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Department of Health

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The Better Letter Initiative: An Evaluation of the Impact of Redesigned Appointment SMS Reminders on Outpatients DNAs.

IGEES

Seirbhís Eacnamaíoch agus Luachála Rialtas na hÉireann
Irish Government Economic and Evaluation Service

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List of Abbreviations

BLI   Better Letter Initiative

DNA   Did Not Attend

DoH   Department of Health

GDPR   General Data Protection Regulation

HSE   Health Service Executive

NGH   Naas General Hospital

NTPF   National Treatment Purchase Fund

PSIF   Public Service Innovation Fund

RCT   Randomised Control Trial

RSPU   Research Services and Policy Unit

SMS   Short Message Service (Text Messages)

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Executive Summary

Background: A "did not attend" (DNA) occurs when a patient unexpectedly does not attend an appointment. DNAs for hospital outpatient appointments can lead to the inefficient use of staff time, worse care for patients, and increase waiting times for patients. In 2022 there were 481,432 DNAs and 3.4 million attendances for outpatient appointments. Sending a text (SMS) reminder to patients in advance of appointments has been found to reduce DNA rates. SMS reminders for outpatient appointments are currently utilised in Ireland. The effectiveness of these reminders at reducing DNA rates can be further enhanced by applying findings from behavioural science to enhance the content of SMS reminder messages.

The project: This collaborative study between the DoH, the NTPF and the HSE explored if using behavioural insights to re-design SMS reminders for hospital outpatient appointments would help more patients to attend. A randomised control trial (RCT) is used to test the impact of four re-designed SMS appointment reminders (interventions) against an existing SMS reminder (control) on patient DNA rates. All interventions included personalisation, reciprocity, and the day of appointment in words. Intervention 2 onwards also included the name of the consultant and clinic. Intervention 3 additionally stated the importance of attendance for health. Intervention 4 referred to the avoided loss if patients who cannot attend signal this in advance.

Results: People who received Intervention 2 had a significantly lower DNA rate compared to the control group (z = 3.29, p < .001 ≤ .0125 threshold). Intervention 2 reduced the DNA rate from 18.72% to 16.35%. This is an absolute reduction of 2.37 percentage points, and a relative reduction of 12.66%. Intervention 3 (which added to Intervention 2 the importance of attendance for health) also had a significantly lower DNA rate than the control but adding the additional information did not lower the DNA rate below that of Intervention 2 – see below.

Did Not Attend (DNA) rates Across Control and Intervention Groups
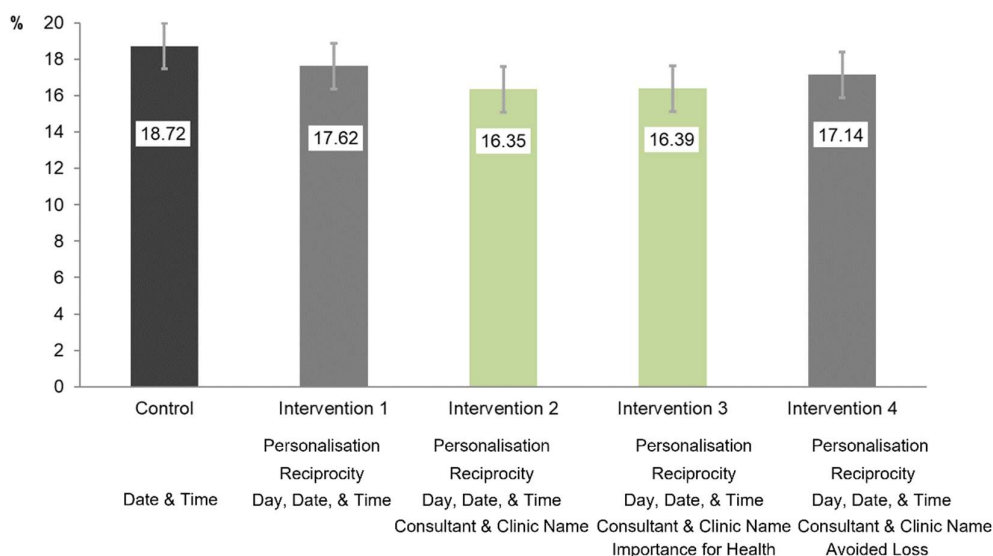
Conclusions: The redesigned SMS of Intervention 2 is the best performing reminder. It reduced DNA rates by 12.66% resulting in one in eight non-attendees changing their behaviour. It is highly cost effective with a benefit to cost gain of between €300 and €445 per 100 appointment offers. We suspect Intervention 2 reduced DNAs as it makes it easier to remember the appointment as it creates a stronger association with the appointment. Adding additional information beyond that in intervention 2 did not reduce DNAs further.

Implications for Policy and Practice: From a policy perspective this study shows (using an RCT, the gold standard of impact evaluation) that using amended SMS reminder content (which added personalisation, reciprocity, day in words, consultant name and clinic name) reduced DNA rates by a substantial amount. One in eight non-attendees changed their behaviour because of a change to wording in the reminder. The national use of SMS reminders with the key components of Intervention 2 for outpatient appointments should reduce DNAs. Applying the findings to 2022 national data suggests DNAs could be reduced by about 61,000 with a 2023 value of €11.6 million. Important considerations for implementing the findings are:

- The study was undertaken at a time when hospitals were including information in relation to COVID-19. Therefore, the SMS reminders in the study advised patients to phone if they have any COVID-19 symptoms. Where it is no longer existing policy to mention COVID-19 symptoms there is no need to include this content.
- The study was undertaken in Naas General Hospital (NGH) and the SMS messages sent in this study were compliant with the HSE data handling policy but moving to national use would involve a wider set of clinic types than those in NGH. Nationally, clinic names could include reference to sexual and mental health clinics, so in certain circumstances it is advisable to remove "clinic name" from the design but to retain the consultant name.

Two SMS template options are recommended. Option 1 includes the clinic name and is recommended for use with "standard" clinic names. Option 2 does not include the clinic name and is recommended for clinics where the clinic name potentially falls into the HSE's data handling category of "restricted information" (e.g., includes reference to mental health, sexual health, addiction, disability).

Any national rollout of the recommended SMS template will require time to allow hospitals with existing SMS capabilities to update their templates. In addition, where hospitals currently do not utilise SMS reminders, additional time is necessary to establish and integrate SMS reminder capabilities into their systems. Widespread adoption of this SMS template as part of national practice could substantially reduce non-attendance and improve hospital productivity and efficiency.

Recommended SMS Templates

Option 1 Recommended for "Standard" Clinic Names

Communication Possible Template – SMS / Text Reminder Option 1 "Standard" Clinic Name

Key elements to include in the Text reminder:
1. Personalise, use the patient's first name.

2. Reciprocity, indicate the patient is expected at their appointment.

3. Include appointment as day of week in words, with the date and time.

As well as the name of the hospital also include:
4. the name of the consultant and

5. the name of the clinic.

6. Give the patient the information required to cancel their appt if needed.

Example of SMS/Text Reminder

❶ ❷ ❸
Robert, we are expecting you at your appointment on Thursday 7 September at 15:00 with Naas hospital Dr. Deirdre Robertson Pain Clinic. If you cannot attend please phone 045841111. ❹ ❺ ❻

Template for SMS/Text Reminder

<Insert patient first name>, we are expecting you at your appointment on <insert appointment day of week, date and time> with <insert name of hospital> <insert name of consultant> <insert name of clinic>. If you cannot attend please phone <insert phone number>.

Option 2 Recommended if Clinic Name Potentially Falls into the "Restricted Information" Category
(e.g., includes reference to mental health, sexual health, addiction, disability)

Communication Possible Template – SMS / Text Reminder Option 2 "Non-standard" Clinic Name

Key elements to include in the Text reminder:

1. Personalise, use the patient's first name.

2. Reciprocity, indicate the patient is expected at their appointment.

3. Include appointment as day of week in words, with the date and time.

4. Include the name of the consultant as well as that of the hospital.

5. Give the patient the information required to cancel their appt if needed.

Example of SMS/Text Reminder

❶ ❷ ❸
Robert, we are expecting you at your appointment on Thursday 7 September at 15:00 with Naas hospital Dr. Deirdre Robertson. If you cannot attend please phone 045841111. ❹ ❺

Template for SMS/Text Reminder

<Insert patient first name>, we are expecting you at your appointment on <insert appointment day of week, date and time> with <insert name of hospital> <insert name of consultant>. If you cannot attend please phone <insert phone number>.

