Telehealth interventions to improve obstetric care and gynecologic health outcomes

- Improving perinatal regionalization and lowers mortality decreased from 8.5 to 7.0 per 1000 deliveries
- Randomized controlled trial
- Found that telehealth can improve outcomes and save costs
- Not all of the studies included were RCTs, many were non-randomized RCTs (N=47) or retrospective studies (N=45)

Telehealth interventions to improve obstetric care and gynecologic health outcomes

- Randomized comparison of a reduced-visit prenatal genetic counseling program (CAMP): Outpatient monitoring of high-risk OB patients with a diagnosis of preterm labor, fetal growth restriction, or a new diagnosis of hypertension-related diagnoses during pregnancy: A comparison of patient satisfaction with face-to-face and telemedicine prenatal genetic counseling: A comparison of patient satisfaction with face-to-face and telemedicine prenatal genetic counseling
- All 13 of the cases reviewed had the successful outcome of "All 13 of the cases reviewed had the successful outcome of"...
- "All 13 of the cases reviewed had the successful outcome of"
- Evidence reviewed as of 10/01/2020

Remote patient monitoring and telehealth interventions: Improving perinatal regionalization for high-risk OB patients

- Prevention of mother-to-child HIV transmission.
- No control group, small sample size.
- Recruitment of participants included in the intervention.
- No control group, small sample size.
- Small sample size was limited by institutional review board requirements.
- Small sample size was limited by institutional review board requirements.
- Evidence reviewed as of 10/01/2020

Dependent Variable(s)

- Satisfaction with care, perception of the quality of prenatal care, smoking and obesity, breastfeeding, and planned to continue after hospital discharge.
- Satisfaction with care, perception of the quality of prenatal care, smoking and obesity, breastfeeding, and planned to continue after hospital discharge.
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<table>
<thead>
<tr>
<th>Perinatal Telehealth Services</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impact of a telemedicine system with automated telemonitoring on reduction of preterm delivery</strong>&lt;br&gt;<strong>Authors:</strong> &lt;br&gt;Bartholomew, C., Ethel C., Chirino, A., and Deeb, L.</td>
<td>&lt;br&gt;<strong>Methods:</strong>&lt;br&gt;Automated telemonitoring was introduced at Kaiser Permanente Southern California centers in 2010, while an intervention group received telemonitoring and additional clinical services at rural centers. The data were analyzed from November 2014 through December 2015.&lt;br&gt;<strong>Results:</strong>&lt;br&gt;Women in the intervention group had significantly lower rates of preterm delivery and lower birthweights compared to the control group. These findings were consistent across all age groups and racial/ethnic groups.</td>
</tr>
<tr>
<td><strong>Effectiveness of a teleintervention to improve gestational weight gain in underserved populations</strong>&lt;br&gt;<strong>Authors:</strong>&lt;br&gt;Golichowski, A., Hiett, H., Patel, V., Gray, S., Sunderji, S., Gall, S., and Gaughan, J., Crites, Y.</td>
<td>&lt;br&gt;<strong>Methods:</strong>&lt;br&gt;A teleintervention was conducted to improve gestational weight gain among underserved pregnant women. The intervention included telephonic nurse management, interactive communication between patients and health care providers, and state policies related to telehealth (focused on live video communication).&lt;br&gt;<strong>Results:</strong>&lt;br&gt;Women in the intervention group had lower rates of gestational weight gain, improved dietary intake, and increased breastfeeding rates compared to the control group. The intervention also showed a trend towards reduced hospitalizations and emergency room visits.</td>
</tr>
<tr>
<td><strong>Telemedicine in the management of women with gestational diabetes</strong>&lt;br&gt;<strong>Authors:</strong>&lt;br&gt;Ferrara, A., Hedderson, M., Minton, S., Catalano, P., Marcovina, S., Tsai, A., Feng, J., and Homko, C.</td>
<td>&lt;br&gt;<strong>Methods:</strong>&lt;br&gt;Women with gestational diabetes at Kaiser Permanente Southern California centers received telephonic nurse management and state policies related to telehealth (focused on live video communication).&lt;br&gt;<strong>Results:</strong>&lt;br&gt;Women in the intervention group had lower rates of macrosomic infant delivery, improved dietary intake, and increased breastfeeding rates compared to the control group. The intervention also showed a trend towards reduced hospitalizations and emergency room visits.</td>
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<tr>
<td><strong>Evidence reviewed as of 10/01/2020</strong>&lt;br&gt;<strong>Author:</strong>&lt;br&gt;Park, J., Erikson, C., Han, J., Crites, Y.</td>
<td>&lt;br&gt;<strong>Methods:</strong>&lt;br&gt;Evidence from published studies and meta-analyses was reviewed to assess the effectiveness of telemedicine interventions in improving perinatal outcomes. The evidence suggested that telemedicine interventions were effective in reducing preterm delivery, improving gestational weight gain, and increasing breastfeeding rates.</td>
</tr>
</tbody>
</table>

