



A 360° VIEW

of HCP Opinions on NOACs

How to leverage integrated data in private and public healthcare professional social networks to develop market research insights

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In today's connected digital world, healthcare professionals (HCPs) are taking advantage of new ways to collaborate and learn, leveraging social media in public networks and private, doctors-only environments. A recent study by CREATION in partnership with SERMO illustrates the power of data available from HCP online conversations and Drug Ratings as a source for market research insights.

Why do HCPs use social media?

Studies of healthcare professionals' behavior by CREATION and SERMO reveal four key reasons why HCPs use social media.

Collaboration

"I actually shared mistakes for the benefit of my colleagues on SERMO...but would not have done that if my employer or my peers could identify me."
— SERMO doctor

Learning

"[public social media] allows me as a practitioner to learn about innovations instantly... no matter where they occur on the planet."
— Richard Brady, Colorectal Surgeon

Far reaching

"I sent a Tweet asking for opinions about routine prophylaxis for our patients on biologic drugs. Within a few minutes I had a reply from an expert in Norway who had published a paper... and from a colleague in England who is an international expert in Lupus." - Philip Gardiner, Rheumatologist

Free

Social media has the power to improve patients' lives and the way doctors practice at no cost to the health system.

Fig. 1: Four reasons why HCPs use social media

Collaboration

Doctors use social media to collaborate with their peers. In SERMO, the private network for doctors which has more than 800,000 members worldwide, physicians are able to anonymously share experiences and challenges. They frequently ask their peers in confidence about individual patient cases to solve problems.

Learning

For many healthcare professionals, social media is an essential component in their learning. Medical students supplement their development by engaging with practising professionals online, while qualified HCPs keep learning from their peers. Richard Brady, a colorectal surgeon in the UK who launched a worldwide online conversation for surgeons, told CREATION: "[public social media] allows me as a practitioner to learn about innovations instantly".

Far reaching

When HCPs need to consult rapidly with other experts in a particular disease area, they may not always be able to

turn to peers in their local hospital or community setting. With social media, they are able to start a worldwide conversation to find the expert opinion they need. One rheumatologist told CREATION about a particular patient case in which he asked for advice from peers via Twitter.

"Within a few minutes I had a reply from an expert in Norway who had published a paper... and from a colleague in England who is an international expert in Lupus", he said, adding that he was then able to share the results of his 20-minute Twitter conversation with other doctors in his hospital.

Free to use

The social media tools used by HCPs - from public channels like blogs and forums to private networks like SERMO - are free of charge. This has enabled a low barrier to entry for HCPs wishing to explore the benefits of peer collaboration online, resulting in a surge of social media adoption among professionals over recent years¹.

¹ CREATION, WORLDWIDE DOCTORS & HCP GROWTH ON TWITTER, 2006-2014
(see <http://creation.co/knowledge/new-video-doctors-twitter-growth-2014/>)

A study of HCP opinions on NOACs

In order to leverage the power of insights available from online collaboration among HCPs, CREATION and SERMO have integrated their datasets to provide the world's only single, comprehensive view of HCP opinions.

Using the integrated dataset, comprising more than one billion HCP social media posts worldwide, a study of HCP opinions on novel anticoagulants (NOACs) in the U.S. was conducted by CREATION. The study was conducted in 2018 and included a retrospective analysis of all HCP online conversation and Drug Ratings in the U.S. over a

one-year period from January through December 2017. Specifically, the HCP conversation on public network Twitter was compared with that on private network SERMO.

Public and private networks provide different perspectives

A comparison of the volume of HCP posts per week between the two platforms reveals that different factors stimulate conversations in public compared to private networks.

