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## Rapid distribution of information by SMS-embedded video link to patients during a pandemic



Urgent communication of targeted health-care information to at-risk patient groups is a challenge. Novel technologies now allow video links, interactive resources, and electronic evaluations to be distributed by SMS (text) messages. Patients with autoimmune rheumatic disease might be at particular risk from coronavirus disease 2019 (COVID-19). In the UK, advice for patients with these conditions has been coordinated by Public Health England, focusing on a high-risk group that requires strict social isolation ("shielding").<sup>1,2</sup> Rheumatologists were presented with a 40-component physician-scored tool to risk-stratify patients under follow-up by the British Society for Rheumatology. They were also requested to advise patients on therapy, such as corticosteroid use, during sickness. A particular challenge in the UK highlighted by regulatory authorities is that, despite the use of electronic patient records, data about rheumatology patients are fragmented (prescriptions for biologics and some disease-modifying antirheumatic drugs are electronically coded in secondary care patient records and comorbidities in primary care records), preventing centralised national identification of at-risk groups.<sup>3</sup>

Modern e-learning publishing platforms—which are already in use in education of health professionals—allow publication, distribution, and user metrics of multimedia resources sent via a single, sharable web-link. We present a proof of principle for this new methodology, already at use in our hospital,<sup>4</sup> used as a means of informing and educating patients in a large secondary care rheumatology service in the UK.

This intervention aimed to communicate a patient-led risk score via an SMS link to a web-based instructional video. The educational content was adapted from physician-led national guidance,<sup>1,2</sup> and included a simple 4-step risk score along with other advice. This method allowed patients to self-identify if they were at high risk (ie, that they should classify themselves as in the "shielding" group).<sup>3</sup> We developed a series of iterations, encompassing changing national guidance, piloted and shared with rheumatologists, our patient participation group, and a national charity. The final iteration included the score, an animated worked example, and information from regulatory bodies and specialist societies.<sup>4</sup> We used

an established educational e-learning tool to record and publish our online video (iSpring Suite, iSpring Solutions, 2019).<sup>5</sup> For patient contact, we used an existing database of mobile phone numbers that had already been used to send SMS messages to our rheumatology cohort in the past 12 months (March 22, 2019, to March 22, 2020).

For the evaluation, we used our institution's SurveyMonkey account to pilot and implement a simple anonymous web-based anonymous patient evaluation. We used Likert scales to evaluate the acceptability of the intervention and its ability to enable participants to self-score. A subset of patients (n=200) was asked about their experiences in more detail, along with age and sex; we limited the sample size because of concerns we had about completion rates for longer questionnaires. We sent the SMS-linked video on day 4 after the national request to contact patients in rheumatology services.<sup>2</sup> Data were collated at day 6, and we analysed responses in line with established methodology.<sup>6</sup> Our main objective was to enable patients to self-score, and the pragmatic primary outcome measure was self-reported ability to risk-stratify.

We sent 12 241 SMS video linked messages (day 4); by day 6, we had recorded 5226 (42.6%) video views with 1167 patient evaluations (22.3% viewer response). Of those who completed our evaluation, 1105 (95.6%) of 1156 patients reported successful self-risk stratifying, including those at low risk (237 [20.5%]), those at medium risk (544 [47.1%]), and those at high risk (324 [28.0%]). 1156 (99.1%) of 1167 patients described the impact of the video intervention, with 825 (71.4%) of 1156 reporting behavioural change. Patient satisfaction scores were high on 1–5 Likert scales (where 1=strongly disagree and 5=strongly agree). A summary is shown in the table. We shared this resource at no cost with a regional network. Our video was approved and adopted by two large rheumatology units, with one choosing to distribute it using their SMS system.

The strengths of this innovative method for communicating with patients are its speed, scale, and positive patient experiences. Large cohorts of patients or individual patient groups can be targeted, and this method appears to be acceptable, low cost (typically £0.01–0.02 per message), and impactful, with striking

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usability metrics. Unlike more costly paper communication, our video information was revised to reflect evolving national guidance and feedback, always using the same link.<sup>4</sup> Some elements are of particular interest for rheumatologists during the COVID-19 pandemic—for example, targeting advice to specific groups, such as patients taking tocilizumab or hydroxychloroquine. There is also wider scope for patient-centred communication in the digital health-care revolution.

SMS message options have been reviewed recently; however, our methodology was not described.<sup>5</sup> The only other intervention based on SMS-linked video that we are aware of, in a small selected cohort, did not evaluate the patient experience.<sup>7</sup> Researchers sent 30-sec video clips directly to phones, with an SMS evaluation; however, these could not be recalled or revised.<sup>8</sup> This is the first intervention that we are aware of to adopt SMS-linked video to explore impact in a large patient group. The population is representative of our wider cohort in terms of age and sex.<sup>9</sup>

Nonetheless, we have concerns that some of the most vulnerable patients might not have been reachable with this intervention, particularly those without mobile phones or internet access. To try to mitigate this limitation, we made these resources accessible on our departmental web pages, although the uptake there was small. We have received feedback from patients with lower literacy and dyslexia who found our SMS-linked video intervention more helpful than more traditional health-care communication as written text. This innovation was done alongside traditional methods of hand searching biologics registries and drug monitoring systems (for which we had several thousand patients in our cohort). The “shielding” letters to the highest risk groups identified by our manual record search were posted only by day 12, illustrating the delays inherent in traditional approaches. Our methodology might be subject to response bias, with only those patients who benefited choosing to complete our survey. Our response rate is within the expected ranges for this type of survey.<sup>10</sup> For the estimated 15% of our follow-up cohort that do not have an inflammatory autoimmune rheumatic disease that did receive our video,<sup>9</sup> we included other generic advice, such as analgesic use.

In summary, this intervention is, to our knowledge, the first of its kind to communicate and evaluate a complex public health message at large scale by use of SMS-linked video. The high acceptability and patient satisfaction scores indicate that this intervention is a potential tool for rheumatology departments to contact selected patients, during and after the COVID-19 pandemic. This work demonstrates that SMS-linked technology is well placed to assist physicians, and might be of interest to national advisory bodies, hospitals, and primary care groups when planning mass health-care communication.

This rapid intervention was funded with internal department funds for SMS messaging. The technology tool (iSpring Suite) used to deliver the programme was a tool that had already been purchased by our institution with the intention of promoting undergraduate and postgraduate education. The SMS text message service is the existing service used by our hospital (Healthcare Communications UK). We received no funding or any support in relation to this work from either source.

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