The Social Oncology Report

BRIAN REID WITH GREG MATTHEWS & KAYLA RODRIGUEZ
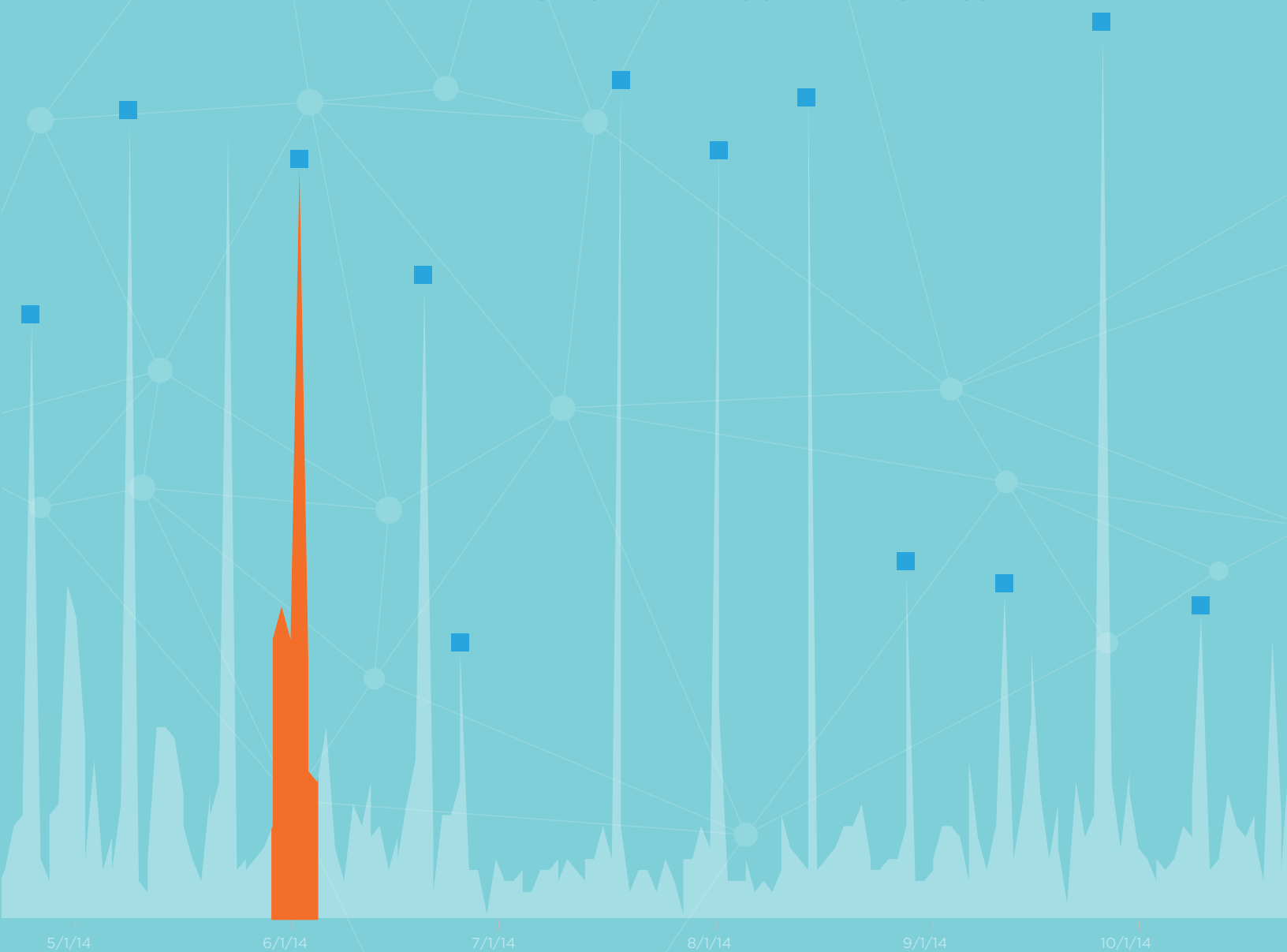
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INTRODUCTION

This is the third edition of our Social Oncology Project report, which seeks to understand the nature of the online conversation about cancer by looking in-depth at both what information is shared via online channels, as well as the kind of individuals who are sharing that data.

In the past, we've examined these issues through a simple lens. Using a large database of digital content, including tweets, news, forum postings and other public digital communications, we looked for the incidence of a broad set of cancer-related keywords. That provided us with an enormous volume of information to sift through. It was Big Data in all of its glory: seeing insights in millions upon millions of tiny data points.

Dealing with that volume of information required a tradeoff. As the volume increased—as we knew more, in aggregate, about what people were saying about cancer—we lost the ability to understand who was talking. This led to interesting but ultimately empty findings: lung cancer tweets may have spiked when television characters were diagnosed with the disease, but that tells us more about television viewers than it does about how to communicate around the biggest cancer killer.

In the thicket of tweets and postings, it was difficult to parse out the expert voices. We didn't know who was talking, and we didn't know who they were talking to.

This year, we took a different approach. We did not seek to pull the largest possible dataset, regardless of author. Instead, we used broad—but carefully curated—communities for whom cancer is an especially pertinent topic, and we examined both those specific communities discussed.

We did this in two ways: for both overall mentions of cancer, as well as specific discussions about prostate, lung, skin, pancreatic and colon cancer, we looked exclusively at how physicians spoke publicly about the disease. We live in a world of low-value health information, and a world in which doctors retain an unparalleled position of trust: doctors are the most-trusted group when it comes to dispensing information online. Analyzing physician communication, then, gives us the opportunity to dissect one of the most meaningful elements of the health dialogue, even if it's not the largest.

In addition to our in-depth examination of physician conversations, we also selected one cancer type—breast cancer—and looked at conversations there from a number of different angles. We examined not only our database of doctors, but new groupings of advocates and advocacy organizations, media, patients, and industry-affiliated accounts. This allowed us to look at not only what was being said, but how those communities interacted with each other.

In short, we now have a much more sophisticated understanding not only of the digital information about cancer, but how that information flows through the system.

The communities we analyzed are all a part of our MDigitalLife database, and include verified, practicing U.S. physicians, advocates, media and patients. More information about how those communities were identified can be found in the appendix to this report.

We found that there were striking similarities between the different communities in some areas. The type of cancer discussed, for instance, followed the same breakdown across the board, with breast cancer driving more discussion than other cancer types. But there were meaningful differences as well; patients flocked to communities built around hashtags, for example, but few media engaged in that way.

PART ONE

Physician Conversations About Cancer

Over the course of 2014, physicians in the United States tweeted about cancer-related topics just over 138,000 times, with 5,500 different doctors engaging in the conversation at least once.

That 138,000 figure is larger than the 82,000 we were able to analyze in 2013, and it covers more than 20 percent more physicians than we were able to analyze in the year prior. The tweets defy easy characterization: no one group of specialists drove more than 15 percent of the conversation, meaning that there was no dominant voice. Hematologists generated about 14 percent of tweets. Surgeons came in at 11 percent, a tick ahead of the 10 percent contributed by medical oncologists. But those specialists hardly swamped the effect of other areas. Urology, internal medicine, family medicine, and radiation oncology each accounted for more than 5 percent of the total tweets.

However, like most internet communities, the rate of contribution was hardly spread evenly among individual physicians. The top 1 percent of the group of 5,500, by volume, contributed 40 percent of the tweets. The top 10 percent generated 77 percent of tweets. These "superusers," then, had a significant impact on the overall breakdown of tweets.

The "superusers" are generally well-followed by other doctors and well-respected by their peers: this year, of the top 5 tweeters, four were selected by the American Society of Clinical Oncology as "Featured Voices" for the 2015 Annual Meeting.

