

Creation of a comprehensive COVID-19 daily news and medical literature briefing to inform healthcare and policy in New Mexico

LynnMarie Jarratt, Jenny Situ, Rachel D King, Estefania Montanez, Hannah Groves, Ryen Ormesher, Melissa Cossé, Alyse Raboff, Avanika Mahajan, Jennifer Thompson, Randy F. Ko, Samantha Paltrow-Krulwich, Allison Price, Ariel May-Ling Hurwitz, Timothy Campbell, Lauren T Epler, Fiona Nguyen, Emma Wolinsky, Morgan Edwards-Fligner, Jolene Lobo, Danielle Rivera, Jens Langsjoen, Lori Sloane, Ingrid Hendrix, Elly O Munde, Clinton O Onyango, Perez K Olewe, Samuel B Anyona, Alexandra V Yingling, Nicolas R Lauve, Praveen Kumar, Shawn Stoicu, Anastasiya Nestsiarovich, Cristian G Bologna, Tudor I Oprea, Kristine Tollestrup, Orrin B Myers, Mari Anixter, Douglas J Perkins, Christophe Gerard Lambert

Submitted to: Journal of Medical Internet Research
on: September 01, 2020

Disclaimer: © The authors. All rights reserved. This is a privileged document currently under peer-review/community review. Authors have provided JMIR Publications with an exclusive license to publish this preprint on its website for review purposes only. While the final peer-reviewed paper may be licensed under a CC BY license on publication, at this stage authors and publisher expressly prohibit redistribution of this draft paper other than for review purposes.

Table of Contents

Original Manuscript	5
Supplementary Files	21
TOC/Feature image for homepages	22
TOC/Feature image for homepage 0.....	23



Creation of a comprehensive COVID-19 daily news and medical literature briefing to inform healthcare and policy in New Mexico

LynnMarie Jarratt^{1*} BS; Jenny Situ^{1*} BSBA; Rachel D King¹; Estefania Montanez¹; Hannah Groves¹; Ryen Ormesher¹; Melissa Cossé¹; Alyse Raboff¹; Avanika Mahajan¹ PhD; Jennifer Thompson¹; Randy F. Ko¹; Samantha Paltrow-Krulwich¹; Allison Price¹; Ariel May-Ling Hurwitz¹; Timothy CampBell¹; Lauren T Epler¹; Fiona Nguyen¹; Emma Wolinsky¹; Morgan Edwards-Fligner¹; Jolene Lobo¹; Danielle Rivera¹; Jens Langsjoen¹ MD; Lori Sloane²; Ingrid Hendrix² MILS; Elly O Munde^{3,4} PhD; Clinton O Onyango³; Perez K Olewe³; Samuel B Anyona^{3,5} PhD; Alexandra V Yingling⁶ MSc; Nicolas R Lauve^{6,7} BSc; Praveen Kumar^{6,7} MS; Shawn Stoicu⁸ BS; Anastasiya Nestsiarovich⁶ MD, PhD; Cristian G Bologa^{1,9} PhD; Tudor I Oprea^{1,9} MD, PhD; Kristine Tollestrup¹⁰ PhD, MPH; Orrin B Myers¹ PhD; Mari Anixter¹¹; Douglas J Perkins^{6,1} PhD; Christophe Gerard Lambert⁶ PhD

¹University of New Mexico School of Medicine Albuquerque US

²University of New Mexico Health Sciences Library and Informatics Center Albuquerque US

³University of New Mexico-Maseno Global Health Programs Laboratories Kisumu KE

⁴Department of Clinical Medicine, School of Health Sciences, Kirinyaga University Kerugoya KE

⁵Department of Medical Biochemistry, School of Medicine Maseno University Maseno KE

⁶Center for Global Health, Division of Translational Informatics, Department of Internal Medicine University of New Mexico Health Sciences Center Albuquerque US

⁷Department of Computer Science, University of New Mexico Albuquerque US

⁸Health and Sciences Center Sponsored Projects Office, University of New Mexico Albuquerque US

⁹Division of Translational Informatics, Department of Internal Medicine University of New Mexico Health Sciences Center Albuquerque US

¹⁰University of New Mexico College of Population Health Albuquerque US

¹¹New Mexico Department of Health, Communications Office Office of the Secretary Santa Fe US

* these authors contributed equally

Corresponding Author:

