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Use of WhatsApp in an oral and maxillofacial surgery department at a major trauma centre and its role during major incidents: our experience

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Abstract

WhatsApp (Facebook), which is a popular instant messaging "app" that is available on several platforms globally, allows users to share text, images, and video (and much more) over an end-to-end encrypted connection. We have investigated its use among the oral and maxillofacial surgery junior trainees' WhatsApp group at King's College Hospital, a level one trauma centre in London, and reviewed existing studies. On five of the seven days analysed, there were 191 communications. Most (n = 127, 67%) were related to administrative issues and patient care (n = 62, 33%). Only two (1%) related to neither and were classified as "other". No communications were sent to the group over the weekend. WhatsApp is a popular means of communication among junior trainees within our department, and can be used to send concise information to several people at once, often more quickly than by telephone, pager, or email. The technology, however, should be used carefully, and it raises important questions on confidentiality, which have recently been addressed by the medical director of the NHS in the wake of its use as a "cascade mechanism" during major terrorist incidents. We also discuss the potential value of emerging methods of communication that have been specifically designed for use in healthcare.

Keywords: WhatsApp; Instant messaging; Trauma; Major incident

Introduction

WhatsApp (Facebook), a smartphone application ("app") that is used across the world by over one billion people, enables the quick and convenient sharing of messages, media, and files among specified groups of users.[1] It is free to download and offers end-to-end encryption.[2]

In this retrospective audit of communications within the oral and maxillofacial surgery department junior trainees' WhatsApp group at King's College Hospital, we analyse the content and type of message, consider the benefits and risks of the platform, and discuss its use during routine provision of services and major incidents.

The WhatsApp group consists of dental core trainees or core surgical trainees on a current rotation in oral and maxillofacial surgery (OMFS). It is easy to add colleagues to a group and their phone number is all that is required.

To our knowledge, this is the first paper to discuss the use of WhatsApp during major incidents.

Methods

Messages sent across the group were recorded over a continuous seven-day period and were classified as patient-related,

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Table 1
Breakdown of messages sent across the King's College Hospital oral and maxillofacial surgery WhatsApp group over a 7-day period.

	Patient-related	Administrative	Other	Total messages
Monday	15	42	0	57
Tuesday	14	20	0	34
Wednesday	8	39	1	48
Thursday	16	9	0	25
Friday	9	17	1	27
Saturday	0	0	0	0
Sunday	0	0	0	0
Totals	62	127	2	191

administrative, or other. We looked at their timing, whether they were intended for specific individuals or the entire group, if a response was given, and if patient-identifiable information was included. Members of the group also reported how often they used WhatsApp compared with other messaging media such as email, iMessage, and Facebook Chat.

We also searched PubMed using the terms "WhatsApp" AND "healthcare". Only papers in the English language were used for review.

Results

We retrospectively analysed the conversations across the group over a seven-day period from Monday 20 March 2017 to Sunday 26 March 2017. In total, 191 messages were sent to the entire group (Table 1). The group conversation was not used over the weekend.

Theme of content

The communications were primarily administrative (n = 127, 67%) and patient-related (n = 62, 33%). Administrative content included the availability of staff, staff sickness, and absence. Patient-related content included matters such as handover updates, changes of prescription, new admissions, discharges, and results of investigations. Any other matter was categorised as "other" and comprised 1% of the messages (Table 1).

Timing of messages

The highest proportion of messages sent on weekdays was between 07:30 and 09:00 (Monday 30%; Tuesday 23%; Wednesday 18%; Thursday 48%; and Friday 81%).

Discussion

Messages were sent most often between 07:30 and 09:00. During this time the night team hands over to the day team, registrars and consultants review their patients (elective or emergency), and the entire team gathers for the consultant-led morning meeting at 08:00 (at which every patient is discussed). At 08:20, the elective-list surgeons attend a team briefing, and at 08:30 a consultant-led ward round takes place and part of the team attends the hospital's major trauma meeting.

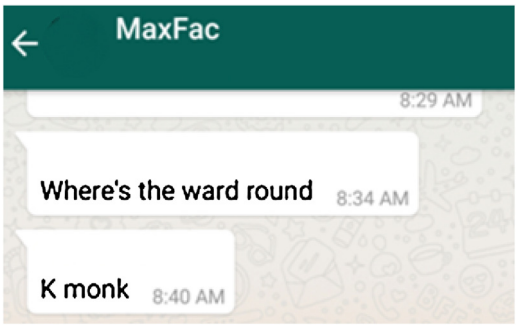

Fig. 1. Rapid communication among the group during the ward round reflects the ease of using WhatsApp and the fast-paced nature of the round.

