

Emergency messaging to pharmacy patients reduced refill delays for maintenance medications during Hurricane Florence

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A pharmacy emergency messaging system effectively helped patients obtain medication refills and maintain their adherence and health during a disaster.



BACKGROUND

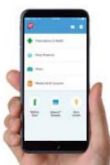
- During major disasters, patients frequently refill medications late because of reduced pharmacy access and survival priorities, compromising their medication adherence and health.
- Following the 2017 hurricane season, one of the worst on record, Walgreens implemented an emergency messaging system to facilitate patient access to medications during large-scale disasters.

OBJECTIVE

- The purpose of this study was to evaluate the impact of the newly implemented emergency messaging system on medication refill rates of pharmacy patients.
- We analyzed the association between emergency SMS notifications and medication refills immediately before, during, and immediately following Hurricane Florence.

METHODS

- We assessed the effectiveness of emergency SMS notifications sent during Hurricane Florence on medication refill rates for pharmacy patients taking maintenance medications.
- Difference-in-difference (DID) regression models examined refill patterns among patients who opted-in to SMS notifications versus non-SMS patients. Patients with refills due during the 7-days of highest storm impact were included (n=104,503).
- Hurricane Florence made landfall on the morning of September 14th, 2018 near Wrightsville Beach, North Carolina. It then moved slowly southwest in to South Carolina, leaving behind damage and major flooding.
- The following text with a link to the pharmacy locator was sent to patients in North and South Carolina who were opted-in to receive SMS notifications (16.8% of patients) at 4pm on September 11th, two and a half days before the hurricane made landfall:

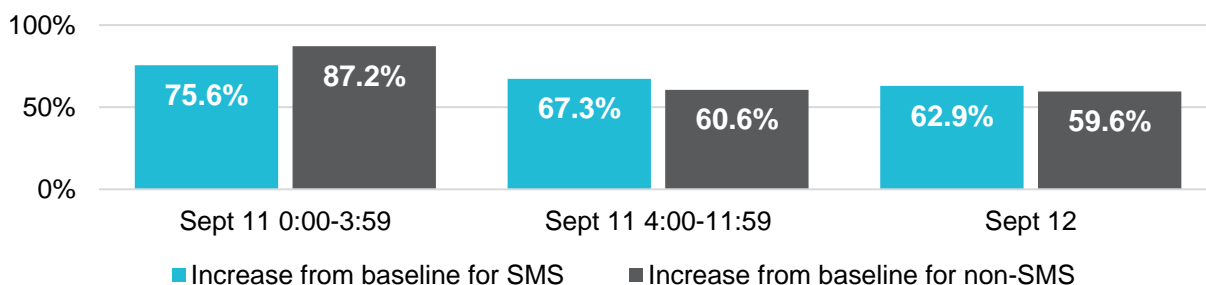


“Here to help if you are impacted by Hurricane Florence. Find emergency closure info and open pharmacies nearby: [walgreens.com storelocator](https://www.walgreens.com/storelocator)”

RESULTS

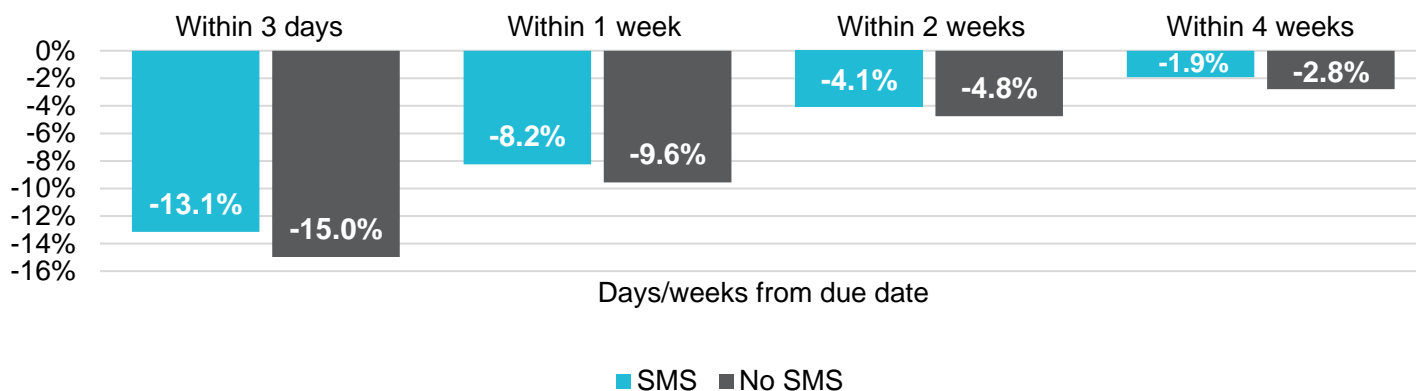
- One-hundred fifty pharmacy locations closed for at least one day for Hurricane Florence. Nearly half (49.3%) closed for ≥ 4 days due to damage or unsafe conditions.
- There was an increase in prescription fills during the week prior to Florence compared to one month earlier (MoM, matched to the time of month and days); and the increase differed between SMS and non-SMS patients.
- Before the first emergency SMS notification was sent on September 11th, compared to SMS patients, non-SMS patients had a statistically significant increase in fills compared to the control period ($p < 0.0001$). In the hours immediately following the emergency SMS notification send (4pm to 11:59pm), prescription fill rates increased among SMS patients compared to non-SMS patients. This increase persisted for SMS patients of pharmacies that were still open on September 12th ($p < 0.0001$, figure 1).

