

Systematic Literature Review on the use of Social Media and engagement by NHS Trusts

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Abstract

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Original Manuscript

Original Paper

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Systematic Literature Review on the use of Social Media and engagement by NHS Trusts

Abstract

Background: Engagement strategies used within the NHS, to reach out to the public and internal stakeholders, have continuously changed over time. Communication with each other is happening through more user-generated information being shared through social media (SM). The advent of SM has shifted the information-seeking behaviour of society, including healthcare. The ability of SM to engage people in the community and overcome traditional separation barriers gives SM the invaluable power of helping in the transition towards a more community and prevention focused health care delivery involving multiple stakeholders.

Objective: A systematic literature review (SLR) was conducted to explore how SM is currently being used in the NHS using current literature. This was under the general theme of use of SM in the NHS, and strategies to engage the public in the NHS.

Methods: Literature searches were performed in PubMed, MEDLINE and EMBASE between 2004-2017. The relevance of articles were screening using a pre decided inclusion and exclusion criteria. The papers included were critically appraised using the PRISMA Statement. Two separate search strings were created to cover both SM use in the NHS and engagement strategies in the NHS.

Results: The search string yielded 3145 papers in total. After screening by initial limits, de-duplicating, screening by title, abstract and inclusion/exclusion criteria, a total of 55 papers were reached. These were all critically appraised and were divided based on the theme they covered. The themes found amongst these 55 papers were use of SM in: the NHS, nursing, healthcare research, conferences, gaining insights to patient perspectives and trends, recruitment, patient and medical education, successful Twitter campaigns and engaging patients.

Conclusions: Literature has shown two main views apparent on the use of SM in the NHS. The effectiveness of SM use in the NHS is uncertain, but SM specific uses acknowledges the potential of SM in engaging with the public and therefore helping to achieve the ambitious Five Year Forward View.

Whilst limited, the literature has shown that SM in NHS has been used in research, conferences, and education of other doctors and patients. Engagement strategies in the NHS have mostly taken the form of awareness campaigns in key areas, such as lung cancer, nutrition and antibiotics use.

22% (12/55 papers) shows that the use of SM in the NHS has still far to go before it achieves full implementation and utilization.

Key words:

Social media; health; NHS; UK; communication; facebook; twitter; systematic literature review

Introduction

Social Media (SM) use today

83% of UK adults use SM, with the majority using it daily [1]. In 2017, 90% of households in Great Britain had internet access – increasing from 89% in 2016 and 57% in 2006. The use of internet on the go has doubled since 2011 [2].

Why is SM important for the NHS?

The introduction of the internet has allowed for information to be delivered more quickly, efficiently and broadly, which the healthcare system can capitalise on to increase public engagement. 32% of students, 45% of employed people and 39% of retirees report that they have used the internet to find out health information [3] – this will only continue to increase as the virtual audience continues to expand [2].

The role of SM is important in engaging the public, and future generations will be increasingly technology literate and comfortable with SM as a means of communication. This change in user acceptance of SM as a technology for communication, and a tool to engage with NHS service providers, bodes well for the use of SM. This is particularly as a result of more user generated information being shared through SM [4].

SM in healthcare is a part of e-health and its advantages on its use help to fulfil the “10 Es of E-health”, which include efficiency, education, empowerment and encouragement of a new relationship between patient and healthcare professional [5].

The NHS operates in an ever-changing sphere influenced by political, policy and technological changes. Adapting to new technological changes has been paramount in improving efficiencies and the quality of the healthcare itself. This is all whilst medical professionals remain anchored to the stable tenets of medicine, primarily humanism, integrity, ethics and trust [6].

What is public engagement and why is it important for the NHS?

Engagement is defined as a way to collaborate, involve patients, inform them or consult with them in decision making. SM can help meet the ‘ladder of engagement and participation’, helping to reach higher levels of meaningful patient participation [7].

Patient engagement is essential when treatment or new policy risks and outcomes are uncertain. An effective engagement process allows for a better solution to be co-produced that is realistic and sustainable, whilst maximising the support and understanding for the change. This can help to build trust amongst the public, provide better outcome for patients, and build a 2 way feedback loop [8].

There has been an increased focus on patient engagement in the NHS, particularly with new policies in place. The 2012 Health and Social Care Act outlined that patient and public engagement in the provision of healthcare services is not only best practice, but also a statutory requirement. The NHS Confederation published a practical guide for public engagement [9].

The NHS Five Year Forward View (5YFV) published in 2014, outlines that more attention should be given to disease prevention and public health. It highlights the need for patients to have greater control of their own care and barriers to how care is provided should be broken down, which can be achieved through SM [10]. SM has the ability to engage people and overcome traditional barriers, such as geographic separation. This can help achieve an integrated form of health care delivery, which is community and prevention focused, involving patients, their carers and their families [11].

The first NHS SM briefing for Chief Executives was in 2013, and since then the upward trend in using SM professionally led to a further update in 2017 [12]. In fact, 2017 has marked the year where the most SM related publications tailored to NHS leaders and staff have been released by organisations such as NHS Employers and NHS Digital.

Today, there are many text and multimedia outlets used by NHS service providers to engage with the public. These include advert campaigns, newspaper articles, press releases for media channels, email distribution channels and SM. SM used includes Facebook,

Twitter, LinkedIn, Instagram, SnapChat and Whatsapp.

Aims of this study

This study aims to conduct a systematic literature review (SLR) to explore how SM is being used in the NHS and the strategies used to engage public with the NHS.

Methods

Search Strategy

Literature searches were performed in three peer reviewed databases, PubMed, MedLine and EMBASE – with the latter two being accessed through Ovid. Other sources, including Google Scholar and EBSCOhost, were also utilised to gain access to more publications. In order to identify any grey literature that could further supplement our study, we conducted a general search through Google as well as using snowballing.

Initially a search string was created to encompass the entire project title but was not specific enough. Therefore, it was decided to split the search into two parts; one focussed on the 'use' of SM by the NHS and the other on 'engagement strategies' employed by the NHS, focusing upon how the NHS engaging the public through social media. These are found in Appendix A. We decided to include 'Facebook', 'Twitter', 'Instagram', 'YouTube' and LinkedIn in our search string because they were found to be the most commonly used SM platforms [13].

