selected Characteristics (2008-2018; Accessed 12/21/20); b. California Dept. of Public Health County Health Status Profiles 2016-2018 (Accessed 12/21/20); c. New Mexico Dept. of Health Indicator Based Information System (NM-IBIS; Accessed 12/21/20); d. Texas Dept. of State Health Services Data Dashboard (Accessed 12/21/20)

As suggested by McDonald and colleagues,³ prenatal care among Hispanic immigrants in the border region may be underreported on U.S. birth certificates due to incomplete access to Mexican records of prenatal care. While cross-border travel in both directions for health services, including reproductive health services, is common and well-documented,⁴⁻⁶ little is known about the extent of cross-border prenatal care utilization, or how prenatal care received outside of the U.S. is counted in vital statistics, not only for Mexican immigrants but for U.S. citizens and residents who access care in Mexico. A 2017 study by the Healthy Start Border Alliance found that self-reported first trimester prenatal care rates among 403 Hispanic women of reproductive age in border communities of California, Arizona, New Mexico and Texas were much higher than official statistics in the same target areas, and documented high rates of cross-border prenatal care utilization in California (21.82%) and Arizona (28.89%).⁷

In 2018, a team of stakeholders collaborating through the Border States CoIIN Initiative (see next section) convened in Imperial County, California, to employ human centered design methods in building a shared understanding around the factors that contribute to low rates of early prenatal care in the area. The team hypothesized that variation in practices or policies that determine how foreign prenatal care is recorded may result in skewed vital statistics data around early and adequate prenatal care for the region as a whole. This is important because we rely on vital statistics to help us understand quality of and access to medical care, and racial, ethnic, and socioeconomic disparities in maternal and infant care within our communities, as well as to design targeted public health interventions.

Using Design Thinking to Understand Gaps in Prenatal Care

From 2017 to 2020, the California team of the Border States Collaborative Improvement and Innovation Network (CoIIN), led by PCI, a Global Communities Partner, with federal funding from the Health Resources and Services Administration's Maternal & Child Health Bureau, pioneered the use of human-centered design in the development of interventions to increase rates of early prenatal care (PNC) in the border regions of the four U.S.-Mexico Border States. The California team of the Border States CoIIN began its work in Imperial County, CA, which has the lowest rates of early PNC in the State of California (49.8% of women received first trimester PNC in 2016-18, compared to 83.9% in the state as a whole).⁸

Beginning in 2018, PCI and a team of 27 local stakeholders in Imperial County employed human-centered design methods to (1) build a shared understanding around low rates of early PNC in the area; and then (2) to validate and test a hypothesis that many women giving birth in U.S. border counties access PNC in Mexico, including U.S. residents and citizens, and this care is often excluded from a woman's PNC records and ultimately omitted from official vital statistics data in the U.S.

The team drew upon the diverse professional experiences of clinical providers, hospital staff and birth clerks working in the region; as well as the pregnancy and birth experiences of women in the county. The team examined the lived experiences of 10 women who obtained PNC on both sides of the border; and interviewed 15

Choosing Prenatal Care in Mexico: User Perspectives

- Many women, residents of U.S. and Mexico alike, report experiencing fewer delays in accessing prenatal care in Mexico, compared to the U.S.
- Women shared that Mexican prenatal care is more affordable, even if they have health insurance in the U.S.
- Some women like that in Mexico they can obtain an ultrasound earlier in their pregnancy, which is important to them for many different reasons.
- Mexican immigrant women report concerns that accessing prenatal care in the U.S. could influence their ability to become U.S. citizens in the future due to considerations of public charge.
- In most of the border region, cities on the Mexican side of the border are much larger than the adjacent cities on the U.S. side. Often this means there is simply a greater selection of prenatal providers and hospitals on the Mexican side of the border.

Sources: User interviews and testimonials from CoIIN workshops and Healthy Start Border Alliance focus groups



Design Workshop in Imperial County (Sept. 2018)

providers, hospital staff and birth clerks to clarify the pathways through which accurate information about foreign care is compiled and reported to vital statistics.