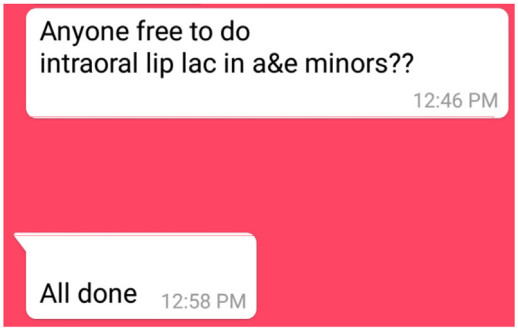

Fig. 2. A message to the group from the on-call junior surgical trainee asking for help with a laceration in the emergency department. Confirmation that the procedure had been completed was received 12 minutes later.

Some juniors do tasks (such as flushing or removing drains, and completing discharge notifications) while the ward round moves forward, often to other wards. A designated junior is responsible for entering patients' records on a departmental laptop. WhatsApp is used to confirm that tasks have been completed, and to inquire about the current location of the ward round, as patients are often dispersed on many different wards (Fig. 1). Messaging an entire group allows the people who are free to reply, and leaves those who are busy to carry on (Figs. 1 and 2).

The WhatsApp group was used overwhelmingly for messages about work, and the two that were classed as "other" related to teaching (all the members are advised to discuss social matters outside the group). This finding differs from that of other studies in which the lines between work and personal lives on WhatsApp were sometimes blurred.[3] The risk, therefore, is that important messages could be lost among non-clinical matters.

We found that 81% of the messages sent on Friday were between 07:30 and 09:00 in comparison with the relatively modest proportion sent during this time on other days. This perhaps coincided with the Friday changeover of on-call consultant in our department.

No messages were sent to the group over the weekend, which reflects the way the on-call team communicates during this period. The on-call consultant, registrar, and two junior trainees conduct the ward round together, and messages to the junior trainees are usually sent individually to prevent them being sent to those not directly involved in a patient's care. Arguably, sending messages to the group may be useful, as colleagues may be involved in caring for a patient during future shifts, and they can easily refer to the conversations and decisions that were made earlier in the week.

Team cohesion

In 2015, Johnston et al conducted the first published study of WhatsApp in an emergency surgical team.[4] They commented on the fast-paced and unpredictable environment that emergency surgeons face, and reported that 90% of clinicians thought that the use of WhatsApp facilitated treatment. It also allowed senior clinicians to oversee the decisions made by the team without directly interfering, and this was perceived as a useful safety net that increased cohesion.

Every member of a WhatsApp group can be made aware simultaneously of a patient's progress, which facilitates handovers. Clinicians who are off-site can keep abreast of their patients' conditions and continue to give advice, but can choose when to read the messages, which increases the control they have on their time. This would not be possible if all decisions were written only on paper, and it is particularly relevant for many OMFS departments in the UK that extend their services in a "hub and spoke" fashion to remote district general hospitals.

WhatsApp also allows each member of the group to see whether their message has been "seen" or simply "delivered". This is important in a busy environment in which it is easy to forget to acknowledge receipt of a message. An example of this is shown in Fig. 3.

Our questionnaire to the King's College group showed that the use of WhatsApp improved the level of support and reassurance within the workplace. Six respondents said that they would continue to use it in a healthcare setting. Our findings reflect those of an orthopaedic department, in which its use improved working and social relationships among the surgical team.[5]

Professionalism

When using their smartphones, healthcare professionals should be mindful of the image they project, as members of the public and patients may get the impression that they are playing instead of working. Patients who have questioned this, however, have been suitably reassured.

Planning for major incidents

At the time of writing, major terrorist incidents in London and Manchester have relied on the response and coordination of

