Personalized Prenatal Care Using Telehealth Strategies

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MATERNAL-FETAL MEDICINE
EARLY 20th CENTURY...
Prenatal Care in the U.S.

• With nearly 4 million births annually, prenatal care is one of the most widely used preventative health care strategies.
Prenatal Care in the U.S.

• With nearly 4 million births annually, prenatal care is one of the most widely used preventative health care strategies.

• Despite its ubiquitous practice, the optimal quantity and character of prenatal care remains controversial.
  • Paucity of randomized trials
  • Questions of efficacy and efficiency remain
1989: U.S. Department of Health and Human Services
Caring for our Future: The Content of Prenatal Care
Report of the Public Health Expert Panel on the Content of Prenatal Care

“The specific content and timing of prenatal visits, contacts, and education should vary depending on the risk status of the pregnant woman and her fetus.”
Proposed reduced frequency prenatal schedule for low-risk parous women based on the timing of specific events and tests that occur in pregnancy.
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Caring for our Future: The Content of Prenatal Care
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Proposed reduced frequency prenatal schedule for low-risk parous women based on the timing of specific events and tests that occur in pregnancy.

→ Reduced recommended visits from 14 to 8.
What should we be doing?

Guidelines:

U.S. Department of Health and Human Services
American Congress of Obstetricians & Gynecologists (ACOG)
American Academy of Pediatrics (AAP)
Institute for Clinical Systems Improvement (ICSI)
Department of Defense and Veterans Administration (DoD & VA)
What should we be doing?

Guidelines:

• All recommend a system of goal-oriented antenatal visits at specific gestational ages.

• Endorse a reduced schedule of prenatal visits compared to traditional models for low-risk women.
Less visits - Is it safe?

Systematic review of 7 RCTs:

• Reduced prenatal care model (4-9 visits) vs. standard care (13-15 visits)

• 57,000 low-risk women, spectrum of resource settings

Carroli et al. WHO systematic review of randomized controlled trials of routine antenatal care. Lancet 2001;357:1565-70
Less visits- Is it safe?

Systematic review of 7 RCTs:

- No difference in maternal or perinatal morbidity / mortality
- However, some increased dissatisfaction with care, particularly among women in more developed countries

Carrolí et al. WHO systematic review of randomized controlled trials of routine antenatal care. Lancet 2001;357:1565-70
‘One Size Fits All’ Prenatal Care

• Despite compelling safety and efficacy data, prenatal care practices in the U.S. have generally continued a ‘one-size fits all’ approach.

• Concerns have limited widespread use of a reduced prenatal care visit model.

  • Patient satisfaction
  • Provider satisfaction
  • What else?
DOGMA

...cannot be changed or discarded without affecting the very system’s paradigm...
Managing the Population

'Higher Risk'
- Chronic disease
- Prior pregnancy complications
- Current pregnancy complications
- Fetal abnormalities or multiples

'Lower Risk'
- Healthy mother
- Prior uncomplicated pregnancies
- Current pregnancy uncomplicated
- Normal, singleton fetus
- Between 20-39 years
- Previous term delivery
- No history of serious pregnancy complications
- No chronic medical conditions
- No major risk factors for adverse outcome
- Singleton, non-anomalous fetus
A Novel Idea

Assess patient satisfaction with a prenatal care model consisting of a novel remote monitoring strategy and reduced number of in-clinic visits in a low-risk obstetric population.
Patients at least as satisfied

With no difference in outcomes

At lower cost
Personalized Prenatal Care for Low Risk Pregnancies: A Randomized Trial of Remote Patient Monitoring

Low-risk pregnant women between 6 0/7 to 16 0/7 weeks at University of Utah Medical Center

5 Scheduled In-clinic Prenatal Visits + Remainder by Telemedicine

Traditional In-Clinic Prenatal Care

CT.gov NCT01979436
Personalized Prenatal Care for Low Risk Pregnancies: A Randomized Trial of Remote Patient Monitoring

• Primary outcome is overall patient satisfaction with prenatal care after delivery.

CT.gov NCT01979436
Remote Prenatal Care Strategy
Add Prenatal Vitals Flowsheet Data

Step 1 of 2: Enter readings

Click Add Another Reading if you would like to enter data for more than one reading at this time.

When you are finished entering data, click Continue. Click Cancel if you do not want to save the data you entered.

Record your blood pressure in the Systolic and Diastolic fields. Record your current weight in pounds in the Weight field. Finally record your baby’s heart rate in beats per minute (bpm) in the last field.

