

# The Future of Prescription Drug Promotion and Digital Marketing

## Meeting Report

### EXECUTIVE SUMMARY

The digital marketing landscape is a dynamic and rapidly evolving ecosystem, with new platforms and formats such as streaming and short form video emerging alongside new technologies that enhance established marketing channels on traditional formats.

The U.S. Food and Drug Administration (FDA) is responsible for ensuring that promotional communications for prescription drug products, including direct-to-consumer (DTC) and health care provider (HCP)-directed promotional communications, are truthful, balanced, and accurately communicated. To achieve its mission, it is vital for the FDA to have current information on the evolving digital marketing landscape, including existing and emerging platforms, strategies, and technologies used by marketers to promote prescription drug products. Despite the emergence of new digital marketing strategies and platforms for the promotion of prescription drugs, this promotion must still be truthful and non-misleading across all marketing channels.

The Duke-Margolis Institute for Health Policy, under a cooperative agreement with the FDA, convened a one-day virtual public workshop to explore the state of digital prescription drug promotion, including the marketing technologies and strategies currently available and commonly used by marketers. Throughout the workshop, participants discussed how current and future digital marketing tools may impact patient, HCP, and consumer perceptions and behaviors. Participants discussed broader trends in promotion that may be used to infer future developments in the prescription drug promotion space. Participants also discussed emerging trends in both digital and legacy marketing channels and what those trends might mean for public health.

*The following key themes emerged from participant discussions throughout the workshop:*

1. The digital marketing space is evolving at a fast pace and presents challenges and opportunities for regulators of advertising and promotion in light of new formats and strategies.
2. New technologies coupled with greater access to large amounts of data enable more targeted advertising.
3. Marketing on social media presents new challenges, particularly related to patient influencers.

With digital marketing continuing to evolve at a rapid pace, it is critical that regulators and the broader research community contribute to a more thorough understanding of how promotional communications in the digital space impact consumers and HCPs and how to best protect public health. A number of areas for further exploration were discussed throughout the workshop, such as what effective disclosure of sponsorship and risk looks like in the digital space, the impacts and potential guidance needed for “science by press release,” and empiric investigations into how HCPs perceive ads. Investigation into these areas and more can help to improve understanding of new and emerging formats and may have bearing on the balance of information presented in promotional content.

## INTRODUCTION

The digital marketing landscape is a dynamic and rapidly evolving ecosystem, and marketers have a rapidly growing array of communication channels to promote products to consumers including social media platforms and podcasts. Legacy communication channels are integrating new digital features that aim to enhance reach and impact of promotional communications.

The FDA's Office of Prescription Drug Promotion (OPDP) in the Center for Drug Evaluation and Research's Office of Medical Policy is responsible for ensuring that promotional communications for prescription drugs, including DTC and HCP-directed promotional communications, are truthful, balanced, and accurately communicated. This is accomplished through comprehensive surveillance, compliance, education, research, and policy development programs. Given this charge, it is critical that the FDA understands how patients, consumers, and healthcare providers view, comprehend, and use the medical information presented in newer digital formats as well as new trends in legacy formats. While it is important to note that new and emerging marketing formats and channels do not change the regulatory requirements, an understanding of the trajectory of prescription drug digital promotion can help the FDA better anticipate future challenges and needs.

### *Meeting Objectives*

The Duke-Margolis Institute for Health Policy, under a cooperative agreement with the FDA, convened a one-day virtual public workshop to explore the state of digital prescription drug promotion, including the marketing technologies and strategies currently available and commonly used by marketers. Participants included an array of experts in marketing, media, industry, and prescription drug promotion as well as those who could speak to the experiences of patients, consumers, and health care providers. The goal of this event was to discuss how current and future digital marketing tools can impact patient, HCP, and consumer perceptions and behaviors generally and to evaluate emerging trends in both digital and legacy marketing channels and the potential public health implications. Participants were also charged with providing insights into specific issues like the presentation of risk information and disclosures of material information necessary to ensure that the prescription drug promotion disseminated through these digital platforms and technologies is truthful and non-misleading.