Guided by human-centered design approaches, the team worked to clarify the pathways through which accurate information is compiled and reported to vital statistics, as well as practical issues or barriers faced by individuals each step of the way. As a result of these activities, the California COLLN team revealed confusion and lack of clarity among clinicians, nurses, hospital staff and birth clerks about whether an issue of under-recording of foreign PNC actually exists; if counting foreign PNC is even permitted by national policies; and how to utilize foreign PNC records if permitted. In response, the COLLN team developed a multi-tiered strategy with priority actions responding directly to each of these challenges. Each priority action is described below in further detail.



Priority Action 1: Clarify Prenatal Care Recording Practices

By analyzing data from state and county health systems and listening to the lived experiences of pregnant and parenting individuals, providers and hospital staff, the California COLLN team learned that a significant proportion of those giving birth in the region, whether they are residents of U.S. or Mexico, choose to initiate prenatal care in Mexico, and there is no systematic way that this information is captured by U.S. clinicians and hospitals for vital statistics recording. Providers may often record the first prenatal visit as the date a patient was first seen by them or the first time a patient was seen in the U.S.

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Discussions by California's COLLN team with over 15 clinicians, nurses, hospital staff and birth clerks revealed several practical challenges to recording foreign prenatal care in U.S. prenatal records and birth certificates. Prenatal care records are sent to birthing hospitals by providers when a person is ready to give birth, and hospital birth clerks may not look at records prior to the first prenatal care records from a U.S. clinician, even if those are included with the U.S. records sent to the birthing hospital.



Figure 2. Standard Flow of Prenatal information from Patient Charts to Vital Statistics

In order to better understand recording practices among hospital data clerks in the border region, and how they may or may not contribute to any skew in vital statistics data for the timing of prenatal care, the California team designed a survey study of birthing facilities along the U.S.-Mexico border (PCI IRB Protocol 38) in partnership with the Southwest Institute for Health Disparities Research at New Mexico State University. Out of 55 birthing facilities meeting our inclusion criteria, 17 participated in the survey, which was conducted both by phone and online during 2019 and early 2020.

An average of hospital clerk estimates in the border region indicates that more than a third (36%) of births received at least some prenatal care from a provider in Mexico or another country, and this care may often be omitted in vital statistics.

Key Survey Findings

Our study captured hospitals in border counties of all four Border States, which together account for about 1 of every 5 births (19%) in the region. Responding hospitals were located in each of the four Border States, and included public and private hospitals, and hospitals of all sizes.

Results from our survey provide evidence of a wide variation in how prenatal care is recorded by providers and birthing facilities, particularly when that care is obtained outside of the country.

A large percentage of prenatal patients receive prenatal care in Mexico. Hospitals were asked to estimate the proportion of women giving birth in their hospital who receive at least some prenatal care from a provider in Mexico or another country, using numeric values ranging from 0-100%. Approximately half of participating hospitals provided a response, with a median response value of 40% and an average estimate of 36%.

U.S.-based care may be the only care that is reported to vital statistics. Some respondents reported that when a mother/parent reported that they initiated prenatal care in Mexico, even if complete medical records were presented, that individual's first prenatal care visit would be recorded as the first time they received care in the United States. One respondent noted that "what [parent(s)] tell us [about care] that happens in Mexico does not go on the birth certificate." Reasons cited for not using foreign prenatal care records include lack of confidence in the quality and/or completeness of prenatal care provided in Mexico.

Only 1 in 5 birth clerks reported following up with clinicians for missing information about date of the first prenatal visit and total number of visits. When records were absent or unavailable, 44% of respondents indicated that they record timing and/or adequacy of prenatal care as "unknown" or "none" (and these terms seemed to be used interchangeably by respondents). In this situation, 38% of birth clerks asked the mother about her prenatal care history, and only 19% indicated they would follow up with the U.S.-based clinic/doctor where prenatal care was received.

Less than half of respondents (41%) reported that their institutions used the Centers for Disease Control (CDC)/National Center for Health Statistics Facility Worksheet for the Live Birth Certificate when registering a birth. Although few hospitals responded to the survey, there was no indication that use of the worksheet was correlated to hospital size or ownership.

This study validated the CollN team's hypothesis that prenatal care initiated outside of the U.S. may often be omitted in vital statistics.

