

Title of Intervention: Patient reminder systems

Intervention Strategies: Individual Education

Purpose of the Intervention: To evaluate the effectiveness and cost-effectiveness of sending letters, automated phone messages or both to families of underimmunized 20-month-olds in a health maintenance organization

Population: 20-month-olds and their parents

Setting: Residential areas of ten northern California medical centers of the Kaiser Permanente Medical care Program of Northern California; health care facility-based, home-based

Partners: Kaiser Permanente

Intervention Description:

- Individual Education: Families were randomized into one of four interventions 1) an automated telephone message alone, 2) a letter alone, 3) an automated telephone message followed by a letter 1 week later, or 4) a letter followed by an automated telephone message 1 week later. The letters were personalized, printed in English, Spanish, or Cantonese, and included a list of which immunizations were needed by 24 months of age. The telephone messages were sent on Tuesdays between 5pm and 9pm by the customer-activated appointment processing services, an automated phone message system used by Kaiser to generate appointment messages. A pre-recorded message approximately 1 minute long was sent to each family. It stated that the child was overdue for immunizations and provided the telephone numbers of the advice/appointment lines at the nearest Kaiser Permanente clinics. The message was personalized to the extent that the child's first name was spoken by software that generated the name from the text. The system prompted the listener to choose the language in which the message was to be delivered, asked him or her to confirm that the correct family had been reached and also enabled him or her to replay the message if desired.

Theories Used: The Health Belief Model

Resources Required:

- Staff/Volunteers: Clinic staff
- Training: Not mentioned
- Technology: Computerized immunization tracking system
- Space: Not mentioned
- Budget: Cost per child immunized for phone messages alone = \$9.80, for letters alone = \$10.50, adding letters to an existing phone strategy would be an additional \$8.30 per child immunized. If post cards were equally effective as letters, they would cost \$6.50 per child immunized.
- Intervention: Automated phone messaging system, letters, postage
- Evaluation: Questionnaire, data from immunization tracking system

Evaluation:

- Design: Randomized trial
- Methods and Measures:
 - The automated phone system kept track of the results of each call.
 - Structured, close-ended interview assessed parents' opinions of the automated telephone messages and or letters.
 - Computerized immunization tracking system tracked receipt of immunizations given.

Outcomes:

- Short Term Impact: A letter followed by a telephone message was significantly better than either a letter alone or a telephone message alone. Among the group that received any needed vaccine by age 24 months, a single automated phone message and a single letter were equally significantly effective. For

the group that achieved full immunization by 24 months, the four methods showed similar patterns but differences between the four groups were not statistically significant.

- Long Term Impact: Not measured

Maintenance: Not mentioned

Lessons Learned: For underimmunized 20-month-olds in a health maintenance organization setting, letters followed by automated phone messages were more effective and cost effective than either method alone. In addition, compared with letters alone, automated phone messages alone were equally effective and more cost-effective. Choices among strategies should be tailored to the populations served.

Citation(s):

Lieu, T.A., et al., Effectiveness and cost-effectiveness of letters, automated telephone messages, or both for underimmunized children in a health maintenance organization. *Pediatrics*, 1998. 101(4): p. E3.

Lieu, T.A., et al., Computer-generated recall letters for underimmunized children: how cost-effective? *Pediatr Infect Dis J*, 1997. 16(1): p. 28-33.