## Future of TV Marketing

Participants reviewed and discussed prescription drug advertising on traditional, or linear, TV as well as the future of prescription drug marketing across connected TV, including ad-supported and subscription-based streaming platforms. Discussion also covered the public health considerations for prescription drug marketing on TV given the evolving landscape of both linear and connected TV.

### *Venues for Promotional Content*

Marketers now have many venues for promotional content, including but not limited to TV, social media, websites, and podcasts. These different venues can be leveraged to help target specific audiences based on available demographic data. Understanding how linear and connected TV fits into this new era of marketing and why TV may or may not be selected as a venue for promotional content for some products will be important for assessing future drug promotion trends. Taking into consideration how firms think about and make decisions around marketing can guide this assessment. Of note, TV advertising costs have increased while internet advertising, especially via social media, has remained a cheaper and potentially more effective option for reaching certain populations. One speaker noted it is also critical to understand where and when the goals of policy makers and marketers may or may not be aligned and what the implications may be for public health.

### *Linear TV and Streaming*

Despite the rise of alternative venues for promotional content, prescription drug promotion via TV platforms is expected to continue into the foreseeable future. One participant noted that there has been a recent trend in marketing transitioning from linear TV to premium video, which includes content made available exclusively for an additional fee. Overall, money spent on advertising via streaming and premium video services is increasing. One panelist referenced a recent report on trends in TV viewership and noted that while TV viewing via streaming is increasing, viewership via traditional TV was still near 50 percent.<sup>1</sup>

Another notable consumer trend participants discussed was the recent reversal of the “unbundling” that

occurred in the earlier days of streaming, where streaming services offered access to a more limited, curated set of content as an alternative to the large packages of channels typically offered in traditional TV settings. Streaming services now appear to be consolidating and bundling services, but in a manner that may be providing consumers more choice compared with traditional TV. This “re-bundling” may influence marketing trends in the TV space in the future as streaming services aim to cater to and capture a wider range of audiences. However, linear TV is also evolving in ways that may ultimately impact the appeal of this venue for marketing purposes in the future.

### *Personalized Marketing Strategies*

Another key trend in TV marketing strategy is the shift from the concept of “one to many” advertising to “one to one” advertising, meaning a move from promotional content designed and placed to reach a broad audience to content that is highly targeted to a specific group or individual based on demographic data. “One to one” is anticipated to become the dominant strategy for TV advertisements in the future. This trend has been powered by new technologies that enable personalized advertising strategies to be applied across different marketing venues. Today’s trove of readily available consumer data allows marketers to target more specific populations than ever before. As such, marketers can leverage data that provides direct information or allows inferences on health and that may not be subject to the Health Insurance Portability and Accountability Act of 1996.

With the shift toward “one to one” advertising, there’s an opportunity to provide better information to consumers compared with past promotional strategies. New technologies that facilitate personalized ads can also be used to link and connect consumers to relevant resources. While this application has the potential to support better consumer awareness and education through greater access to healthcare information, it is important to note that regulatory challenges may arise.

Understanding the chain of events that leads consumers through the customer journey – from watching an ad to purchasing a product – will continue to be important for assessing future marketing trends. Newer technologies

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<sup>1</sup> <https://www.nielsen.com/insights/2023/data-driven-personalization-2023-state-of-play-report/>

and increased access to consumer data are also enabling sequenced advertising where the same consumer will see a marketing “story” across different mediums. Similarly, omnichannel and multichannel marketing strategies are becoming increasingly prevalent because they allow the advertiser to reach the same consumer across different mediums. De-duplicating audiences, the process of identifying unique viewers across various platforms or devices, has remained a challenge to effectively targeting viewers with these strategies. However, marketers are working to identify viewers to precisely target them across platforms in order to support storytelling-style promotional content through multiple interactions with the same viewer.