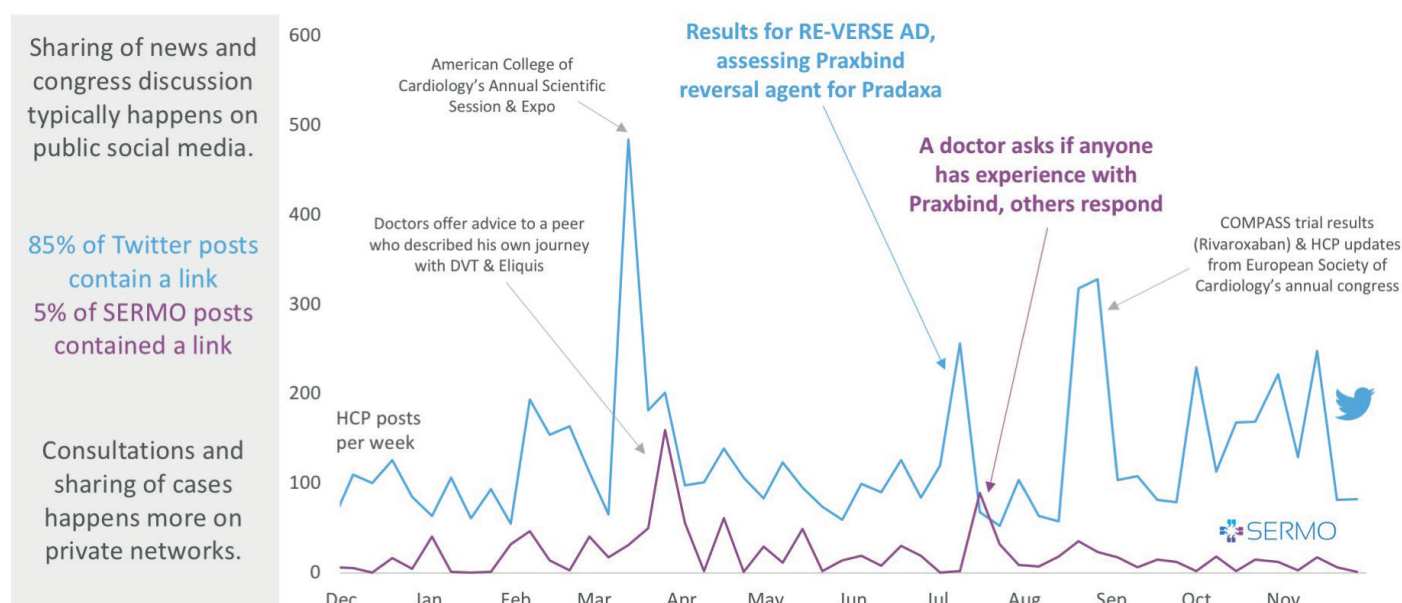


Fig. 2: U.S. HCP posts about NOACs per week on Twitter vs SERMO, Jan-Dec 2017
Source: CREATION Pinpoint with SERMO

On Twitter, HCPs can be seen sharing and reacting to medical congress meetings, clinical trial data and product news. Often their posts will include a link referencing a news story or an academic article. In SERMO, doctors' conversations are frequently more qualitative, with few links shared to external sources. Instead, doctors on SERMO discuss their own experiences.

A good example of this can be seen in the conversation volume spike that took place in July, illustrated in **Fig. 2**. On Twitter, HCPs shared results for a clinical trial assessing Praxbind, Boehringer Ingelheim's reversal agent for its NOAC product Pradaxa. The following week, a spike in conversation volume on SERMO resulted when a doctor asked peers about their experiences with Praxbind. This experience-sharing conversation took place in the privacy of SERMO's closed network.

Drug Ratings add a new dimension

SERMO's Drug Ratings tool offers doctors using the private network the opportunity to rate drugs, and view how others have rated them. For each approved indication of a drug, doctors comment about the product and rate it for efficacy, safety, tolerability, accessibility and adherence; and SERMO also provides an overall rating by combining doctors' ratings for each attribute. Thus doctors can see the top drugs as rated by their peers in any indication.

To date, SERMO has collected more than 3 million data points from Drug Ratings, and thousands more are being added daily.

Adding SERMO Drug Ratings and comments to the combined HCP online conversation dataset from CREATION and SERMO provides significant additional richness to the data on HCP views. As illustrated by **Fig. 3**, the volume of Drug Ratings in the NOAC study exceeded the volume of posts in which HCPs mention the products in their conversations.