Selection

This searches filtered articles between 2004 – December 2017. 2004 represents the year that Facebook was created, which constitutes the oldest of the networks addressed through our search string. Other initial limits for the search included: published literature only, articles written in English and available in full-text.

Articles were then selected based on an inclusion and exclusion criteria. The inclusion criteria included, articles discussing the use of SM by NHS hospitals in the UK, the use of SM by all healthcare organisations (including medical practices) in the UK, and engagement strategies/approaches taken by the NHS. SM discussed in a non healthcare context or outside of the UK were excluded.

Screening

Articles retrieved were first screened by title and then abstract, and those that passed this stage were assessed on a full text basis against the inclusion and exclusion criteria. They were then tabulated; summarising their source, purpose and description, main themes, results and conclusions and strengths and weaknesses (see Appendix B). The latter provided a critical appraisal, assessing for limitations and potential bias.

This was based upon the PRISMA Statement, which gave an evidence-based 27-item checklist for reporting in systematic reviews [14].

Quality Assessment

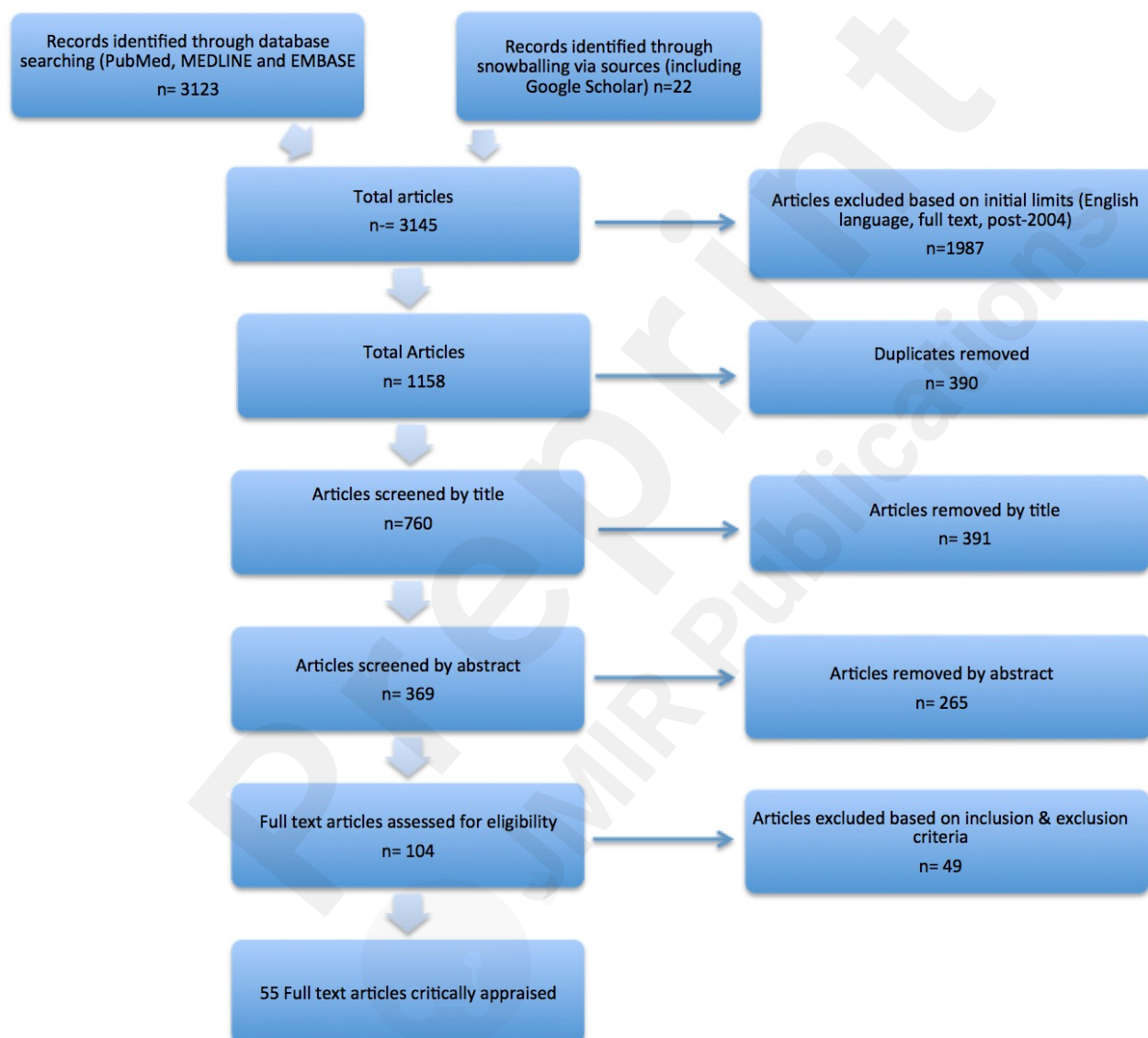
Articles were appraised for strengths and weaknesses, including limitations and potential bias.

Results

3123 articles were gathered from the databases, as well as 22 other items identified through snowballing via sources such as Google Scholar. A total of 3145 articles were left after application of initial filters, and after duplicates were removed, 760 articles were screened by title. 369 articles were screened by abstract, 265 being excluded.

This left 104 articles to be assessed on a full-text basis for eligibility, applying the inclusion and exclusion criteria laid out in appendix B. 55 final articles emerged from the selection process as shown in figure 1, forming the basis for this SLR.

Figure 1. PRISMA Diagram



Discussion

SM uptake and engagement in the NHS has taken form through various degrees and dimensions. SM has been used for staff, such as in nursing, recruitment, or to enhance the future medical profession, such as in education, healthcare research, medical conferences, It has also been used to engage with patients, such as to gain patient perspectives, increase public awareness or for patient education.

How can the NHS use SM?

SM gives an organisation an identity, extending a hospital's presence beyond their name [15]. It brings many possible benefits to hospitals, particularly in the areas of customer service and public relations, communications, education and research [16]. SM can even help cut down overhead costs by decreasing the use of telephones, paper and postage services [17]. Through the ever-expanding pervasion of technology, SM has changed our relationships with each other [6], and becoming increasingly difficult for physicians to avoid online-based interactions [18].

