

Twitter, #alternativefacts, careless whispers and Rheumatology

Scientific research published using social media can be misleading

Many readers may recall an era prior to mobile telephones. In recent decades, the mobile phone has evolved from a cumbersome accessory to an essential part of daily life. Any contemporary social gathering bears witness to the omnipresence of mobile devices. Along with the advent of portable technology a continuous data stream of information has also arrived, channelled through social media platforms such as Twitter. For the unfamiliar, Twitter is an online news and social networking service. Users post and interact with messages, called 'tweets', each restricted to 140 characters in length. Users access Twitter through its website interface, or via an app on their mobile phone. Twitter launched in 2006 and grew rapidly, gaining worldwide popularity. As of March 2017, Twitter had more than 313 million monthly active users [1]. On the day of the 2016 US presidential election, Twitter was the largest source of breaking news, with over 40 million tweets that day alone [2]. Social media outlets have recently experienced a somewhat troubled public image (with reference to the European referendum and American presidential elections), becoming tarred by assertions that the platforms are awash with #alternativefacts and 'FAKENEWS'. Indeed, the veracity of communication via social media is challenging to judge.

In parallel to its use for disseminating news, social media are similarly becoming a platform for information sharing within medical spheres. The Journal launched its own twitter account in 2016, @RheumJnl, which now has some 1000+ followers. So what about Twitter and the Rheumatologist? Attendees at any contemporary conference will be familiar with the concept, as banners advertising tweets from attendees are now commonplace. Many rheumatologists access rheumatology news through Twitter feeds, for example, the popular virtual journal club @RheumJC. However, should we trust what we read? The convenience of accessing information via Twitter is offset by some important limitations.

The first consideration is that 140 characters is often not enough for medical news. A recent publication in the Lancet reported the outcome of an open label randomized controlled trial comparing methotrexate or placebo in addition to intra-articular steroids in oligoarticular JIA [3]. The primary end-point of the study was not met, and the initial response might be to tweet: 'Trial shows methotrexate of no benefit in oligoarticular JIA' (indeed the BMJ blogger site drew this conclusion [2]). In reality, though, a more nuanced interpretation is probably more appropriate:

'Trial suggests methotrexate might prolong and, to a lesser extent, increase the effectiveness of intra-articular corticosteroid therapy in oligoarticular JIA. Although no difference in primary outcome in the intention-to-treat analysis, imputed covariate and outcome data with multi-variable logistic regression and Cox proportional hazards model favoured methotrexate arm.' Unfortunately, the latter statement would require the Twitter author to have read the original paper and uses 371 characters, far above the limit imposed.

The second consideration is that indirect information often becomes corrupt. Everyone is familiar with the childhood game in which one person whispers a message to the ear of the next person through a line of people until the last player announces the message to the entire group, revealing how errors accumulate in retelling. The explanations are simple and include impatience, mistaken corrections, the difficult-to-understand nature of whispering, and sometimes deliberate intervention. Twitter is perhaps the ultimate whispering game: information is collated by an index user (maybe in a rush), and shared to their network of followers; a number of followers may then quote or retweet the original user and so forth. As an example, the BMJ published an article on vitamin D supplementation [4, 5]. The day before publication, @BMJ released a Tweet: 'Study reports a new indication for #vitaminD supplementation: the prevention of acute respiratory tract infection <https://t.co/WJYLEj72H1>'. Over the following 5 days, 802 Twitter users commented on the study, with the full spectrum of possible interpretations endorsed: that the study shows nothing through to claiming that the study confirms vitamin D cures the common cold.

A third consideration is that Tweets are anonymous. Of course, physicians are familiar with the tabloid nature of some medical journalism. The challenge with Twitter is that the authors are largely anonymous, tagged not by a name but instead a pseudo anonymized Twitter handle, or even simply the name of a medical journal, without any visible attribution to an actual individual. With traditional media sources, a reader can look at the publication title and draw judgement on the likely integrity of the report, but this is not possible in the same way with Twitter. This means that there is the potential for some news resources to be posting information that is unreliable, or could be used in a detrimental way, possibly towards other Twitter users.

Lastly the impact may be misleading. Of interest to some readers will be the potential of Twitter to disseminate research. For our academic readers, achieving impact is highly prized. @RheumJnl Tweeted daily over the last month, totalling over 35 000 impressions (views of a Tweet) across the globe (34% UK, 21% USA). What remains unknown is how Twitter activity influences traditional impact. Web traffic to articles mentioned in Twitter increases, but influence upon citations is unknown. Altmetric has emerged in recent years as a non-traditional alternative to more citation metrics, such as impact factor and h-index (readers may have noticed Altmetric scores in the journal appearing online inside a multi-coloured circle to the right of articles). Altmetric rates an article according to aspects of impact such as how many data and knowledge bases refer to it, article views, downloads or mentions in social media and news outlets. However, both success and infamy improve the Altmetric score.

Despite these caveats, Twitter and other social media are clearly becoming a regular source of medical information for many of us in the rheumatology world. It is therefore important that we learn how best to view and interpret these 140 character comments.

If you would like to comment further our twitter handles are @drdj and @drjamesgalloway

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