But that doesn't automatically translate into broad knowledge among the public at large: the most retweeted physicians on the topic of cancer tended to be those with a well-established profile in popular culture. Jen Arnold, the doctor who is the star of the TLC show "Little People" battled cancer in 2014; her cancer-related tweets were retweeted more than 100 times, on average. (Another 500+ "favorited" each post.) Physician-scribe Atul Gawande generated an average of nearly 70 reweets every time he talked about cancer. And Mehmet Oz, the head of the Dr. Oz empire, touched on cancer in 28 tweets, drawing 1,700 total RTs: about 63 RTs per cancer-related tweet.
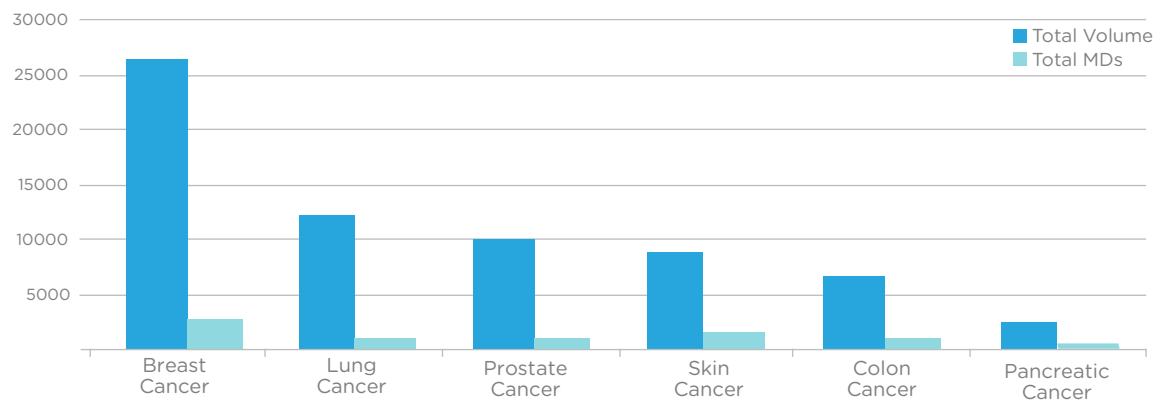
ALL CANCER MENTIONS BY DAY
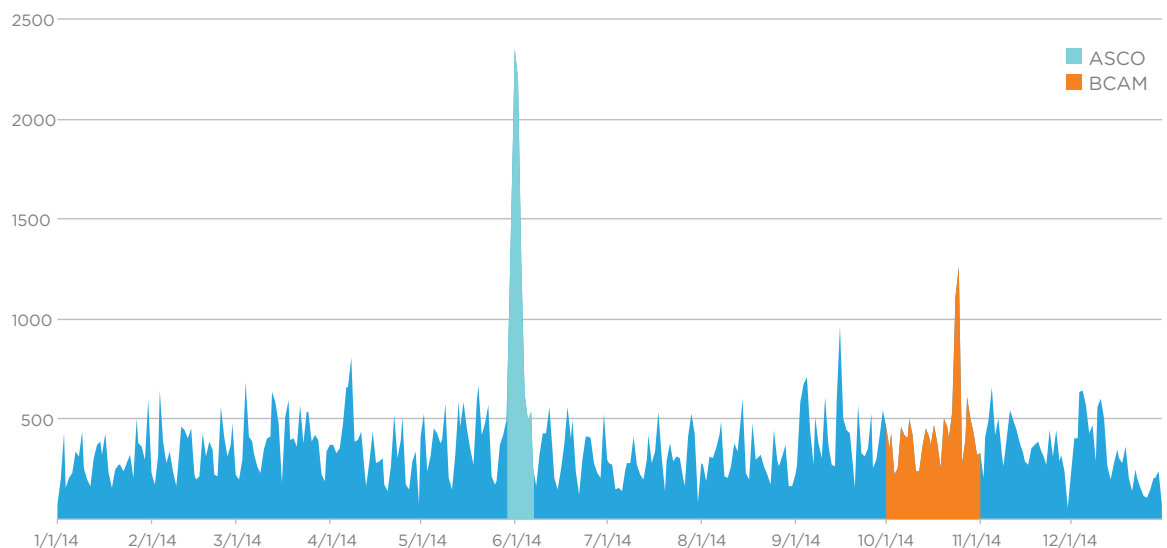
PART ONE

A grand total of 138,000 tweets works out to just over 378 postings a day, every day, over the course of the year, but, unsurprising, there is a tremendous amount of variation. Doctors tweeted about cancer nearly 9000 times over the five days of the ASCO conference last year, averaging about 1,800 tweets a day, and peaking at 2353 on June 1.

The only non-ASCO day to break the top 5 was Oct. 25, 2014, which sat at the intersections of two mammoth trends: a medical conference (the Palliative Care in Oncology Meeting) and Breast Cancer Awareness Month.

Awareness months generally—and Breast Cancer Awareness Month specifically—drive huge amounts of online conversation, as shown by the Social Media Project reports in 2013 and 2014, and that's a trend that's evident in the conversations among physicians: with the exception of the months of the ASCO Annual Meeting (May and June), October had the next highest volume of tweets.

As was the case in our analysis of cancer conversations among physicians in 2013, breast cancer was the specific cancer most often mentioned in physician tweets, generating 26,460 tweets from 2,665 doctors. Lung cancer ranked second, though less than half of the volume of breast cancer: 12,271 tweets from 1,124 physicians. Prostate cancer came next of the six cancers we analyzed, followed by skin cancer, colon cancer, and pancreatic cancer.

VOLUME OF CANCER MENTIONS BY TYPE

VOLUME OF ALL CANCER MENTIONS

>378
postings
a day
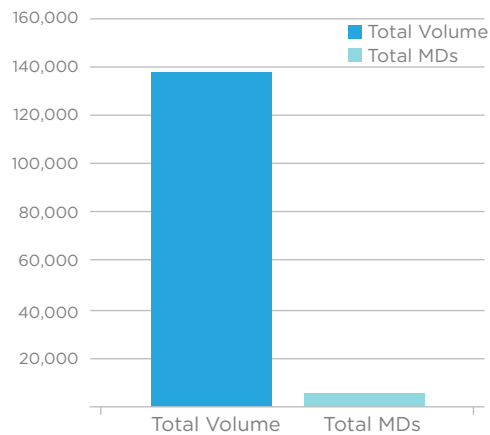
“ We know there are huge knowledge gaps, and we feel it's our duty try to close that. The satisfaction comes from seeing patients have their questions answered, become empowered, and then get to witness them mentoring and educating others. And the satisfaction from engagement with other physicians is seeing docs transition from being social media skeptics to the "ah-ha!" moment when they recognize the value.”

DR. DEANNA ATTAI
A "SUPER-USER" WHO GENERATED
MORE THAN 3,700 CANCER RELATED POSTS IN 2014

PART ONE

# Physician Conversations About Lung Cancer

Lung cancer remains a fiendishly difficult cancer to address. Despite recent success in driving down deaths attributed to the cancer, especially in men, it remains the leading cancer killer by a wide margin. And it's not simply that lung cancer is so widespread. It is also particularly deadly, with a five-year survival rate of about 18 percent, a figure that has risen only modestly from the 12 percent five-year survival rate of the 1970s.

Despite those figures, funding for lung cancer treatment has consistently lagged other cancer types, which has given rise to a visible online lung cancer advocacy community that is increasingly working with physicians to carry important messages about the importance of focusing on the disease.

Even though our analysis of lung cancer looked only at physicians, the impact and influence of that advocacy community is evident in the 12,200 tweets from U.S.-based doctors about lung cancer; indeed a majority of all tweets are focused in ways that directly connect with the lung cancer advocacy community.

The most popular hashtag used in lung cancer tweets is #LCSM, a bi-weekly tweetchat about lung cancer issues that was founded by patient advocate Deana Hendrickson (@LungCancerFaces) in 2013, along with Janet Freeman-Daily (@JFreemanDaily), Laronica Conway (@louisianagirl91) and physicians Jack West (@DrJackWest) and David Tom Cooke (@UCD_ChestHealth).

MOST-MENTIONED BY PHYSICIANS DISCUSSING LUNG CANCER
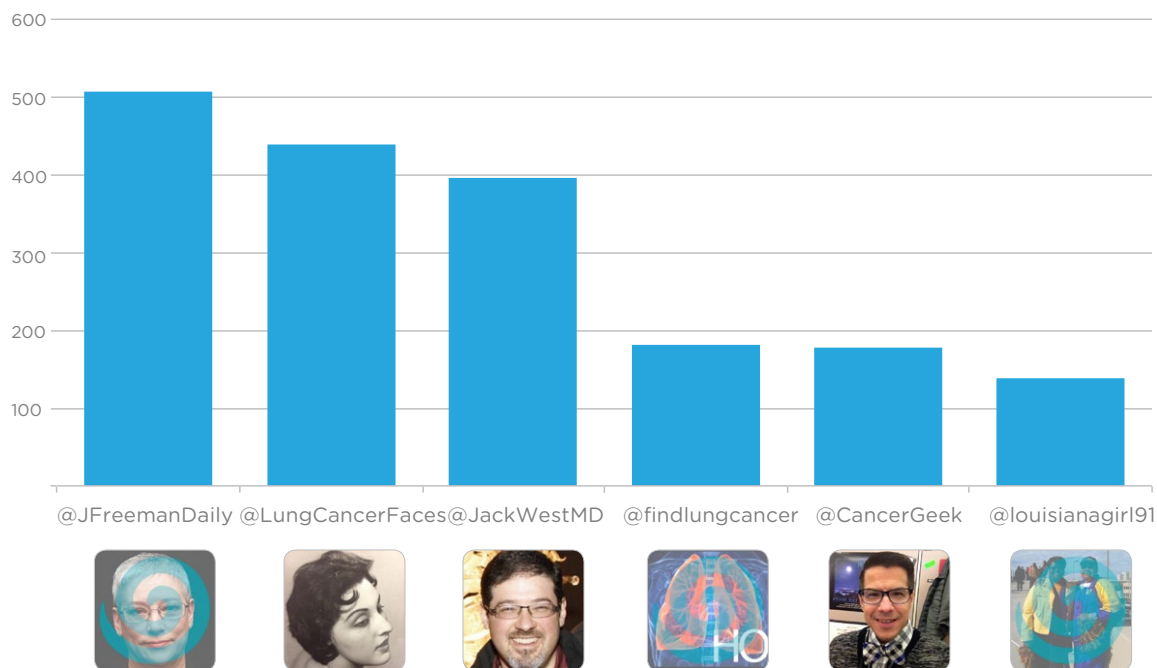
PART ONE

The impact of that tweetchat is evident when the volume of lung cancer tweets are viewed: every two weeks, there is an enormous spike corresponding with those chats. That doesn't mean that annual variations don't show up. November (Lung Cancer Awareness Month) is the highest-volume month, followed by the "ASCO effect" in May and June; the #ASCO14 and #LCAM14 hashtags each generated more than 400 appearances in physician tweets about cancer.

Still, those hashtags generated an order of magnitude fewer uses than the #LCSM tag, and the monthly swings were nothing compared with the twice-monthly volume spikes of the #LCSM activity.

