Abstract (Phase 1)

Objective
We aimed to develop an effective intervention program on maternal smoking cessation during pregnancy.

Methods
In this single-case experiment with multiple baselines, 13 daily smokers in early pregnancy were recruited from Buffalo, NY in 2015. Participants had 1 (early intervention group), 3 (delayed intervention group) or 5 (late intervention group) repeated baseline visits, and then received the same intervention with 4 components: stage-tailored education and counseling, monitoring and feedback, contingent financial incentives along with financial planning, and family support.

Results
Consistent smoking trajectories were observed across the 3 groups: none stopped smoking before intervention regardless of waiting duration, most patients started to quit smoking (verified by urine-cotinine) after intervention. Assuming drop-outs as smoking, conservative estimation of smoking cessation rate was 84.6% at 2 weeks of intervention, 76.9% at 8 weeks of intervention, and 70.0% by the end of pregnancy (35+ weeks).

Conclusion
Our multicomponent intervention could achieve high rate (70% or higher) of smoking cessation during pregnancy.

Background and Significance
Prenatal and postnatal tobacco exposure predicts childhood obesity
Maternal smoking is associated with rapid infant weight gain
Childhood obesity may be prevented by maternal smoking cessation

Objective
• Specific Aim 1: to examine the effect of maternal cessation intervention in pregnancy on infant gain in WFL z-score from birth to 6 months (Phase 1).
  • This poster presents the preliminary results on maternal smoking cessation in pregnancy and birth outcomes.
• Specific Aim 2: to examine the effect of maternal smoking abstinence intervention in lactation on infant post-weaning gain in WFL z-score among the women who successfully quit smoking in pregnancy (Phase 2).

Methods
Single-case experiment design with multiple baselines (Phase 1)
• Early intervention group (N=4): 3 visits before intervention
• Delayed intervention group (N=4): 5 visits before intervention
• Late intervention group (N=5): 7 visits before intervention

Sample Flow
• 68 patients from 3 local sites in Buffalo, NY
• 36 patients completed survey screening
• 27 patients completed lab screening
• 22 patients met study criteria
• 13 patients managed to complete pre-test and repeated baseline and then received intervention

Number of Visits
• 506 patient visits completed by 2/22/2016
• 485 prenatal lab visits
• 7 postpartum hospital visits
• 14 postpartum home visits
• 39 training sessions for 8 family supporters completed

Duration
• Longest duration of participation is 236 days
• Furthest follow-up is 2 months postpartum

Intervention Schedule
Table 1. Schedule of intervention visits

Results
• Consistent smoking trajectories across the 3 groups: none stopped smoking before intervention regardless of waiting duration, most patients started to quit smoking (verified by urine-cotinine) after intervention (Figure 2).
• Assuming drop-outs as smoking, conservative estimation of smoking cessation rate was 84.6% at 2 weeks of intervention, 76.9% at 8 weeks of intervention, and 70.0% by the end of pregnancy (35+ weeks).
• On average, infants of mothers who quit smoking in early pregnancy were 779.5 grams heavier at birth (3,416.0 grams [SD, 522.6]) than those infants of mother who continued smoking throughout pregnancy (2,636.5 grams [SD, 465.1]). The mean difference was statistically significant (p=0.023) even with such small sample size (N=8). They also had an average 3.6 cm longer birth length, and the difference was marginally significantly (p=0.058). Gestational age was similar between two groups of infants

Conclusion
• Our intervention could achieve high smoking cessation rate during pregnancy.
• Maternal smoking cessation in early pregnancy could significantly improve birth weight and possibly birth length.

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Figure 1. Study Design

Figure 2. Cigarette smoking and urine cotinine trajectories in our pilot study on maternal smoking cessation in pregnancy with multiple-baseline in Buffalo, NY*
(A) Daily number of smoked cigarettes
(B) Urine cotinine level

Table 1. The Beneficial Effect of Smoking Cessation in Pregnancy on Birth Outcomes

Table 2. Schedule of intervention visits

Table 3. Interventions and Incentives

Table 4. Results

Table 5. Outcomes

Table 6. Results

Figure 1. Schedule of intervention visits

Figure 2. Cigarette smoking and urine cotinine trajectories in our pilot study on maternal smoking cessation in pregnancy with multiple-baseline in Buffalo, NY*