1. Introduction

A key phase in a patient's successful journey through the healthcare system is the point from receiving an appointment date for a procedure to successfully receiving a procedure on appointment day. Ineffective communication at the point of appointment offer can reduce the engagement and can contribute to patients unexpectedly not attending on appointment day.

A "did not attend" (DNA) occurs when a patient unexpectedly does not attend an appointment. DNAs for hospital outpatient appointments can lead to the inefficient use of staff time, worse care for patients, and increase waiting times for patients (Karter et al., 2004; Murray, 2000). In 2022 there were nearly half a million (481,432) DNAs for outpatient appointments and 3.4 million outpatient appointments where patients attended. This is equivalent to a national DNA rate in 2022 of 12.4%. There is considerable variation in DNA rates across hospitals from 5.7% to 19.3% in 2022 (Health Statistics, 2022).

Sending a reminder to patients in advance of appointments via SMS messages has been found to reduce DNA rates (Robotham et al., 2016; Gorul-Urganci et al., 2013; McLean et al., 2016). SMS reminders for outpatient appointments are currently utilised in Ireland. However, applying findings from behavioural science to the content of reminder SMS messages could further reduce DNA rates (McLean et al., 2016). Since how best to re-design the content of SMS reminders is unclear, this study tests if DNA rates can be reduced by using alternative content in SMS reminders using a randomised control trial.

This project is part of a broader approach to improve communication and reduce administrative burden in the health system, and it follows on the success of projects under the Better Letter Initiative such as a redesigned waiting list validation letter (Murphy et al., 2020a) and redesigned inpatient and day case appointment offer letter (Murphy et al., 2020b). The trial for this study was carried out in Naas General Hospital. If a redesigned letter can be shown to successfully reduce DNA rates in this context, there is potential for any effect observed in this study to have a large impact when implemented at a national scale.

This work has been carried out by the Research Service and Policy Unit (RSPU) in the Department of Health in collaboration with the National Treatment Purchase Fund (NTPF) and the Health Service Executive (HSE) with input from a Behavioural Advisory Group. Funding for this project was received through the 2020 Public Service Innovation Fund. The COVID-19 pandemic delayed the field trial as did the cyber-attack on the HSE.

In June 2023 the HSE produced an Outpatient DNA Strategy which included a toolkit. It includes a requirement to "send offer letters six weeks before the appointment, send letters *or* SMS text reminders two weeks before the appointment, and to send a SMS text a few days before the appointment". It also includes a template for an offer letter. It does not include a template for a SMS reminder. The recommended SMS content from this current study should be considered by the HSE for use as a template SMS / text to help implement the Outpatient DNA Strategy.
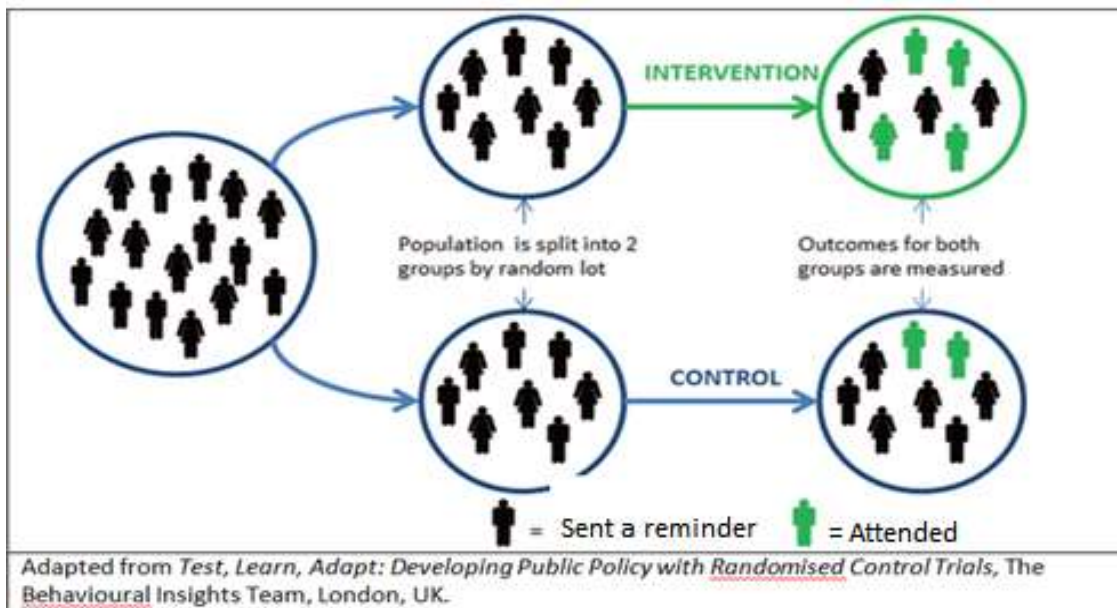
2. Method

2.1 Using a Randomised Control Trial to test the effectiveness of SMS Communication

It was existing practice in NGH to send SMS reminders for outpatient appointments (new and return) typically four days in advance of the appointment. All patients also receive written notification of their appointment typically at least several weeks before their appointment. For example, via an offer letter for new patients and via an appointment card for return appointments.

To test the effectiveness of redesigned SMS communication, we utilise a randomised control trial (RCT). This involved randomly assigning patients into five different groups. Each group received a different SMS reminder. One group, the control group, received the SMS reminder that was already in use. The other four groups, the intervention groups, received one of four newly designed SMS reminders. We compared the DNA rates across these five groups to assess whether the intervention groups who received a newly designed SMS reminder had a lower DNA rate when compared to the control group who received the existing SMS reminder message. We can assign causation to an intervention if a significant reduction in the DNA rate is observed between control and intervention groups.

Figure 1 – Outline of Randomised Control Trial

Population is split into 2 groups by random lot

Outcomes for both groups are measured

= Sent a reminder   = Attended

Adapted from *Test, Learn, Adapt: Developing Public Policy with Randomised Control Trials*, The Behavioural Insights Team, London, UK.

2.2 Intervention Design

Design Rationale

The design of the four interventions was informed by:

- a review of existing practice,
- guides on how to apply behavioural insights and plain English,
- literature on patient / customer engagement and increasing responses to surveys, on patients' reasons for non-attendance, tests of the effect different SMS content,
- previous projects under the Better Letter Initiative (BLI),
- an iterative process of feedback from staff in the HSE, NTPF, IMS MAXIMS, and a Patient Engagement Behavioural Advisory Group.

The most common reason reported by patients for not attending is that they forgot (Murdock et al., 2002; Van Baar et al., 2006; Collins, et al., 2003; Stone et al., 1999). All interventions aimed to help the patient remember better or to improve their recall.

Intervention 1 (Recall I) included two design elements reported to increase engagement, namely personalisation (Edwards et al., 2009) and reciprocity (Dolan et al., 2012). It also included the day of the appointment in words to help with recall. Intervention 1 remained less than 160 characters (i.e., 1 SMS segment) and so did not involve any additional cost per message sent.

All other interventions included these three design elements of Intervention 1 along with additional design features. Interventions 2 to 4 exceeded the 160 characters limit, in the hope of increasing engagement, but remained less than 320 characters so they involved an additional cost per message sent (i.e., each message was the cost of 2 SMS segments rather than 1).[1]

Intervention 2 (Recall II) additionally included the name of the consultant and clinic name on the basis that this might help patients to remember their appointment.

Another commonly reported reason for not attending is that a patient felt the appointment appeared to have no benefit (Frankel et al., 1989; Collins, et al., 2003). Therefore, Intervention 3 additionally stated the importance of attendance for health (Recall II + Importance for health).

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[1] A SMS message longer than 160 characters is automatically split into parts (called "segments") and SMS messages are billed per segment. With modern mobile phones so that longer texts arrive on the phone as one message, rather than a string of individual messages, the SMS messages are 'concatenated' or linked back together. This feature was adopted widely to mobile phones from the early 2010s. For older mobile phones a longer text message arrives as a string of individual messages. In practice the use of the longer text messages did not have any negative effect on attendance.

Some previous trials show an effect on DNAs of including the cost to hospitals of non-attendance (Hallsworth et al., 2015; NSW, BIU), so Intervention 4 included text on the avoided loss if patients who cannot attend signal this in advance (Recall II + Avoided loss to patients and staff).