LUNG CANCER MENTIONS BY DAY
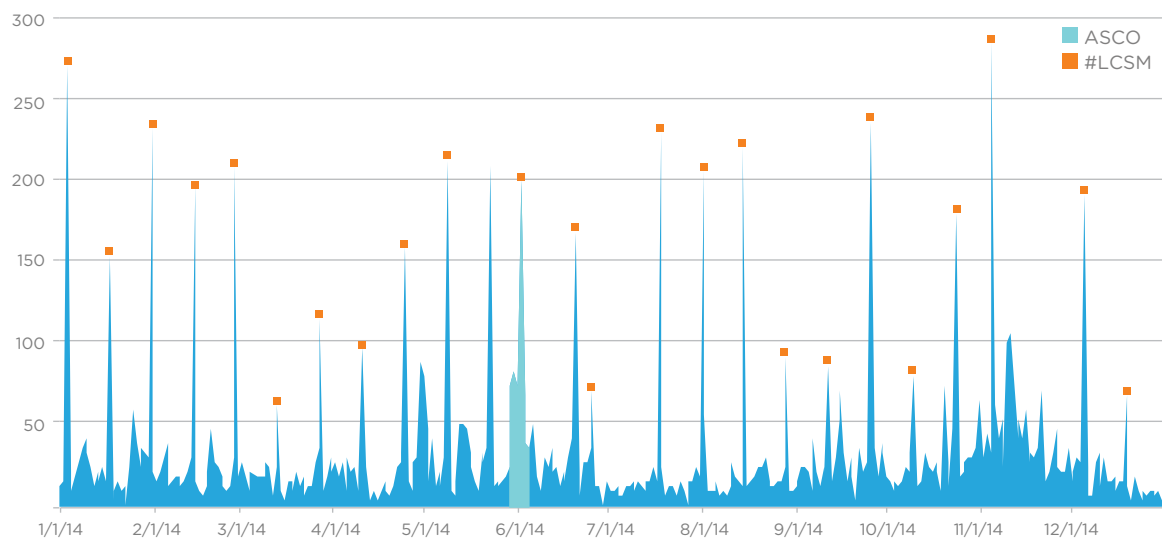
Partnership between patient-advocates and physicians, via social channels, is not unique, but it appears to be especially deep: nearly 7,400 of the 12,200 lung cancer tweets included the #LCSM hashtag. What's more, the most-mentioned names in physician tweets all tracked strongly to that #LCSM group: Freeman-Daily had the most-mentioned handle, Hendrickson came in at #2, followed by West at #3. Conway was #6.

H. Jack West, MD
@JackWestMD
+ Follow

Heading off to #ASCO15 today. Stay tuned for live updates, particularly from the lung cancer track. #LCSM

Janet Freeman-Daily
@JFreemanDaily

Amplify msg about importance of #lungcancer genomic profiling! Join #ASCO15 @DontGuessTest Thunderclap thndr.it/1G9dKyG #LCSM

PART ONE

Physician Conversations About Colon Cancer

Among real-life television doctors, Richard Besser has a unique perspective. Unlike Mehmet Oz or Sanjay Gupta, Dr. Besser's rise to fame came as a public health official—acting head of the Centers for Disease Control and Prevention—rather than from the clinic.

This combination of public health communication know-how combined with a huge built-in audience via his employer, ABC News, has built Besser's visibility and reputation, and he has taken that name recognition to the Internet, where he hosts a widely read tweetchat each week known by its hashtag: #abcDrBchat.

In March of 2014—Colon Cancer Awareness Month—Besser named colon cancer as the topic for one of his weekly chats. Colon cancer is typically a lower-volume topic among doctors, trailing breast, lung and skin cancers for overall mentions. On average, about 18 tweets a day about colon cancer are generated by physicians.

But on March 4, when Besser's chat took place, 304 posts about colon cancer from 51 different doctors hit Twitter, most of them referencing some of the 12 questions posted during Besser's chat. The ABC chats from Besser are aimed at the consumer, not the professional, and the doctors who chimed in clearly saw the chat as an educational opportunity. Physicians jumped in with signs and symptoms that should prompt patients to seek medical attention. Others linked to additional resources.

While the Besser chat revealed the demand for forums in which physicians could share news about the condition with an online audience, there were few other flashpoints for sharing of information. News sometimes helped drive conversations; as with other cancer types, the ASCO Annual Meeting prompted a small flurry of tweets, peaking on June 1 when Harald zur Hausen, during the Science of Oncology Award and Lecture, suggested a link between colorectal cancer and red meat.

Other spikes also followed news; there was increased attention in late March for the National Colorectal Cancer Roundtable's initiative to push for screening in 80 percent by 2018.

That focus on news carried down to the most-cited Twitter handled by physicians discussing colon cancer. @ASCO was the most mentioned Twitter handle, followed by @YouTube, with the ASCO Post's Twitter account coming in at #4, tied with the American Cancer Society's handle. No individual physician made the list of the top 10 most-mentioned handles, a sign of the diffuse nature of the conversation around colon cancer.

COLON CANCER MENTIONS BY DAY

MARCH 4
Dr. Besser's Chat
Generates 304 Posts
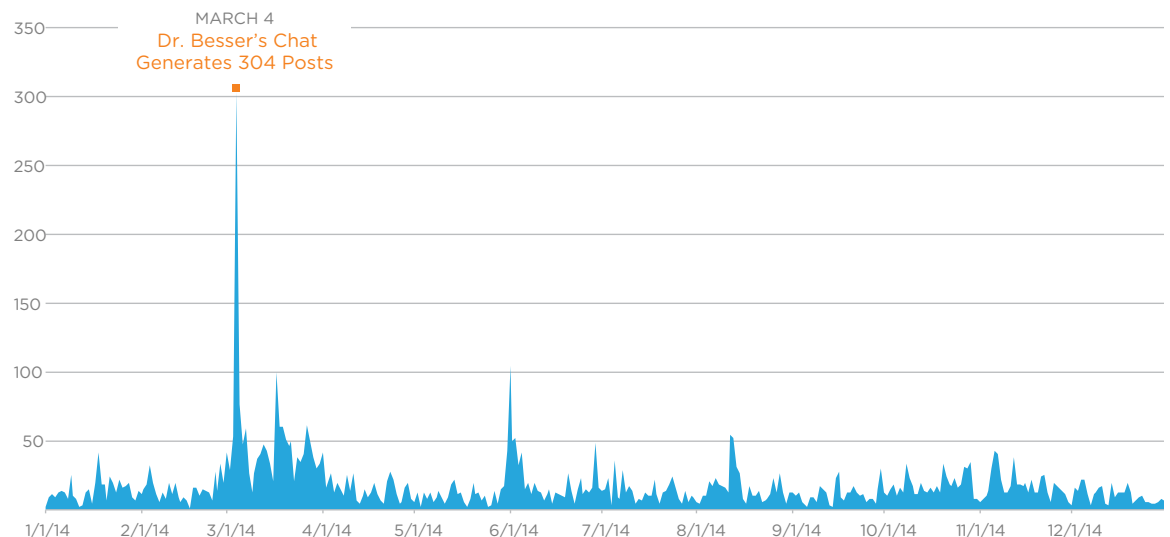
PART ONE

## Physician Conversations About Pancreatic Cancer

If there is a theme to the Social Oncology Project 2015, it is that hashtags in medicine provide a powerful hub around which physician conversations can take place. This ought not be a surprise: Twitter is generally a service driven by immediacy. It is a place for snap commentary on everything from the Super Bowl to election results.

That's led to various estimates of the "half-life" of a tweet: the amount of time it takes a given piece of information on Twitter to reach half of its total audience. At the low end, a tweet's life is half over within minutes. More charitable estimates give a tweet 2 hours of meaningful life. Blink, and you'll miss it.

That poses an issue for the discussion of medicine on Twitter: without a strong hook, there is an increased probability that any given piece of information will go virtually unseen. That has explained the rise of the tweetchat, which was pioneered in breast cancer (the #BCSM community) and successfully adopted to drive conversation in a number of other cancers, including lung cancer (#LCSM) and multiple myeloma (#MMSM).

That makes the emergence of a new hashtag and tweetchat particularly intriguing, and this year, the pancreatic cancer community launched its monthly Twitter discussion, helping boost conversation around a cancer that, while it has a large burden—it's the fourth-leading cause of cancer, with a low five-year survival rate—lags behind other cancer types in online discussions.

PANCREATIC CANCER MENTIONS BY DAY
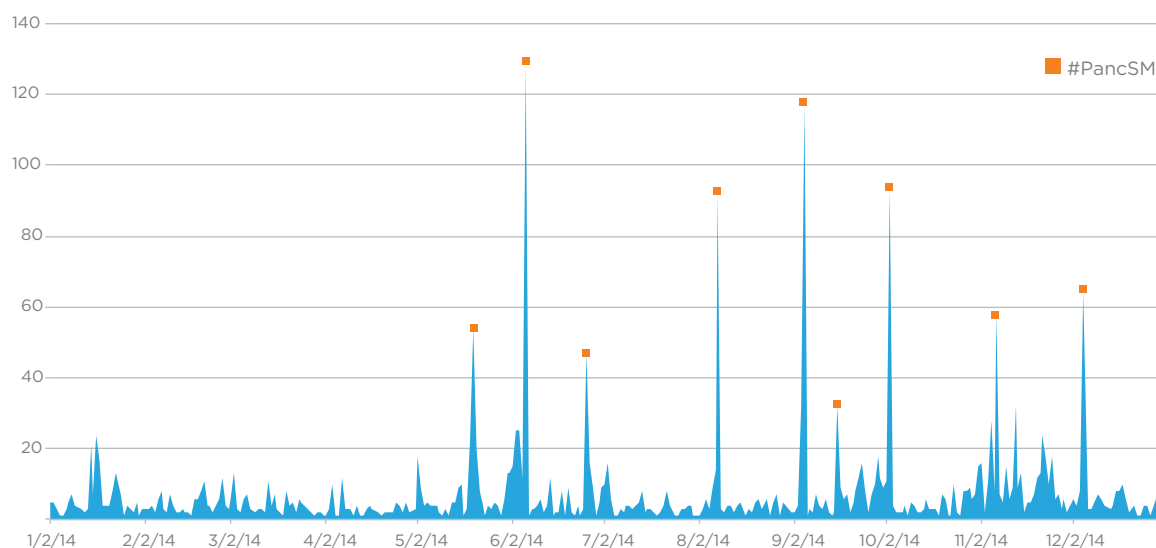
In 2013, the MDigitalLife analysis found just over 1,000 physician mentions of pancreatic cancer. In 2014, that number more than doubled, to 2,500. That is still modest by the standards of other cancers; the previously mentioned #MMSM hashtag, begun a year earlier, produced 3,700 mentions by doctors, but it represents a critical start for a cancer that has otherwise lacked a strong nucleus to build around.