Cummings [19] supports the push for using SM in the NHS in order to create an environment where staff at all levels can make full use of the resources available and improve engagement levels. She acknowledges the challenge for creating the right environment to "unlock this rich resource for our workforce and, as a result, benefit the people we care for and support".

Rozenblum & Bates [20] believe that three domains: patient centred health care, the internet and SM can potentially create a major shift in how patients and healthcare organisations interact. They coined this phrase as the 'perfect storm', as they believe this rare combination of circumstances can lead to a heavily beneficial outcome.

In the UK, under the 5YFV [10], there is a push to develop a preventative healthcare model and nurture patient empowerment by making patients more accountable and in control of their own health. This can be achieved by making information more accessible, which digital communications such as SM could achieve. Similarly, as the Sustainability and Transformation Plans continue to develop around England, there is an increasing need to collaborate and integrate multiple organisations within the NHS for it to be sustainable.

Hopkinson [21] praises Twitter as offers the possibility of networking and informed users can help create good-quality content, helping non-experts to find accurate information.

Huberman [22] concluded from an analysis of a sample of Twitter users, that solely having a digital identity will not increase engagement. A superficial digital link between people does not equate to interaction between them and there is a need to develop a bidirectional communication platform.

However, there are challenges of meeting patient expectations which are rising as SM increases. The doctor-patient relationship can break down as patients have greater access to information and false 'cures'. This creates a sense of false expectations and leads to patients pressuring clinicians to provide treatment that may have a lack of research based outcomes [23].

Current uptake of SM in the NHS

There is a significant lack of research available to explore the UK's use of SM in healthcare organisations and a large variation in use amongst different specialties. Borges & Hanley [24] explores the extent to which haematologists in England engage with SM and concluded that engagement is high, especially amongst junior doctors.

Hawker [26] directly explored the uptake of SM by NHS trusts. A quantitative analysis of the 152 Primary Care Trusts (PCTs) in the UK was conducted to determine whether healthcare organisations use social utilities to engage with the public. It was concluded that only 61 organisations use at least one utility, with Twitter being the most popular and Bebo the least popular. A limitation of this study is that it is outdated by seven years and it is likely that more trusts have adopted SM since. There is a lack of clarity as to whether trusts not digitally engaging is due to a lack of operational knowledge of SM, or a collective decision the trusts have made. Hawker [26] highlights how PCTs, who are meant to meet the local needs of the community, have an objective to engage with patients and the public.

The British Medical Association and General Medical Council both have SM guidance for the NHS and likewise, NHS Digital released a set of Dos and Don'ts list of how SM should be used at work [25]. Their policies make it clear that they recognise the value of SM and how it can spread best practice, but lacks specific evidence based advice.

However, Scragg et al [27] evaluates the NHS trust SM policies in North West of England and found that practitioners are discouraged from using SM by employers' policies. This is despite the national strategy of engagement of SM use with all stakeholders. Instead, the paper found that local policies are more focussed on protecting reputation and security measures which is not aligning with the national policies and push. Protecting reputation and security measures and the blurred lines surrounding use of SM in the NHS is a key barrier towards the uptake of SM policies [28].

Use of SM to gain insights to patient perspectives and social trends

SM has been useful in potential future medical practice through its means of retrieving valuable information. For example, a study done in a London NHS trust focused on Mephedrone and SM showed a link between increased SM, google and sceptical searches of the psychoactive substance and a peak in Mephedrone related references in the clinical record. Monitoring this could prove useful in surveillance for substance related events of interest as well as provide an early warning system for psychiatrists [29].

Similarly in mental health, a thematic analysis surrounding the twitter hashtag #dearmentalhealthprofessionals revealed the perceptions related towards mental health and how it could be useful as a medium of feedback for mental health professionals [30].

SM has been useful in providing an insight into the perceptions of the public on certain health campaigns. The Care Data campaign set up by NHS England was qualitatively analysed using twitter data. This found that a range of opinions were identified in reaction to this with a number of concerns raised by those both for and against the project [31].

In Hertfordshire, Weiler & Neyndorff [32] used a British Journal of Sports Medicine (BJSM) blog, online poll, Twitter and email to generate interest and formal feedback to tackle physical inactivity. Readers were also asked to forward the blog to others via email and retweeting. This use of a 'viral marketing' technique informed a mass number of readers and the online poll showed that 98.4% of BJSM online poll voters felt that Hertfordshire should tackle the problem of physical inactivity as a top priority. This demonstrated the potential of SM as a useful information disseminating tool and facilitated discussion, in order to allow public health changes to occur. McKee et al [33] notes how the public are becoming increasingly sceptical towards information from the media and politicians and have started relying on Twitter as a more reliable and untainted source of information.

SM has been useful for testing in men who have sex with men in two studies. In both, users were invited through gay SM networking websites. Elliot et al [34] found that 17,361 respondents had completed the risk self assessment and were offered a free HIV sampling kit, where 1.4% of returned samples were confirmed as new HIV diagnoses. The survey had revealed a high service acceptability rate and would provide a further roll out of online strategies to enhance HIV testing. Frankis et al [35] explores sexually transmitted infection testing regularity where they identified a complex interplay of social, health and behavioural factors contributing to testing.

A retrospective Twitter analysis by Dyar et al [36] explored peaks related to mentions of antibiotics over a 2 year period. The greatest activity increases were related to antimicrobial resistance, which shows that these events can have an impact on the public and evaluating the engagement of this crisis remains key.

In the palliative care speciality, a 2 year retrospective analysis of tweets by Nwosu et al [37] showed that a positive discussion is taking place. A total of 683.5K tweets containing a combination of 13 palliative care teams were analysed, where over the course of the study, tweet volume had increased by 62.3%. Sentiment was high where 89% of these tweets were rated more positive than all other tweets sent on Twitter during this period.

SM has also been effective in promoting changes in healthcare behaviours as found by a systematic review and meta analysis by Laranjo et al [38]. Facebook was the most popular social networking site for health behaviours. Twitter however, has been used by King et al [39] to investigate the demographic of 'most influential' Twitter users and the role of Twitter in informing, debating and influencing opinion in a specific area of health policy.

Rozenblum & Bates [20] reflect on failures in NHS hospital quality of care standards, such as the Stafford Hospital incident. They

conclude that a better approach at identifying poor services is necessary and as SM opens doors to both positive and negative insights, this is known as the patient cloud of experience. The unfiltered voice of the patient can now be accessed and acted upon with clarity and urgency.

