The QR code: A treatment for COVID-19 information overload

One of many challenges created by the COVID-19 pandemic for emergency departments (EDs) is the need for unusually rapid dissemination and uptake of new information by healthcare teams [1]. As our understanding of COVID-19 evolves quickly, it is accompanied by a rapid progression of new procedures and protocols related to infection control strategies, testing indications, admissions policies, and the physical flow of patients in the ED setting. Multiple authors have noted that effective communication to staff is important for preventing burnout and promoting resilience in this type of crisis situation [2,3], and having staff adhere to the most current policies has been crucial for patient safety. Our emergency department therefore sought innovative, behavioral-science informed methods for effective and efficient information dissemination during the initial stages of the pandemic.

The methods we utilized early on were effective but resource intensive. These included frequent e-mail updates, in-person rounding by our physician administrative team, and weekly COVID-19 case conferences highlighting developments in clinical understanding. As it became apparent that COVID-19 would continue to impact our care environment beyond the initial few months, our focus turned to more sustainable long-term strategies. Here, we describe one such strategy that replaced more resource-intensive efforts while continuing to provide staff with readily accessible and up-to-date information: QR code stickers placed strategically throughout our ED, linked to a simple single-page website displaying the most recent and relevant COVID-19 updates.

Our emergency department is part of a large, urban, quaternary care academic center that traditionally sees approximately 112,000 ED visits per year. Our staff consists of approximately 55 attending physicians, 60 residents that rotate between our ED and another site, 70 advanced practice providers (APPs), and 230 nurses. During the COVID-19 surge in March through May of 2020, our ED saw the most COVID-19 patients of any ED in the state of Massachusetts [4], and our department underwent rapid and substantial changes in policies and protocols as a result.

While designing a long-term solution for information communication, the following priorities emerged:

1) Easy access for staff
2) Up-to-date information
3) Uncomplicated maintenance for the communications team
4) Rapid adaptability for potential future changes

A QR code-based solution fit these criteria. Rather than searching through e-mails or cumbersome file-sharing platforms, staff could scan codes in real-time during shifts and arrive at a curated site displaying only the most pertinent information. Once built, the associated website could be updated quickly and easily; this responsibility was entrusted to the physician leading our ED-based COVID-19 response, ensuring updates would come from the person who would know about them first. Finally, the QR platform allowed for continued customizability.

The platform was programmed using a template on the Wix website builder (Wix, Tel-Aviv, Israel). The site template included a home page with separate links for nurses and clinicians. This allowed both clinicians and nurses to scan the same QR code while accessing information specific to their role group.

Small QR code stickers were placed on every computer in our ED, and size-optimized to fit on the monitor border without interfering with screen viewing. Larger QR code posters were placed at strategic locations in all care pods. We used TAGO (TAGO, Israel) to assign each QR code a tracking number; this allowed us to not only monitor website traffic but also to track unique QR code scans. The poster we designed utilizes the behavioral principles of ease and salience (Fig. 1); the design acknowledges the rapidly changing protocols, offers help, and includes just one simple call to action - to scan. It also uses bright colors and strategic formatting to capture attention.

From June through October 2020, the QR codes were scanned 433 times by 294 distinct users. 47% of these scans were of the computer stickers and 53% were of the posters. Some users seemed to re-scan the code each time they wanted to access the content, while others appeared to bookmark the website on their mobile device; 34% of website visits were returning visitors without a new associated scan. The site was accessed most frequently in June and July following initial implementation, but use remained durable over subsequent months (Fig. 2).

The primary advantage and disadvantage of a QR code solution is that information access is user-initiated. This allows staff to seek information at any time they wish, but also does not push information to them. We have therefore found it necessary to continue other forms of communication for particularly important and time-sensitive updates. However, the need for e-mail and in-person communications related to COVID-19 has decreased substantially overall because of the QR code strategy. We suspect the QR platform may also prove useful for providing other types of updates to ED staff in the future, or as a way for staff to easily review information related to other rarely used procedures and protocols.

Prior presentations

None.