Samples of Design

The control and intervention SMS reminders utilised for this RCT are outlined below:

Control

REMINDER: NAAS HOSPITAL APPOINTMENT 7/09/2023 AT 15:00 IF YOU HAVE ANY COVID 19 SYMPTOMS OR UNABLE TO ATTEND CALL 045841111 AUTOMATTED TEXT PLEASE DO NOT REPLY.

Intervention 1: Recall I = Personalisation, reciprocity & day

Robert, we are expecting you at your appointment on Thursday 7 September at 15:00 with Naas hospital. If you cannot attend or have any Covid 19 symptoms please phone 045841111.

Intervention 2: Recall II = Recall I + Clinic and consultant name

Robert, we are expecting you at your appointment on Thursday 7 September at 15:00 with Naas hospital Dr. Deirdre Robertson Pain Clinic. If you cannot attend or have any Covid 19 symptoms please phone 045841111.

Intervention 3: Recall II + Importance for health

Robert, we are expecting you at your appointment on Thursday 7 September at 15:00 with Naas hospital Dr. Deirdre Robertson Pain Clinic. Attending means you are looking after your health. If you cannot attend or have any Covid 19 symptoms please phone 045841111.

Intervention 4: Recall II + Avoided loss to patients and staff

Robert, we are expecting you at your appointment on Thursday 7 September at 15:00 with Naas hospital Dr. Deirdre Robertson Pain Clinic. If you cannot attend or have any Covid 19 symptoms please phone 045841111, let us know now so that we can give your appointment to another patient.

In designing and undertaking the project, the evaluation team considered ethical and data protection issues. The study was judged not to pose ethical or data protection issues see Appendix 1 for more details.

Design Limitations

A limitation of this study is that the redesigned SMS involved a combination of components (e.g., *personalisation, reciprocity & day)*, so it is not possible to determine which specific components led to a reduction in DNAs, nor to identify the psychological mechanisms behind the change in behavior. This limitation often arises when undertaking field trials because, from an immediate policy perspective, *that* the intervention works matters more than *how* it works. Nevertheless, the study does allow us to identify which combination of design elements works best.

2.3 Sample, Statistical Power, and Outcome Measure

This randomised control trial took place in Naas General Hospital between August 2022 and July 2023. A sample of 32,891 patients took part in the randomised control trial and received SMS reminders for outpatient appointments. Power analysis was carried out prior to carrying out the trial to estimate the necessary sample size, with estimated effect size informed by literature on trials in other countries. Data was initially extracted at a sample size of approximately 19,000 participants. The effect size in an Irish context was smaller than reported in the small number of papers in the academic literature. Thus, the statistical power was lower than required to ensure an appropriate testing approach. So, to ensure at least 80% statistical power, additional data was used, and a final sample of 32,891 was obtained.

Appointment offers monitored during this study had five possible mutually exclusive outcomes; attended, did not attend, rescheduled, cancelled by patient, and cancelled by hospital. Appendix 2 (Section 2.1) indicates patients across the one control and four intervention groups across these five possible outcomes. The primary outcome measure for this study was the DNA rate. This is calculated as the number of did not attends divided by the total number of appointments offered for which a patient was expected to attend. That is we exclude any cancelled or rescheduled appointments[2]. This is line with the HSE guidance on defining the DNA rate, which states that "the failure to attend (DNA) rate is calculated by dividing the number of failures to attend (DNAs) by the number of appointments made (attendances + DNAs)." (HSE, 2014). The DNA rate is therefore based on a sample of 27,849 patients who either attended or did not attend their appointment.

As outlined in Table 1, randomisation of patients across the one control and four intervention groups was successful when looking across other characteristics. Patients across these groups were similar in terms of age, and appointments were similar in terms of type (new or return) and speciality area.

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[2] A similar international study, Hallsworth et al. (2015), calculates the DNA rate differently. It does not exclude these other outcomes from the denominator of the DNA rate. Our view is that exclusion of these categories is consistent with the concept of DNAs (i.e., a person not attending when they were expected to attend) because a patient was clearly not expected to attend after a hospital had rescheduled or a patient had cancelled an appointment. Our approach is also consistent with DNA figures reported by the HSE (Health Statistics, 2022).

Table 1 – Sample Characteristics Across Control and Intervention Groups

	Control	Intervention 1	Intervention 2	Intervention 3	Intervention 4
Average Age	57	57	57	58	58
New Visits	26.65%	26.69%	25.77%	26.36%	26.61%
Return Visits	73.35%	73.31%	74.23%	73.64%	73.39%
General Medical	42.61%	41.82%	42.26%	43.35%	43.02%
General Surgery	12.88%	13.56%	12.86%	13.24%	13.45%
Orthopaedics	14.40%	13.76%	13.69%	14.29%	13.81%
Dermatology	12.95%	12.74%	13.54%	12.28%	12.66%
Rheumatology	6.75%	7.36%	7.77%	6.69%	6.92%
Sample Size	5,700	5,516	5,480	5,576	5,577

2.4 Statistical Testing

The purpose of statistical tests undertaken in this analysis is to determine if the difference in DNA rates in the sample is likely to have occurred by chance, or if we can assign causation for differences in DNA rates to the SMS messages.

The null hypothesis is that there is no effect, the DNA rate for the control and intervention group do not differ. The alternative hypothesis is that the DNA rate is lower for the intervention than the control group.

The p-value is the probability that a difference in DNA rates as large as the one observed would have occurred if the null hypothesis were true. We reject of the null hypothesis (in favour of the alternative of an effect) if the *p* value is below or equal to a threshold, i.e., if there is a small chance of observing such a large difference if the null is true.

False Positive or Type I Error, rejecting the null hypothesis in favour of a false alternative hypothesis. We follow standard practice by testing with a significance level of 5% (a 5% chance of a Type 1 Error). Because the study has 4 interventions, to keep the family-wise error rate across the study at 5% we apply a threshold *p* value of .0125 (= 0.05/4).

False Negative or Type II Error, failing to reject a false null hypothesis in favour of a true alternative hypothesis. Power is the probability of avoiding a Type II error, the probability that a test will pick up on an effect that is present. We follow good practice by ensuring at least 80% Power when testing for effect on DNA rates.

3. Results

As shown in Figure 2, those receiving Intervention 2 had a significantly lower DNA rate compared to the control group ($z = 3.29$, $p < .001 \leq 0.0125$ threshold). Intervention 2 reduced the DNA rate from 18.72% to 16.35%.[3] This is an absolute reduction of 2.37 percentage points and a relative reduction of 12.66%. One in eight non-attendees changed their behaviour following Intervention 2.

Figure 2 – DNA Rates Across Control and Treatment Groups (Error bars represent 98.75% confidence intervals)

	Control	Intervention 1	Intervention 2	Intervention 3	Intervention 4
		Personalisation	Personalisation	Personalisation	Personalisation
		Reciprocity	Reciprocity	Reciprocity	Reciprocity
	Date & Time	Day, Date, & Time	Day, Date, & Time	Day, Date, & Time	Day, Date, & Time
			Consultant & Clinic Name	Consultant & Clinic Name	Consultant & Clinic Name
				Importance for Health	Avoided Loss