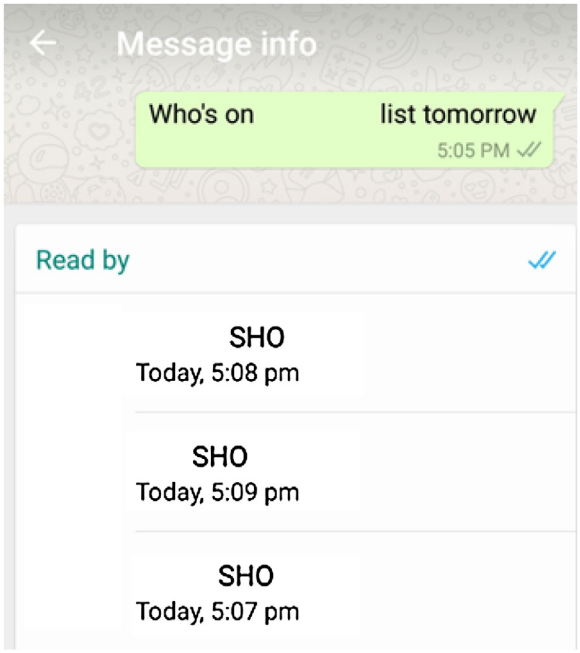

Fig. 3. The message sent has been read by the recipients shown.

the emergency services. A major incident is "any occurrence that presents serious threat to the health of the community or causes such numbers or types of casualties, as to require special arrangements to be implemented".[6] WhatsApp has been instrumental in enabling communication between several levels of command within the hospital and between the local ambulance service and the hospital. Our department's protocol for major incidents states that, for team members who are on call, communication should be initiated and maintained through WhatsApp group conversations.

In the wake of these recent incidents, discussions have been held at a national level with Sir Bruce Keogh, the medical director of the NHS, who advised that the use of WhatsApp is permissible when patient-sensitive details are not involved.

Sharing media

WhatsApp allows users to share media that would be too long or impossible to type, such as pictures of conditions or imaging. Confidentiality will be discussed later. Fig. 4 shows the use of an image that was sent to our group.

We also have a departmental phone. This is carried by the on-call junior trainee to send colleagues information and media concerning patients by encrypted NHSmail, which can be accessed through the WhatsApp group. A South African study has shown that the sharing of clinical pictures on WhatsApp can reduce the incidence of inappropriate referral,[7] and a Turkish study showed that 74.5% of diagnoses by orthopaedic consultants (who were often off-site) were made solely using radiographs that were sent through the service.[8] This allows clinicians to differentiate critical conditions from

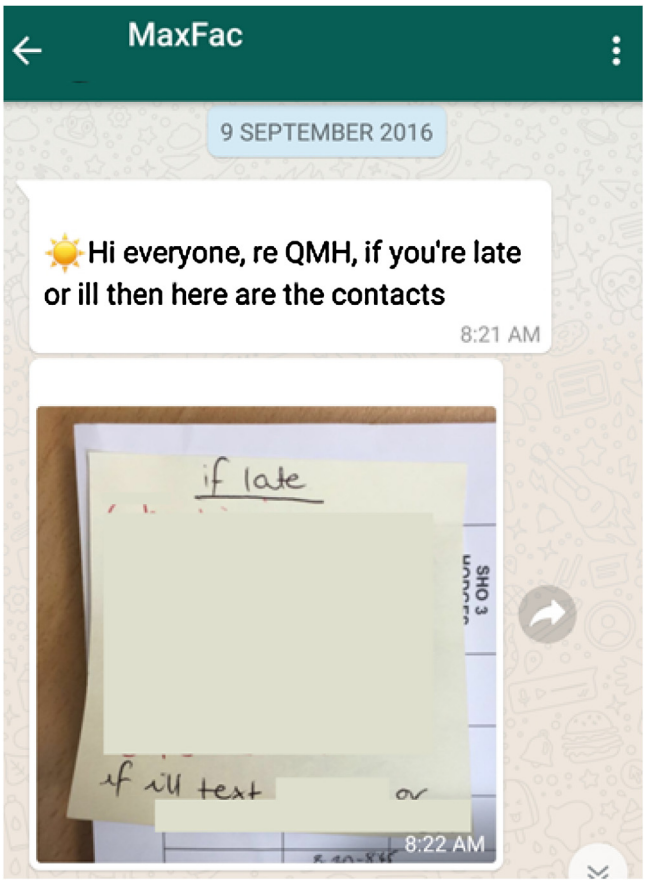

Fig. 4. A picture of contacts has been sent to the rest of the OMFS group.

minor ones, but there is a risk that important symptoms could be missed if patients are not clinically assessed. Also, decisions and discussions about patients on WhatsApp are not easily transferred to the patients' records,[9] which is troubling, as the records constitute a pillar of good clinical practice and governance.

Sharing patient-identifiable information

WhatsApp makes it easy to send information to several people at once, and there is a risk that patient-identifiable information could be disseminated in this manner.