A look at mentions of the disease over the course of 2014 shows the impact of the tweetchat: every spike in conversation was related to the #PancSM chat. That is not to say that there was not other news that occasionally caught attention and drove attention of doctors to above-average levels. There was an announcement, in late June, that aspirin appears to cut pancreatic cancer risk, a finding that was featured in the New York Times.

And while that breakthrough created excitement, it did not spawn the kind of back-and-forth conversation that drives social media volume.

Physician Conversations Around Prostate Cancer

Twitter is generally considered a social network: the original aim was to allow individuals to communicate with other individuals in 140-character snippets. But the service has evolved over time into a one-of-a-kind hybrid, combining both the elements of a one-to-many social network with features of a news feed.

Indeed, for many cancer types, the Twitter handles that doctors refer to most don't belong to individuals at all, but to advocacy organizations or media outlets. Prostate cancer, then, is unusual in that the most-mentioned Twitter handles in physician tweets about the disease are all other physicians.

Looking at who gets mentioned in physician tweets offers a different look into communities. Among cancer types, prostate cancer generates more online discussions than all but breast and lung cancer—10,158 mentions in all—yet the doctors most responsible for that volume aren't necessarily the ones being referenced by their peers.

Roscoe Nelson (@PeeDoc) showed up in tweets from his peers more often than any other single Twitter handle, 172 times, yet he tweeted about prostate cancer only 223 times. Compare that to the far more prolific John Clay McHugh (@prostatediaries) who tweeted on the subject 1,400 times but garnered 15 mentions by other physicians.

That's not to say one pattern of use is intrinsically better; different doctors may be talking to different audiences. But an analysis of how the doctors tweeting about prostate cancer fit together shows there is a tight network of physicians that is engaged in dialogue with each other.

Unsurprisingly, that network is comprised mostly of urologists: four of the five most-mentioned handles are urologists. (The other most-mentioned handle: that of the American Urological Association.) And the AUA played a role in creating hubs around which professionals could engage. As with many other cancers, the single highest-volume day for discussions around prostate cancer was Sept. 30, when AUA hosted a tweetchat to correspond to the last day of Prostate Cancer Awareness Month.
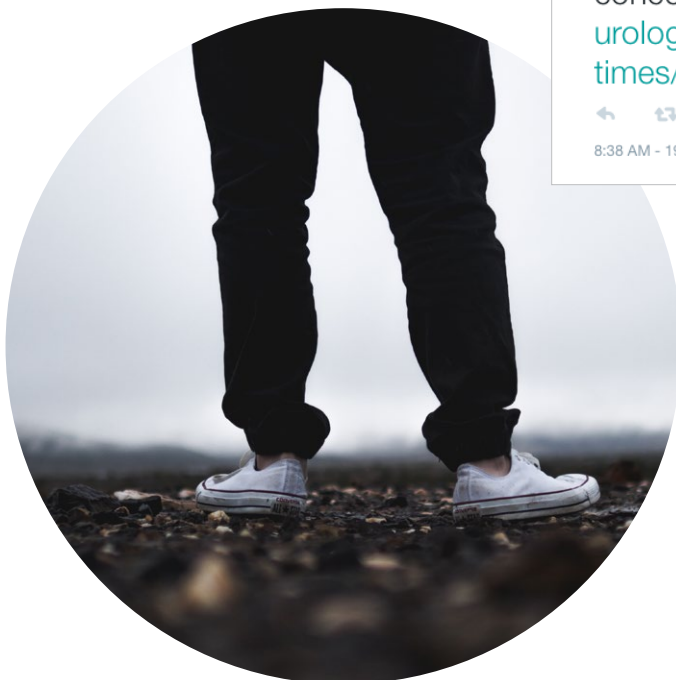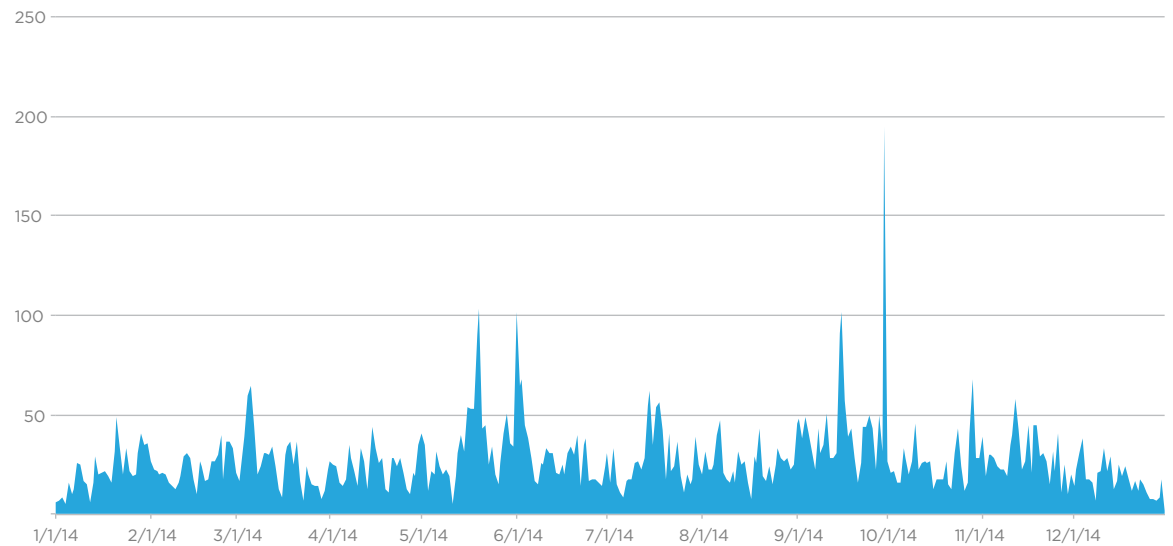
MOST-MENTIONED PHYSICIANS IN PROSTATE-CANCER TWEETS
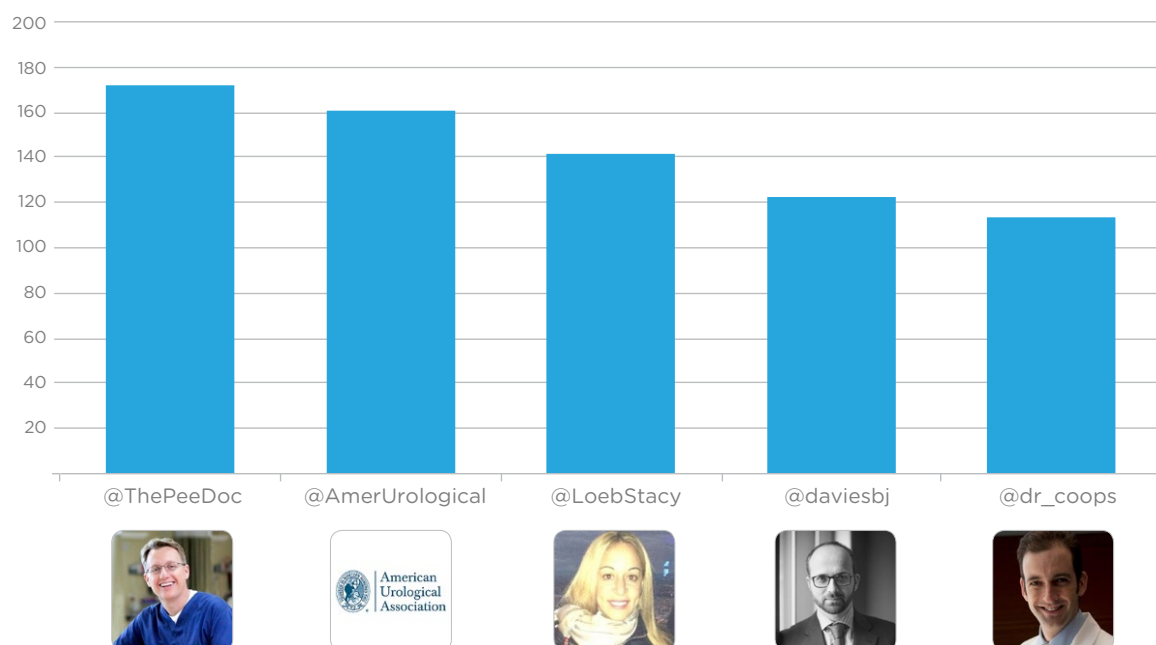
PART ONE

Urology's impact can also be seen in the hashtags used around prostate cancer; #AUA14, the tag for the urology meeting, generated more use (208 mentions) than #ASCO14 (155 mentions), the only cancer type where the most-cited medical meeting was not ASCO.

PROSTATE CANCER MENTIONS BY DAY

Dr. Roscoe Nelson
@ThePeeDoc

Follow

Long-term #testosterone study refutes concerns about #prostatecancer safety urologytimes.modernmedicine.com/urology-times/…

8:38 AM - 19 May 2015

Physician Conversations Around Skin Cancer

The war against skin cancer was waged in two meaningful ways during 2014: prevention efforts continued apace, but new research on immunotherapy also burst into the public consciousness, culminating with Food and Drug Administration approval of Keytruda, the first in a new class of drugs for melanoma. (W2O Group works with Merck, Keytruda's manufacturer.)

Those dual elements drive the physician conversation around skin cancer, making skin cancer the most news-driven cancer analyzed. Looking at the conversation around the 8,800 skin cancer tweets, the research milestones show up clearly: a sustained spike over the course of the 2014 ASCO Annual Meeting corresponded with data being presented on a number of new therapies for melanoma, and a second spike is visible on Sept. 4, when Keytruda was approved.