There is a growing body of information on the internet based on patient's blogs, rating websites and other SM forms, in where they post about the quality of the healthcare they receive. A thematic analysis on five online SM platforms found that Glaucoma patients were discussing topics surrounding treatments, care experiences and providing each other with mutual support. This can be potentially useful for physicians in flagging up areas for service improvement and any adverse drug reactions. It was also found through this study that unmoderated sites contained more misleading information, suggesting that moderating can help to maintain a supportive and educational online community [40].

Healthcare can intervene quicker at any red flags of poor quality and amend the problem before it becomes very significant. Traditionally, patient experience has been measured by annual paper based surveys which is both difficult to collect and costly. SM can immediately capture and aggregate content on a daily basis, at a low cost and would act as a form of continuous service monitoring [20].

Greaves et al [41] conducted a mixed-method study to quantitatively analyse all 198499 tweets sent to NHS hospitals over a year and then directly qualitatively analysed 1000 random tweets. They found that 11% of tweets to hospitals contained information about care quality, with the most common topic being patient experience (8%), they contained information useful to target quality improvement activity. Therefore in the NHS, SM could be utilised as a potential quality monitoring and improvement tool.

SM in Patient Education

Youtube videos are also being used to help educate patients with Chronic Obstructive Pulmonary disease, analysed by Hopkinson [42]. Patients have been viewing and engaging with the videos, with the most viewed video having 81 comments. They offer the possibility for patients to view educational material repeatedly and can reinforce learning on self managing their condition. However, with such videos not being moderated by a professional body, it is vital that health professionals engage professionally on SM to give them a clear direction towards reliable and useful information for patients.

McCartney [43] summarises a patient education campaign in Leeds about using the Emergency Department appropriately. NHS hospitals provided anonymous, real time accounts of the reasons people visited the hospital's A+E department and preventative advice, such as "avoid colds this winter by wrapping up warm". The overall feedback of this campaign was positive. However, messages such as "a headache is not usually an emergency. Save the Emergency Dept for real emergencies!", can be misconstrued especially when the 140 character limit of posts does not allow much room for clarity. This can result in an organisation breaching the public's trust, so attention to detail in SM use is vital.

The #EndPJparalysis campaign led by an NHS-trained nurse went viral on SM [44]. It focuses on encouraging patients to stop wearing pyjamas or hospital gowns when they don't need to, to avoid reinforcing the 'sick role'. This can often prevent patient recovery and hospital discharge. Statistics regarding the negative consequences of bed rest were spread through tweets, posts and videos, reaching out to the general public.

SM in Medical Education

SM is being increasingly used in medical education with unique advantages over non social educational tools. It gives the opportunity for students to virtually build connections, make friends and find mentors [45].

This is particularly for young doctors who are at the start of their medical journey, as identified in both Pompa and Tolan [46] and Nason et al [47]. The former looked at Paediatric trainees using a Whatsapp revision group in preparation for their MRCPCH examinations. All of them found that the revision support group provided good peer support for the exams and 44% found it useful to compare their progress with their colleagues [46]. The latter used YouTube as its SM outlet and assessed the quality of these videos on male urethral catheterisation. It was found that after newly graduated doctors watched these videos, they had reported it to be a useful educational adjunct in preparation for performing the clinical procedure – nearly half of whom had not yet independently

inserted a urinary catheter prior to the video watching session [47].

Vohra & Hallissey [48] explored the use of SM in innovating surgical education, as many surgical organisations and surgeons currently actively utilise SM platforms to spread content to their followers. One example is a surgical news channel called Schoolofsurgery.org, formed by a group of surgical trainees in the UK who generate and disseminate free medical education to surgeons worldwide. This concept has proved successful, attaining 60,000 followers on Facebook and Twitter within 3 years, with more than 10 million page views on Facebook [48]. These papers show how SM networks are increasingly important in the ongoing clinical education of doctors.

Use of SM in Nursing

In the last decade, nurses as well as other healthcare professionals have seen an increased workload. SM can simplify and enhance care in order to counteract the increased workload [49]. The Leading Change, Adding Value Framework better enables nurses to deliver the triple aim, which is part of the 5YFV. Thus SM will help in a better utilisation of resources and more positive experiences for patients.

Sherrington [50] offers a personal insight into her opinion as to how imperative it is for nurses to utilise SM in order to avoid 'losing their voice' in discussions and debates. She found that Twitter and SM help her as she was able to connect with other specialists, find out what others feel about topics and, "if I am brave enough, join the conversations." However Sherrington [50] states higher professional bodies were not emphasising the benefits of SM, but instead warning them on the risks – this deterred those already reluctant to use it.

Use of SM in Recruitment

NHS is increasingly using SM in recruitment, particularly due to its ability to reduce costs and enhance response rates to advertisements. A recent NHS Employers case study revealed how traditional media use for advertisements can cost up to £2000 per quarter page but often received poor response rate and uncertain reach. This contrasts to SM campaigns costing half of this amount yet reaching an average of 20,000 people [51].

Newcastle upon Tyne Hospitals NHS Foundation Trusts developed a SM strategy to engage with a wider audience and to aid recruitment. The Trust grew its Facebook following to reach an average of 52,000 people each week. Staff were actively encouraged to like and share the Trust's Facebook page, which as a result led to 8000 likes in 8 months. After patients started to engage with it, the Facebook page diversified to share public health messages and events rather than remaining recruitment and staff specific [51].

Furthermore, NHS is already using specific SM to target specific audiences. 61% of Snapchat's adult UK users are 18-29 [52]. As a result, the NHS graduate scheme have an active Snapchat account to engage with this age group for recruitment [53].

Use of SM in Healthcare Research

Ryan [54] highlighted two challenges faced in healthcare research as: a lack of relevant participants in clinical trials, and difficulty in retaining and following up those who do participate. A systematic review was conducted to determine the potential of SM to engage patients and public. He concluded that SM was a successful and cost effective way to target a range of underrepresented communities, and that retention in longitudinal studies can be improved with SM use. This was supported by Williams [55], who successfully used a Facebook page to spread information regarding sports science research.

Twitter could also be used as a means of assessing the credibility. Tweets can predict the highest level of credibility within the first 3 days of article publication. They can particularly measure social impact, complementing traditional citation metrics. Twitter can also increase citations [56].