Priority Action 2: Obtain Clear Policy Guidance From Federal/State Authorities On The Acceptability Of Foreign Prenatal Care For Vital Statistics

The COLLN's early work had revealed that some hospitals have in place hospital-specific policies that explicitly disallow the use of foreign prenatal care records for informing timing and number of prenatal care visits in the birth certificate. Decision makers at some hospitals identified the need for a clear policy directive from national and state authorities on recording vital statistics in order to change hospital policies that disallowed foreign prenatal care. In response, the COLLN team conducted targeted communication to raise awareness of this lack of clarity with key staff at CDC/National Center for Health Statistics (NCHS) and the State of California, and gave presentations to national and state working groups on birth data quality.

In early 2019, the CDC NCHS issued official guidance stating that *information obtained on prenatal care received in countries other than the United States and in languages other than English is permitted and should be used* to complete the confidential section of the birth certificate see updated official guidance in Figure 3 below. This was reinforced by an All-County Letter issued by the State of California to all counties in March 2020.

Definitions	Instructions	Sources
PRENATAL CARE AND PREGNANCY HISTORY		
The prenatal care record is the preferred source for items 6 through 16. If the prenatal care record is not in the mother's file, please contact the prenatal care provider and obtain a copy of the record.		
6. Date of first prenatal care visit (BC #29a, FDFWS #6a, FDR #23a)		
The date a physician or other health care professional first examined or counseled the pregnant woman for the pregnancy. information obtained on prenatal care received in countries other than the United States and in languages other than English is permitted and should be used.	Enter the month, day, and year of the first prenatal care visit. If date information is incomplete, enter all parts of the date that are known. Report "unknown" for any parts of the date that are missing. If mother's earliest prenatal care records are not available (i.e., the date of the first prenatal care visit is unavailable), report "unknown."	1st Prenatal care record <i>under-</i> <ul style="list-style-type: none"> • Intake information • Initial physical examination • Prenatal visit flow sheet • Current pregnancy

Figure 3. Updated Guide to Completing the Facility Worksheet for the Certificate of Live Birth (Excerpt from Page 13; updated February 2019)

Priority Action 3: Prototype And Test Standard Forms To Facilitate The Transfer Of Foreign Prenatal Care History In Provider Records

One practical challenge cited by providers and hospital staff was that foreign prenatal care records were usually completed in another language and often used different lab or screening standards which clinicians felt they could not confidently translate. Prenatal lab results from other countries might use different methodologies, different units and different normal ranges.

As one potential solution to facilitate the transfer of information from foreign prenatal records to U.S. prenatal records, PCI and the California COLLN team designed, validated and tested a prototype of a Prenatal Transfer Record (PTR) tool. The tool, which was tested and refined using a rapid cycle testing model with prenatal providers in the U.S. and in Mexico, includes fields for documenting key information from prenatal care visits, including lab and imaging results. Additionally, the Spanish translation of each field name is listed directly below the English field name to eliminate the need for cost-prohibitive Spanish to English translation.

PRENATAL TRANSFER RECORD/EXPEDIENTE DE TRANSFERENCIA PRENATAL

_____/_____/_____
Last Name (Apellidos) **First Name(s) (Nombre(s))** **Date of Birth (DAY / MONTH / YEAR) (Fecha de Nacimiento (DÍA / MES / AÑO))**

Allergies (Alergias): _____ Pre-pregnancy weight (Peso previo al embarazo): _____ (lbs / kg)

CURRENT PREGNANCY (Embarazo Actual)
 Gravidia: _____ Parity: _____ Abortions: _____ LMP: _____/_____/_____ Est. Due Date: _____/_____/_____
 (Gravidez) (Paridad) (Abortos) (FUR) (DAY Día /MONTH Mes / YEAR Año) (Fecha Est. De Parto) (DAY Día /MONTH Mes / YEAR Año)

PREVIOUS PREGNANCIES (Embarazos Anteriores)
 Cesarean (Cesárea) VBAC (PVDC) Preterm Birth (Parto Premat.) Gestational Diabetes (Diabetes Gestacional) Preeclampsia (preeclamsia)
 IUGR (RCIU)

LABORATORY (Laboratorio)

