**Automated cell phone text messaging: An efficient data collection tool for U.S. epidemiologic studies**

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**Background**: Cell phones provide opportunity for data collection in clinical studies. We developed, tested, and implemented an automated, text message-based system to support the PREVAIL cohort study, which requires intensive data collection to capture the natural history of infection in U.S. infants. We assessed the system’s technical feasibility, impact on subject selection, response rates, acceptability, and cost.

**Methods**: We used REDCap (Research Electronic Data Capture) with a plugin for Twilio to fully automate text messaging for data collection. Prior to study initiation, we tested the system to ensure successful survey automation, information security, and HIPAA compliance. Women were enrolled into PREVAIL during pregnancy, with final eligibility determined 2 weeks after birth. One of the eligibility criteria was ownership of a cell phone capable of receiving and sending text messages. Weekly surveys were sent to participants in one of 3 ways: Short Messaging Service (SMS) text message containing a link to a web-based REDCap survey; SMS text message conversation; or email (offered if mothers reported unreliable cell phone service). Weekly surveys asked if the study child experienced 1) fever and/or cough or 2) vomiting and/or diarrhea during the past week. If a mother did not respond within 24 hours of the weekly message sent on Monday, the message was resent on Tuesday and Wednesday, if needed. Responses were automatically captured in REDCap. Follow-up is ongoing.

**Results**: Of 1211 women approached for the study, only 1 was excluded due to lack of cell phone ownership. A total of 245 eligible mother-infant pairs were enrolled. Mothers were 18-44 yrs of age, 57% were publicly insured. Asked their preferred method of receiving weekly surveys, 96% chose SMS text and 4% chose email. 17,987 weekly surveys have been sent as of December 2018 without major technical incident. The median response rate of enrolled mothers was 97% of weeks. A survey found that 94% of mothers were highly satisfied with this approach. The cost of the automated text surveys is $0.0075 per text message, which totals $135 for all messages to date. Had these contacts instead been made by staff phone calls, we estimate that the cost increase would have been at least 200-fold.

**Conclusions**: Automated cell phone text messaging is technically feasible, cost-effective, and a well-received method of collecting data that can be applied to epidemiologic and clinical studies. **Funded by CDC**

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