In the seven days analysed, no such information was sent over our WhatsApp group, and images that related to patients were accessed using the departmental smartphone through an NHS.net account. This contrasts with an Irish study that reported that 97% of clinicians often sent patient-sensitive information.[10]

Data protection

As with all the technology used within a clinical setting, WhatsApp users are bound by strict information governance policies. However, contrary to the information technology provided by hospitals whose security features (such as passwords and PIN codes) comply with their governance policies, users are under no obligation to enforce such protection on their phones. This means that sensitive information could be accessed and shared if a phone is lost or stolen (remote storage could easily be accessed, particularly if passwords are automatically filled in on the web browser).

All messages sent by WhatsApp are encrypted, but as end-to-end encryption is available only on the latest versions, all members of a group must have them installed.[11] Even then, it is impossible to know if the encryption provided will be compromised by a deficiency in its algorithm or new technology. Check Point Research has already intercepted and altered messages sent by WhatsApp with considerable ease, and this could have devastating consequences for patient care if used by those with sinister intentions.[12]

WhatsApp servers that store information are located globally, and content is bound only by the data protection laws of the country in which it is stored. Patient-identifiable information that is shared over WhatsApp would therefore not comply with the latest General Data Protection Regulation (GDPR) legislation that was enacted in May 2018.

Depending on the phone's settings, images of patients may directly or (at times) automatically be uploaded to the device and personal Cloud, which have different and potentially weaker security. Popular remote storage (such as the Cloud) has been successfully targeted by hackers. WhatsApp software has not been approved for use in a clinical setting or to relay information about patients, and would require official approval by the NHS.

The risk of cybercrime should not be underestimated and, as we share the view that WhatsApp is not suitable for the transfer of patient-identifiable information, we use an on-call smartphone through an NHS email account.[13,14]

Two emerging alternatives to WhatsApp, which are designed for use in healthcare, are NHSmail Skype for Business, and Hospify (Hospify Ltd). NHSmail Skype for Business is a mobile, accessible, secure communication tool that is designed for use in a clinical setting. It enables users to send instant messages to one another, to share documents, view the location of contacts, and make personal or conference calls.[15] It is designed for a rapid exchange of messages, rather than emails, which might not be checked as often.[16]

Hospify offers healthcare professionals a messaging platform that is similar to WhatsApp, but along with encryption, users must enter a six-digit PIN number to access their messages. All servers are within the European Union and are deleted from a user's phone after 30 days, which complies with GDPR regulations. Unlike WhatsApp, Hospify complies with ISO27001 and NHS IG Toolkit L2 certification (now replaced by the NHS Digital Data Security and Protection Toolkit), which makes it suitable to communicate patient-identifiable information.[17]

Table 2
The functionality of several modes of communication that are available in hospitals.

	WhatsApp	SMS (text messaging)	Pager (bleep)	WiFi phone	Email
Available on personal mobile device	Yes	Yes	No	No	Yes
Requires a cellular connection	No	Yes	Yes (hospital radio frequency)	No	No
Requires a data connection	Yes	No	No	Yes	Yes
Can send media	Yes	No	No	No	Yes
Allows multiple messages to be sent to a single group	Yes	No	Yes (can page multiple users at once)	No	Yes
Allows user to see if a message has been read	Yes	No	No	No	No

Use over a WiFi connection

In our experience, the cellular phone network in many hospitals is poor, which makes phone conversations or the sending of texts impractical. In contrast, the hospital WiFi network at King's College Hospital, which WhatsApp uses, is excellent. Users can still send messages or even call one another over the application, and during recent major incidents, there have been no connection issues in the use of "communication cascades".

WhatsApp compared with other means of communication

The pager has been an essential tool among hospital clinicians for decades, but it has its limitations: it is difficult to know whether or not a call is urgent (apart from "crash calls"),[18] it often interrupts treatment, and it is difficult to delay one's response by more than a few minutes. Table 2 shows the advantages and disadvantages of using WhatsApp compared with other means of communication at King's College Hospital.

In conclusion, our audit reflects the consensus among our team of junior surgical trainees that WhatsApp has several advantages over conventional pager or bleep systems. These include instant messaging without the need for a cellular connection, the ability to send a message to multiple users at once and to check whether it has been delivered and read, and the ability to share media and contact information. Its use is likely to be instrumental in the delivery of urgent care during future major incidents, and will ultimately improve patients' safety. However, concerns about the compromise of confidentiality and issues of professionalism remain. Until these newer methods come to the forefront of our communication armamentarium, we will continue to rely on the transfer of such information by departmental smartphones and NHS accounts.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patients' permission

Neither are applicable.

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