Christophe Gerard Lambert PhD

Center for Global Health, Division of Translational Informatics, Department of Internal Medicine

University of New Mexico Health Sciences Center

BRF #323A, MSC10-5550

915 Camino de Salud NE

Albuquerque

US

Abstract

Background: On March 11, 2020, the New Mexico (NM) Governor declared a Public Health Emergency in response to the coronavirus disease 2019 (COVID-19) pandemic. The NM Medical Advisory Team (MAT) contacted faculty at the University of New Mexico (UNM) to form a team to assist in consolidating available information on severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and COVID-19 to facilitate NM's pandemic management. In response, faculty, physicians, staff, graduate students, and medical students created the "UNM Global Health COVID-19 Intelligence Briefing."

Objective: Based on the growing number of daily scientific publications and news reports and the potential risk of community misinformation, we formed a team of academics to consolidate and disseminate relevant daily briefings with a goal of informing healthcare and public policy decisions for the state of NM.

Methods: Microsoft Teams™ was used for manual and automated capture of COVID-19 articles (daily average=456), and composition of briefings. Articles were summarized according to relevant content and statistical findings. Multi-level triaging allowed for the most impactful articles to be reviewed and summarized with priority placed on randomized controlled studies, meta-analyses, systematic reviews, practice guidelines, and other topics informing on healthcare and policy response to COVID-19. Team members met virtually to edit the briefing on clarity and grammar, and to prioritize articles based on scientific merit. The finalized briefing was emailed to a LISTSERV® and posted on the UNM Digital Repository. An IRB-approved

survey to assess the impact of the briefing was sent to readers.

Results: The briefings reached approximately 1,000 people by email alone. This number was likely higher with direct subscribers forwarding to colleagues. Tracking showed 5,047 downloads across 116 countries as of July 5, 2020. The survey received 114 respondents consisting of physicians, academic faculty, administrators, government employees, students, and nurses. Respondent feedback showed 95% gained relevant knowledge of the pandemic, 79% believed it decreased misinformation, 24% used the briefing as their primary source of information, and 79% forwarded to colleagues.

Conclusions: Variability in subject matter expertise was addressed with training, standardized article selection criteria, and collaborative editing. The UNM Global Health COVID-19 Intelligence Briefing accomplished the goal of disseminating relevant COVID-19 information to help guide NM government policy and clinical practice. A secondary benefit included advancing medical student education.

(JMIR Preprints 01/09/2020:23845)

DOI: <https://doi.org/10.2196/preprints.23845>

Preprint Settings

1) Would you like to publish your submitted manuscript as preprint?

Please make my preprint PDF available to anyone at any time (recommended).

Please make my preprint PDF available only to logged-in users; I understand that my title and abstract will remain visible to all users.

Only make the preprint title and abstract visible.

No, I do not wish to publish my submitted manuscript as a preprint.