### ***Consumer Perceptions and Presentation of Quantitative Data***

Consumer baseline understanding of product risks and benefits will continue to influence viewer comprehension of promotional content on streaming platforms. One participant noted that research on consumer-directed marketing strategies indicates that people are likely to overestimate the benefits of drugs and underestimate side effects after viewing advertisements, especially when they lack consumer-friendly quantitative language. Research shows consumers don’t understand that, despite receiving FDA approval, all drugs also carry potential risks. Furthermore, consumers do not realize that drug advertisements are not approved by the FDA.

Despite concerns over consumer numeracy, numerical data can be presented in a manner that provides consumers with a clearer understanding of the potential risks associated with a given product. Adding consumer-friendly numerical information about the frequency of potential risks to TV advertisements could be helpful and used to mitigate the harms of patients overestimating benefits of advertised drugs. One possible strategy to overcome patient bias when hearing data is to have ads link to alternative objective information sources, especially via QR code, to better facilitate consumer exploration of such resources.

### **Use of Native Advertising on Digital Platforms**

Participants reviewed settings and formats commonly used to promote prescription drugs through native advertising – promotional content meant to match the feel, look, and function of a given media format – and discussed public health considerations related to specific settings. Participants also discussed digital

platforms where new formats of native advertising are emerging. The discussion encompassed examples where native advertising has been utilized for marketing to consumers versus healthcare professionals and how the presentation of information may differ by population of interest. While sometimes referred to as “covert advertising,” platforms that identify content as “sponsored” or “advertised” help consumers identify the promotional nature of native advertisements.

### ***Interactive Advertisement Capabilities***

With the rise of integrated marketing strategies that deliver consistent messaging across marketing channels, the future of digital marketing will likely include more connected and native advertisements with features like QR codes, home smart system advertising integration, and links connecting viewers to supplemental information. Internet advertisements are appealing to marketers because they can be much cheaper and easier to produce than more traditional advertising formats and venues. Marketers also see better performance with advertisements that include interactive options like clicking or scanning QR codes. One participant noted that while consumers respond to messages differently when those messages have a persuasive goal, consumers tend to have less promotional skepticism with native advertising, which can be appealing for marketers. Marketers should also be aware that the presence of a platform-specific watermark or tag may negatively impact a post’s performance when shared to other platforms. For example, a post created on one platform will include that platform’s watermark but the same post shared to another platform may not perform as well on the other platform due to the presence of the first platform’s watermark.

### ***Use of Data and Metrics***

As with emerging trends in the TV space, new advertisement strategies on digital platforms are supported and motivated by the capacity to utilize big data like advertisement exposure and web browsing data. Digital marketing leverages such metrics to assess audience reach and campaign success, and uses engagement data to better target audiences. Data sources in this space continue to evolve as more major web browsers allow access to data for marketing purposes. Participants highlighted concerns regarding both perceived and real privacy infringement that may result from data tracking and utilization to support targeted advertisements.

## ***Advertisement Disclosures***

Trends in native advertising on digital platforms in the health space may have bearing on current and future prescription drug promotion trends. It is important to note that there is an opportunity for regulators to provide additional clarity around these kinds of advertisements through guidance that takes into account the new platforms and trends within and across different platforms.

For example, while current Federal Trade Commission guidelines dictate that advertisements falling under the commission's regulatory purview should be clearly labeled, advertisement disclosure can take different forms while still remaining in compliance with these guidelines. Advertisement disclosures may appear in a very small font within a social media post or may be included as a hashtag within a large list of hashtags, resulting in a lack of consumer awareness regarding the promotional nature of the content they are viewing.

Additionally, the language used in advertisements may be vague or may imply medical benefits that are not supported. For example, the use of phrases such as "recommended by" may imply particular benefits of products that may not be in alignment with available evidence. The variety in placement and formats of advertisement disclaimers and use of vague language make it difficult for consumers to consistently differentiate advertisements from non-sponsored content.

