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Enhancing Patient Information and Sustainability through QR Codes

Mohamed Mohsin* and Banan Osman

Department of Urology, University Hospitals Birmingham, UK

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***Corresponding author:** Mohamed Mohsin, Department of Urology, Heartlands Hospital, Bordesley Green E, Birmingham B9 5SS, England, Email: urology.qip@gmail.com

Abstract

Providing patients with information about their condition and proposed treatment is a crucial aspect of healthcare. The authors explore the potential of digitalizing information leaflets in the context of improving patient accessibility to information while contributing towards sustainability, a theme that has rightly piqued the interest of health professionals in recent years.

Keywords: Quick Response (QR); British Association of Urological Surgeons; Sustainability; Prostate; Innovative Solutions

Abbreviations: QR: Quick Response; PIL: Patient Information Leaflet; TURP: Transurethral Prostatectomy; BAUS: British Association of Urological Surgeons; LUTS: Lower Urinary Tract Symptoms; EAU: European Association of Urology; HCP: Healthcare Professional

Introduction

Traditionally, patients receive printed information leaflets. Some summarize the disease condition while others describe the proposed procedure, associated risks, and rationale for undergoing the same. The authors reviewed the patient information leaflet (PIL) titled "Transurethral prostatectomy (TURP) for benign disease" [1] provided by the British Association of Urological Surgeons (BAUS). Albeit subjective and based on the opinion of the authors, the PIL is undoubtedly comprehensive. However, while these leaflets may be comprehensive, a significant proportion of the population amounting to 43% would find this same PIL unreadable [2]. The authors believe that a measure of effective healthcare is the active participation of patients in the decision-making process of their care to make informed choices about their treatment and choose the appropriate treatment which has also been reiterated by Krist, Tong, Aycock, and Longo in 2017 [3]. In the setting of an outpatient clinic, information leaflets are typically provided either on the day of the appointment or posted as printed leaflets along with a summary of the appointment.

Nonetheless, this differs significantly from when a urologist is on an "acute take" with patients undergoing a range of emergency procedures such as scrotal explorations and ureteric stent insertion. In these circumstances, the authors postulate that patients may not always receive the same level of information as those seen in a clinic and the information provided may be limited to verbal information which may not only be due to time pressures but also due to the lack of pre-printed information sheets available on demand.

While it is a common deduction that written information is superior to verbal information, verbal information when used in conjunction with written information is superior to verbal information alone [4].

Discussion

Digitalizing information

On reflection, a urologist may ask themselves how often they find themselves printing and providing this information after explaining the same to the patient. For instance, if a patient is undergoing a ureteric stent insertion for an obstructed system, does the initial discussion at the time of consent always include a BAUS information leaflet? If not, the question is why would sharing information with a patient in an acute setting be any different from sharing the same information on an elective basis? To put this into perspective, we explore one of the most performed elective procedures offered by urologists worldwide, TURP. In the writer's analysis of a typical Lower Urinary Tract Symptoms (LUTS) clinic session based on one consultant's practice (BO), an

average of 12 patient information leaflets for TURP is provided per month which translates to 144 leaflets a year equaling 1008 pages. Modern healthcare must leverage modern technological solutions and institutions including the British Association of Urological Surgeons (BAUS) and the European Association of Urology (EAU) which constitute two of the most used references amongst urologists in the UK and offer text and video information to help patients better understand their disease pathology and proposed surgical procedure. Still, the authors ask how we can provide patients with this information in a format that is more accessible and sustainable. The author's solution is the Quick Response (QR) code. Initially introduced for the automotive industry by Denso Wave in 1994 [5], QR codes are becoming a universal means of accessing information conveniently and sustainably. This approach ensures that vital medical information is readily available and convenient, accessible, bares medicolegal significance, is sustainable, cost-effective, and quantifiable.

Convenience and accessibility

QR codes are scanned using a smartphone using the default camera app or a third-party QR scanner making it easy for users to access information without typing long URLs or searching for specific resources and can instead receive the information as intended by the treating healthcare professional (HCP.) The convenience of QR codes also extends to the HCP who can create their versions of QR codes quickly and easily and share the same with comparable ease with nothing more than their smartphone or a poster. Patients can access this information at any point in time by simply saving the link or referring to the original QR code. Visually impaired patients may rely on aid to read the information or for it to be converted into Braille before they can access it. This project also takes into consideration visual impairment and appreciates that smartphones and computers with text-to-speech functions can aid our patients in accessing this information in a way that they prefer and is convenient to them. Similarly, text can also be enlarged or viewed in a variant colour scheme that is compatible with the patient's limitations.