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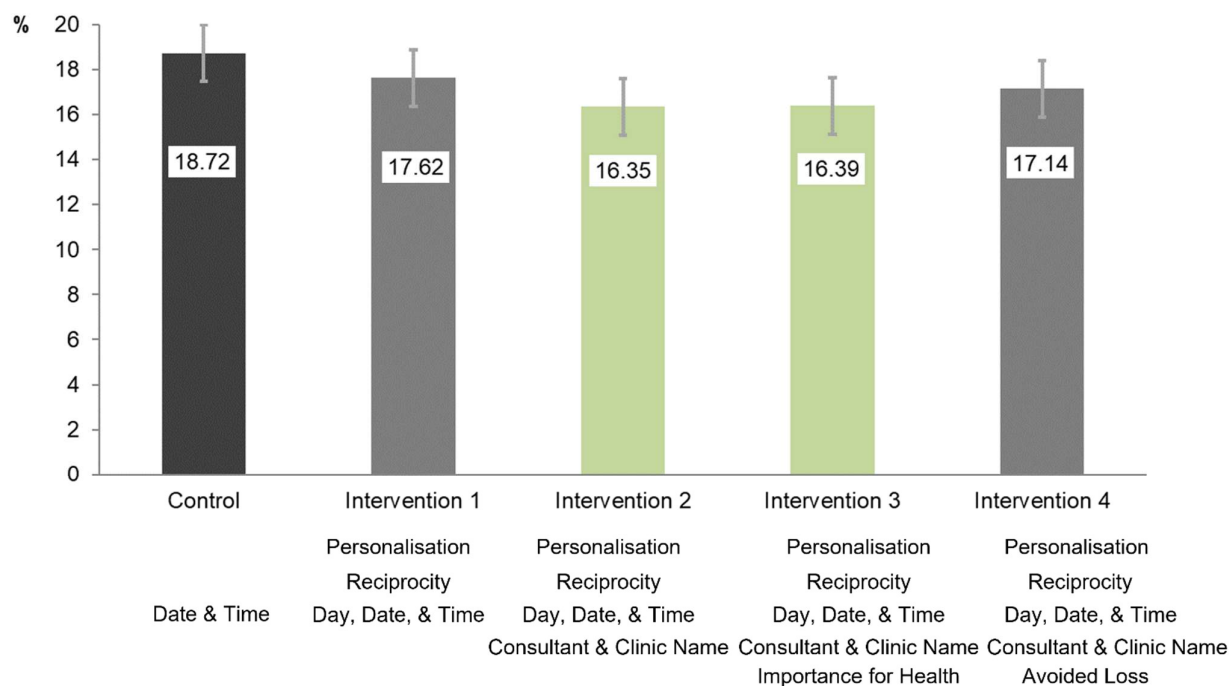
[3] Intervention 2 also resulted in a significant increase in attendance rates ($z = -3.29$, $p = .001$). However, some caution is needed when looking at outcomes other than DNA rates as this study was not intended to be powered to detect differences in DNA rates and not for other outcomes.

Those receiving Intervention 1 (which contained personalisation, reciprocity, day, and date) did not have a significantly lower DNA rate than the control (z = 1.51, p = 0.065 ≥ 0.125 threshold). The respective DNA rates were 18.72% (control) and 17.62% (Intervention 1). Those who received Intervention 3 (which added to Intervention 2 the importance of attendance for health) also had a significantly lower DNA rate than the control (z = 3.25, p = .001 ≤ 0.125 threshold). However, this additional information did not lower the DNA rate below that of Intervention 2. The respective DNA rates were 18.72% (control), 16.35% (Intervention 2), and 16.39% (Intervention 3).

Those who received Intervention 4 (which added to Intervention 2 the avoided loss if patients who cannot attend signal this in advance) did not have a significantly lower DNA rate than the control (z = 2.19, p = .0144 ≥ .0125 threshold). The respective DNA rates were 18.72% (control), 17.14% (intervention 4). All these results hold when patients' age, appointment type, and clinic characteristics are controlled for (see below) and when an alternative model specification is used (see Appendix 2.2).

Table 2 Logit Regression on DNA with All Interventions, Age and Appointment Characteristics

	Intervention 1	Intervention 2	Intervention 3	Intervention 4
Intervention (control = base)	0.928 [0.820 - 1.050]	0.842** [0.742 - 0.956]	0.850** [0.750 - 0.964]	0.892 [0.788 – 0.1010]
Age	0.988** [0.985 - 0.992]	0.987** [0.984 - 0.991]	0.987** [0.983 - 0.990]	0.988** [0.985 - 0.992]
New or Return Visit (return visit = base)	0.973 [0.834 - 1.136]	0.967 [0.825 - 1.135]	1.001 [0.855 - 1.171]	0.97 [0.831 - 1.132]
General Medical	1.480**[1.193 - 1.835]	1.835** [1.457 - 2.311]	1.643** [1.315 – 2.054]	1.671** [1.335 – 2.091]
General Surgery	1.002 [0.776 - 1.295]	1.052 [0.799 - 1.384]	0.928 [0.709 - 1.214]	1.061 [0.814 - 1.384]
Orthopaedics	0.523** [0.394 - 0.694]	0.574** [0.425 – 0.744]	0.510** [0.380 - 0.685]	0.542** [0.404 - 0.728]
Dermatology	0.747** [0.570 - 0.978]	0.769 [0.577 – 1.025]	0.837 [0.635 - 1.103]	0.861 [0.654 - 1.135]
Rheumatology	0.694** [0.501 - 0.961]	0.789 [0.563 - 1.106]	0.601** [0.422 - 0.858]	0.788 [0.564 - 1.101]
Constant	0.426** [0.320 - 0.567]	0.394** [0.293 - 0.531]	0.444** [0.331 - 0.596]	0.394** [0.294 - 0.527]
Observations	11,216	11,180	11,276	11,277

Main figures are odds ratios with 98.75% confidence intervals in parentheses. Stars reflect *p*-values below thresholds of **p < .0025 (i.e., family-wise error rate of 1%) and *p < .0125 (i.e., family-wise error rate of 5%).

4. Conclusion

1. The redesigned SMS of Intervention 2 (Recall II) is the best performing reminder.
   a. It reduced DNA rates by 12.66%. It resulted in one in eight non-attendees changing their behaviour.
   b. Adding additional information beyond that in Intervention 2 did not reduce DNAs further.[4]
   c. It is highly cost effective with a benefit to cost gain of between €300 and €445 per 100 appointment offers. (Appendix 3).

2. We suspect Intervention 2 reduced DNAs as it makes it easier to remember the appointment as it creates a strong association with the appointment.

3. Using SMS reminders with the key components of Intervention 2 for outpatient appointments should reduce DNAs and increase attendance for appointments. Applying the findings to 2022 national data suggests DNAs could be reduced by approximately 61,000 with a 2023 value of €11.6 million. This is likely to increase hospital productivity.

4. The content of Intervention 2 should be considered for use as the template SMS / text reminder for use to support the implementation of the HSE's Outpatient DNA Strategy Toolkit with minor adjustment to account for the altered and wider context (i.e., remove COVID-19 reference and in certain circumstances remove clinic name, see the next section for details).

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[4] Intervention 3 also had a lower DNA rate than the control. However, Intervention 3 did not have a lower DNA rate than Intervention 2 and it was longer. Therefore, Intervention 2 has the advantage that it is shorter than Intervention 3, this means Intervention 2 places a lower burden on patients, and it can more readily incorporate changes to future appointment processes (e.g. if patients are asked to reply to confirm attendance).

5. Implications for Policy and Practice

From a policy perspective this study shows (using an RCT, the gold standard of impact evaluation) that using amended SMS reminder content (which added personalisation, reciprocity, day in words, consultant name and clinic name) reduced DNA rates by a substantial amount. One in eight non-attendees changed their behaviour simply because of the wording in the reminder. The national use of SMS reminders with the key components of Intervention 2 for outpatient appointments should reduce DNAs and increase attendance for appointments thereby increasing hospital productivity and efficiency.

From a practice perspective, some key considerations for implementing the findings from this study are discussed below. First, the study was undertaken at a time when hospitals were including information in relation to COVID-19. Therefore, the SMS reminders in the study advised patients to phone if they have any COVID-19 symptoms. Where it is no longer existing policy to mention COVID-19 symptoms there is no need to include this content. See the suggested template in Figure 3.

Second, the study was undertaken in Naas General Hospital (NGH) and the SMS messages sent were compliant with the HSE data handling policy. Nevertheless, moving to national use would involve a wider set of clinic types than those in NGH. Nationally, some clinic names could include reference to sexual and mental health clinics, so it is advisable to remove the "clinic name" from the design for these specific clinics but to retain the consultant name. That is there are two options, with implementation decided by the hospital of option 1 (which includes the clinic name) or of option 2 (which does not include the clinic name). See the suggested templates in Figure 3. The paragraph below explains the rationale for this in more detail.