Consumer demographics, such as age or education, may have bearing on what protections are needed to ensure consumers are receiving appropriate benefit and risk information from native advertisements appearing in digital formats. Two key demographics to consider are adolescents and older adults, both of whom might necessitate different guardrails to ensure consumer comprehension of disclosures and balance of risk and benefit information. For example, research has indicated that younger individuals appear to be better at recognizing native advertisements and are also more reliant on implicit cues to identify advertisements as opposed to explicit disclosures like hashtags or other markers of promotional content.

## ***Display of Benefit and Risk Information***

Native advertisements on social media often display benefit information and safety information differently. For example, drug advertisements on image and video-based social media sites may visually show claimed

transformation effects for product applications like acne or weight loss, which can be a highly persuasive presentation for consumers. Side effects, however, may be shown in small font and appear only briefly due to the nature of short form content. Consumers may be presented with an option to click a "learn more" button to go to a promotional website prior to being presented with a full presentation of risk information. As such, native advertising and new digital marketing technologies may impact delivery of balanced information to consumers.

Help-seeking native advertisements may become more common in the future given the perceived latitude available to marketers for this type of advertisement. Help-seeking advertisements are promotional content that do not recommend a specific medical product or application but instead focus on making viewers aware of a particular medical condition. This type of advertisement presents opportunities to connect viewers with additional information while also allowing for consumer data collection via engagement features, thus enabling marketers to create more targeted subsequent advertising to relevant populations.

## ***Influencers***

While a relatively new phenomenon, use of influencers to present a narrative about a drug product has been increasing and may become a more common promotional strategy in the future. Participants acknowledged that there is a sense that influencer advertising will be the future of marketing because it is often much cheaper, and has a more targeted audience. Research on the impacts of influencer marketing tactics on consumer comprehension of risk and benefit information and health behaviors is nascent. However, existing research on information presentation and consumer comprehension within legacy marketing channels can help inform our understanding of digital formats.

Consumers tend to perceive influencers as more trustworthy when compared with other types of messengers in advertisements, even when they can correctly identify that the influencer is being compensated for the product promotion. Consumers may also have difficulty differentiating influencer promotional content from that same influencer's non-promotional content. Participants discussed that once a brand relationship is established, it becomes more challenging to determine at what point in time help-seeking or condition-specific content may serve the

same purpose as a product claim advertisement. Even when a segment isn't directly sponsored or when the product isn't explicitly mentioned, participants noted the content may serve as an advertisement for a product given the pre-existing association with a given brand.

Ensuring influencers and celebrities understand and abide by existing regulations and guidance on prescription drug promotion remains a significant challenge in the digital marketing space. Panelists agreed that influencer and celebrity promotional activities present significant challenges to both policy makers and industry groups to ensure fair balance in presenting prescription drug promotional content.

### ***Patient Ambassadors***

It is also important to consider challenges arising from content developed and delivered by patient ambassadors. Patient ambassadors are individuals who have lived experience with a given condition and may serve as brand ambassadors. These individuals may be leveraged by marketers to show narrative journeys and the transformative effects of a given medication they have direct experience with. Although patient ambassadors may not always receive financial compensation, they may still require training and education to ensure compliance with any applicable regulations for promotional content.

### ***HCP Influencers***

Another emerging trend is the use of HCP influencers across social media platforms. HCP influencer messaging may have impacts on prescribing practices, particularly for clinicians who view these individuals as key opinion leaders (KOLs). Like other consumers, clinicians may not distinguish between promotional and non-promotional content delivered by influencers, including HCP influencers.

## **Patient and Consumer Experiences with Promotion on Digital Platforms, with a Focus on Presentation of Risk Information**

In this session, participants discussed emerging trends and formats observed in the promotion of prescription drug products in digital media as it related to content intended for patients and consumers.