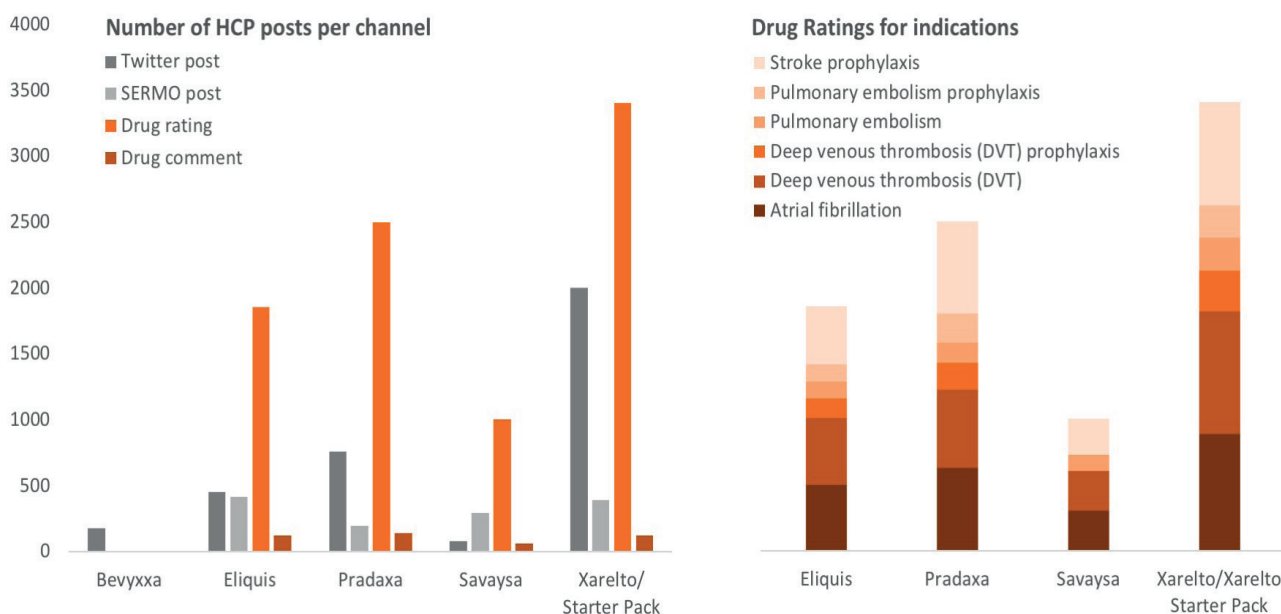


Fig. 3: Volume of U.S. HCP social media posts and global SERMO Drug Ratings for NOACs, Jan-Dec 2017. Source: CREATION Pinpoint with SERMO

HCP roles behave differently across channels

A comparison of the behavior of HCPs by their role types reveals differences in the way that different specialties engage in public and private networks. Analysis of posts and Drug Ratings for NOACs in deep vein thrombosis (DVT), for example, as illustrated in **Fig. 4**, suggests that cardiologists are especially active in conversations within SERMO; whereas physicians in General Practice and Internal Medicine post the greatest number of Drug Ratings.

Some roles are more active in the conversations about NOACs for DVT, others simply rate a NOAC for DVT.

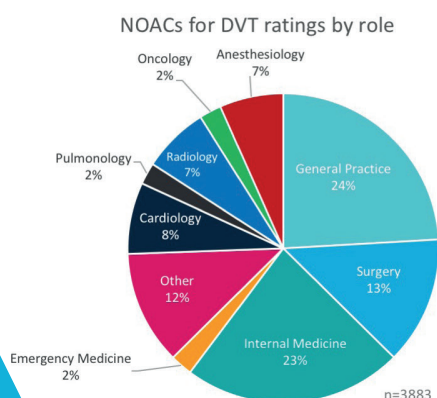


Fig. 4: HCP roles and specialties rating and discussing NOAC drugs for DVT on social media in the U.S., Jan-Dec 2017. Source: CREATION Pinpoint with SERMO

"A comparison of the behavior of HCPs by their role types reveals differences in the way that different specialties engage in public and private networks."