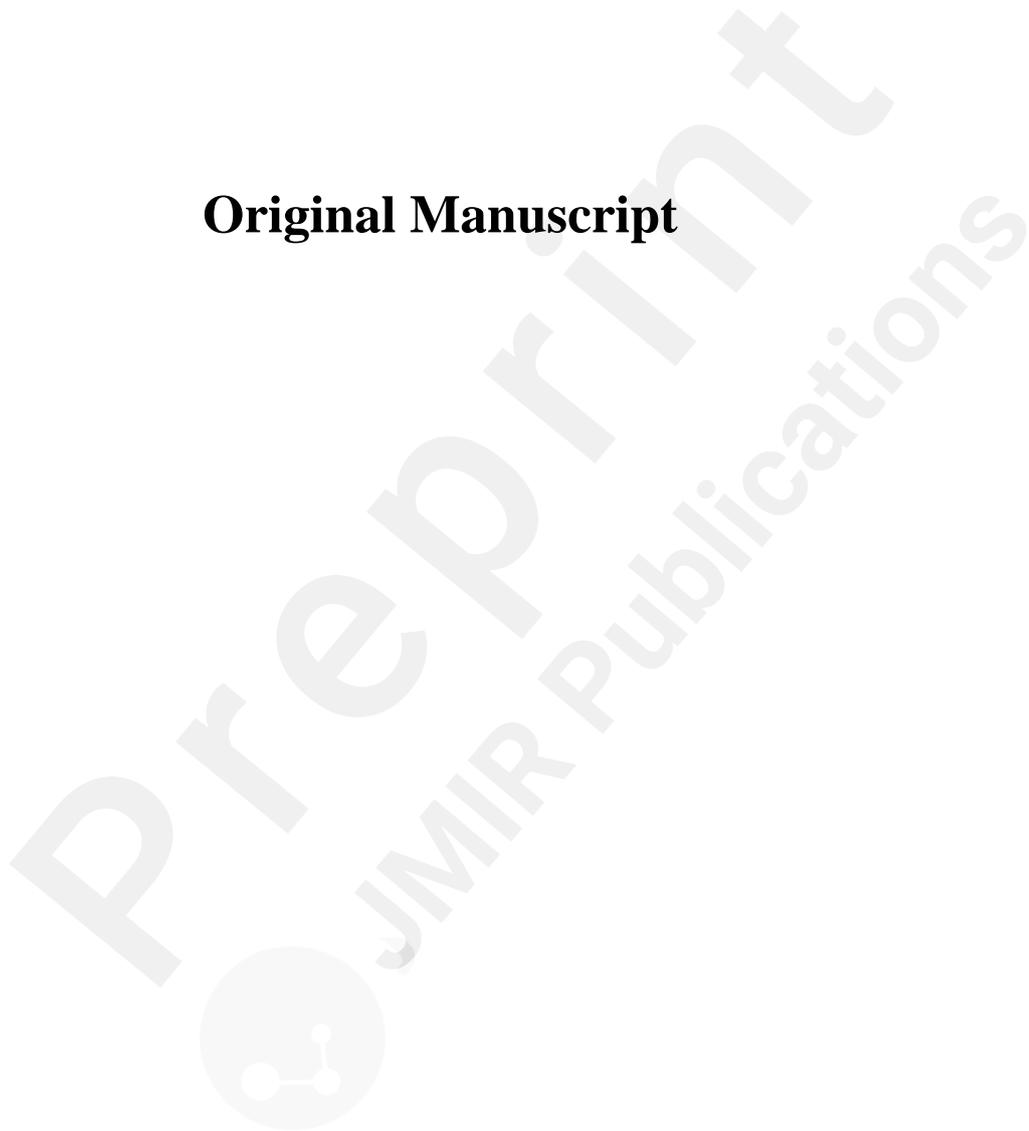
2) If accepted for publication in a JMIR journal, would you like the PDF to be visible to the public?

Yes, please make my accepted manuscript PDF available to anyone at any time (Recommended).

Yes, but please make my accepted manuscript PDF available only to logged-in users; I understand that the title and abstract will remain visible to all users.

Yes, but only make the title and abstract visible (see Important note, above). I understand that if I later pay to participate in [http](#)

Original Manuscript



Creation of a comprehensive COVID-19 daily news and medical literature briefing to inform healthcare and policy in New Mexico

Authors and Affiliations

LynnMarie Jarratt^{1†}; Jenny Situ^{1†}; Rachel D King¹; Estefania Montanez¹; Hannah Groves¹; Ryen Ormesher¹; Melissa Cossé¹; Alyse Raboff¹; Avani Mahajan, PhD¹; Jennifer Thompson¹; Randy F Ko¹; Samantha Paltrow-Krulwich¹; Allison Price¹; Ariel May-Ling Hurwitz¹; Timothy Campbell¹; Lauren T Epler¹; Fiona Nguyen¹; Emma Wolinsky¹; Morgan Edwards-Fligner¹; Jolene Lobo¹; Danielle Rivera¹; Jens Langsjoen, MD¹; Lori Sloane²; Ingrid Hendrix²; Elly O Munde, PhD^{3,4}; Clinton O Onyango³; Perez K Olewe³; Samuel B Anyona, PhD^{3,5}; Alexandra V Yingling, MSc⁶; Nicolas R Lauve^{6,7}; Praveen Kumar^{6,7}; Shawn Stoicu⁸; Anastasiya Nestsiarovich, MD, PhD⁶; Cristian G Bologna, PhD^{1,9}; Tudor I Oprea, MD, PhD^{1,9}; Kristine Tollestrup, PhD, MPH¹⁰; Orrin B Myers, PhD¹; Mari Anixter¹¹; Douglas J Perkins, PhD^{1,6}; Christophe G Lambert, PhD^{1,6,7,9*}