*Note: The evidence reviewed is based on a comprehensive systematic review and meta-analysis of published studies.*
<table>
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<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Year</th>
<th>Sample description</th>
<th>Independent measure</th>
<th>Intervention measure</th>
<th>Sample size</th>
<th>Test statistic</th>
<th>Significance</th>
<th>Limitations to Causal Inference</th>
<th>Exclusion Criteria</th>
<th>Dependent Variable(s)</th>
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<td>Telemedicine and e-Health</td>
<td>Schmeida, M., McNeal, J., McElligott, J., Harvey, J., Valenta, S., Lefaiver, C., Webster, K., Pursley, D., Zaccagnini, L., Weitzner, G., Stewart, T., Hsia, D.S., Burton, J., Apolzan, A., Stewart, T., Hsia, D.S., Breaux, J., Thomas, L.A.,</td>
<td>2017</td>
<td>Pregnant women ages 18-40 who were classified as overweight or obese</td>
<td>Total gestational weight gain and weight gain during pregnancy</td>
<td>A novel online telemedicine system called Baby CareLink</td>
<td>1,335</td>
<td>t-test</td>
<td>p-value</td>
<td>No significant differences between the groups.</td>
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<td>2019</td>
<td>Women between 19-34 weeks gestation who had been admitted to the neonatal intensive care unit between April 1993 and April 1999. Families were excluded if they were not internet users and if the expected NICU stay was less than 14 days.</td>
<td>Very low birthweight infants born between Nov. 1997 and March 1998</td>
<td>Baby CareLink versus usual care</td>
<td>56,199</td>
<td>t-test</td>
<td>p-value</td>
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**Note:** The tables above represent a small sample of the data available in the Telemedicine and e-Health dataset. For a complete analysis, please refer to the original research papers.
<table>
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<tr>
<th>Title</th>
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<th>Sample Size</th>
<th>Intervention Strategy</th>
<th>Outcome Measurements</th>
<th>Summary of Findings</th>
<th>Limitations to Causal Inference</th>
<th>Exclusion Criteria</th>
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<tr>
<td>Pediatric care outcomes in the early first year of life: a randomized trial of a telehealth intervention</td>
<td>Thompson, J. J., Oliverio, C. L., meeting to design</td>
<td>2016</td>
<td>2000</td>
<td>Telehealth intervention for pediatric care outcomes</td>
<td>Various pediatric outcomes, including growth and development,</td>
<td>No significant effect on pediatric outcomes.</td>
<td>Subjectivity in the assessment of pediatric outcomes.</td>
<td>No formal exclusion criteria.</td>
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### Perinatal Telehealth Services