But research was not the only kind of information that moved doctors to tweet about skin cancer. In July, Surgeon General Boris Lushniak issued a report calling for individual and society-wide changes to prevent skin cancer, from reducing the use of indoor tanning beds to changes in the social norms around tan skin. That sparked an outpouring of links and commentary.

Still, like nearly all cancers reviewed as part of the Social Oncology Project, it is difficult to overstate the way that coordinated online advocacy impacts physicians. The single largest day for skin cancer tweets was not research-driven or the result of the surgeon general. Instead, #melanomamonday in early May caught the eye of physicians, who generated nearly 200 tweets, nearly an order of magnitude more than the average volume of 28 daily tweets.

SKIN CANCER MENTIONS BY DAY
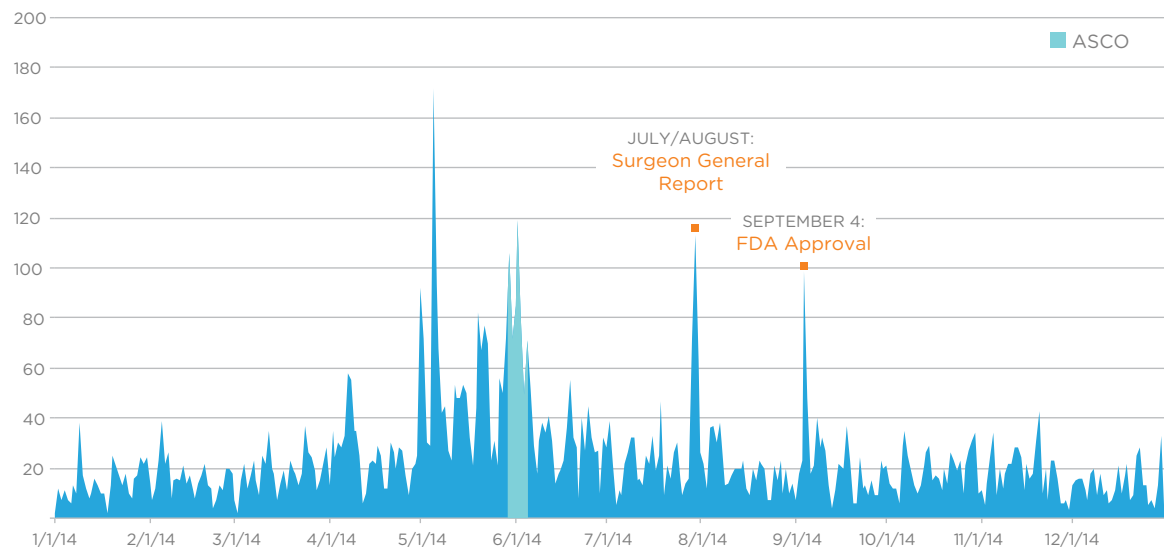

Given the emphasis on prevention—which touches a broad demographic range—doctors promoted a number of different hashtag campaigns aimed at changes in consumer behavior. The awareness-building #melanomamonday was included in 139 tweets from doctors. #spotskincancer also generated more than 100 physician tweets. But #getnaked, #burningtruth and #skincancertakeahike all also trended among docs.

PART ONE

The mix of specialties talking about skin cancer represented one of the widest ranges of any cancer we assessed. Dermatologists led the way, with 250 in that specialty issuing at least one skin cancer-related post, though more than 100 each of surgeons, family practice doctors, plastic surgeons and internists also participated in the dialogue.

SPECIALISTS TWEETING ABOUT SKIN CANCER

Did you know: Each year in the US, nearly 5 million people are treated for skin cancer? #skincancerawareness
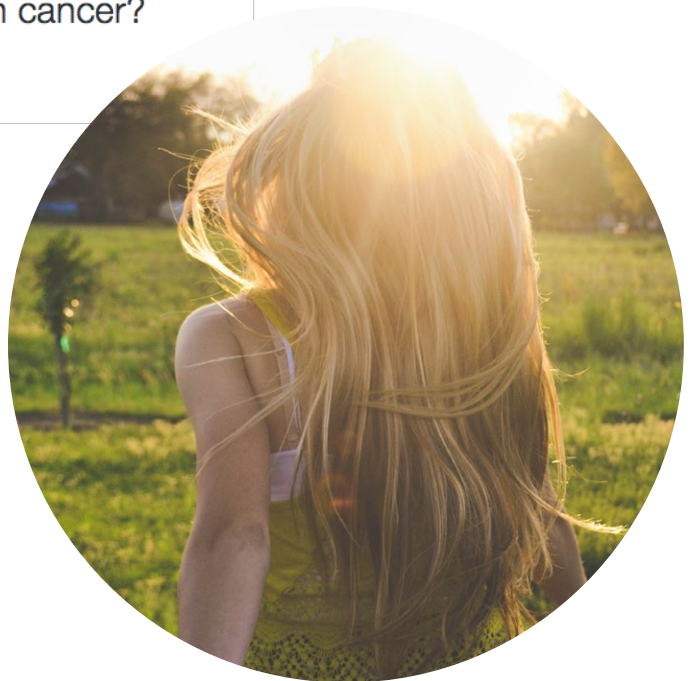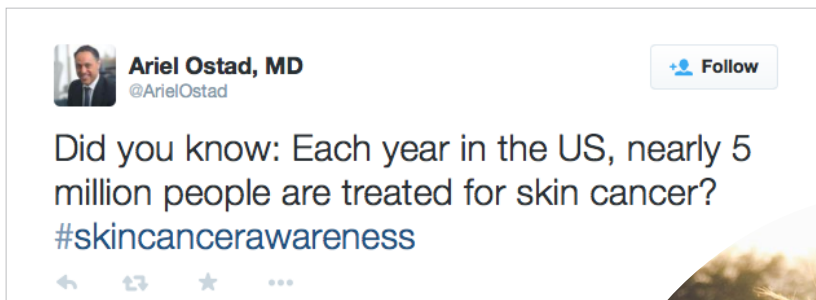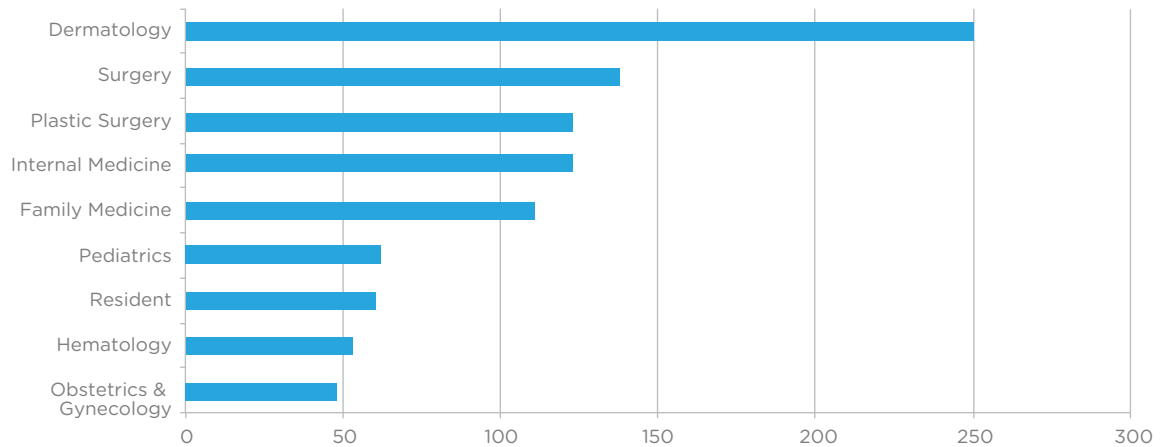
PART TWO

The Breast Cancer Ecosystem

One of the truisms of social media and oncology, demonstrated convincingly in past versions of this report, is that breast cancer stands alone when it comes to conversation volume. This year, we saw no evidence to contradict that belief.

Our core level of analysis for breast cancer, like the other cancers analyzed, was the physician. Through that lens, breast cancer had more than double the conversation of the next-most-discussed cancer, lung cancer, with 26,500 tweets issued by U.S.-based physicians.

Physician conversations offer important insight from professionals who are at the center of the health care system, but they cannot tell the entire story of cancer conversations. In part, that is a reflection of the small (but growing) number of physicians online, whose voice can be drowned out by the huge amount of noise in digital communities. And data on physicians alone can only hint at the increasingly interconnected relationships between the medical community and other key stakeholders in the battle against cancer.

In the case of lung cancer, discussed in Part I, it is clear that physician tweets represent one side of a broader conversation: patients and advocates are frequently cited. In that disease state, doctors do not represent a closed loop. They respond to the communities.

To further investigate those intersectionalities, the MDigitalLife team at W2O Group began building robust communities of other health care stakeholders, looking at patients and advocates, media and industry. Unlike practicing physicians in the United States, who all have a National Provider Identification and can therefore be verified and quantified, other communities have edges that are more blurry. Nonetheless, significant work has been done to ensure that the communities are robust, if not comprehensive.