1. University of New Mexico School of Medicine, Albuquerque, NM, USA
2. University of New Mexico Health Sciences Library and Informatics Center, Albuquerque, NM, USA
3. University of New Mexico-Maseno Global Health Programs Laboratories, Kisumu and Siaya, Kenya
4. Department of Clinical Medicine, School of Health Sciences, Kirinyaga University, Kerugoya, Kenya
5. Department of Medical Biochemistry, School of Medicine, Maseno University, Maseno, Kenya
6. Center for Global Health, Department of Internal Medicine, University of New Mexico Health Sciences Center, Albuquerque, New Mexico, USA
7. Department of Computer Science, University of New Mexico, Albuquerque, New Mexico, USA
8. Health and Sciences Center Sponsored Projects Office, University of New Mexico, Albuquerque, New Mexico, USA
9. Division of Translational Informatics, Department of Internal Medicine, University of New Mexico Health Sciences Center, Albuquerque, New Mexico, USA
10. University of New Mexico College of Population Health, Albuquerque, NM, USA
11. New Mexico Department of Health, Communications Office, Office of the Secretary

† Jarratt and Situ contributed equally to this paper.

* Corresponding Author: Christophe G. Lambert, Ph.D., University of New Mexico Health Sciences Center, Department of Internal Medicine, Center for Global Health and Division of Translational Informatics, MSC10-5550, 915 Camino de Salud NE, Albuquerque, New Mexico 87131, USA. Email: cglambert@unm.edu. Tel. +1 (505) 272-9709. Fax +1 (505) 272-8441.

Abstract

Background: On March 11, 2020, the New Mexico (NM) Governor declared a Public Health Emergency in response to the coronavirus disease 2019 (COVID-19) pandemic. The NM Medical Advisory Team (MAT) contacted faculty at the University of New Mexico (UNM) to form a team to assist in consolidating available information on severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and COVID-19 to facilitate NM's pandemic management. In response, faculty, physicians, staff, graduate students, and medical students created the "UNM Global Health COVID-19 Intelligence Briefing."

Objective: Based on the growing number of daily scientific publications and news reports and the potential risk of community misinformation, we formed a team of academics to consolidate and disseminate relevant daily briefings with a goal of informing healthcare and public policy decisions for the state of NM.

Methods: Microsoft Teams™ was used for manual and automated capture of COVID-19 articles (daily average=456), and composition of briefings. Articles were summarized according to relevant content and statistical findings. Multi-level triaging allowed for the most impactful articles to be reviewed and summarized with priority placed on randomized controlled studies, meta-analyses, systematic reviews, practice guidelines, and other topics informing on healthcare and policy response to COVID-19. Team members met virtually to edit the briefing on clarity and grammar, and to prioritize articles based on scientific merit. The finalized briefing was emailed to a LISTSERV® and posted on the UNM Digital Repository. An IRB-approved survey to assess the impact of the briefing was sent to readers.

Results: The briefings reached approximately 1,000 people by email alone. This number was likely higher with direct subscribers forwarding to colleagues. Tracking showed 5,047 downloads across 116 countries as of July 5, 2020. The survey received 114 respondents consisting of physicians, academic faculty, administrators, government employees, students, and nurses. Respondent feedback showed 95% gained relevant knowledge of the pandemic, 79% believed it decreased misinformation, 24% used the briefing as their primary source of information, and 79% forwarded to colleagues.

Conclusions: Variability in subject matter expertise was addressed with training, standardized article selection criteria, and collaborative editing. The UNM Global Health COVID-19 Intelligence Briefing accomplished the goal of disseminating relevant COVID-19 information to help guide NM government policy and clinical practice. A secondary benefit included advancing medical student education.

Keywords: COVID-19; pandemic; daily report; policy; epidemics; global health; SARS-CoV-2; New Mexico; medical education

Introduction

On March 11, 2020, New Mexico Governor, Michelle Lujan Grisham, and the New Mexico Department of Health (NMDOH) declared a Public Health Emergency in response to the coronavirus disease of 2019 (COVID-19) pandemic, after announcing three New Mexico (NM) residents tested presumptive positive for COVID-19[1]. NMDOH responded by creating the Medical Advisory Team (MAT). The MAT brought together state officials, healthcare providers, and community members to compile and disseminate scientific findings, and create guidelines and recommendations for New Mexicans navigating the challenges of the pandemic. With the growing number of daily scientific publications and news reports, and the potential for misinformation being disseminated to the community, the MAT reached out to faculty at the University of New Mexico (UNM) to form a team to generate and disseminate relevant daily briefings to inform healthcare and public policy decisions for the State of NM.