### ***Engagement on Social Media Platforms Differs by Age***

Participants discussed how engagement and utilization of social media platforms differs based on age. Younger

individuals are more likely to use social media in lieu of a search engine, while older individuals are more likely to use social media platforms to engage in entertainment, information, and connection. Patients and caregivers are increasingly using social media platforms to organize and connect with each other, as well as to seek out new information.

### ***Interactions Between Consumers and Patient Influencers***

Patient influencers have significant appeal to drug companies due to their audience reach, close relationships with viewers, and the overall cost-effectiveness of influencer-delivered promotional content.

Patient influencers tend to be micro- or nano-influencers, whose following ranges from 1,000-15,000 and is made up of individuals who share the same condition. Patient influencers can serve as advocates or ambassadors by showing their personal disease journey to bring awareness to their condition and lived experience. Organizations such as patient advocacy groups may also fall into the patient influencer category.

Patient influencers interact with their followers by building a relationship over time through multiple posts and other forms of content. There are also various modes of interaction, including comments and direct messaging. Their followers may ask very specific medical questions and engage in conversations amongst each other in the comments of other posts. Some patient influencers even share medical information, such as medication dosages, with their followers. The impact of these interactions is difficult to monitor and assess and raises unique considerations around regulatory oversight when patient influencers are operating by or on behalf of pharmaceutical firms.

Participants also noted how if a consumer interacts with one form of promotional content, he/she may be inundated with similar content. Promotional content from patient influencers may be shown to consumers who do not follow nor interact with the patient influencer. Promotional content may be featured on a platform's explore page and may be rapidly disseminated, especially if the content goes viral.

Participants detailed the important role of disclosures in promotional content created and posted by patient influencers. This type of influencer may be appealing to

advertisers because of the trust that exists between patient influencers and their followers. However, disclosures are an essential element to help consumers distinguish between posts created by or on-behalf of a drug company versus those that independently share a personal experience. Context is important and can shape consumers perceptions of promotional content created on behalf of a drug company.

Participants also shared concerns around source credibility and transparency. Patient influencers may use titles that indicate clinical training, such as “doctor,” but may ultimately be speaking outside the scope of their role and/or area of expertise.

### ***Presentation of Risk Information***

The format in which product risk is presented is important. Participants reported highly variable methods of presenting risk information. The size, placement, and duration that risk information is presented in a promotional piece are critical factors that impact consumer comprehension. Participants reflected on seeing some promotional content that presented risk information as white letters that flashed on the screen for only five seconds. Participants also referenced another example that contained risk language in the caption (such as “see prescribing information at the link in bio”) but omitted risk information from the video portion of the content.

Participants discussed challenges with presentation of risk information, whether the promotion comes from industry or a patient influencer. Especially for short-form content, it is important that the risks are presented to consumers in a way that provides informational value. Participants talked about finding the balance between brevity and completeness when presenting risks in short-form content. One participant suggested opportunities to provide more clear, concise quantitative information in a way that better informs consumers.<sup>2</sup>

Participants acknowledged the responsibility that drug companies have in the effort to develop and establish better guidelines for patient influencers and promotional content.

## **Healthcare Provider Experiences with Emerging Trends and Formats in Prescription Drug Promotion**

Participants discussed emerging trends and formats in the promotion of prescription drug products intended to target health care providers. Participants reflected on the impact of the COVID-19 pandemic and how it accelerated digital marketing to HCPs. Since industry representatives were no longer able to share promotional content in person at offices or conferences, new trends in marketing to HCPs emerged.

### ***Omnichannel Marketing to HCPs***

HCPs are uniquely positioned to receive advertisements that are targeted towards consumers as well as advertisements that are targeted towards HCPs. Participants discussed a study from 2021 that found that 42% of patients who sought out medical information online asked their HCP about medication and started a new prescription. Participants stressed the importance of HCPs seeing both consumer-directed and HCP-directed advertisements so that HCPs are not blindsided when a patient asks them about a product they saw in an advertisement.

