When’s best to text?
Optimum timing of SMS appointment reminders

Williams CML, Gregory L, Apoola A and Wood H.
Outpatient DNA rates are estimated to cost the NHS £600m per year\textsuperscript{1} and impacts on service efficiency and continuity of care\textsuperscript{1-7}

High DNA rates are seen Sexual Health Clinics throughout the UK including Derby Hospitals\textsuperscript{1-3}

SMS reminders for appointments are common and widely accepted in multiple clinical settings\textsuperscript{3,5-15} as a convenient, cost effective and confidential way of communicating with patients\textsuperscript{2,3,5,8}

SMS reminders have been shown to decease DNA rates in SH\textsuperscript{2,3,8,9,15,16}
Derby Sexual Health Service

- Single Level 3 clinic located near Derby City Centre seeing patients for SH and HIV care
- Covers a large geographical area – including Derby city and county
- Seeing a total of ~20,000 patients per year, 380 for their HIV care
- Offer a mixture of walk-in and pre-booked appointments throughout the day
- Separate asymptomatic screening offered as both pre-book and walk-in appointment
Prior to April 2013:
- Clinics mainly pre-booked with some walk-ins
- All HIV clinics were pre-booked
- High DNA rate (>25%) especially for follow up/HIV appointments

April –Nov 2013:
- Introduced:
  - ‘on the day’ SMS reminders,
  - new appointment schedule with increased walk-ins
  - telephone recall
- DNA rate dropped but remained high
Baseline DNA rates

Sexual Health – 11%  
HIV – 20%  
Total – 12%
Methods

- Data was collected on three cohorts of patients during 3 consecutive 4 week periods between 30/12/13– 6/4/14
- In addition to the routine ‘on the day’ SMS reminder an extra reminder was sent 1, 2 or 3 days prior to patient appointments
- Data was collected on patient attendance during these periods for pre-booked appointments for HIV and Sexual Health
Cohorts and Exclusions

<table>
<thead>
<tr>
<th>Cohort No.</th>
<th>No. SH Appointments</th>
<th>No. HIV Appointments</th>
<th>Total number</th>
<th>SMS schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1271</td>
<td>247</td>
<td>1518</td>
<td>1 day prior &amp; on the day</td>
</tr>
<tr>
<td>2</td>
<td>1215</td>
<td>270</td>
<td>1485</td>
<td>2 days prior &amp; on the day</td>
</tr>
<tr>
<td>3</td>
<td>1264</td>
<td>254</td>
<td>1518</td>
<td>3 days prior &amp; on the day</td>
</tr>
</tbody>
</table>

Exclusions:
- Walk-in appointments
- Appointments booked after the time the SMS should have been sent for that cohort.
# The Cohorts

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Total No. patients</th>
<th>No. Males (%)</th>
<th>No. Females (%)</th>
<th>Median Age (range)</th>
<th>Previous attendance (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1124</td>
<td>530 (47)</td>
<td>594 (53)</td>
<td>25 (13–83)</td>
<td>730 (66)</td>
</tr>
<tr>
<td>2</td>
<td>1058</td>
<td>468 (44)</td>
<td>590 (56)</td>
<td>25 (14–79)</td>
<td>698 (66)</td>
</tr>
<tr>
<td>3</td>
<td>1087</td>
<td>492 (45)</td>
<td>595 (55)</td>
<td>26 (14–75)</td>
<td>698 (64)</td>
</tr>
</tbody>
</table>
Results

[Graph showing DNA rates for HIV and Sexual Health over different numbers of days SMS sent prior to appointment.]
Results

<table>
<thead>
<tr>
<th>Attendance Type</th>
<th></th>
<th>Baseline</th>
<th>1 day</th>
<th>2 days</th>
<th>3 days</th>
<th>Pearson's co-efficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV</td>
<td>DNA rate</td>
<td>20.22%</td>
<td>16.60%</td>
<td>16.30%</td>
<td>10.24%</td>
<td>R = 0.72, p=0.042</td>
</tr>
<tr>
<td></td>
<td>Absolute % change from baseline</td>
<td>–</td>
<td>-3.62%</td>
<td>-3.92%</td>
<td>-9.98%*</td>
<td></td>
</tr>
<tr>
<td>Sexual health</td>
<td>DNA rate</td>
<td>10.57%</td>
<td>8.26%</td>
<td>9.96%</td>
<td>11.16%</td>
<td>R = -0.40, p=0.014</td>
</tr>
<tr>
<td></td>
<td>Absolute % change from baseline</td>
<td>–</td>
<td>-2.31%</td>
<td>-0.61%</td>
<td>0.59%#</td>
<td></td>
</tr>
</tbody>
</table>

*For HIV appointments, $\chi^2 = 6.728$, $p = 0.009$ for additional SMS sent three days before appointment compared with single SMS reminder.

# For sexual health appointments, $\chi^2 = 14.63$, $p < 0.001$ for additional SMS sent one days before appointment compared with single SMS reminder.
Discussion

- Sending a second SMS reminder at an optimised time appears to reduce DNA rate in our population.
- This optimised timings is different depending on type of clinic visit.
- HIV patients had lower DNA rates when texted further from the appointment time, whereas Sexual Health patients DNA’d less often if texted nearer to their appointment.
Discussion

- Limitations:
  - Small sample size done over a short time period
  - No data on cancellation rates
  - One site only
  - Conducted prior to integration of services

- Areas for further work:
  - Generalisability of our findings to other settings
  - Investigating appointment type and optimal timing for SMS
  - Reasons underpinning the difference in optimised SMS schedule
  - Impact of integration has on the timing of SMS
Thank you, Any Questions?
References

1. Dr Foster Research Limited. Outpatient appointment no-shows cost hospitals £600m a year, http://www.drfosterhealth.co.uk/features/outpatient-appointment-no-shows.aspx