Social media and altmetrics: The pharma perspective

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Abstract

The increased prevalence of healthcarerelated social media and other web-based communications has generated interest in tools that measure the attention and engagement of published content. In the context of medical research publications, the use of alternative metrics, or altmetrics, in place of article citations, has also grown. To date, pharmaceutical companies show limited interest in social media tracking and altmetrics tools, and their reluctance is driven by concerns about the sharing of fraudulent research and the risk of genuine research findings being misinterpreted. Despite these limitations, five strong areas of opportunity arise for pharmaceutical companies to explore, namely patient groups supporting rare diseases, the recruitment of patients into clinical trials, communications at scientific conferences, the supplementing of traditional data sets, and support for regulatory compliance.

Background

An increased global use of social media is one of the most far-reaching consequences of the COVID-19 pandemic. It is now reasonably argued that social media is an essential tool in the preparedness, response to COVID-19, and future public health challenges.1

In the past decade, digital tools have been developed with the aim of tracking and measuring the attention and engagement associated with published content via social media and other web-based channels. These tools have been categorised as "alternative" metrics or "altmetrics" and are now widely used in medical publications. Prominent examples include Altmetric, Plum Analytics, and ImpactStory.

The types of content surveyed include journal articles, book chapters, software, blogs, datasets, websites, and videos. Of particular interest for healthcare is the usage, impact, and influence of academic research publications within academic and professional digital communities and beyond, to patients and the general public.

Citation metrics – a time for change

Altmetrics have also generated huge interest over the past 10 years as a means of complementing, or potentially replacing, traditional citation metrics and, ultimately, the journal impact factor (JIF).

The Clarivate Analytics JIF was first devised in 1955. Despite all the intervening time and well-documented highlighting of its significant and fundamental flaws,² it continues to be heavily, if not exclusively, argued that social relied upon by governments, funders, and research institutions, as a proxy for the quality, impact,

and influence of research publications. It is only relatively recently

that the scientific publishing community has collaborated to significantly improve the way in which journal research outputs are measured and evaluated.

This is now led by the Declaration on Research Assessment (https://sfdora.org), which promotes new digital tools and processes in research assessment and the responsible use of metrics that better align with core academic values and promote consistency and transparency in advancing science.

Altmetrics use within pharma

Although the potential for altmetrics is clear, the application remains relatively limited and is, in many cases, still exploratory. A number of studies have been published. From these, seven pharma-related activities can be identified in which social media share of voice is important

and hence, have potential for application:

	1.	Pharma	icovigi	lance
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- 2. Patient experience
- 3. Product marketing
- 4. Clinical practice
- 5. Regulatory compliance
- 6. Drug development
- 7. Scientific meetings

Pharmacovigilance

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Social media measurement and monitoring provides the opportunity to complement traditional surveillance methods that rely on proactive clinician and patient reporting via registries such as the FDA's MedWatch; these, however, typically experience significant delays and systematic underreporting.

> Besides surveying pharmacovigilance data and the scientific literature, social media measurement can be useful in identifying adverse drug events.^{3,4} For example, Instagram influencers frequently discuss health probincluding diagnosis, lems. prescribed drugs, and side effects through photos and comments.

> A recent literature review⁵ has reported that the task of extracting relationships between drugs and their effects from social media is a complex challenge owing to the characteristics of

social media texts.⁶ These texts, typically posts or tweets, usually contain many typographical errors, and patients use lay terminology to refer to diseases, symptoms, and indications.

Although the potential value of social data is increasing, research on social media-based pharmacovigilance is still not in a position to supplant more traditional methods.⁷ Data from traditional health systems and patient-generated data, however, have complementary strengths and, when combined, can lead to more robust public health systems.

The European Union's Innovative Medicines Initiative WEB-RADR project has explored the value of social media^{8,9} and partnered with

Delahunty - Social media and altmetrics: The pharma perspective



PatientsLikeMe, u-Motif, and Voluntis. To date, however, WEB-RADR does not recommend the use of general social media for broad statistical analysis.

Finally, the Canadian Network for Observational Drug Effect Studies (CNODES) is an example of a nationally distributed network of researchers and data centres using social media for collaborative, population-based approaches to study drug-safety and-effectiveness. Recently, CNODES monitored and measured the social media impact of pharmaco-epidemiologic research using altmetrics.¹⁰

Patient experience

The Deloitte Centre for Health Solutions forecasts¹¹ that, as pharma moves from simply engaging with patients to becoming more patient-centric, more will be done to connect with patients and carers via social media.

The use of digital and social media tools as a natural source of information for patients and healthcare professionals alike is still difficult for pharma. Although it has become easier to provide patient apps, uncertainty over the regulatory response remains. If patient-centricity is to reach its full potential, social media content and interactions must be measured as accurately and as honestly as any other activity or variable in drug development and delivery.

The impact and influence of social media on patients is clearly shown in a PWC Health Research Institute patient survey which reported¹² that 34% of respondents said that social media would affect taking of certain medications and 40% said it would affect how they coped with chronic illness or approach to diet and exercise.

In addition, patient recruitment and retention are the two biggest reasons for delays in completing clinical trials. For

example, only a small percentage of eligible US patients participate in clinical trials, even though 70% are estimated to be inclined or very willing to participate. Social media combined with clinical trial search tools can help patients find and enrol into trials with eligibility requirements matching their profiles.