Drug companies may leverage data and algorithms to target HCPs on platforms beyond social media, including clinical support tools and electronic health record platforms.

Participants described how the HCP has their own journey in an omnichannel environment. HCPs engage in different behaviors depending on which platform they are using. Participants detailed how an HCP may be at a different stage of decision-making for prescribing medications when they visit the Doximity platform versus when they open an electronic health record. Different information is relevant to the HCP at different stages in the process and marketers are able to target the timing and types of messages directed at HCPs just by virtue of the channel the HCP is engaging on. For example, advertisers can tailor the formatting and content of promotional material to fit on a small screen if the HCP is accessing information on their mobile device.

Not only do advertisers have access to data about the HCP’s journey in an omnichannel environment, but they also have access to data such as the HCP’s network of

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<sup>2</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3752172/>

colleagues based on their engagement and interactions throughout the various platforms. Some platforms will require HCPs to answer survey questions before they can continue onto the next page. The survey questions may collect data on the HCP that can be used to serve targeted advertisements.

### ***Press Releases***

Participants talked about the relationship between HCPs and social media. Social media allows for HCPs to obtain readily available and digestible information, however, that information may not sufficiently address the nuances and methods that contributed to the information presented in the promotion. One particular emerging trend on social media is the use of press releases to disseminate information through major news outlets.

Advertisers use social media platforms to amplify press releases, including those that highlight outcomes related to drug approvals, FDA announcements, and early study results. Participants noted that in some cases, the press release is the only information in the public space and even clinical trial information may not be publicly available yet. Participants expressed concerns that press releases are insufficient as the only source of information available prior to a drug or indication approval and noted that the abstract in a press release is not sufficient for an HCP to understand the benefits and risks of a product. From a practical standpoint, press releases provide a quick summary of the product, but do not fully address risk or other critical information.

Participants expressed concern that key information cannot be adequately conveyed in these formats and may negatively impact clinical practice and decision-making. One recommendation suggested that FDA should serve as the initial source of public information regarding new product approvals. Participants also called for increased transparency into the relationships between advertisers and telehealth companies and prescribing behaviors as a result of promotional materials. A final recommendation would be for medical professional societies to serve as a conduit to supplement press releases by providing context around safety and benefit information.

### ***Presentation of Risk Information***

Participants identified gaps in risk presentation in promotional materials to HCPs. It is essential for the HCP to understand the benefit/risk profile of the

product along with the clinical trial inclusion criteria. Beyond digital marketing, HCPs have a responsibility to determine how the benefits and risks of a product may impact a particular patient, especially if the patient's characteristics do not align with the population of patients who were studied in the clinical trial. Participants expressed a desire for more clinical practice guidelines that outline how to have conversations with patients to outline risks of a product.

### ***Clinical Education***

Promotional content has become increasingly present in medical education and continuing medical education (CME) programs. The key challenge is ensuring that HCPs don't confuse the two types of activities, for example, by inadvertently perceiving promotional material as "educational."

Participants talked about the rapid pace at which digital marketing is evolving and how medical education is not able to catch up. For example, virtual CME programs and conferences may include "conference conversations," which act as advertisements and may be required viewing in order to access virtual conference content. Conference conversations are one example of unanticipated venues where there may be promotional discussion about products, but HCP education has not yet caught up.

There is a need for better education of HCPs, during both medical school and their career, to teach them how to effectively review and interpret promotional messages to enable evidence-based decision-making. Other areas where medical education is lacking include the drug approval process and emerging marketing trends and tactics in the digital space.

Participants reported on the interactions between the medical and commercial sides of pharmaceutical companies. Often times, the commercial team may emphasize the types of information the medical team shares with HCPs, particularly if HCPs reach out with questions about the product. The medical team may leverage omnichannel marketing to HCPs to make sure they receive the most optimized information at the most optimized time. Participants listed examples of platforms, such as Epocrates, that have embedded advertisements that are shown to HCPs who access the platform for clinical decision support.