There is a high volume of vital information available on the internet about COVID-19. However, the quality of reported content needs to be managed to avoid information overload for government and healthcare leadership, and to minimize misinformation [2][3][4]. A 2020 study found that using the internet as a resource for COVID-19 posed a risk to public health due to the poor quality of most readily available information, as measured by quality assessment instruments, such as the HONcode, JAMA benchmarks, and the DISCERN tool [5]. The authors suggested that governments should develop strategies to regulate health information on the internet without censure. The authors advise the use of official public health organization websites as the most reliable source of information on COVID-19 preventative measures [6].

Other programs have released daily briefings [7][8][9] in similar efforts to combat information-overload and quality control. Based on the high volume of information, we assembled a diverse working group (i.e., faculty, physicians, UNM Health Sciences Library and Informatics Center (HSLIC), staff, and graduate and medical students) to inform policymakers, healthcare workers, state leaders, and the NM community. A comprehensive daily briefing was first disseminated on April 5, 2020 as the "UNM Global Health COVID-19 Intelligence Briefing." Here, we describe the process of recruitment, briefing compilation, and the impact of the daily briefing.

Methods

Training and Recruitment of Authors

Initially, a working group of MDs, PhDs, journalists, graduate and medical students, and researchers from the United States (US) and Kenya were recruited to the collaborative team to compose the daily briefings. Due to the magnitude of the workload, additional team members were recruited from UNM. Team members were virtually trained on the relevant software and briefing development process.