An author's intent may not be fully conveyed with the limited word count on twitter. This is similarly described as a challenge by

Leung et al about journal clubs [57]. However, to ensure that participation is not limited to 140 characters, a LinkedIn Group has been created parallel to the twitter account.

Both Leung et al [57] and Pathiraja [58] identify that SM can facilitate discussions that can contribute to continued professional development. Pathiraja [58] discusses how radiologists should engage in SM to get involved in a global health conversation and raise awareness of the speciality – e.g. through educating patients about imaging on Facebook.

In other specialities, such as oncology and urology, SM is also being increasingly used. Attai et al [59] identified how there are highlights, challenges and opportunities related to SM use in cancer care and research. There is an emerging use of SM in urological journals, where Nason et al [60] identifies how many of the leading urological journals (8 out of 33 urological journals that have Twitter) have used SM to highlight articles that may be of interest to readers. There has also been a link found between a journal having a twitter profile and a higher mean impact factor of a journal, potentially suggesting SM's role in facilitating research and journal reputation. Devitt [61] also supports the role of SM in disseminating research findings.

Use of SM in Medical Conferences

Several papers from the UK acknowledged the potential of Twitter use in medical conferences. Chapman, Mayol & Brady [62] wrote a letter to the British Medical Journal to protest against the ban on live tweeting in conferences and regarded it as a 'policy made by those who fail to recognise the need for global communication and value of SM in the medical profession'. Conferences are being promoted with hashtags to encourage attendance and help disseminate the information, which is particularly valuable to those who have been unable to attend. For example, within the first 10 weeks of its launch, the hashtag #colorectalsurgery collated more than 5200 tweets from 823 global users, which were viewed nearly 17 million times. McGuckin [63] concludes with a strong anti-ban statement, explaining that other industries have adopted SM to expand attention regarding events, but only science and medicine are resistant to change, so it is 'about time we caught up'.

Roland [64] discussed potential drawbacks that may need to be taken into account when using SM at conferences. This included sharing of presenting information may have copyrighted conflict of interests, so ensure presenters are aware of this potential information dissemination. There may be a chance of less attendees if live information is likely to be tweeted, so the integrity of conferences should still be preserved.

NHS Engagement Strategies

Both national and local NHS engagement strategies were found in the literature.

The type of social media outlet used can affect engagement, as shown by a cross sectional survey on diabetes and social networking. The survey found that 78.7% of patients would preferably like to share information through email rather than Facebook (47.7%). Nevertheless, there is a willingness to share information through a professionally moderated Facebook group by 66.5% of patients [65]. This shows that if the SM is utilised in a format similar to email, it may be as effective in the future.

Table 1. National engagement strategies

Name of Strategy	Description of strategy	Outcomes of strategy
Antibiotic Awareness Campaigns	- National antimicrobial campaign, during winter 2007-08, of posters to help the public avoid a cold and what to do when they catch a cold. - To improve antibiotic use, educational approaches such as The Moxy Malone campaign in Northern Ireland, ran from 2003-2005. Professionals were encouraged to give patients clear information about the likely duration of symptoms, self-care, and benefits and harms of antibiotics.	- The Moxy Malone campaign in Northern England resulted in a 5% reduction in prescribing, with the rest of England experiencing a 10% increase [66]. - McNulty et. Al. [66, 67] concluded there was little evidence that the campaigns were effective, highlighting the need for the NHS to improve their engagement strategies.

Nutrition Awareness Campaign	- The NHS ran 'nutrition awareness weeks' in three hospitals, led by junior doctors to improve clinical outcomes amongst patients, decrease the health and wellbeing gap as part of 5YFV [10] and to reduce risk of malnutrition - The project assessed whether an intensive training intervention, combining clinical nutrition with leadership skills, could allow junior doctors to improve nutrition awareness [68].	Knowledge, attitudes and practices were compared before and after four months, and found a notable increase in the overall score in all three hospital teams [68].
Lung Cancer Awareness Campaign	Raised public awareness of a persistent cough as a symptom of lung cancer, encouraging people with this symptom to visit their GP [69].	Data collated over one year found positive increases in metrics, including: public awareness of a persistent cough as a lung cancer symptom; urgent GP referrals for suspected lung cancer; early diagnosis of lung cancers.
#HelloMyNameIs Twitter Campaign on @NHS	- Each week, a new patient or member of NHS staff curates the @NHS twitter account for 5 days through the #HelloMyNameIs campaign. - They would tweet about their experiences of being part of the NHS and would engage with the public through video, pictures and stories. - Communication was 2 way, enabling the wider public to reply and share their experiences with the NHS too [53]	Lucy, one of the patients that was in control of the NHS account tweeted, "I've really enjoyed it. It's been an amazing platform to share so many different things, topics, ideas, causes close to my heart. I've had such a great week - I am so grateful to the @NHS @NHSEngland team for the opportunity & to you all for engaging with me" [70]

A HIV testing campaign, #TestMeEast also received a widespread Twitter reach and this helped in measuring the effectiveness of this engagement campaign [71]. An emotional wellbeing campaign for stroke survivors in a London stroke unit, posted on both Twitter and Facebook, had a combined reach of 5,088 impressions. This initiative provided education to the stroke multi disciplinary team and has had positive outcomes, such as referrals, increase [72]. Twitter campaign #hospitalbreastfeeding also acted as a call to action for improve breastfeeding support in paediatric care, uniting service users and professional voices [73].

Table 2. Local engagement strategies

Name of Strategy	Description of strategy	Outcomes of strategy
Diabetes Engagement on Facebook	In an inner city London clinic, a new model of care involving social media, multidisciplinary support and education was piloted to improve outcomes and engagement.	- All young adults with diabetes were found to be engaging with the service - Helped to reduce the number of appointment non attendees [74]
Diabetes Engagement on Whatsapp	- A whatsapp broadcast list was set up for Diabetic paediatric patients at Ealing Hospital, West London. - The list functions similar to a Bcc email newsletter, where the diabetic children are connected with the hospital staff but patients can also easily share their	- Increased patient involvement - average Hba1c levels for patients drop, showing clinical effectiveness too [53].

	thoughts and experiences to the hospital team in a personal manner.	
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Limitations

There was a lack of literature available concerning the use of SM in the NHS, namely only 3 papers that were broad overviews and analyses, as opposed to just using specific examples relating to the use of SM in certain medical specialities. This made it difficult to get a generalised NHS perspective on SM and engagement.