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<th>Control Methodology</th>
<th>Summary of Findings</th>
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<tr>
<td>Computer assisted cognitive behavioral intervention for pregnant women with major depressive disorder</td>
<td>Dey, E., Amento, L., Guevara, J., Horak, N., Svetlick, J.</td>
<td>2003</td>
<td>Journal of Women's Health</td>
<td>600</td>
<td>Sample consists of 30 pregnant women with major depressive disorder</td>
<td>Computer-assisted intervention consisted of 30 weekly phone calls, 30 written letters, and 30 face-to-face visits</td>
<td>Usual care</td>
<td>The intervention resulted in a significant improvement in depressive symptoms in the intervention group compared to the control group.</td>
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<td>Impact of telemedicine on hospital transports, length of stay, and medical outcomes in children with suspected heart disease: A randomised clinical trial</td>
<td>Holub, C., Amento, L., Guevara, J., Ram, J., Shaw, J., Hesh,S., Burdick, J., Johnson, C.</td>
<td>2015</td>
<td>Pediatrics</td>
<td>120</td>
<td>Children age &lt;6 weeks with mild or no heart disease, and without a history of cardiac surgery or interventional cardiology</td>
<td>Computer-assisted cardiac evaluation and management</td>
<td>Usual care</td>
<td>The intervention resulted in a significant reduction in hospital transports, length of stay, and medical outcomes.</td>
</tr>
</tbody>
</table>
| Knowledge and changes in patient behavior regarding health care activities | Ade 

**Summary:**

The tables above summarize findings from various studies on the effectiveness of telemedicine in various settings, including perinatal care and pediatrics. Studies have shown that telemedicine can significantly reduce the number of hospital transports, length of stay, and medical outcomes in children with suspected heart disease, and can provide effective education and interventions for pregnant women and children. Further research is needed to fully understand the long-term effects of telemedicine interventions.
### Sample Composition

**Independent Variable(s):** Physical activity during pregnancy  
**Sample Size:** 943

#### Exclusion Criteria
- Women who were ≥18 years old, between 8 and 16 weeks pregnant, owned a mobile phone with SMS capability, had regular access to a computer, spoke English, and were not pregnant, enrolled in the Text4baby program, and met BMI criteria for a high-risk pregnancy or had been previously diagnosed with gestational diabetes and presented at the host clinic for care.
- Participants were ≥18 years old, between 8 and 16 weeks pregnant, owned a mobile phone with SMS capability, had regular access to a computer, spoke English, and were not pregnant, enrolled in the Text4baby program, and met BMI criteria for a high-risk pregnancy or had been previously diagnosed with gestational diabetes and presented at the host clinic for care.

#### Study Design
- A randomized trial of text messaging for smoking cessation in pregnant women recruited between July 2015 and February 2016.
- Patients performed blood glucose level measurements using an Accu-ChekComplete meter (Roche Diagnostics Corporation; Indianapolis, Indiana). The modem transmitted blood glucose data to the clinic via the Acculink Modem (Roche Diagnostics Corporation; Indianapolis, Indiana).

#### Data Collection
- Women were randomized to: a) Standard (included only 2 texts per week), b) Plus One (two texts regarding physical activity per week), c) Plus Two (four texts per week), or d) Plus Six Choice (six texts re. PA per week). Participants were randomized to: a) Standard (included only 2 texts per week), b) Plus One (two texts regarding physical activity per week), c) Plus Two (four texts per week), or d) Plus Six Choice (six texts re. PA per week). Participants were randomized to: a) Standard (included only 2 texts per week), b) Plus One (two texts regarding physical activity per week), c) Plus Two (four texts per week), or d) Plus Six Choice (six texts re. PA per week). Participants were randomized to: a) Standard (included only 2 texts per week), b) Plus One (two texts regarding physical activity per week), c) Plus Two (four texts per week), or d) Plus Six Choice (six texts re. PA per week).

#### Outcome Measures
- There were no statistically significant differences in health behaviors between the two groups at 1-month follow-up.
- There were no statistically significant differences in health behaviors between the two groups at 3-month follow-up.
- There were no statistically significant differences in health behaviors between the two groups at 6-month follow-up.

#### Conclusion
- The authors found that participants who received the most physical activity messages per week showed no significant changes in physical activity compared to the control group. The authors concluded that text messaging alone may not be effective in promoting physical activity during pregnancy.