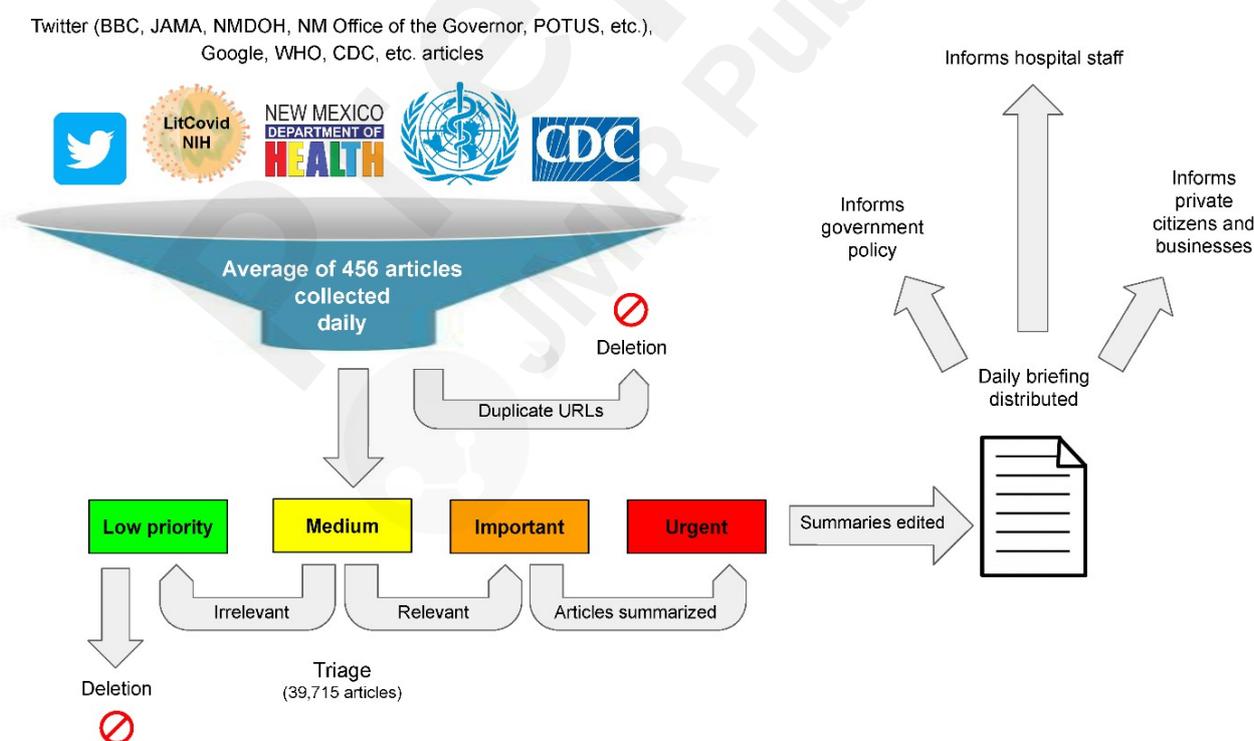
Briefing Process

Microsoft Teams™ served as the platform for managing the briefing processes, which allowed for asynchronous and simultaneous collaborative work in automation of article compilation, triaging of articles, manual article submission, composition of the briefing collaboratively as a team, and the

administration of a survey. Triage of publications began with Microsoft Teams™ Flows automatically gathering a daily average of 456 COVID-19 related papers and reports from various sources including Twitter (BBC, JAMA, NMDOH, NM Office of the Governor, POTUS, etc.), Google, LitCovid-NIH, WHO, and the CDC while excluding duplicate URLs (Figure 1, Appendix 1). Based on the source, the incoming articles were summarized in Microsoft Planner tasks, using Planner buckets to categorize them into NM Mainstream Media, Manual Requests, US Mainstream Media, International Media, Health Organization, Science and Medicine, or Literature and assigned a default “medium” priority tag. Manual requests were articles sent in by team members and briefing recipients, and often represented sources we did not automatically cover (e.g. Reddit /r/covid19, Johns Hopkins Situation Report). Articles were also submitted by readers through a submission link found in each briefing email, which generated a Microsoft Teams™ Planner task, which was reviewed and triaged accordingly.

Incoming articles were manually triaged by team members into an “important” or “low” priority group. Scientific reports were triaged based on the veracity and potential impact on COVID-19-related healthcare response or public policy. In particular, information on epidemiology, testing, public guidelines, medical practice guidelines, new therapies, vaccines, and pathogenesis were of primary focus. Priority was given to sources with the highest quality of evidence, such as randomized controlled studies, and systematic reviews with meta-analyses. In addition to the scientific reports, news articles covering NM, US, and international pandemic responses and impacts were also triaged based on relevance and content validity.

Figure 1. A conceptual overview of the methods used to generate the daily briefings



Articles in tasks tagged as “important” were read and analyzed by trained members who self-assigned a task, reviewed the linked content, and created a single-line headline, followed by a one-paragraph summary clarifying the type of study, publication source, study design, and major

findings. For some research articles, this would include the number of subjects, p values, and conclusions. Other article summaries included the main conclusions as formulated by the original authors. Finally, a hyperlink to the original source was included with a Digital Object Identifier (DOI) for peer reviewed publications and the Task progress was marked “complete” in the Microsoft Teams™ system and re-assigned priority of “urgent”. The bulk of the “important” tasks were expected to be completed by 4:00 pm (US Mountain Daylight Time), with some last-minute tasks coming in prior to the final cut-off of 5:00pm when collaborative editing began. The items considered to be “low” priority were largely commentaries, editorials, political messages, and non-evidence-based studies. The “low” priority group was discarded.

The completed tasks auto-populated the briefing content into an Excel spreadsheet. The tasks were then manually moved into a premade Microsoft® Word document template, with the following sections: Executive Summary; NM Highlights; US Highlights; Economics, Workforce, Supply Chain, Personal Protective Equipment (PPE) Highlights; Epidemiology Highlights; Healthcare Policy Recommendations; Practice Guidelines; Testing; Drugs, Vaccines, Therapeutics, Clinical Trials; and Other Science.

During the daily 5:00 pm Zoom meeting, members of the team used Microsoft® Word online to simultaneously edit the paper headers and summaries within each section, which included checking the clarity of each study, title and summary, adding key details if missed, checking spelling and grammar, and ensuring a working hyperlink for each source article. Studies that did not have a sufficient sample size, clear conclusions, or appropriate methodology were excluded from the report draft. The final document included a short “Executive Summary” with pithy article descriptions, and the articles were arranged in order of importance within their respective section. The names of the contributors to each daily briefing were listed at the bottom of the page, along with a disclaimer that notes the inclusion of non-peer reviewed manuscripts and limitations of the review process.