## **Key Opinion Leaders (KOLs) and Digital Opinion Leaders (DOLs)**

KOLs and DOLs will continue to shape the landscape of digital marketing to both consumers and HCPs. Participants described the recent emergence of DOLs, which are HCPs or other opinion leaders whose primary following is in the digital space, while KOLs are opinion leaders offline. DOLs can be HCP-focused or consumer-oriented. A marketer may utilize two different groups of

KOLs to reach both consumers and HCPs. One group may be well known by consumers, while the other group may be well known by HCPs.

Participants also talked about generational differences and how younger HCPs tend to discuss studies and new products they see in short form videos online. Another example is in emergency medicine when HCPs can post a scenario on social media and receive opinions from other HCPs from across the country.

## **Key Themes and Future Directions**

While a wide range of marketing venues and audiences were covered throughout the workshop, there were several cross-cutting themes that emerged during the discussion.

- 1.** The pace at which new marketing venues, technologies, and trends are proliferating in the digital marketing space presents challenges and opportunities for regulators of advertising and promotion.
- 2.** New technologies and access to data enable more targeted advertising. This allows marketers to tailor their messaging and select promotional content venues that align more closely with how and where a user consumes media.
- 3.** Marketing on social media presents new challenges, including presentation of risk information and transparency around disclosures, particularly in short-form content. There is a need for research and guidelines related to sponsored content posted by patient influencers on behalf of marketers, and the impact of that content on prescribing decisions between patients and HCPs.

Participants discussed a number of areas where further exploration would be beneficial. Research into the following topics can help support a better understanding of how audiences perceive promotional content in the context of emerging trends and formats, and how this may have bearing on the balance of information presented:

- Research and best practices related to native advertising, with consideration for social media algorithms and use of consumer data for targeted advertisements.
- Research and guidelines for ethical practices related to advertiser interactions with patient influencers and sponsored content.
- Research related to promotional content shared by patient influencers and the role of disclosures for both consumer- and HCP-directed advertising.
- Research to collect metrics on prescribing decisions and behaviors that result from HCP-directed drug promotion on social media.
- Research to examine the impacts of “science by press release” on HCP decision-making.

## CONCLUSION

The digital marketing landscape is dynamic and constantly evolving and the rapid development of novel technologies and platforms presents challenges to marketers, consumers, healthcare providers, and regulators. Emerging marketing strategies are increasingly tailored to specific consumer groups and rely on algorithms and large datasets to create a consumer experience that is unique to the target audience. Further research is necessary to expand our understanding of both consumer and healthcare providers perceptions, attitudes, and comprehension of prescription drug digital marketing. This environment is challenging for researchers, though. The underlying technologies and algorithms are often proprietary and lack the transparency required for rigorous analysis and study and the user-specific experience of modern social media is increasingly difficult to replicate in research settings. Additionally, marketers and consumers alike could benefit from additional guidance from regulators to help ensure prescription drug promotion is truthful, balanced, accurate, and doesn't mislead consumers or HCPs. Despite the ever-evolving landscape of prescription drug digital marketing, it is incumbent on all of us to continue to work together to expand our knowledge, understanding, and expertise to develop solutions to meet the challenges ahead.

## ACKNOWLEDGEMENTS

We would like to thank the participants who joined our virtual public workshop for sharing their expertise and insights, which are reflected in this report. We additionally thank the project team from the FDA's Center for Drug Evaluation and Research, Office of Medical Policy, Jason Cober and Shannon Sparklin, for all their direction and contributions to the event as well as this report. The Duke-Margolis project team includes Nancy Allen LaPointe, Victoria Gemme, Erin Soule, and Kate Tsiandoulas.

This project was supported by the Food and Drug Administration (FDA) of the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award U01FD006807 totaling \$3,193,089 with 100 percent funded by FDA/HHS. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by FDA/HHS, or the U.S. Government.