Comparing the NHS to other healthcare systems that have successfully implemented SM, such as US, would be useful [75]. Within the US, there are not only successful case studies, such as The Mayo Clinic, to learn from, but SM is used to engage with patients in many more ways. An example is SM being used in feedback, where patients have the opportunity to rate their hospital services and their doctors. SM already unofficially captures a rich source of patient and public feedback, but this could be better utilised by organisations such as Patient Advice and Liaison Service in the NHS.

SM in healthcare could be compared to how business organisations use their SM. Organisations align their SM to their organisations goals and objectives, making them together achieve their business strategy. SM can help healthcare organisations improve their reputation, enhance public confidence and aid efficiency and effectiveness [15].

35% of papers (20/55) focused solely upon traditional SM outlets, such as Facebook and Twitter. However, now, the NHS are increasingly using more recent SM outlets such as Instagram and Snapchat, as well as one-to-a-few platforms such as Facebook Messenger and Whatsapp. The latter is particularly useful for medical teams and multidisciplinary teams as a means to communicate [53].

Whilst the search string screened for use of SM in the NHS and in the UK in the title and abstract, it became apparent after reading the whole paper that some may not be specific to NHS or UK based SM. These take a global approach towards healthcare in SM where outlets are accessible worldwide. This is a grey area of our exclusion criteria because whilst it is not specific to what the aim of this study is, it is still applicable to UK users and this was the case for 18% (10/55) of papers.

Conclusion

Based on the literature retrieved on the use of SM by the NHS and its current engagement strategies, it is evident that there is still a long way to go before it takes full advantage of SM.

The literature has shown that SM in NHS has been used in research, conferences, identifying patient behaviour and trends, and education of other doctors and patients. Engagement strategies in the NHS have mostly taken the form of awareness campaigns in key areas, such as lung cancer, nutrition and antibiotics use. There have been several recent examples of successful Twitter campaigns in order to increase awareness and drive the new movement.

However, there are still many more areas and potential campaigns that can be used by the NHS. The literature illustrates that the NHS is not taking full advantage of the interactional nature of SM, as there is no apparent strategy to integrate all information channels. Instead, are simply using them to 'push' information through in a unidirectional manner.

The UK is divided in opinion regarding the effectiveness of SM use: one school of thought theorises on its potential and the other disregards its ability to add to the wider communications strategy.

NHS hospitals can use SM to engage with patients and empower them to take control of their own health – this is also highlighted in the 5YFV. Ultimately, if utilised to its full capacity SM can assist in the development of a more integrated, prevention-focused health system.

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Conflicts

of

Interest

None

declared

Abbreviations

5YFV:	Five	Year	Forward	View
EBSCO:	Elton	B.	Stephens	Company
EMBASE:	Excerpta		Medica	Database
ICT:	information	and	communication	technology
IT:		information		technology
MEDLINE:	Medical	Analysis	and	Retrieval
NHS:	Literature	Systematic	Health	System
PRISMA:	Preferred	Reporting	Reviews	and
PUBMED:	Items	for public		Meta-Analyses
SLR:	systematic		literature	MEDLINE
SM:		Social		review
UK:		United		media
US:		United		Kingdom
				States

Appendices

Multimedia Appendix A: Search Strings for Literature Review

Search string for the use of SM in NHS

Search Number	String
1	NHS OR hospital*
2	Social media OR Facebook OR Twitter OR Instagram OR LinkedIn OR YouTube
3	England

4	(NHS OR hospital*) AND (Social media OR Facebook OR Twitter OR Instagram OR LinkedIn OR YouTube) AND England
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Search string for engagement strategies used by the NHS towards the public:

Search Number	String
1	NHS OR hospital*
2	engag* OR engagement OR engagement strateg* OR aware*
3	Public
4	England
5	(NHS OR hospital*) AND (engag* OR engagement OR engagement strateg* OR aware*) AND public AND England

Multimedia Appendix B: Inclusion and Exclusion criteria

Inclusion Criteria	Exclusion Criteria
Articles discussing the use of SM by NHS hospitals in the UK	Articles discussing the use of SM in non-healthcare context
Articles discussing the use of SM by all healthcare organisations (including medical practices) in the UK	Articles discussing use of SM elsewhere (non-UK)
Articles describing engagement strategies/approaches taken by the NHS	Articles that are too specific to a particular medical speciality- we seek a broader perspective, from the point of view of the NHS/organisation.

Multimedia Appendix C: Systematic Literature Review Paper Summaries

Table for England/NHS USE of SM

Paper	Purpose and Description
Greaves F, et al (2014)	Summary: Mixed-methods study to examine whether tweets sent to hospitals in the NHS contain information about quality of care. Themes: Use of SM in the NHS, Tweet analysis, NHS Quality analysis Findings: 11% of tweets to hospitals contained information about care quality, with the most frequent topic being patient experience (8%). 77% of Tweets were positive.