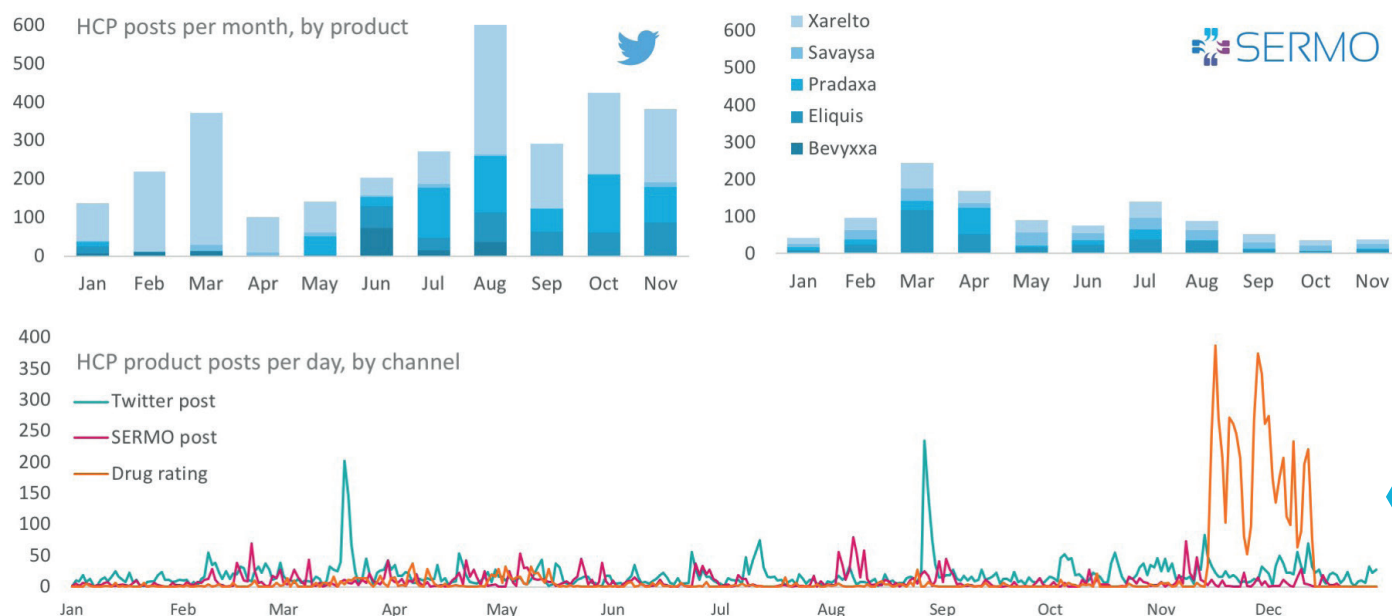


Fig. 5: Variations in U.S. HCP post volume over time, by platform, 2017
Source: CREATION Pinpoint with SERMO

Different factors drive doctors' posts on each channel

A comparison of HCP posts about products on each channel indicates that each is subject to different drivers of conversation. As illustrated in **Fig. 5**, for example, in March 2017 there was a significant volume of HCP conversation about Xarelto, yet less so in SERMO in the same month. In SERMO, it was Eliquis that had the greatest share of voice in March.

Further analysis of the detail of conversation reveals how these variations in volume across channels are caused by differing behaviors: the analysis labelled in **Fig. 2** indicates that during the last week of March, doctors offered advice to a peer who described his own journey with DVT and Eliquis. This kind of conversation is unlikely to have taken place on a public social media environment.

Doctors reflect different attitudes on each channel

Perhaps the most surprising finding of the study is the extent to which doctors reflect different attitudes towards products in their posts on each channel. Sentiment analysis is a technique often used to indicate positive or negative feelings expressed in qualitative verbatim data. CREATION's methodology uses human analysis to verify the classification of sentiment in HCP posts, which has been found to be more reliable than the use of automated computer-based sentiment algorithms alone.