The HSE's Information Classification and Handling Policy (HSE, 2013) outlines information (classified as "restricted information" which should not be sent in SMS / text messages). The clinic names in the NGH study do not fall in the data handling category of "restricted information" (see Appendix 4). However, if all the design elements in Intervention 2 were recommended to be extended to national practice on a blanket basis some clinic names might result in the SMS content either (a) falling into the "restricted information" category or (b) being perceived to fall into the "restricted information" category (in which case even if compliant it might not be adopted by providers). The HSE's data handling policy states that "Restricted information is defined as highly sensitive confidential information. The unauthorised or accidental disclosure of this information would seriously and adversely impact . . . patients" such as "mental health status, HIV status, STD/STI status", "addiction services information", and "disability services information." Therefore, in such cases the "clinic name" should not appear in the SMS reminder. Whether option 1 or 2 is appropriate for a particular clinic is to be determined at local hospital level in accordance with the HSE's information classification policy. In instances where hospitals use multiple consultants names

for a clinic (for example two consultants) and where the clinic name falls into the category of "restricted information" (option 2) it would be clearer (avoid the impression that both consultants will be present at the consultation) to insert the word "clinic" (with no reference to the medical clinic name) before the consultants names (i.e. rather than "Dr. Deirdre Robertson and Dr. Robert Murphy" it would read "clinic of Dr. Deirdre Robertson and Dr. Robert Murphy").

Two SMS template options are recommended. Option 1 includes the clinic name and is recommended for use with "standard" clinic names. Option 2 does not include the clinic name and is recommended for clinics where the clinic name potentially falls into the HSE's data handling category of "restricted information" (e.g., includes reference to mental health, sexual health, addiction, disability).

Figure 3 - Recommended SMS Templates

Option 1 Recommended for "Standard" Clinic Names

Communication **Possible** Template – SMS / Text Reminder Option 1 "Standard" Clinic Name

Key elements to include in the Text reminder:
1. Personalise, use the patient's first name.

2. Reciprocity, indicate the patient is expected at their appointment.

3. Include appointment as day of week in words, with the date and time.

As well as the name of the hospital also include:
4. the name of the consultant and

5. the name of the clinic.

6. Give the patient the information required to cancel their appt if needed.

Example of SMS/Text Reminder

❶   ❷   ❸
Robert, we are expecting you at your appointment on Thursday 7 September at 15:00 with Naas hospital Dr. Deirdre Robertson Pain Clinic. If you cannot attend please phone 045841111. ❹   ❺   ❻

Template for SMS/Text Reminder

<Insert patient first name>, we are expecting you at your appointment on <insert appointment day of week, date and time> with <insert name of hospital> <insert name of consultant> <insert name of clinic>. If you cannot attend please phone <insert phone number>.

Option 2 Recommended if Clinic Name Potentially Falls into the "Restricted Information" Category (e.g., includes reference to mental health, sexual health, addiction, disability)

Communication <u>Possible</u> Template – SMS / Text Reminder Option 2 "Non-standard" Clinic Name

Key elements to include in the Text reminder:

1. Personalise, use the patient's first name.

2. Reciprocity, indicate the patient is expected at their appointment.

3. Include appointment as day of week in words, with the date and time.

4. Include the name of the consultant as well as that of the hospital.

5. Give the patient the information required to cancel their appt if needed.

Example of SMS/Text Reminder

❶ ❷ ❸
Robert, we are expecting you at your appointment on Thursday 7 September at 15:00 with Naas hospital Dr. Deirdre Robertson. If you cannot attend please phone 045841111. ❹ ❺

Template for SMS/Text Reminder

<Insert patient first name>, we are expecting you at your appointment on <insert appointment day of week, date and time> with <insert name of hospital> <insert name of consultant>. If you cannot attend please phone <insert phone number>.

Any national rollout of the recommended SMS template will require time to allow hospitals with existing SMS capabilities to update their templates. In addition, where hospitals currently do not utilise SMS reminders, additional time is necessary to establish and integrate SMS reminder capabilities into their systems.

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* For a summary of patient reported reasons for non-attendance see Murphy & Taaffe, (2019) Patients' Reasons for Non-Attendance at Outpatient Appointments: A Literature Synthesis, *Department of Health Research Paper*

Appendix 1 – Ethical and Data Protection Considerations

In designing and undertaking the project, the evaluation team considered ethical and data protection issues. Three important factors considered are described below.

Firstly, the project consisted of two core components, neither of which posed ethical concerns, namely:

(a) Redesigning an appointment SMS remind for use in one pilot site. These redesigns were built upon the pre-existing SMS reminder used at the site. The redesigned SMS did not involve the use of any design elements that may be deemed to be inappropriate, and the letters did not have any impact on personal autonomy.

(b) Analysis of secondary non-personal data by the evaluation team. All data for this project is already collected as part of routine care / service management (no new data was collected on patients) and there is a clear legal basis under both the GDPR and the Data Protection Act 2018 for this by the HSE and the NTPF. In addition, the HSE's website under a section relating to "What is my personal data used for?" (HSE's FAQ on GDPR) states that "personal information" can be used to "Remind you of appointments by text." The project did not involve the analysis of information (attendance) that patients would not expect to be analysed. The evaluation team in the Department of Health did not require access to personal data.

Secondly, this project is most appropriately described as an evaluation rather than as health research. Therefore, it does not fall under the Health Research Regulations made by the Minister for Health in August 2018 and the evaluation plan did not need to be sent to a research ethics committee for review. The website of Ireland's Health Research Board provides a link to a HRA's decision tool to help decide whether or not a study is research as defined by the UK Policy Framework for Health and Social Care Research.[5] The response to the tools four questions in the tool for this project (Yes, No, No, No) yield the result from the tool that "Your study would NOT be considered Research by the NHS." The purpose of the project was to see whether patient engagement with appointment processes could be increased (its conduct did not involve changes to allocation to nor changes to treatment/ care / services) by testing changes to correspondence in two pilot sites (that is the "sample" was not nationally representative of the inpatient and day case waiting list in Ireland).

Thirdly, not requesting informed consent to be part of the Better Letter Initiative (to see whether one form of letter worked better than another) was appropriate. The project was consistent with Principle 10 of the Council for International Organizations of Medicine Sciences (CIOMS)/ World Health Organization (WHO) Ethical Guidelines' criteria for a waiver of informed consent, namely: (a) it would not be practicable to carry out without a waiver; (b) it poses no more than minimal risks to the participants; (c) it has important public benefits. Telling patients that two different letters were being tested would have undermined the project results by introducing bias (practicality), since the

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[5] http://www.hra-decisiontools.org.uk/research/

purpose was to test whether different letters resulted in different levels of engagements. There was no more than minimal risk to privacy and confidentiality as only an irreversibly anonymised dataset (non-personal data) was required by the Research Services and Policy Unit (RSPU) for analysis. The project offered public benefit as it was seeking means to most efficiently manage the waiting list and provide more timely access to care. If it was found that a redesigned version of the appointment letter worked best, this version would be adopted as the recommended letter for use nationally. The approach adopted was also considered legally sound under both GDPR and the Data Protection Act 2018.

Appendix 2 Additional Statistical Details

2.1 Appointment Outcomes Across Control and Intervention Groups

Outcome	Control	Intervention 1	Intervention 2	Intervention 3	Intervention 4
Attended	4,633 (68.8%)	4,544 (69.6%)	4,584 (71.1%)*	4,662 (70.6%)	4,621 (70.3%)
DNA	1,067 (15.9%)	972 (14.9%)	896 (13.9%)**	914 (13.8%)**	956 (14.5%)
Rescheduled	653 (9.7%)	691 (10.6%)	648 (10.0%)	697 (10.6%)	692 (10.5%)
Cancelled by Patient	377 (5.6%)	325 (5.0%)	321 (5.0%)	330 (5.0%)	308 (4.7%)*
Cancelled by Hospital	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Sample Size	6,730	6,532	6,449	6,603	6,577

Stars reflect p-values below thresholds of **$p < .0025$ (i.e., family-wise error rate of 1%) and * $p < .0125$ (i.e., family-wise error rate of 5%).

2.2 Logit Regression on DNA Rate with Controls, alternative model specification

	DNA	DNA
Intervention 1	0.927	0.929
	[0.820 - 1.049]	[0.820 - 1.051]
Intervention 2	0.843**	0.843**
	[0.744 - 0.955]	[0.743 - 0.957]
Intervention 3	0.857**	0.851**
	[0.757 - 0.970]	[0.750 - 0.964]
Intervention 4	0.899	0.893*
	[0.795 – 1.017]	[0.788 – 1.011]
Age	0.990**	0.987**
	[0.987 - 0.992]	[0.985 - 0.989]
New or Return Visit	0.760**	0.973
(Return Visit = base)	[0.691 - 0.835]	[0.880 - 1.076]
General Medical		1.606**
		[1.392 - 1.854]
General Surgery		0.951
		[0.802 - 1.129]
Orthopaedics		0.548**
		[0.454 - 0.661]
Dermatology		0.811*
		[0.679 - 0.969]
Rheumatology		0.684**
		[0.550 - 0.850]
Constant	0.446**	0.443**
	[0.396 - 0.520]	[0.363 - 0.541]
Observations	27,849	27,849

Main figures are odds ratios with 98.75% confidence intervals in parentheses. Stars reflect *p*-values below thresholds of **$p < .0025$ (i.e., family-wise error rate of 1%) and * $p < .0125$ (i.e., family-wise error rate of 5%).