Blood Type & Rh: _____ (Tipo Sanguíneo y Rh)	ABS: _____ (ABS)	VDRL / RPR: _____ (VDRL / RPR)	Hgb/Hct: _____/_____ (Hgb/Hct)	HIV: _____ (VIH)
Rubella: _____ (Rubiola)	HBsAG: _____ (HBsAG)	PAP: _____/_____/_____ (Papanicolaou)	TB Test: _____/_____/_____ (Tuberculosis)	Result _____ (Resultado)
GC / Chlamydia: _____/_____/_____ (Gonorrea/Clamidia)	Urinalysis: _____/_____/_____ (Uroanálisis)	Result _____ (Resultado)	Result _____ (Resultado)	Result _____ (Resultado)

24 to 28 Week Lab (Laboratorio 24 a 28 semanas de gestación)

NOTE (Nota)
 For complete prenatal records, the following must be attached and may be requested (Si desea el expediente prenatal completo, debe anexarse y puede solicitarse lo siguiente recien):

Figure 4. Prenatal Transfer Record prototype

The tool is designed to capture all information needed by a U.S. provider to record prior prenatal care, and can be completed either in advance by prenatal providers for patients planning to complete care in the U.S., or can be requested by a U.S.-based provider via secure fax. See Figure 5 below for how the PTR could be used to enhance the standard flow of prenatal care information from patient charts to vital statistics.

The California COLIN team met with representatives of SIMNSA, a Mexican HMO that was the first to be licensed by a U.S. state to provide care as part of a binational health plan, to identify what information is typically captured during a PNC visit in Mexico. The SIMNSA team also validated the accuracy and usability of the final product.

The California COLIN team partnered with a community clinic in San Diego, CA, to conduct a small-scale test of use of the PTR tool. Over a period of four months, two key staff at Mid-City Community Clinic used the PTR tool with prenatal care patients who had records of prior prenatal care from a foreign country.

- During the test cycle period, 12 patients had information in their medical records showing they had received at least some of their prenatal care in a foreign country and, therefore, met the criteria for using the PTR tool.
- Of the 12 patients with whom the PTR tool was used, 10 patients received at least some of their 1st trimester prenatal care in a foreign country.
- Clinic staff reported that the tool was easy to use and typically took about 15 minutes to complete.

Prenatal Transfer Record (PTR)

- Captures ACOG required prenatal care elements and intervals
- Includes dates, key screens and provider for each visit received
- Facilitates direct sharing of key information between providers through secure email contact
- Is bilingual, with English AND Spanish on same form

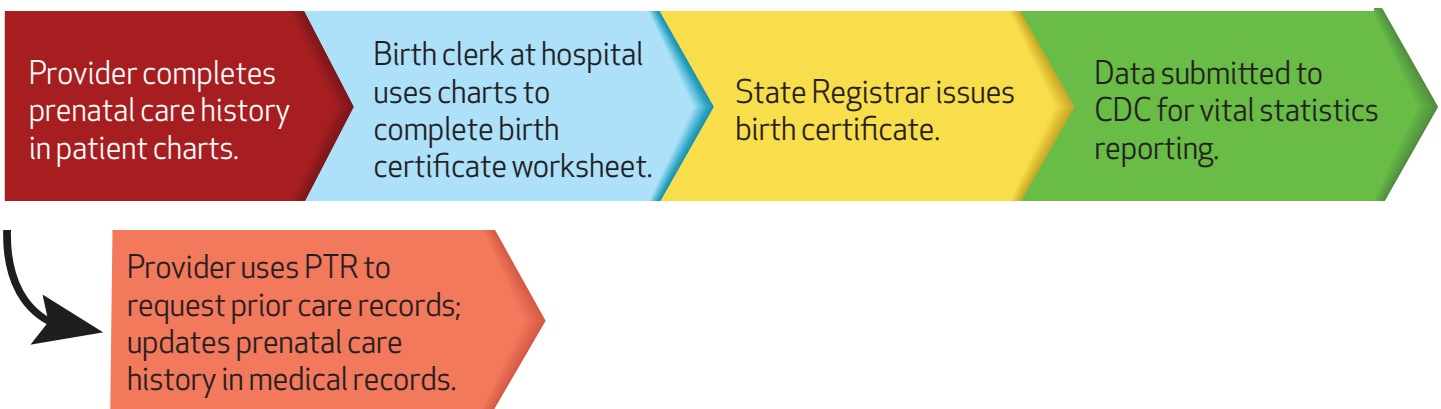


Figure 5. Proposed Improved Flow of Prenatal information from Care Records to Vital Statistics