Medicolegal significance

Incorporate a QR code into each clinical letter, which acts as a digital "rubber stamp" proving that the information has been provided.

Sustainability

Replacing the traditional paper based PIL with QR codes can contribute towards reducing the environmental impact of printing and discarding numerous pages as well as the overall carbon footprint with literature quoting up to 29g of CO_2 emitted in the process of posting a standard letter barring factors not truly appreciated such as transport [6]. A snapshot audit conducted by the authors based on a single surgeon's practice concluded that 12 TURP PILs were provided in October 2023 which translates to 144 leaflets per year or 1008 pages. To further elaborate on the carbon footprint of these leaflets, we describe this information as follows:

Emissions of CO_2 per A4 Paper = 5g [7,8]

Emissions of CO_2 per one printed page with a LASER printer = 2g [7,8] Emissions of CO_2 per TURP PIL = 20g + 7g = 27g of CO_2

Per month = 324g of CO_2 Per year = 3900g of CO_2

These numbers, when calculated as exponential, describe the environmental impact of one specific type of PIL for one consultant over a year. The figures multiply into the hundreds if not thousands when considering the practice of urologists across the United Kingdom.

Cost Reduction

By minimizing the use of printed materials, the project will help cut costs associated with papers, mail, ink and toner, printer costs and the administrative burden. Mittal et al. described the role of QR codes as well as departmental costs in their work from 2022 [9].

Tracking

QR code uptake can be tracked, allowing departments with a basic IT infrastructure to gather data on how often these codes are scanned. Contributing towards measurable healthcare metrics. The authors have used QR codes as a part of their clinical practice on an emergency basis with a good uptake. This has been marked on the consent forms as "information provided digitally." Generating the QR codes can be done quickly and easily on an Excel or Google spreadsheet and stored on a smartphone. No knowledge of functions or coding is required as demonstrated by the author (MM).

Limitations and the Ageing Population

The authors acknowledge the limitations (both realized and unrealized) of digitalizing PILs and do not expect it to achieve 100% uptake amongst patients.

The authors refer to the work of Mittal et al. [9] and draw upon three key figures.

- 60% of the patient population were between the ages of 60 to 80 years.
- Only 40% of patients were familiar with QR codes.
- 73% of patients were able to access the internet.

For clarity, elderly individuals are described as people over the age of 65 years [10,11]. We acknowledge that the increase of an ageing population must also be considered with projections predicting a doubling of the population of people over the age of 60 (from 12% to 22%) in the 35 years between 2015 to 2050 [12] which may be viewed as a barrier to the adoption of QR codes. However, urologists must look beyond the generalization of age being an obstacle to accessing information as this concept has been

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disproved [13] reminding HCPs to acknowledge that technology is more accessible with a 53-percentage point reduction in the discrepancy between smartphone usage in 2021 compared to 2012 [14] between individuals aged 18 to 29 versus individuals aged 65 years and older. Additionally, there is a 27-percentage point increase in the use of smartphones amongst the public over 9 years from 2014 to 2023 with statistics from 2023 indicating 96% of 16- to 24-year-olds, 77% of people aged 55 to 64 and 69% of people aged 65 and overuse a smartphone [15].

Conclusion

The shift towards QR codes from printed PILs represents a progressive change in the urologist's approach to patient education and sustainability through the adoption of which, healthcare providers can enhance patient engagement and accessibility to information while also championing sustainability by reducing paper usage and in turn waste and its associated carbon footprint. In the ever-changing landscape of healthcare and technology, embracing innovative solutions to commonly overlooked issues like QR codes remains key to achieving a patient-centered and environmentally mindful ecosystem. QR codes in clinical documentation serve as a convenient digital "rubber stamp" verifying information provision but also offer a measurable means of tracking patient engagement, thereby contributing to quantifiable healthcare metrics. While the authors acknowledge potential challenges such as digital accessibility among older populations, it is crucial to recognize the increasing uptake of technology among elderly individuals and the evidence disproving the notion of technology being inaccessible to this demographic.

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