Appendix 3 Cost Benefit Analysis

It is beyond the scope of this study to produce estimates for a detailed cost-benefit analysis. Based on available data the intervention is highly cost-effective.

Sending the redesigned SMS only involves an additional cost in instances where a hospital's current SMS reminder message is short (1 segment of 160 characters or less). In such cases there would be a small additional cost to using the redesigned SMS message (as the charge per SMS would be higher as it involves characters equivalent to 2 segments) but there would be a considerable additional benefit as the redesigned SMS reduces DNAs. See below for benefit to cost estimates. See below for details.

Table 2 – Cost Benefit Analysis

Additional Benefit – Additional Cost per 100 appointment offers (lower estimate)	€300
Additional Benefit – Additional Cost per 100 appointment offers (higher estimate)	€445
Ratio of Additional Benefit to Additional Cost per 100 appointment offers (lower estimate)	54
Ratio of Additional Benefit to Additional Cost per 100 appointment offers (higher estimate)	80

For every 100 appointment reminders sent, Intervention 2 reduces non-attendance by 2.37. The lower benefit per DNA is based on a cost of a DNA of €129 in 2022 as stated in HSE's Outpatient DNA Strategy Toolkit v1.0, the higher benefit is based on a cost of €190 year to date in 2023 (Q3) HPO correspondence. Both are likely to be underestimates of the true cost as they capture the inefficient use of staff time but do *not* capture the additional costs of worse care for patients nor of increased waiting times for patients. The cost of sending a SMS with 2 segments is twice the cost of sending a SMS with 1 segment.

Appendix 4 SMS Design Elements' Compliance with HSE Data Handling

1. Summary

The study does not raise any GDPR issues (see Section 2 and Box 2). All 6 design elements used in **the study in NGH are judged to be compliant** with the HSE data handling policy. Nevertheless, **when moving to a national recommendation** which would involve a wider set of clinic types it is **advisable in certain circumstances to remove design element 6 Clinic Name**. This is because when used for a wider set of clinic types the content could fall (or be perceived to fall) into the category of "restricted information". All design elements are consistent with the ICGP Guidelines where direct guidance is provided. Box 1 provides a summary and the basis for these is presented in more detail followed by "extract box" presenting the verbatim text.

Box 1: SMS Design Elements' Compliance with HSE Policy and Consistency with ICGP Guidelines

SMS Design Elements	Compliant with HSE Data Handling Policy?*	Consistent with ICGP Guidelines?**
Patient Forename (1) e.g., "Robert"	Yes, surname is not also used so this is not "personal information".	Yes, Guidelines state "this helps to personalise the text message".
Reciprocity (2) i.e., "we are expecting you at your appointment"	Yes, this is simply a statement of expectation (neither "personal", "confidential" nor "restricted" information).	Yes, this is simply a statement of expectation.
Date and time (3) e.g., "Thursday 7 September at 15:00"	Yes, the policy states that a SMS can include "the appointment date & time".	Yes, does not raise any issues.
Hospital Name (4) e.g., "Naas Hospital"	Yes, the policy states that a SMS can include "the name of hospital."	N.A. Not discussed, relates to general practice.
Consultant Name (5) e.g., "Dr. Deirdre Robertston"	Yes, this is personal information but it is not "restricted information" and is not advised against.	Yes, Guidelines state "To avoid confusing patients, GPs should identify they have sent the text".
Clinic Name (6) e.g., "Pain Clinic"	Yes, for the NGH study as the policy states "the specific HSE clinic the patient is to attend may also be included" and the clinics in NGH are not in "restricted information" category. If extended to national practice on a blanket basis some clinic names might (a) result in SMS content falling into the "restricted information" or (b) be perceived to fall into this category. The policy states "restricted information" should not be included in SMSs.	N.A. The guidance does not provide a definitive recommendation. "Clinicians should be mindful of these issues.

* HSE Information Classification and Handling Policy, Feb 2013**.** ** Quinlan, Text Messaging in Irish General Practice, Irish College of General Practitioners, 2018. N.A. = not applicable.

2.   GDPR and Design Elements Items 1 to 6

The content of the SMS message as used in this is compliant with GDPR. The 'General Data Protection Regulation' (GDPR) applies directly in Ireland to most kinds of data processing and is read in conjunction with the Data Protection Act 2018. The HSE's website provides a clear legal basis for processing of personal data and under a section relating to "What is my personal data used for?", the HSE's FAQ on GDPR states that "personal information" can be used to "Remind you of appointments by text." See Box 2: GDPR Information for details.

3.   Design Element 1 "Patient forename" and Policy / Guidelines

The inclusion of **patient forename (design element 1) is compliant with HSE data handling policy** as this is **not** "personal information". An individual cannot be identified from the content of the SMS, it only includes the patient forename not the full name (i.e., not forename and surname). See Box 3 for more details.

The inclusion of **patient forename (design element 1) is consistent with ICGP guidelines** which state "Never use both first name and surname in a text. Use of first name is permissible and helps to personalise the text message." (2018, p. 8). See Box 4 for more details.

4.   Design Element 2 "Reciprocity" and Policy / Guidelines

The inclusion of the **reciprocity content** ("we are expecting you at your appointment", design element 2) **is compliant with HSE data handling policy** as it is simply a statement of expectation (i.e., neither "confidential" nor "restricted" information as defined in the policy) and so can be included in SMS messages. See Box 3 for more details.

The inclusion of the **reciprocity content** ("we are expecting you at your appointment", design element 2) **is consistent with ICGP guidelines** as it is simply a statement of expectation. See Box 4 for more details.

5.   Design Element 3 "Date and time" and Policy / Guidelines

The inclusion of **date and time (design element 3) is compliant with HSE data handling policy** which states that SMS's can include "the appointment date & time." (2013, p. 29).

The inclusion of **date and time (design element 3) is consistent with ICGP guidelines.** This is purely factual information of a non-personal or sensitive nature. The sample text messages provided in the ICGP guidelines are for results from lab tests and not reminders (and therefore do not explicitly mention date and time). See Box 4 for more details.

6. Design Element 4 "Hospital Name" and Policy / Guidelines

The inclusion of **hospital name (design element 4) is compliant with HSE data handling policy** which states that SMS's can include "the name of hospital." (2013, p. 29).

The **ICGP guidelines** is not applicable to this design element as it relates to text messaging in general practice as so would not refer to hospital names. See Box 4 for more details.

7. Design Element 5 "Consultant Name" and Policy / Guidelines

The inclusion of **consultant name (design element 5) is compliant with HSE data handling policy.** Under the policy this is "personal information", i.e., "Information relating to a living individual (i.e., HSE employee, client or patient) who is or can be identified either from the information or from the information in conjunction with other information" (2013, p. 12). Nevertheless, it is **not** "restricted information", for example as it does **not** provide any information on the staff member's "mental health status, HIV status, STD/STI status" (2013, p. 6). In addition, the policy does **not** state, and there is nothing to suggest, in the section under "confidential information" that a consultant's name cannot be included in a SMS message. Therefore, this design element is compliant with the policy.

The inclusion of **consultant name (design element 5) is consistent with ICGP guidelines** which state "To avoid confusing patients, GPs should identify they have sent the text" and illustrate the point as follows "Good morning Joe, Dr Murphy here…". (2018, p. 8). See Box 3 for more details.

8. Design Element 6 "Clinic Name" and Policy / Guidelines

The inclusion of **the clinic names (design element 6) in the NSH study is compliant with HSE data handling policy.** With regard to "confidential information" and the content of SMSs the policy states (emphasis added) "Where patients and service users have consented to be contacted by text of their appoints, the text message should only contain the minimum amount of information, for example, the appointment date & time and the name of hospital. **The specific HSE clinic the patient or service user is to attend may also be included in the text where this will not compromise privacy**." (2013, p. 29) Later in the policy privacy is defined as "The right of individual or group to exclude themselves or information about themselves from being made public." (2013, p. 12). The inclusion of the clinic name in the SMS reminders sent to individuals in the NGH study does not make the information public and is compliant with the guidance. The clinics included in the NGH study (see Box 5) are **not** in the health areas that might be considered to be in the restricted categories of the policy (such as

"mental health status, HIV status, STD/STI status" or "addiction services information" or "disability services information").