When comparing sentiment expressed in comments on SERMO Drug Ratings with that in conversations on SERMO or Twitter, some products appear to differ significantly in the eyes of HCPs. CREATION's research shows that on Twitter, as illustrated in **Fig. 6**, the sentiment of HCPs

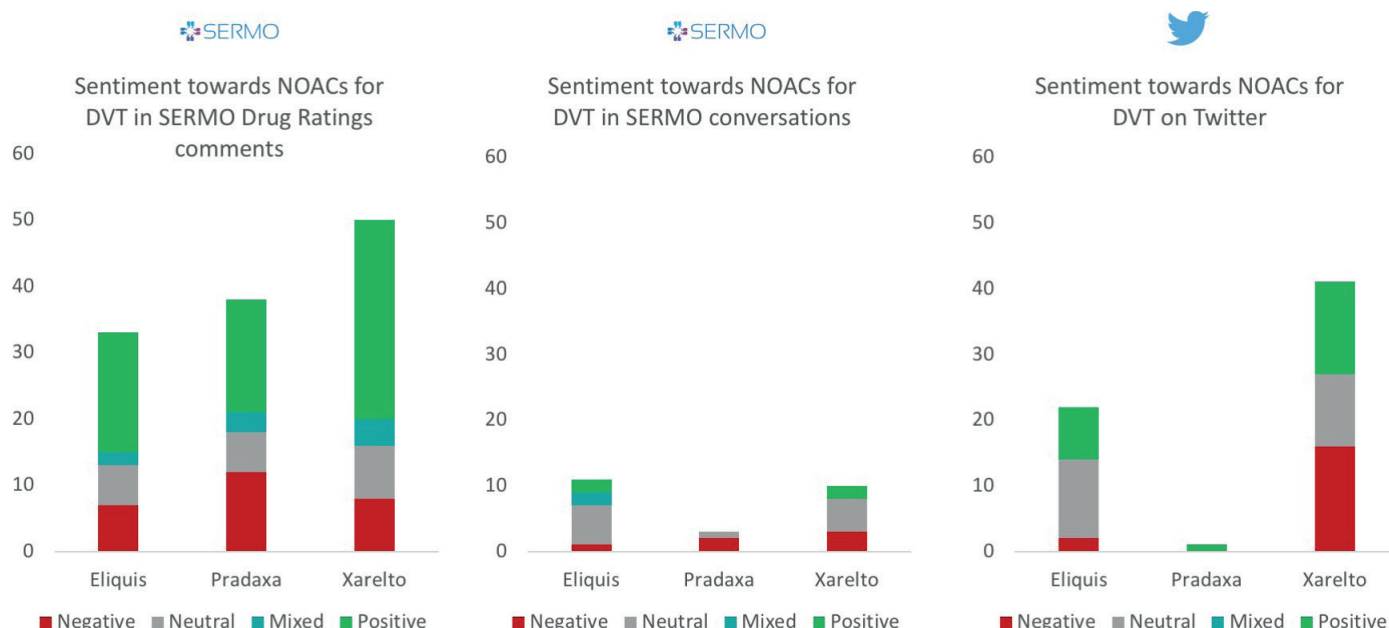


Fig. 6: Product sentiment in U.S. HCP posts about NOAC products during 2017
Source: CREATION Pinpoint with SERMO

"It is possible that their expressed views may provide a glimpse into future hopes and expectations."

towards Xarelto leans slightly towards negative. Analyzing doctors' comments on SERMO Drug Ratings for Xarelto, however, indicates a largely positive sentiment.

Why would the sentiment indicated by HCPs on different channels differ? The answer lies in the differing behaviors across channels, which also provide clues to what influences HCP attitude towards products. On SERMO, HCPs are typically considering their own experience so their views shared may be associated with what they have read from others or posted themselves on the private network. On Twitter, however, much of what HCPs post is directly linked to other sources including mainstream media, medical journals, policy influencers and peers. In this environment it is possible that their expressed views may provide a glimpse into future hopes and expectations.