Cummings et al (2013)	Summary: Short extract emphasising on the need for utilising SM. Themes: Push to use SM in NHS, Need to overcome current challenges Results: SM as an invaluable resource to allow 'creativity to flow within your organisation'. Changes in the working culture must occur such as empowering staff to develop their skills and knowledge to utilise SM.
Scragg et al (2017)	Summary: Investigated the barriers between national and local SM policy. Themes: Communication policies, North West of England, NHS Communication strategy Findings: The condensed framework showed that policies were imbalanced and heavily skewed towards Security, Conduct & Behaviour and preserving employer reputation.
Cork et al (2016)	Summary: Outlines the GMC guidance on doctors using SM and how SM is driving a new understanding of what it means to be a doctor. Themes: SM in the Medical Profession, Professionalism on SM Findings: The GMC guidance for doctors goes through protection of patient confidentiality and remaining accountable if you are mentioning that you are a doctor on a public profile.
Hopkinson et al (2015)	Summary: BMJ highlights SM as invaluable tool in order to help disseminate accurate information. Themes: Twitter use, BMJ Twitter, Embracing SM Findings: They expect authors to include 1 or more 140 character tweets as part of the submission process to stimulate and improve the quality of online discussion.
Sherrington et al (2013)	Summary: Nurse's personal insight of Twitter help her as she is able to connect with other specialists, find out what others feel about topics and join the conversations. Themes: Nurses and SM use Findings: Nurse realises that she hasn't encouraged her patients to utilise SM as she herself hasn't been encouraged to use it from her managers.
Shuttleworth (2016)	Summary: Case discussion of a patient who watched a YouTube video from an American dentist and requested the same treatment. Themes: Dentistry case, Negative impact of SM use, Increased patient expectations, Breakdown of doctor-patient relationship Findings: The case highlights how patients using SM means greater access to information leading to increased expectations in the NHS and can fracture the fragile doctor-patient relationship.
King et al (2013)	Summary: Looks at how Twitter can be used during health policy reforms. Themes: Twitter influence during health policy reforms. Findings: There were spikes in Twitter activity during important points in the passage of the Bill. Twitter discussions would precede printed media.
Weiler et al (2013)	Summary: Used a <i>BJSM</i> blog, online poll, Twitter and email to generate feedback to the Health & Wellbeing boards in Hertfordshire. Themes: SM contribution to drafting health policies. Findings: SM can help to disseminate information and hold discussions related to health policies.
Betton et al (2013)	Summary: Explores how SM can benefit nursing healthcare and mental health. Themes: SM benefit to nursing care. Findings: There are examples of blogging and Twitter being beneficial to nurses. Users should consider specific points to ensure they stay safe online.
Rozenblum et al (2013)	Summary: Examine how SM and the internet can be used to engage patients in their own healthcare and promote patient-centred care. Themes: The use of SM in advancing patient-centred healthcare. Findings: Disease outbreaks and occurrence of common medical problems can be detected through Twitter posts. Also can be used for patients to rate their experiences.

Greaves et al (2013)	Summary: Examines how SM can be used to detect poor healthcare, as seen through patient's descriptions of their healthcare. Themes: Detecting poor care through SM. Findings: Data would first need to be collected from free text platforms through 'scraping'. An algorithm would then need to be used to process this into a quantitative measure of experience for each provider.
McKee et al (2011)	Summary: Explores how twitter was used to discuss the NHS reforms, with mention of specific accounts and hash-tags. Themes: Twitter discussion on the NHS reforms Findings: Twitter can be used to disseminate information regarding the NHS reforms. It can be useful in summarising key points from lengthy documents.
Hawker et al (2010)	Summary: This quantitative analysis to investigate the online identities of the 152 PCTs in the NHS to inspect their usage of social utilities. Themes: Changing communication platforms, determining extent of SM use by NHS PCTs. Findings: Results show that a total of 61 organisations use at least one utility, with the most popular being Twitter. In general, the organisations fail to be taking advantage of interactional nature of social utilities as there is no apparent strategy.
Ryan et al (2013)	Summary: Systematic review of current literature to discuss the potential of how social networking websites such as Facebook can contribute to clinical research. Themes: Online social networks use and potential, Patient and public involvement in research. Findings: Concluded that online social networking is a cost-effective and efficient method to target and recruit a wide range of communities, demographics and underserved populations into quantitative and qualitative research, especially longitudinal studies.
Chapman et al (2016)	Summary: Argue against the banning of live tweeting during medical conferences. Themes: Anti-ban of live tweeting, Medical Conferences and Twitter use Findings: Live tweeting attendance and helps disseminate and impact of key information in a competitive events market.
McGuckin et al (2016)	Summary: Letter by an academic who often presents in medical conferences. He argues that live tweeting allows him to converse, engage and debate with the attendees. Themes: Anti-ban of live tweeting, Medical Conferences and Twitter use Findings: McGuckin argues that science and medicine need to catch up with the other industries who are already utilising the potential of SM.
Sloane et al (2015)	Summary: Systematic review acknowledges the problem of adverse drug reactions and theorises the potential of SM as a source of information for pharmacovigilance. Themes: SM and pharmacovigilance, Opportunities of SM in pharmacy, Challenges of SM Findings: The paper concludes that to fully appreciate the benefits of SM, technical, regulatory and ethical challenges need to be addressed.
Borges et al (2017)	Summary: Determine the level of engagement by haematologists in England with different SM platforms. Themes: Haematology SM engagement Findings: SM engagement amongst consultant haematologists is high, with LinkedIn being the most popular and more junior consultants have a higher presence.

Vohra et al (2015)	Summary: Explores the potential use of SM use in innovating surgical education. Themes: Surgical education innovation via SM utilisation Findings: Drew on the example of Schoolofsurgery.org, a surgical news site to deliver free surgical education worldwide. In order to achieve success, one must understand the need to engage users.
McCartney (2013)	Summary: Observation of the first NHS SM project to use Twitter to educate local people about the appropriate use of Emergency Department. Themes: Tweets emergency department Findings: The outcome of the campaign was successful and increased awareness amongst the public.
Eysenbach et al (2000)	Summary: Review focussing on consumer health informatics and evaluates the current state of where this field is, its potential and barriers to full utilisation. Themes: Potential of consumer health informatics, Future of the hospital Findings: Acknowledges the potential for reducing the knowledge gap between professionals and patients with the use of health informatics.
Huberman et al (2009)	Summary: to identify how relevant a list of "friends" is to members of the network Themes: Twitter data, Friend list correlating with interaction Findings: But the linked structures of social networks do not reveal actual interactions among people and are not representative of actual engagement between users.
Williams (2011)	Summary: To determine if a SM site such as Facebook is a useful method of communicating sports science research to practitioners Themes: Communicating research through SM Findings: Overall it was concluded that SM platforms, Facebook in particular, are an effective means of communicating research.

Table for NHS strategies of engagement

Source	Purpose and Description
Rawson et al (2016)	Summary: Qualitative study to understand patient engagement with decision-making for infection management in secondary care and the consequences associated with current practices. Themes: Patient engagement with infection management in secondary care. Findings: Poor communication can cause loss of ownership, frustration, anxiety and ultimately distancing from engaging with decision-making.
Ironmonger et al (2015)	Summary: An evaluation of a campaign by the Department of Health to raise public awareness of persistent cough as a lung cancer symptom. Themes: Public awareness affect on diagnoses and health outcomes Findings: Compared with the same time in the previous year, there were significant increases in metrics including: public awareness of persistent cough, urgent GP referrals, and lung cancers diagnosed.