Author contributions

JJB, RO, TR, MH, KM, and BAW developed the manuscript concept and executed the intervention. JJB wrote the manuscript. BAW and RO provided critical revisions of the manuscript for important intellectual content.
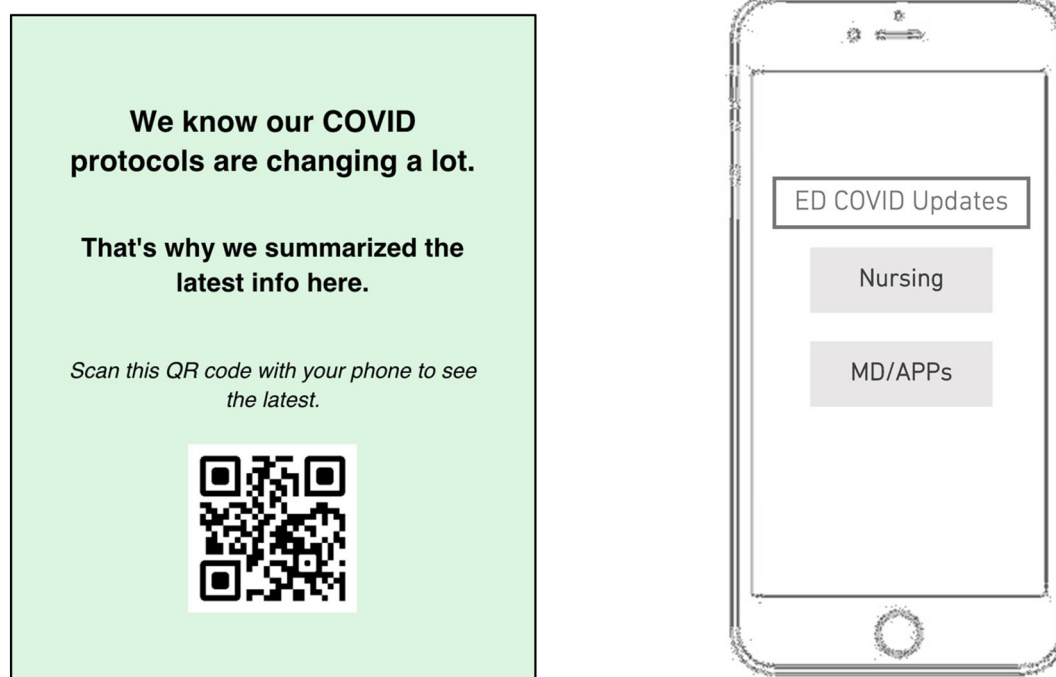
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Fig. 1. The QR code sticker with associated text and the website homepage, side by side.
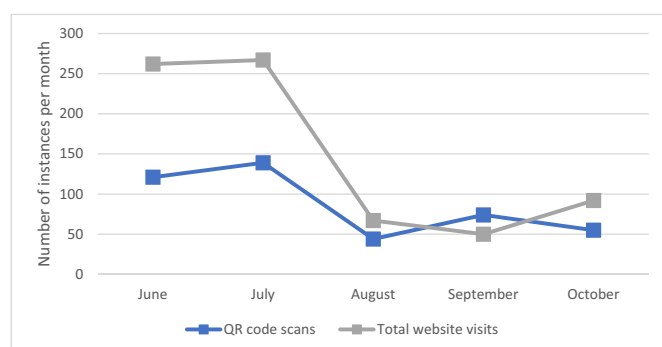

Fig. 2. Graph of unique QR code scans and total website visits over time. The Y-axis denotes the number of instances per month both for QR code scans and total website visits. Note, if a user scanned a QR code but did not click the link for the website, this counted as a scan but not a website visit.

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Joshua J. Baugh MD, MPP
Department of Emergency Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, USA
*Corresponding author at: Department of Emergency Medicine, Massachusetts General Hospital, 55 Fruit St, Boston, MA 02114, USA.
E-mail address:* jbaugh@partners.org

Rebecca Oran MPH
bIdeas42, USA
E-mail address: roran@ideas42.com

Ted Roberts MPA
bIdeas42, USA
E-mail address: troberston@ideas42.com

Matthew Hankin
bIdeas42, USA
E-mail address: mhankin@ideas42.com

Kevin Moore
bIdeas42, USA
E-mail address: kmoore@ideas42.com

Benjamin A. White MD
Department of Emergency Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, USA
E-mail address: bwhite@mgh.harvard.edu

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