Figure 1: Percent increase in patients filling RX vs MoM control period



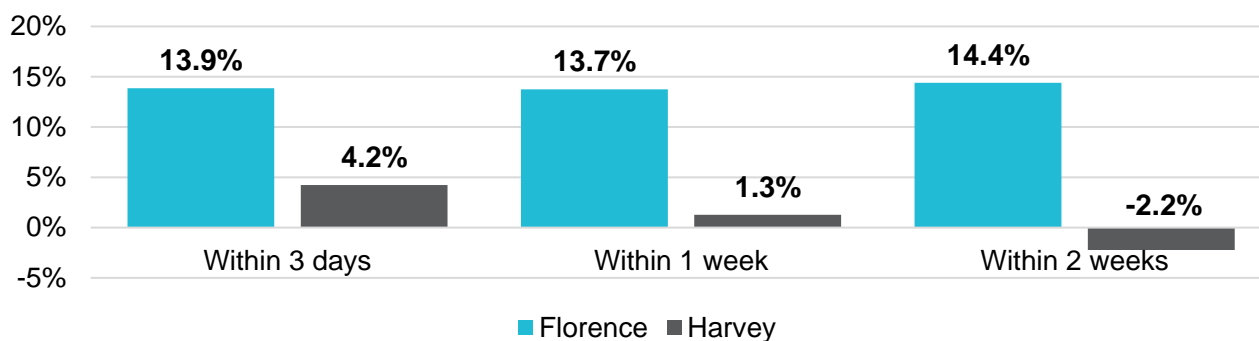
- Next, patient-level prescription fills during Florence were compared to the patients' baseline fill rate one year earlier (YoY). Compared to non-SMS patients, patients sent emergency SMS notifications (16.8%) exhibited significant reductions in refill delays. Compared to the YoY control period, SMS patients had a 12.2% reduction in refill delays within 3 days of their due date, 13.7% reduction in refill delays within 1 week, 14.4% reduction in refill delays within 2 weeks, and 31.2% reduction in refill delays within 4 weeks compared to non-SMS patients ($p < 0.0001$, figure 2).

Figure 2: Percent change in patients refilling Rx due for refill, post-Florence vs YoY



- To account for self-selection bias of patients who opted into SMS compared to those who did not, we repeated the analysis for patients impacted by Hurricane Harvey, during which emergency notifications were not sent. During Harvey, SMS patients had just a 4.2% reduction in refill delays within 3 days of their due date, 1.3% reduction in refill delays within 1 week, and 2.2% increase in refill delays within 2 weeks compared to non-SMS patients.
- Finally, three-way DID regressions models were conducted to test the validity of the difference in medication refill rates between SMS and non-SMS patients. The parameters included hurricane period versus baseline in the year prior, Harvey versus Florence, and SMS versus non-SMS, age, and gender. The models for each time point found that the emergency SMS notification significantly reduced delays in medication refills ($p < 0.0001$, figure 3).

Figure 3: Percent reduction in medication delays between SMS and no SMS



CONCLUSIONS

- A pharmacy emergency messaging system that sent SMS messaging with a pharmacy locator during Hurricane Florence effectively helped patients obtain timely medication refills and maintain their adherence and health during the disaster.

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