Use of SM in conferences

Source	Purpose and Description
Roland et al (2015)	Summary: Looks at how SM is gaining interest at conferences Themes: SM in medical conferences Findings: Opportunities for education and interaction but can be issues with human error or limited word count in twitter. Need to set rules on how its used.
Leung et al (2015)	Summary: #BlueJC is a journal club hashtag on twitter, which has been used to raise the profile of journal clubs . The twitter account allows discussions that happen on there to be published into the correspondence section of journals. Themes: SM in Journal Club Findings: Altmetrics showed that #BlueJC may have increased the visibility of Journal Club papers and encouraged access to the full text of these papers soon after they were published.

Use of SM to gain insights to patient perspectives/ social trends and on increasing testing

Source	Purpose and Description
Kolliakou et al (2016)	Summary: Investigating the relationship between novel psychoactive substances on SM and their appearance in a large mental health database. Themes: Trends between SM and clinical data, SM in Clinical Psychiatry Findings: Study focused on Mephedrone and there was an increased link with Google and Wikipedia searches and peak in Mephedrone-related references in the clinical records. This could be a potential early warning system.
Hays et al (2015)	Summary: Qualitative content analysis on the reactions on Twitter about the Care Data project launched by NHS England as part of a Public Health Campaign. Themes: Twitter reactions on a Public Health Campaign, Qualitative Analysis of Tweets Findings: Various concerns were raised about Care Data that appeared to be shared by those both for and against the project with 9 themes being expressed.
Bath et al (2016)	Summary: HIV Testing campaign #TestMeEast and evaluating its reach Themes: Twitter reactions on a Public Health Campaign Findings: #TestMeEast achieved a total Twitter "reach" of 238, 860 and the campaign had widespread news coverage.
Jensch et al (2017)	Summary: A SM approach was included in a patient driven quality improvement approach to identify, assess and treat psychological difficulties in stroke survivors in a London stroke unit. Themes: SM Involvement in a health campaign, SM in stroke care Findings: The web chat received 800 clicks, and alongside the dissemination on Twitter and Facebook, this had a combined reach of 5,088 impressions.
Elliot et al (2016)	Summary: Users were invited to assess their HIV risk anonymously through messages or promotional banners on several gay social networking websites. Irrespective of risk, they were offered a free HIV test delivered by post. Themes: SM and sexual health, SM to breakdown stigma Findings: A success. 17 361 respondents completed the risk self-assessment. Half had an 'identifiable risk' for HIV and a third was previously untested.
Frankis et al (2017)	Summary : This paper explores sexually transmitted infection testing regularity amongst MSM who use social and socio-sexual media. Themes: STI Testing through SM Findings: Only one-third of participants report regular STI testing, despite relatively high levels of male sex partners, and unprotected anal intercourse.

Shepherd et al (2015)	Summary: Thematic analysis was conducted of the conversation surrounding Twitter hashtag #dearmentalhealthprofessionals Themes: mental health and SM Findings: Shows that online SM can act as a place for discussion for those suffering from mental health problems and as a medium of feedback for healthcare professionals
Mylod et al (2015)	Summary: The article described Twitter campaign @heartmummy #hospitalbreastfeeding, which united service user and professional voices to call to action improved breastfeeding support in paediatric care. Themes: Breastfeeding Campaign on Twitter, Twitter Campaign
Dyar et al (2014)	Summary: Events/individuals influencing the discourse about antibiotics on Twitter were explored. The occurrences on Twitter of 'antibiotics' were analysed. Themes: Antibiotics on Twitter, Engagement on twitter about antibiotic resistance Findings: 234,000 referred to antibiotic where greatest activity increases were found in the declaration of antimicrobial resistance as a national risk.
Buchanan et al (2014)	Summary: To assess the magnitude, purpose and validity of vaccination-related information on Facebook and to determine whether information varies by site. Themes: Vaccinations on Facebook Analysis Findings: Of 30 sites, 43% were anti-vaccination, 7% neutral and 50% pro-vaccination.
McGregor et al (2014)	Summary: Five online SM platforms were selected and thematic analysis was carried out on them. Themes: Patient engagement using SM Findings: The most commonly discussed topics: treatments, care experiences, promotions and support. Online forums give an opportunity to engage with the services provided as well as mutual support.

Use of SM in Medical Education

Source	Purpose and Description
Pompa et al (2017)	Summary: Explore the use of SM networks and online resources for the purpose of MRCPCH exams revision among paediatric trainees using a purpose-designed webbased survey. Themes: SM in Education, Whatsapp Revision Groups Findings: All trainees have used SM for educational purposes. Facebook and Whatsapp being the most commonly used.
Nason et al (2015)	Summary: The study was used to assess the quality of YouTube videos on male urethral catheterisation. Themes: YouTube education Findings: The quality of videos on YouTube regarding male UC is widely variable.
Hopkinson (2014)	Summary: This article explores how SM can be used to educate patients with Chronic Obstructive Pulmonary Disease Themes: Patient Education via SM Findings: Youtube videos offer the possibility to view educational material repeatedly and can reinforce learning about inhaler technique and self management

Use of SM in Healthcare Research

Source	Purpose and Description
Devitt (2016)	Summary: Describes how SM is being used in research today and in particular, with disseminating research findings

	Themes: SM in Research Findings: SM has broadened opportunities.
Attai et al (2016)	Summary: Aim is understand how the public is using SM to find out about cancer, what the information is and how physicians can participate in this Themes: SM in Cancer Research Findings: Highlights 3 ways SM is used in cancer care
Pathiraja et al (2015)	Summary: The article discusses the opportunities that SM offer radiologists and provide potential guidelines that medical professionals can follow for SM use in radiology Themes: SM and radiology, SM guidelines Findings: Reasons why radiologists should engage in SM include: engaging in a global health conversation and continuing professional development
Nason et al (2015)	Summary: To assess the emerging use of urological journals using Twitter search of urological journals and their profiles, as well as key statistics. Themes: urology and SM, urological journals on Twitter Findings: 8 of 33 urological journals had Twitter profiles. A Twitter profile was associated with a higher mean impact factor of the journal.

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Supplementary Files

Multimedia Appendixes

Search strings for literature review.

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Inclusion and exclusion criteria.

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