When considering SMS outpatients reminder **content for use nationally**, i.e., for a wider set of clinics / services than those included the in NGH study, it may be advisable to exclude the clinic name in circumstances where the inclusion of the clinic name might result in such content falling into the category of "restricted information".

The policy states that "Restricted information is defined as highly sensitive confidential information. The unauthorised or accidental disclosure of this information would seriously and adversely impact the HSE, its patients, its staff and its business partners." (2013, p. 6) The policy also states that "Some examples of restricted information include: Patient / client / staff sensitive personal information (i.e., mental health status, HIV status, STD/STI status etc); . . . Addiction services information; Disability services information." (2013, p. 6)

The SMS reminders are being used to remind a patient of an outpatient appointment and not to confirm a health status. For instance, the appointment might be for diagnosis which subsequently confirms verbally or in letter to a patient a health status (e.g., do not have HIV). Furthermore, the SMS content in and of itself is not identifiable. Nevertheless, a SMS reminder for a follow-up or ongoing appointments on a phone could perhaps be inferred to imply a health status, and reference to clinic names including words such as "mental health", "HIV", or "STD/STI" might therefore put such content into the "restricted information" category. Or even if further review indicated that such content would not in the "restricted information" category, such content might be perceived by staff to fall into this category and not used. The policy states "Under no circumstances whatsoever should restricted information be transmitted by text." (2013, p. 29). Therefore, when considering the content for use nationally it would be better to avoid this risk by not including clinic name where the name of the clinic is a hospital may fall into the "restricted information" category (e.g., includes reference to mental health, sexual health, addiction, disability). In the Main Report two SMS template options are provided (see Chapter 5).

The **ICGP guidelines does not** provide a definitive recommendation in relation to "specific clinical information". It notes that "Clinicians should be mindful of these issues." The specific issued discussed are (a) "Medical indemnity organisations advise caution in texting **specific** clinical information, recommending the content of each text message should be generic and only include essential information. In a meeting with the Office of the Data Protection Commissioner (9th June 2016, oral communication) concerns were expressed that text messages to patients could breach confidentiality." and (b) "However, such advice predates the current GMC advice. Clinicians and patients find texts with clinical content effective." It is important for the reader of this Appendix to recall that in the context of ICGP guidelines that

"specific clinical information includes" is wider that just clinic names but also includes vaccination recalls and results from laboratory tests.

Box 2: GDPR Information

1.a: HSE FAQ on GDPR, https://www.hse.ie/eng/gdpr/gdpr-faq/

"What are the main GDPR Principles?
- Personal data must be processed in a transparent manner,
- We must have a specific purpose to collect your data,
- We may only keep data for as long as needed to fulfil the purpose for which it was collected. We delete medical records in accordance with our Records Retention Policy,
- Where data is held on computers, we must ensure that those computers and networks are safe and secure,
- Where data is in paper format, we are obliged to ensure that it is as safe and secure as a computer record.

What is the HSE's legal basis for processing? The HSE's lawful basis for processing personal data of service users is as follows:

1. The processing is necessary in order to protect the vital interests of the person (referred to as the data subject in Data Protection language). This would apply in emergency situations such as in the Emergency Department when unconscious sharing information with other emergency services for rescue or relocation in storms etc.
2. The processing is necessary for a task carried out in the public interest or in the exercise of official authority vested in the controller; for the HSE this official authority is vested in us through the Health Act 2004 (as amended).

What is my personal information used for?

- For the provision of health and social care to you,
- Review the care we provide for you to ensure it is of the highest standard,
- Investigate complaints, legal claims or adverse incidents,
- Protect wider public health interests,
- Provide information for planning so we can meet future needs for health and social care services Provide information to prepare statistics on Health Service performance,
- Carry out health audit,
- Provide training and development,
- Remind you of appointments by text.

What information must be given to individuals whose data has been collected?

All service areas will have a Data Protection Leaflet that will be available in service areas and websites. It will cover:
- Who is collecting the data,
- Why the data is being collected,
- The categories of personal data concerned,
- Who else might receive it,
- Whether it will be transferred outside the EU,

- Their right to request a copy of the data,
- Their right to lodge a complaint".

1.b: Additional GDPR Definitions and Information
https://www.dataprotection.ie/en/individuals/data-protection-basics/definition-key-terms

The term "processing" refers to any operation or set of operations performed on personal data. Processing includes storing, collecting, retrieving, using, combining, erasing and destroying personal data, and can involve automated or manual operations.

In the context of GDPR, 'personal data' means any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. (GDPR, Art. 4, § 1)

A special category of personal data is "sensitive" data and is defined as "personal data revealing racial or ethnic origin, political opinions, religion or philosophical beliefs, trade union membership, and the processing of genetic data, data concerning health or data concerning sex life or criminal convictions and offences or related security". (GDPR, Art. 9 , §1). The GDPR state that these special categories of personal data may be processed for "the purposes of preventive or occupational medicine, medical diagnosis, and the provision of health and social care or treatment or the management of health and social care systems and services" (GDPR, Art. 9, §2(h))

Box 3: Medical Council, Guide to Professional Conduct & Ethics for Registered Medical Practitioners, 9th Edition 2024

The Medical Council's *Guide to Professional Conduct & Ethics for Registered Medical Practitioners* includes one mention to SMS messages. Namely "You should be aware of security when sharing information by electronic means, including texts, other electronic messaging or emailing, and you should take all reasonable measures to protect confidentiality." (p. 35). Regarding the word "security" a footnote clarifies that "Security includes being mindful of the threat of cybersecurity attacks and taking all necessary precautions."

Box 4: HSE's Information Classification & Handling Policy, Version 1, February 2013

3.a. Guidance on Confidential information:
"Under no circumstances whatsoever should confidential information be transmitted by text. However, patients and service users who provide the HSE with prior explicit consent may be reminded by text message of their HSE appointments. Where patients and service users have consented to be contacted by text of their appoints, the text message should only contain the minimum amount of information, for example, the appointment date & time and the name of hospital. The specific HSE clinic the patient or service user is to attend may also be included in the text where this will not compromise privacy. The text message should not contain any personal information belonging to patient or service user."

Definitions related to the above:
"Confidential information is defined as information which is protected by Irish and/or E.U. legislation or regulations, HSE policies or legal contracts. The unauthorised or accidental Health Service Executive Information Classification & Handling Policy Version 1.0 6 February 2013 disclosure of this information.
Some examples of confidential information include:
Patient / client / staff personal information (Except that which is restricted);
Patient /client / staff medical records (Except that which is restricted);

Personal information: Information relating to a living individual (i.e., HSE employee, client or patient) who is or can be identified either from the information or from the information in conjunction with other information. For example: - an individual's name, address, email address, photograph, date of birth, fingerprint, racial or ethnic origin, physical or mental health, sexual life, religious or philosophical beliefs, trade union membership, political views, criminal convictions etc."

"Privacy: The right of individual or group to exclude themselves or information about themselves from being made public."

3.b Guidance on Restricted information:
"Under no circumstances whatsoever should restricted information be transmitted by text."
Definition of Restricted information:
"Restricted information is defined as highly sensitive confidential information. The
unauthorised or accidental disclosure of this information would seriously and adversely
impact the HSE, its patients, its staff and its business partners. Some examples of restricted information include:
- Patient / client / staff sensitive personal information (i.e., mental health status, HIV status, STD/STI status etc);
- Childcare / adoption information;
- Social work information;
- Addiction services information;
- Disability services information."

3.c Public and Internal information:

The policy makes a distinction between four types of information. "Confidential Information" and "Restricted Information" as discussed above and then "Public Information" and "Internal Information" as defined below. There are **no** specific handling requirements outlined by the HSE that apply to Public or Internal information in the context of text messages.

"Public Information is defined as information that is available to the general public and is intended for distribution outside the HSE. There would be no impact on the HSE, its staff, clients, or patients if this type of information was mishandled or accidentally released.