The finalized report was then emailed out that evening to the MAT and a LISTSERV® of subscribers, and was posted on the UNM Digital Repository [10]. The UNM Department of Internal Medicine also incorporated the briefing into its daily update email that was disseminated to all of the personnel. The LISTSERV® members consisted of healthcare providers, researchers, government employees, and UNM faculty and students. Anyone, including those not directly involved in healthcare, could subscribe to the briefing. The repository runs on BePress and was able to track and map total downloads across the globe. The reports have also been indexed by Google Scholar.

A continuous effort was made to curate COVID-19 practice guidelines [11] and therapeutic evidence [12] from each briefing were organized into shared documents with publicly accessible links. The summarized practice guidelines were divided into medical specialties, while therapeutics were organized into sections on specific medications, computationally predicted compounds, immunotherapy, vaccines, and others. On the first page of each briefing, a link was provided to practice guidelines from April 15, 2020 onwards, and for therapeutic evidence from April 23, 2020 onwards.

Medical Education

Medical students did not provide direct patient care during the pandemic due to high transmission

risks and conservation of PPE. To combat this potentially detrimental impact on medical education, the UNM School of Medicine (SOM) created a virtual course, the COVID-19 block. Thirty-one medical students assisted in the creation of briefings as part of the practical project-based component of the course.

COVID-19 Global Health Briefing Survey

To assess the impact of each briefing report on NM policy makers, researchers, physicians, and other healthcare professionals and educators, an 18 -question survey was designed, Institutional Review Board (IRB) approved (20-263), and distributed to all briefing recipients. The survey assessed respondent job characteristics (terminal degree, occupational sector, place of employment, and years of clinical practice), and utilized a 5-point scale ranging from “strongly disagree” to “strongly agree” to assess the impact of the briefing on the individual COVID-19-related response, level of knowledge, and information ascertainment. A free text portion allowed responders to describe how they applied the information found in briefings in their professional and personal life.

Results

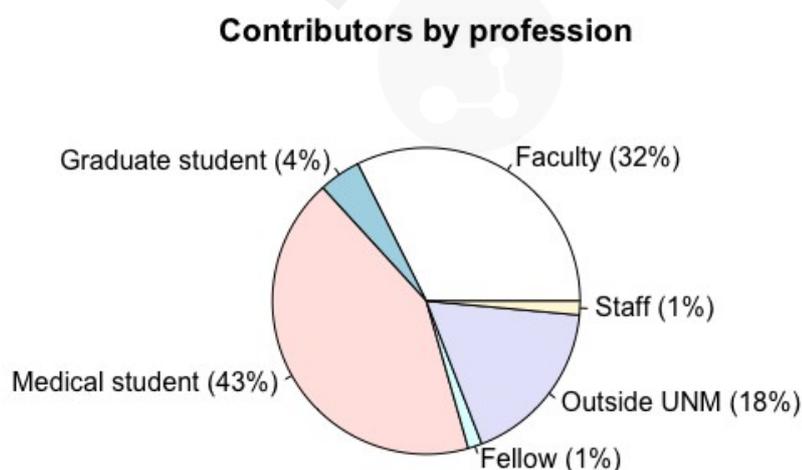
Article Collection

A total of 39,715 articles were automatically added as tasks, and subsequently triaged over the duration of the briefing. Of these, 560 articles were manually submitted. A record of all article URLs were kept to ensure redundant hyperlinks were excluded.