Recommendations

Given the importance of accurate vital statistics to inform targeted and effective public health strategies, we strongly urge State Registrars in all states and territories consider several recommendations that draw on ColIN findings:

1. Update official state guidance to align with the new CDC/NCHS policy on the use of foreign prenatal care records for vital statistics recording and ensure its thorough dissemination to all local health department authorities. The ColIN found that having federal guidance was often not enough; providers and birthing facilities deferred to State guidance over NCHS.
2. Invest in additional training for key hospital staff on the importance of vital statistics data accuracy and the importance of their role in ensuring vital statistics accuracy.
3. As hospitals adopt updated guidance on the recording of foreign prenatal care, it will be informative to monitor the changes in early and adequate prenatal care rates at the hospital, county and regional levels. Where appropriate, ensure any data reported for these prenatal care indicators specifies whether foreign prenatal care was counted.
4. State and County level Maternal and Child Health (MCH) directors should assess how the statistics they rely on to design programs may be revisited to expose the influence of bias, particularly where the experiences of mobile populations may not be accurately captured in official data.

Additional Implications

The hospital survey study conducted provides evidence that prenatal care received outside the U.S. is discounted by some providers and hospital staff. To the extent that such a bias is operating throughout the region, it would serve to decrease rates of early and adequate prenatal care in official data for the entire region. Sustained investment in improved data quality – particularly for mobile or marginalized populations – is critically important to help overcome structural biases across the health care system.

Continued research, follow up and monitoring is needed to understand the impact of varying prenatal care recording practices on birth data quality, particularly around care received outside the U.S. In areas like the border region, where traveling abroad for care is commonplace, this will be key to identifying those populations that are truly not receiving or accessing early and adequate prenatal care. This, in turn, will allow for better-targeted public health efforts that can more effectively address the social determinants of health that have an impact on prenatal care utilization. This phenomenon is not limited to the border region of the U.S., but rather is relevant for any region with mobile populations.

This initiative uncovered key ways in which social and structural determinants operate within the prenatal care user experience and the health care system at large. When a prenatal patient establishes care with a provider in the U.S. and the records of prior care she brings with her are disregarded, this decision could mean that she receives incorrect or inappropriate care. The choice of many U.S. residents to obtain prenatal care across the border reflects a reality in which U.S.-based care is either not accessible or does not satisfy their requirements (i.e. cost, wait times) or preferences (i.e. language or cultural context). Many U.S. citizens who live on the Mexican side of the border may choose to obtain prenatal care in Mexico as a matter of convenience, even if they intend to give birth in the U.S. It will be important for researchers and stakeholders to better understand the quality of prenatal care provided outside the U.S. and its impact on birth outcomes as well as positive user experiences.

Conclusions

A clearer national policy directive around inclusion of foreign care for the purposes of vital statistics was achieved through this process. In order to maximize uptake/ adherence to this policy at the ground level – and thereby achieve improved data quality and strengthen coordinated care – it will be important to test and deploy practical tools that can support providers in obtaining, recording and utilizing foreign records. The Prenatal Transfer Record (PTR) offers one solution that can be further tested, but researchers should learn from other examples of effective cross-border care coordination practices among providers who serve binational patients experiencing tuberculosis, cancer and other conditions. Stakeholders should look to these and other examples of how to design a health care experience and supportive system that accommodates the binational reality of many individuals' lives in the border region(s) of our nation, and ensures continuity of care, including but not limited to prenatal care. Finally, the utility of human centered design thinking for identifying solutions to similar complex challenges cannot be understated. The identification of this issue and potential avenues for addressing it were made so much richer by the fact that this process was human centered, rather than prescriptively donor or policy driven. Public health stakeholders should learn from this example to engage in truly human-centered work.

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