Reading 1

Date: 

Time: 

Mother's Vitals:

Systolic: 

Diastolic: 

Weight (lbs): 

Baby's Vitals:

Fetal Heart Rate (bpm): 

Continue > Add Another Reading > Cancel
<table>
<thead>
<tr>
<th>Week</th>
<th>Visit Type</th>
<th>Survey/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Remote Visit</td>
<td>Survey: Remote Care Experience</td>
</tr>
<tr>
<td>20</td>
<td>In-Person Visit</td>
<td>Survey: Satisfaction, Preference, Chat</td>
</tr>
<tr>
<td>24</td>
<td>Remote Visit</td>
<td>Survey: Cost</td>
</tr>
<tr>
<td>28</td>
<td>In-Person Visit</td>
<td>Survey: Cost</td>
</tr>
<tr>
<td>30</td>
<td>Remote Visit</td>
<td>Survey: None</td>
</tr>
<tr>
<td>32</td>
<td>Remote Visit</td>
<td>Survey: None</td>
</tr>
<tr>
<td>34</td>
<td>In-Person Visit</td>
<td>Survey: Satisfaction, Preference, Chat</td>
</tr>
<tr>
<td>36</td>
<td>Remote Visit</td>
<td>Survey: None</td>
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<td>37</td>
<td>Remote Visit</td>
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<tr>
<td>38</td>
<td>Remote Visit</td>
<td>Survey: None</td>
</tr>
<tr>
<td>39</td>
<td>In-Person Visit</td>
<td>Survey: Satisfaction, Preference, Remote Care Experience</td>
</tr>
</tbody>
</table>

**Visit Checklist**

1. Before Each Visit
   - Measure your blood pressure, weight, & your baby's heart rate
   - Record these measurements in MyChart (https://mychart.md.uottawa.ca)
2. Remote Visits Only
   - Go to your doctor's clinic or comédian
3. After Your Visit
   - Complete the surveys emailed to you

**Contact Info**

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- Dr. Erin Clark
# Prenatal Care Visits

<table>
<thead>
<tr>
<th></th>
<th>Traditional (N=96)</th>
<th>Remote (N=91)</th>
<th>P-value</th>
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</thead>
<tbody>
<tr>
<td>Total Visits (median)</td>
<td>12</td>
<td>12</td>
<td>0.42</td>
</tr>
<tr>
<td>Total In-Clinic Visits</td>
<td>12</td>
<td>7</td>
<td>&lt;0.001</td>
</tr>
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</table>
Postpartum Satisfaction with Prenatal Care

![Postpartum Satisfaction Bar Chart]

- Not Satisfied (n=2)
- Satisfied / Very Satisfied (n=173)

- Traditional (n=89)
- Remote (n=86)
I am satisfied with remote prenatal care for monitoring my health during pregnancy.
What are the 3 most important reasons you liked receiving remote prenatal care?
Remote Monitoring Arm

Preference for In-Person versus Remote Visits

- **<20 wk**: 90% in-person, 10% remote
- **20-36 wk**: 100% remote
- **after 36 weeks**: 0% in-person, 100% remote

Legend:
- **Gray**: Only in-person visits
- **Red**: A mix of in-person and remote visits
- **Black**: Only remote visits
Remote Care Experience

• Almost everyone said:
  • Learning to operate the remote equipment was easy
  • Comfortable using the equipment
  • Equipment is easy to use
Personalized Prenatal Care

- Traditional prenatal care
- Remote prenatal care
- Centering group care
Novel Strategies for High Risk Patients

• Telemedicine strategies for women with diabetes, chronic hypertension, etc.

• Self-administered home non-stress tests for fetal monitoring
  • Can be successfully integrated into a healthcare system
  • Patient and provider satisfaction is high
Opportunities

• Randomized trials addressing the content and delivery of prenatal care for high and low risk OB populations

• Focus on approaches that reduce disparities in care for rural and remote patients
  • U.S. population: 19% rural*

*2010 U.S. Census
Healthcare systems are increasingly interested in implementing innovative care strategies to improve the quality of health care, improve patient satisfaction, and reduce cost— in other words, create VALUE.

\[
V = \frac{Q + S}{C}
\]

\(V\) (VALUE) = \(\frac{Q\text{ (QUALITY)}}{\text{COST}} + S\text{ (SERVICE)}}

\(Q\) (QUALITY) + \(S\) (SERVICE) \(C\) (COST)
ONE SIZE DOES NOT FIT ALL
Prenatal care as we know it is going to change...

Obstetric dogma will be replaced with a focus on evidence-based care, cost-effectiveness and patient satisfaction.