"Internal Information" is defined as information that is only intended for internal distribution among HSE staff and students, contractors, sub-contractors, agency staff and authorised third parties (i.e., service providers). In the majority of instances there would be no significant impact on the HSE, its staff, clients or patients if this type of information was mishandled or accidently released."

Source: HSE Information Classification and Handling Policy, Feb 2013.

3.d Brief Reference to Other Documents

HSE Electronic Communications Policy. V 3.1, July 2019
This document states that "The purpose of this policy is to define acceptable use of HSE's electronic communications, email, internet, intranet, and fax services." It does not provide specific guidance in relation to the use of SMS messages, but it makes reference to the HSE's Information Classification & Handling Policy. It provides the same definitions as the Classification & Handling Policy of "personal information", "privacy", and the four-way classification of information.

HSE Integrated Patient Management System (IPMS): two-way SMS Appointment Reminders, AO **March 23 v0.1-PR**

Under Configuration Guidance, Message configuration it states:
"Advice is as per HSE Policy on electronic communications regarding inclusion of **any identifying data** and that it should not be included. Patients will have received an appointment notification letter and the SMS is simply a reminder of the original appointment which includes date and time and relevant information regarding appointment."

Example includes:
"Reminder appt for "patient forename" on "appointment date" at "appointment time" in Hospital. Please confirm your attendance by responding Y or N".

[The reader should bear in mind that the ICGP guidelines do not relate solely to appointment reminders, as it covers text messaging in general practice and cover to use for "appointment reminders, vaccine recall or investigation results".]

Confidentiality
"Text messaging is inherently insecure: texts are transmitted on a public network and may be read by others, even on a locked smartphone. The GMC (General Medical Council, UK) acknowledges that "most communication methods pose some risk of interception". Clinicians should 'take reasonable steps to make sure the communication methods you use are secure' (Confidentiality, para 133).[6] We should always be mindful that third parties may read the text.

- **Never** use both first name and surname in a text. Use of first name is permissible and helps to personalise the text message.

- To avoid confusing patients, GPs should identify they have sent the text "Good morning Joe, Dr Murphy here…"

- Clinicians should double-check contact numbers for patients on every occasion it is anticipated that information may be texted to the patient.

- Be mindful that third parties may read the text.

Clinicians seeking further information around text messages and confidentiality, may
find the following of interest: "Balancing confidentiality guidance for you and your
patients"[2] and "Confidentiality, Good Practice in handling patient information"
Paragraph 132 & 133.[3]" [extracts from these paragraphs are presented under "Content" section].

[References within the document]:
[1] UK General Medical Council, "Confidentiality: good practice in handling patient information", January 2017.

[2] General Medical Council (GMC) UK. Communicating with patients. 2017; Available at: https://www.gmc-uk.org/guidance/ethical_guidance/confidentiality.asp. [Accessed 21st February 2018]

[3] Montgomery J. General Medical Council (GMC) UK. Balancing confidentiality
guidance for you and your patients: 2017; Available at:
https://gmcuk.wordpress.com/2017/01/25/balancing-confidentiality-guidance-for-youand-your-patients/.
[Accessed 21st February 2018]

Children and Young adults
"In general, text messages should not be sent to children under 16 years of age. Young people, aged 16y and 17y, may consent to receive text messages. It is especially important to verify their phone number, as young people may frequently change mobile, or use a parent's number. Carefully consider the content of text messages to young people, with whom inadvertent breach of confidentiality may easily arise, if friends or parents access their phone."

Content of text message

"Discuss with your patient what information may be transmitted by text. Informed consent includes a discussion of the intended content of text messages: (appointment and vaccine reminders, investigation results, etc). Sample "template" text messages, save GP time, standardise the text, and might read as follows:
Dear [forename of patient], Your recent test results are normal (satisfactory). Regards Dr_____. [4]

Dear [forename of patient], the lab results showed some minor irregularities. Please
book a consultation […] to have a chat about it. (in next 2-3 weeks, not urgent) [4]

Information which may be **inappropriate** to text?

- It is unsafe to rely solely on texts to communicate **urgent or important** clinical information. There is no guarantee the text has arrived. For the avoidance of doubt: Texting alone is potentially unsafe for urgent or important matters, but may be a useful adjunct to contact a patient.

- Text messages should not contain **sensitive information**. Sensitivity is not determined solely by the type of information (clinic appointment), but requires a judgement as to the impact if the information was misused. Some information is especially sensitive, such as issues relating to sexual health and mental health. Discuss and agree with your patient what information may be texted: appointment reminders, vaccine recall or…investigation results?

- Medical indemnity organisations advise caution in texting **specific** clinical information, recommending the content of each text message should be generic and only include essential information.[5] In a meeting with the Office of the Data Protection Commissioner (9th June 2016, oral communication) concerns were expressed that text messages to patients could breach confidentiality. However, such advice predates the current GMC advice.[6] Clinicians and patients find texts with clinical content effective.[4] Clinicians should be mindful of these issues."

[References within the document]:
[4] Leahy D, Lyons A, Dahm M, Quinlan D, Bradley C. Use of text messaging in general practice: a mixed methods investigation on GPs' and patients' views. Br J Gen Pract 2017 Nov;67(664):e744-e750.

[5] Reference is made to two indemnity organisations as follows:
Medical Protection (Republic of Ireland). Communicating with patients by text message. 2014; Available at: http://www.medicalprotection.org/ireland/resources/factsheets/factsheets/roicommunicating-with-patients-by-text-message. [Accessed 21st February 2018]
Medisec Ireland. Texting, faxing and emailing patients. 2017; Available at: https://medisec.ie/news/Texting--faxing-and-emailing-patients. [Accessed 21st February 2018]

[6] Reference is made to the document UK General Medical Council, "Confidentiality: good practice in handling patient information", January 2017.
The Guidance does not refer to specific paragraphs. Nevertheless, looking through the document one can see that paragraphs 132 & 133 outline advice for communication with patients. Paragraph 132: "wherever possible, you should communicate with patients in a format that suits them. For example, electronic communications – such as email or text messaging – can be convenient and can support effective communications between doctors and patients, with appropriate safeguards." Paragraph 133: "Most communication methods pose some risk of interception – for example, messages left on answering machines can be heard by others and emails can be insecure. You should take reasonable steps to make sure the communication methods you use are secure."

Box 6: Specialities Covered in the NGH Study

Speciality Area	Number of Texts	Definition (Source: Merriam Webster Online Dictionary)
General Medical	14,233	General consultant appointments
Orthopaedics	4,430	Correction or prevention of deformities, disorders, or injuries of the skeleton and associated structures (such as tendons and ligaments)
General Surgery	4,332	General operative or manual procedures
Dermatology	4,109	Dealing with the skin, its structure, functions, and disease
Rheumatology	2,309	Conditions characterized by inflammation or pain in muscles, joints, or fibrous tissue
Haematology	571	Dealing with the blood and blood-forming organ
Cardiology	567	Concerning the heart and its action and diseases
Respiratory Medicine	486	Anatomy, physiology, and pathology of the lungs
ENT	407	Conditions of the ear, nose, throat, and neck
Neurology	311	Concerning the structure, function, and diseases of the nervous system
Nephrology	279	Concerned with the kidneys
Endocrinology	219	Concerned with the structure, function and disorders of the endocrine glands
Gastro-Enterology	214	Concerned with the structure, functions, diseases, and pathology of the stomach and intestines
Oncology	190	Concerned with the prevention, diagnosis, treatment, and study of cancer
Urology	146	Concerned with the urinary or urogenital tract
Anaesthetics	45	Dealing with anaesthesia and anaesthetics
Dietitian	43	Dealing with nutrition to the diet
Grand Total	32,891	This number refers to all texts sent, it includes the control (existing message) and redesigned messages.

Appendix 5 Quality Assurance

In preparing this report, the authors followed the Irish Government Economic and Evaluation Service (IGEES) quality assurance process on:

- The analysis format (structure)
- Clarity (quality of writing)
- Accuracy (reliability of data)
- Robustness methodological rigour
- Consistency (between evidence and conclusions)

The report was circulated for review to the following:

- Internal/Departmental
  - o Colleagues in the Research Services and Policy Unit, Department of Health
  - o Scheduled Care Performance Unit, Department of Health
- External
  - o The National Treatment Purchase Fund (NTPF)
  - o Access Team and also Specialist Acute Services in Acute Operations, HSE