Product marketing

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Pharma is beginning to adapt to advertising

strategies and partnering with influencers to promote new drugs and medical devices. Social media enables users to connect over shared interests, locations, and illnesses. Healthcare companies locate potential influencers who can use these commonalities to reach and build trust with an audience.

For example, Instagram has a particularly high user-engagement rate, with projected 1.1 billion users, 50% aged 18 to 29 years and where "influencers"

have paid advertising partnerships. One such influencer is Louise Roe who has 698k followers and suffers from psoriasis. She has a paid partnership with Celgene, which produces the patent-protected psoriasis drug Otezla.



Clinical practice

Digital online networking communities for physicians are well established for the sharing of clinical opinion. Examples include, Doctors.net.uk, Doximity, and Sermo. Most of these, however, are closed communities with the ability to validate physician and healthcare professionals and, therefore, increase trust and transparency in the sharing of knowledge.

Physicians and healthcare professionals are also active on social media and, aside from fake or fraudulent research being spread on social media, there is also the risk of misinterpreting genuine research findings.¹³ Conclusions of research findings are often simplified and overly extrapolated in the media and this is an underlying factor in the pharmaceutical industry's reluctance to engage with social media tools especially when communicating with physicians.

Regulatory compliance

A constant concern and challenge for pharmaceutical companies is regulatory compliance for social media activities and dealing with each of the relevant regional authorities. Codes of practice and guidance, however, have been painfully slow to be established.

The Association of the British Pharmaceutical Industry code of practice permits monitoring of social media sites to allow pharma companies to "listen to" or "see" what the public is discussing, saying, or sharing about it, the diseases and conditions it treats, and its treatment options. Companies must always declare their presence and monitor all content on an ongoing basis, especially for adverse events and product complaints.

The US FDA code of practice gives guidance on the correction of misinformation about prescription drugs and medical devices on social media originating from independent third parties but does not survey influencers or influencer posts owing to the limited availability of tools to search and report on non-compliant content.

A further complication for regulators is the advent of the preprint servers such as bioRxiv. With the publication of these non-peer reviewed studies on preprint servers, associated social media comments may flag up issues and concerns with study disclosures of conflict of interest and funding statements. Studies have shown that, although preprints are not well cited, they achieved significantly higher Altmetric scores.¹⁴

Drug development

Social media can influence the process of orphan and rare diseases drug development by assisting the study of orphan diseases, increasing the awareness of these diseases, and playing a vital role in the clinical trial process.¹⁵

As the early drug development process begins with understanding the needs of patients with

orphan diseases, companies can use social media to study disease progression at much earlier stages compared with traditional communications from physicians.

In addition, social media increases patient awareness of orphan disease and orphan drug

developers. Because many patients with orphan diseases spend years seeking a correct diagnosis, they are more likely to actively engage in social media and web searches.

By engaging in content-rich social media activities, pharma companies can provide valuable information on orphan diseases to help patients better understand their symptoms, as well as promote the credibility of their brand and gain patient trust.

Also, for the purpose of patient recruitment, retention, and monitoring, social media is a powerful tool for serving geographically dispersed patients or those with transportation challenges.

Social media is vulnerable to

breaches of patient privacy, the collection of unrepresentative data of uneven quality or may be compromised by unblinding. Nevertheless, it possesses great potential for improving the efficiency and economics of orphan drug development, if companies consider the positive and negative aspects of using such a powerful tool.

Scientific meetings

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Physician use of social media increases during major scientific meetings, resulting in a global sharing of predominantly By engaging in

For example, recent data¹⁶ show an explosive growth of Twitter use by physicians during major cardiovascular scientific meetings. Widespread, international use of Twitter should translate into facilitation of realtime scientific discussion as well as immediate dissemination of potentially practice-changing information to a large global audience.

Future studies to explore and better characterise user demographics, as well as educational content and value of tweets, is warranted as routine use of these platforms by physicians could significantly impact on patient

education, disease awareness, and research.

Conclusions

Overall, pharmaceutical companies continue to show limited interest in social media monitoring and measurement using altmetrics, and continue

Table 1. Future priority areas for social media monitoring

Rare diseases	Facebook groups that allow for direct interaction between pharmaceutical companies, researchers, clinicians, patients and carers.
Clinical trial patient recruitment	Search tools, combined with social media channels, can help patients find and enrol into trials with eligibility requirements matching their profiles.
Scientific conferences	Harnessing the increasing growth in social media use by physicians during major scientific meetings.
Supplementing traditional data sets	Further development of computational methods for processing large data volumes and natural language processing methods for more detailed and sophisticated data analysis.
Regulatory compliance	Development of technologies and universal standards to monitor and police compliance.

to take traditional approaches to success metrics, and primarily citations and publications.

Another underlying barrier is the pharmaceutical industry's reluctance to engage with social media tools where there is the risk of fake or fraudulent research and, the risk of genuine research findings being misinterpreted.

Despite the known limitations of social media monitoring and measurement, Table 1 summarises priority areas for social media monitoring tools that were reported in interviews to Inspiring STEM by pharmaceutical and medical communications stakeholders.

In summary, although the potential value of social media monitoring and measurement is increasing with some interesting opportunities or further exploration, it is not currently in a position to supplant more traditional methods, for example, in pharmacovigilance or product marketing.

Conflicts of interest

The author is a director and owner of Inspiring STEM Consulting Limited, an independent scholarly academic and scientific publishing consultancy. The author declares no conflicts of interest.

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Social media and altmetrics: The pharma perspective – Delahunty



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