The goal in looking at these five groups is two-fold. First, as with doctors, we are interested in the internal dynamics of each group: what issues drive conversation? Who leads the dialogue? What are the go-to resources? Second, we wish to assess the ways in which the groups might overlap with each other and ways in which they differ.
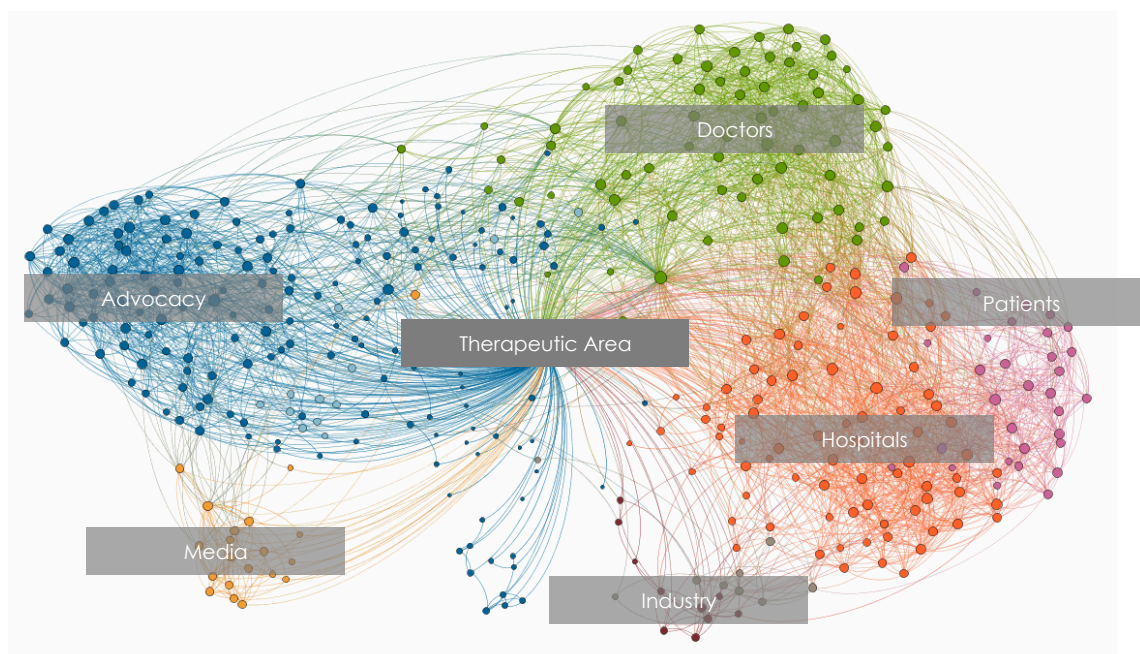
PART TWO

To understand, in depth, the only patterns created by different communities, we looked at the various communities that engage around breast cancer. We restricted this time-intensive analysis to a single cancer type.

We selected breast cancer not because it is an outlier in terms of impact on public health; lung and colorectal cancer kill more Americans, and lung and prostate cancer have incidence rates roughly equivalent to that of breast cancer.

But what sets breast cancer apart is the volume of online dialogue. The Social Oncology Project 2013 and Social Oncology Project 2014 both found that overall levels of dialogue around breast cancer were more than lung, prostate, colon, lymphoma and pancreatic cancer combined.

And our research for the American Society of Clinical Oncology Annual Meeting found a similar pattern among physicians: breast cancer was mentioned at more than double the rate of the next-month-mentioned cancer.

That volume of conversation reflects a number of different factors, not the least of which is a strong network of patients and advocacy groups that have a large impact on online conversations. This network includes both traditional groups as well as a new generation of advocates whose primary means of spreading information and support is through online channels.

It is our hope to extend these analyses, in the future, to other cancer types.
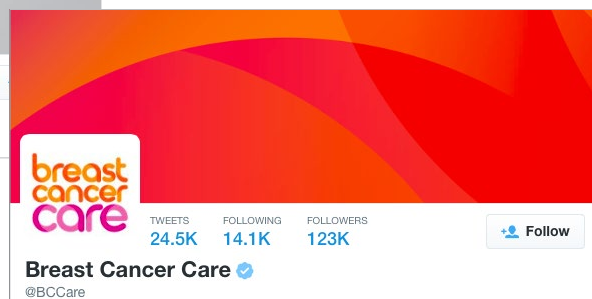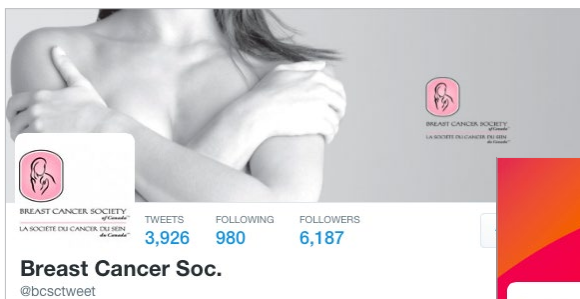
Physician Conversations Around Breast Cancer

With nearly 27,000 tweets to analyze, pigeonholing the breast cancer conversation among physicians can be dangerous.

Viewed from one perspective, the physician community focused on breast cancer uses Twitter much like the lung cancer community. There is heavy use around hashtags, especially the weekly #BCSM tweetchat that show up as 52 spikes on the graph of yearly volume and which is, alone, responsible for 8,300 tweets from doctors.

That the #BCSM tweetchat has such buy-in from doctors is due in no small part of the role played by Deanna Attai, a surgeon who helped found the chat. Attai was the most-active tweeter on breast cancer topics, generating 3,300 tweets. But with that volume also came frequent interaction with physician peers on Twitter; she was the most-mentioned individual in the sample of physician tweets about breast cancer. Incidentally, Attai also had the second-most mentioned Twitter handle (by a narrow margin) among patients, a topic that will be discussed anon.

But from another perspective, breast cancer-related traffic from doctors on Twitter looks like the skin cancer and prostate cancer communities, where news and conferences tend to prompt conversations. In breast cancer, medical meetings drive huge volumes: more than a thousand physician tweets about breast cancer were tagged #ASCO14. Another thousand were generated from the ASCO Breast Cancer Symposium in September and the San Antonio Breast Cancer Symposium in December, both meetings dominated by peer-to-peer conversations.

And neither a focus on weekly advocacy nor an analysis of peer-to-peer communication at medical meetings accounts for the spike in activity during Breast Cancer Awareness Month, where tweeting jumps more than 50 percent, to 3,800 in October from a monthly average of 2,200.

PHYSICIAN BREAST CANCER MENTIONS BY DAY
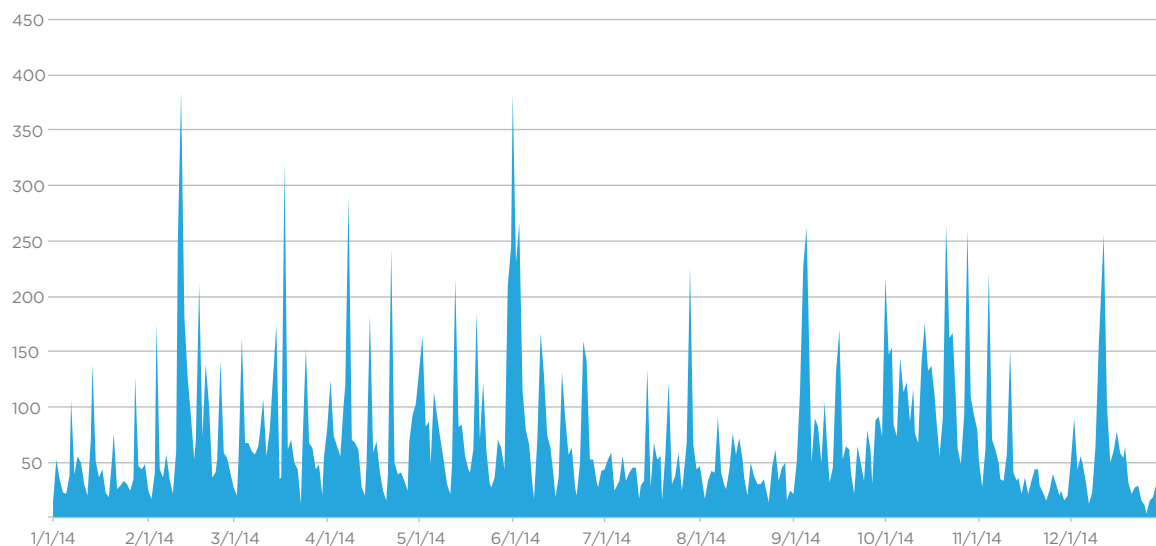
Taken as a whole, physician tweets about breast cancer demonstrate the limits of assuming that conversations by doctors are equivalent to conversations among doctors. While some analyses have opted to focus solely on the physician-to-physician dialogue on Twitter, failing to note the varied purpose of online conversation is to miss critical nuances in how doctors use online tools and how those individuals connect with others in the health care system.

PART TWO

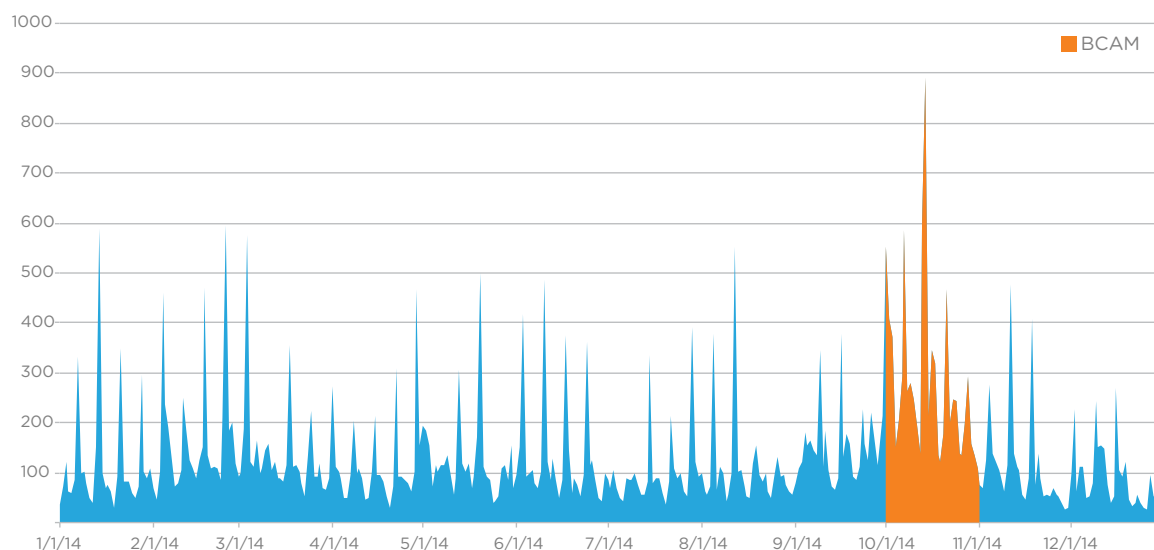## Patient Conversations Around Breast Cancer

The breast patient community on Twitter is often simplified to the group that has formed around the #BCSM tweetchat: more than one in every three patient conversations included the hashtag, and the three founders of the group, Dr. Attai, Alicia Staley and Jody Schoger, were the three most-cited Twitter handles.