Drug Ratings complete the picture

We saw in **Fig. 3** how the integration of SERMO Drug Ratings added a significant volume of quantitative data to the analysis of HCP views. CREATION's geolocation analysis of HCP posts about NOACs revealed that Drug Ratings not only add volume to the data but diversity of location.

In **Fig. 7**, the location of each HCP post on Twitter and SERMO is shown in red and orange dots, mostly centered around key cities. In blue, the location of each Drug Rating is shown, covering every populated part of the country. With such comprehensive coverage of HCP ratings for NOAC products, it is possible to identify regional variations in views about factors such as accessibility, and even to track how and when these views have changed over time.

US healthcare professionals discussing and rating NOACs

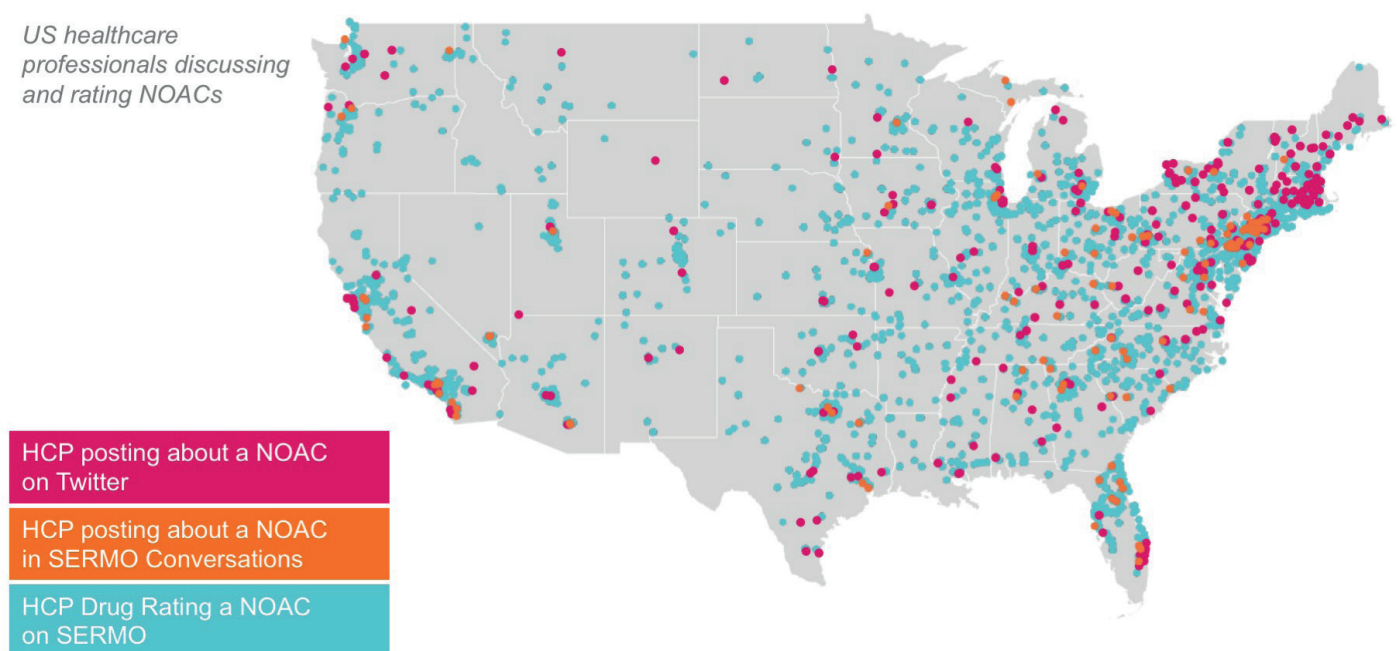


Fig. 7: Geolocation of HCP social media posts and Drug Ratings on NOAC drugs in 2017
Source: CREATION Pinpoint with SERMO

"With such comprehensive coverage of HCP ratings for NOAC products, it is possible to identify regional variations in views"

Ratings over time show the impact of doctors' conversations

The multidimensional data from HCPs' online behaviors allowed for analysis to be conducted from diverse perspectives in order to discover new insights. When CREATION studied how Drug Ratings changed over time, an interesting anomaly was identified in July 2017, as illustrated in **Fig. 8**.