And it would be wrong not to cite the impact of that group in fomenting discussions—both during the Monday night chats and throughout the week—but to view that discussion monolithically misses what is increasingly the legacy of #BCSM: the varied topics that form the foundation of the group's conversations.

The expanding nature of the breast cancer conversation can be seen most clearly in discussions around metastatic breast cancer, a topic that had, until recently remained outside of the mainstream discussions. Traditional advocacy groups have tended to focus on prevention and survivorship, but over the past decade, a growing number of patients and advocates have used social media to bring attention to late-stage and metastatic disease.

The surest proof of the success of that approach can be seen in the Twitter data: the biggest day, by tweet volume, for patient discussion of breast cancer was Oct.14, when #BCSM discussed metastatic disease. The second highest-volume day was Oct. 13, Metastatic Breast Cancer Awareness Day. That success has come not because of broad support online for discussions of metastatic disease—only 28 media tweets mentioned metastatic disease—but despite the lack of broader visibility. There is evidence to suggest that this online advocacy is beginning to break through; it will be illuminating to examine both online and offline discussions of metastatic breast cancer in 2015 to measure how well those messages are penetrating.

PATIENT BREAST CANCER MENTIONS BY DAY

As we saw in physician conversations, the crossover between patients and physicians can be measured, in part, by the Twitter handles mentioned by the different groups. Doctors who tweeted about breast cancer often mentioned patients and advocates, and, in turn, the analysis of patient tweets found a number of doctors who are frequently cited. Dr. Attai was the second-most cited handle, and more than half-a-dozen physicians racked up more than 100 mentions.

PART TWO

MOST-MENTIONED PHYSICIANS IN BREAST CANCER BY PATIENTS
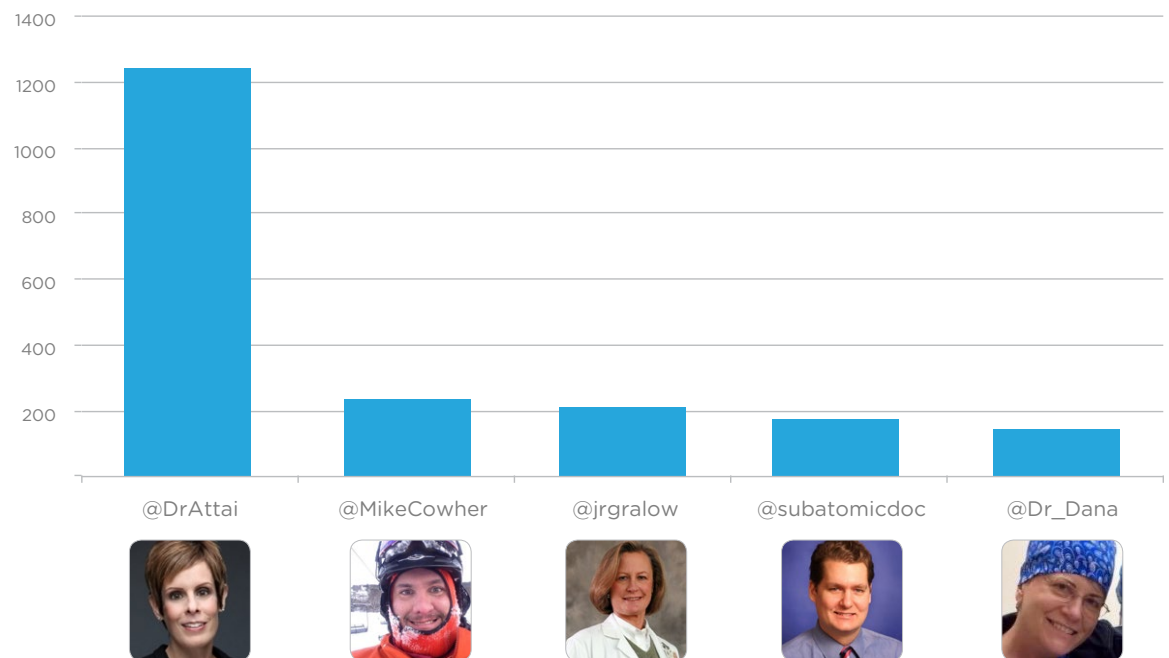
Advocacy Conversations Around Breast Cancer

In addition to our patient analysis, we also performed an analysis of advocacy groups, which also have a large and growing footprint on Twitter. But what we found was that use is varied and rarely conforms to the norms observed by individuals, be they doctors, patients or individual reporters.

For starters, though we tracked fewer than 1,000 organizations, we recorded some 71,300 tweets. Twelve handles tracked as part of this group generated more than 1,000 tweets over the course of 2014. And yet that created a relatively small amount of engagement: only one of the 10 most frequently tweeting organizations also made the top 10 most-mentioned list (the UK's Breast Cancer Campaign).

There was also a promotional thread that ran through some of the tweets, with some organization handles racking up hundreds of mentions through nearly identical tweets from advocates asking others for support.

Still, this tangle of information led to some insights. Media outlets were seldom referenced: advocacy organizations pointed their readers to YouTube more often than any single media outlet. And practicing physicians, by and large, made few appearances in advocacy group tweets, with the notable exception of Dr. Attai.
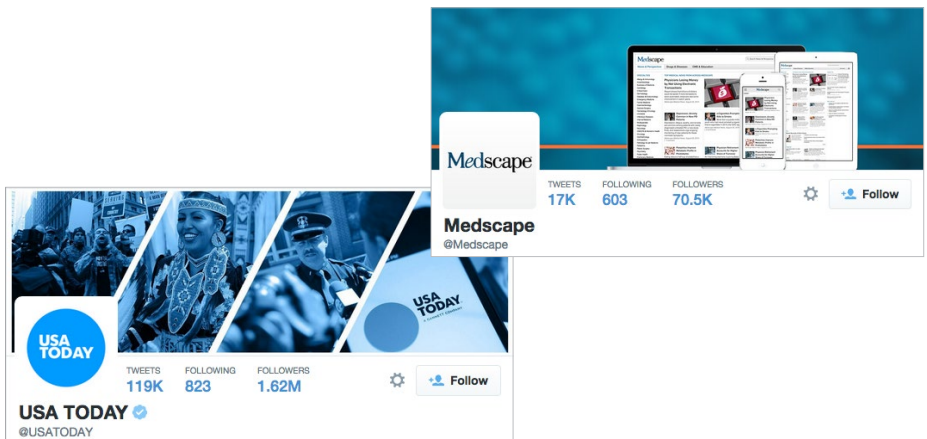
PART TWO

Media Conversations Around Breast Cancer

The news media have often (but not exclusively) used Twitter as a broadcast tool. The service is an effective way to share links and build an audience for content, which makes it an attractive way to for writers to promote their work and expand their audience.

For this report, we identified 8,000 tweets from 1,400 different writers and outlets, ranging from Shape Magazine to Time's Alice Park to Fox's Manny Alverez. Despite that heterogeneity, it is possible to see certain patterns emerging. Take the publication of research, in early February, that cast doubts on the benefits of widespread mammography beginning at age 40. While that was an issue that showed up in tweets from physicians, it hardly caused a spike in conversations. For reporters, on the other hand, who end up penning around 20 cancer-related tweets a day, it caused conversations to skyrocket, with more than 180 tweets on the day the news was released.

Because reporters are largely on Twitter as an information-sharing platform, rather than a community-building one, some of the major trends that emerge when looking at doctor or patient activity do not appear. There was modest participation in #BCSM, and BCSM founds Dr. Attai and Schoger appear in the top 10 most-cited Twitter handles. But beyond that, it's clear that the media's emphasis is often on media. The Twitter account with the most mentions was USA Today's main handle; Good Morning America and the New York Times also appeared in the top 5.

If media are primarily interested in sharing information, perhaps the greatest insight from that community is understanding where the information shared on Twitter is sourced from. By that measure, the New York Times finished at the top of the list of most-shared domains, followed by Medscape and USA Today.

PART TWO
INDUSTRY CONVERSATIONS AROUND BREAST CANCER

Skeptics about the involvement of health companies in social media often ask the question of whether social media users want to engage with corporations online. The Social Oncology Project offers a short answer to that question: "yes."

While patients and consumer have little interest in interacting with companies that don't inform or amuse, those that can add value to a conversation are seldom ignored. Below are five tweets from pharmaceutical companies that managed to get broad engagement on the subject of breast cancer:

Roche ✔
@Roche

Follow

#breastcancer is more common in the left breast than the right. See more facts here: ow.ly/C1KSn #ESMO14
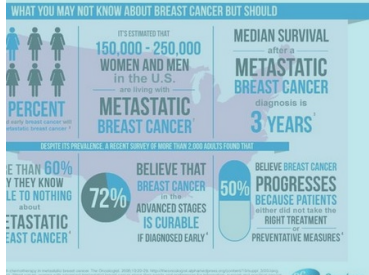
RETWEETS
50

FAVORITES
9

11:30 PM - 27 Sep 2014

Inc.