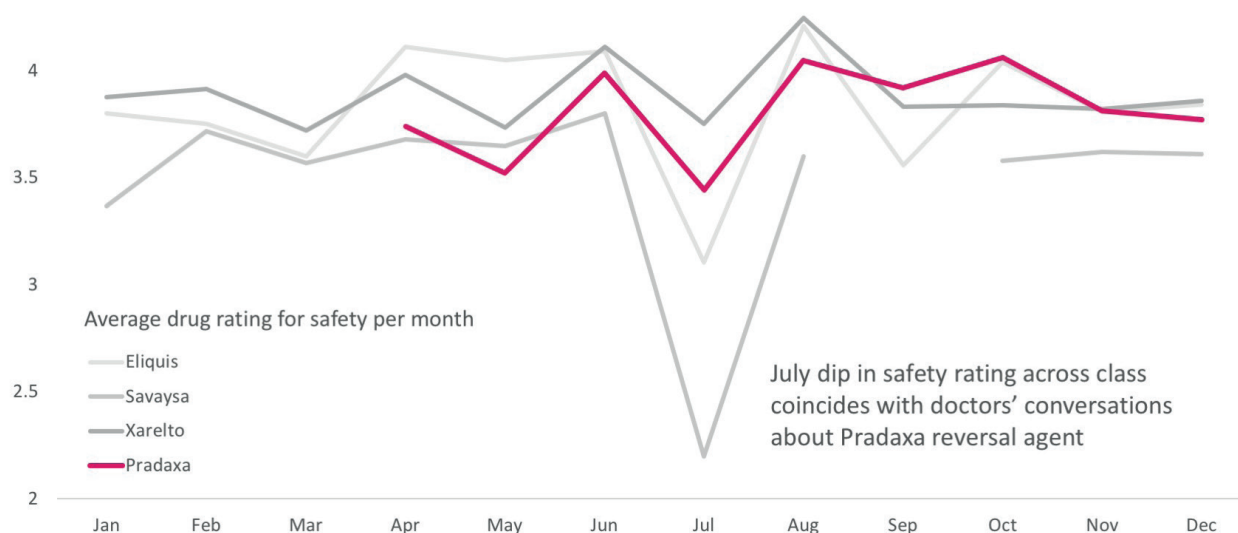


Fig. 8: Aggregated SERMO Drug Rating scores for safety attribute by month during 2017
Source: CREATION Pinpoint with SERMO

Drug Ratings data submitted by doctors on SERMO per month was aggregated and plotted for products in the class, revealing that a sudden dip in confidence occurred across the class in July for the safety attribute. A review of other insights in the study confirmed, as discussed earlier, that July was the month in which HCPs had also discussed the announcement of data on Praxbind, the reversal agent for NOAC product Pradaxa.

Perhaps the increased awareness of a reversal agent brought to mind doctors' concerns over NOAC safety, even if only for a short period since doctors who rated drugs in August appeared to have had their confidence restored.

The application for healthcare brands

To leverage the powerful insights available thanks to CREATION's integration of SERMO Drug Ratings with HCP online conversations in open and private networks, healthcare marketers should develop informed actions from multi-dimensional research, as illustrated in **Fig. 9**.

HCP research dimension	What you will discover	How to take action
Identify how doctors talk about their needs	Find language that resonates with customers	Develop the right message
Track when doctors' product perception changes	Understand how time affects customer perceptions	Act at the right time
Discover where doctors' perceptions vary	Learn how location and environment impacts customer expressed needs	Connect at the right place, on the right platform

Fig. 9: How to develop your insights-led health strategy with CREATION

CREATION has a heritage in insights-led health strategy spanning more than 20 years. To talk about how unique customer insights can inform your strategy, get in touch at contact@creation.co or www.creation.co.

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