Follow

Metastatic Breast Cancer
ss Day. Survey shows > 60% know
thing about #MBC #Oct13

WHAT YOU MAY NOT KNOW ABOUT BREAST CANCER BUT SHOULD

IT'S ESTIMATED THAT
150,000 - 250,000
WOMEN AND MEN
in the U.S.
are living with
METASTATIC
BREAST CANCER

MEDIAN SURVIVAL
after a
METASTATIC
BREAST CANCER
diagnosis is
3 YEARS

E THAN 60%
Y THEY KNOW
LE TO NOTHING
about
ETASTATIC
EAST CANCER

72%

BELIEVE THAT
BREAST CANCER
in the
ADVANCED STAGES
IS CURABLE
IF DIAGNOSED EARLY

50%

BELIEVE BREAST CANCER
PROGRESSES
BECAUSE PATIENTS
either did not take the
RIGHT TREATMENT
or
PREVENTATIVE MEASURES

Pfizer Oncology

Genentech ✔
@genentech

Follow

#Breaking: Genentech agrees to acquire Seragon Pharmaceuticals to strengthen breast cancer pipeline bit.ly/1o0MAN8

RETWEETS
25

FAVORITES
8

10:07 PM - 1 Jul 2014

PART TWO

The Breast Cancer Ecosystem: How the Influencers Interact

In order to understand the dynamics of the online health ecosystem, it is important not only to understand the language and dynamics of the individual stakeholder groups but also to understand how they engage and, ultimately, impact one another.

Our understanding of online influence has evolved:

- First, efforts were made to determine who has influence online
- Then, a focus on relevance emerged to determine who has influence about a specific topic
- After that, researchers began looking at narrower interactions: who from a specific group of people (e.g., doctors) has influence relative to a specific topic
- Now, we have refined this endeavor even further by determining who, from a specific group of people (e.g., doctors), has influence on another specific group of people (e.g., the media) relative to a specific topic

In our case, that often translates to understanding how influential doctors are relative to each other, or to patients, or to the media. Understanding those interactions makes a big difference in acting upon the findings.

The breast cancer ecosystem is among the most deeply integrated of all online health communities. The #BCSM tweetchat has been held up for years as a model community, and it was one of the first (if not the first) to add a physician to its moderation team: Dr. Attai. What is both encouraging and interesting, though, is that players from all of our major ecosystem panels have engaged in these online conversations in meaningful ways.

Social network visualizations can be helpful in this regard. Using MDigitalLife software, the players in this conversation have been assessed, including a detailed examination of how they connect to each other through conversation (on Twitter, this constitutes a "mention" of another user's handle). When looking at all of the breast cancer conversations, there were literally hundreds of thousands of accounts mentioned by the participants. When we look at all of the accounts that were most-mentioned by the breast cancer ecosystem, the top 20 accounts break down like this:

20 MOST CENTRAL ACCOUNTS BY STAKEHOLDER GROUP

0%

15%

30%

55%

- Patient
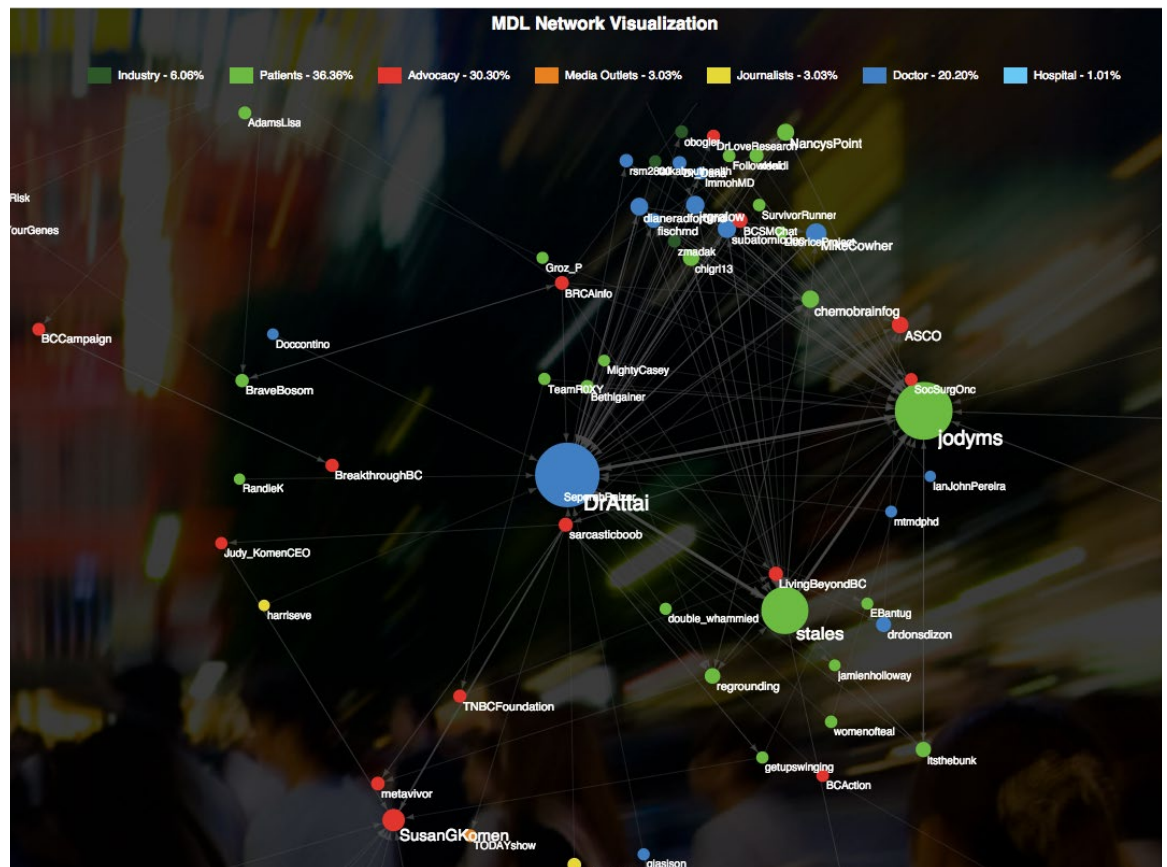- Physician
- Advocacy
- Industry
- Media
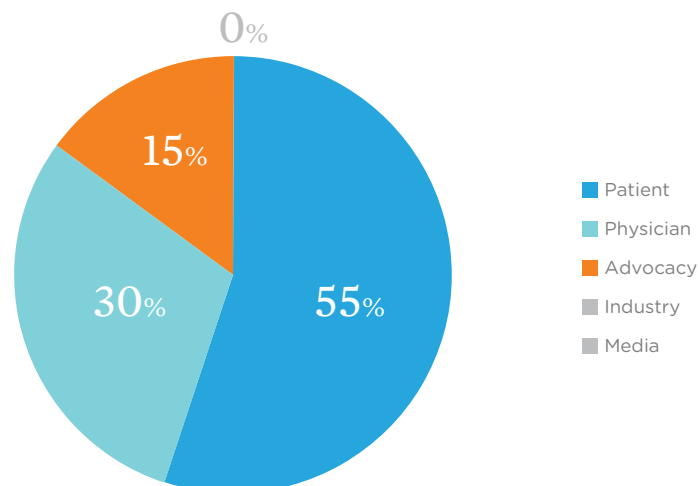
PART TWO

This is useful information, but if we were to show the raw visualization, it would be nearly unreadable. It is showing too many relationships at once. In any case, what's most important is the core of the online breast cancer network. Those who, based on their interactions with each other, are most central.

There are two factors used to easily home in on the most central group:

• First, possible handles are limited only to those that have been mentioned by at least 50 other handles in the ecosystem, indicating that they have relatively broad appeal.

• Handles further limited by showing only those handle relationships that have mentioned each other at least 25 times.

When using those criteria, a clear sense of the handles that are truly central to the network begins to emerge:

https://www.evernote.com/l/AAfdMKNLxYtA1JZWoNiEM3q8tRF5gLq4-4U

It is not surprising that different panels have different tastes in terms of the physicians they engage with. Certainly, there is some overlap; Deanna Attai, Mike Cowher, Julia Gralow and Matthew Katz were in the top 10 most-mentioned by each panel (Media, Patients, Advocacy, Industry and Physicians).

The misalignments are highly intriguing. For example, "media personality" doctors like Laura Esserman and Sanjay Gupta were near the top of the list for the media, advocacy organizations and industry handles, but nowhere near the top for doctors or patients. Notoriously plainspoken Jennifer Gunter ranked high for the media, patients and doctors, but was never mentioned by advocacy organizations or industry handles.

PART TWO

Doctors, patients, advocacy and industry frequently mentioned Diane Redford and Naoto Ueno, but they haven't cracked the top 25 for media yet.

And the biggest lightning rod on the list, Mehmet Oz, was mentioned 19th most by patients and 5th most by advocacy organizations - but he didn't crack the top 50 for doctors, industry or the media. In fact, he was 91st most-mentioned by industry handles.

It's very clear that different physicians resonate with different audiences—which makes it doubly important for anyone assessing influence and impact in the space to consider three factors:

1 The topic under discussion
(relevance is context - and context is everything)

2 The individual's role in the ecosystem
(e.g., doctor vs. patient vs. reporter)

3 The health ecosystem stakeholders that each influencer is best able to reach

ABOUT MDIGITALLIFE

MDigitalLife, a division of the W2O Group, is an end-to-end solution for Understanding, Engaging and Activating the online health ecosystem. Having mapped the digital footprints of over 530,000 stakeholders in the online health ecosystem worldwide (including doctors, patients, advocacy organizations, reporters & media outlets among many others), it allows users to track & leverage digital trends for the healthcare audiences they care about - the evolution of topics, language, behavior & influence.