Distribution

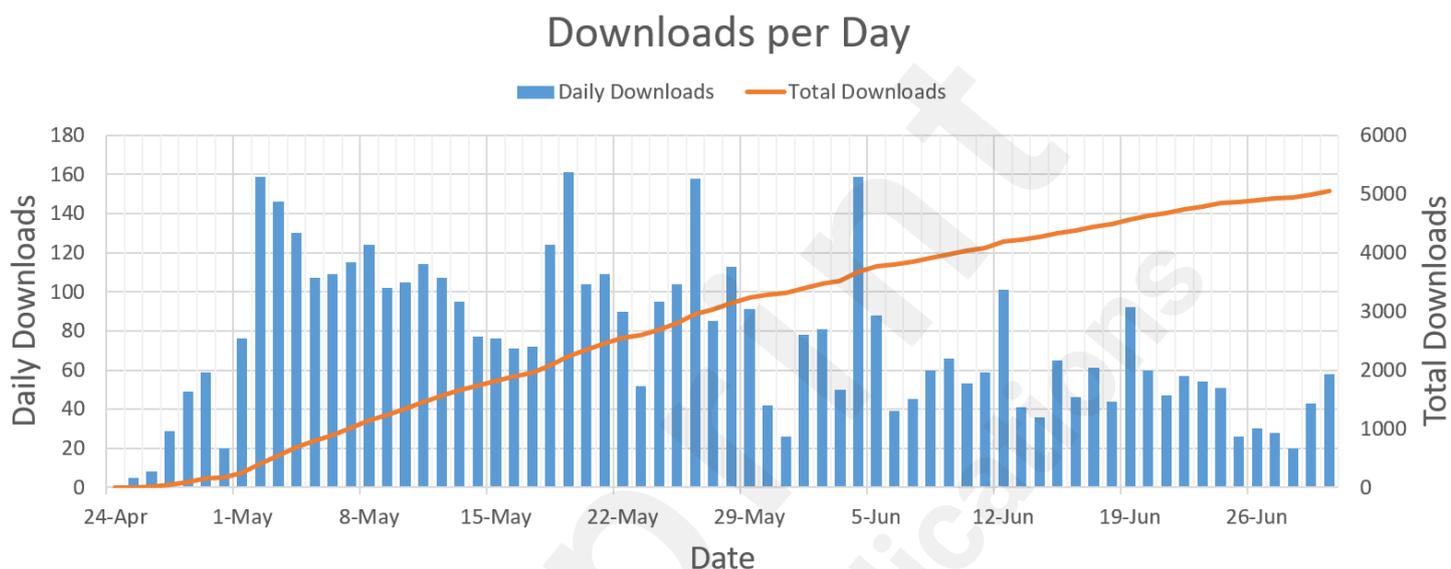
From April 5, 2020 to June 30, 2020, a total of 58 UNM Global Health COVID-19 Intelligence Briefings were generated and published, with collaborative efforts of 68 individuals, including 19 faculty members, 31 medical students, 3 graduate students, 1 postdoctoral fellow, 3 staff members, and 11 contributors from outside of the UNM (Figure 2).

Figure 2. Pie Chart of the categorization of contributors to the daily briefings by profession.



Initially, each briefing was directly emailed to 176 members of the NM MAT. On April 27, 2020, we announced availability of the briefing via a LISTSERV, which grew to 400 subscribers by June 30. Beginning April 10, 2020, the leadership of the UNM Department of Internal Medicine forwarded the prior night's briefing to 525 of its members as part of a daily newsletter. By June 30, 2020, our briefing was sent to 1,080 unique email addresses - 693 within the UNM Health and Sciences Center (HSC) and 387 outside of the HSC.

Figure 3. Bar graph showing downloads per day and total downloads over time



The X axis shows the number of days (April 24, 2020 to July 5, 2020). The left Y axis is in units of daily downloads, while the right Y axis is in units of both total downloads. The blue bars show the number of briefing downloads for a given day. The orange line shows the cumulative number of downloads over time.

Beginning on April 24, 2020, all of the briefings were posted for public viewing in the UNM Digital Repository[13]. The number of briefing downloads is plotted both daily and cumulatively in Figure 3. Between April 24, 2020 and July 5, 2020, there were 5,047 downloads, with an average of 74 downloads per day. The highest number of downloads for an individual briefing was 260 (April 27, 2020). The average number of downloads was 85, the median 72, the maximum 260, and the minimum 4.

Throughout the timeframe of the project, the briefings were downloaded in 116 countries (Figure 4). The five countries with the most downloads were the US with 2,164, Brazil with 235, India with 233, Canada with 224, and Germany with 224.

Impact

The briefings directly impacted NM state government response to the pandemic. Dr. David Scrase, the Cabinet Secretary for Health and Human Services, informed our team that the daily briefing influenced dozens of policy decisions including: 1) mandating universal mask use in NM early in the pandemic, 2) expansion of remdesivir treatment, 3) caution about hydroxychloroquine treatment, 4) selecting R_{effective} as a key gating criteria for the state (COVID spread rate), 5) guiding the adequacy of the PPE supply chain(particularly overseas), and 6) recommending against the use of

antibody testing as an adjunct to clinical (or patient) decision making (David R. Scrase, MD, email communication, June 16, 2020).

The project also received direct positive feedback from other health and policy officials around the state. These include, but are not limited to, the UNM Associate Dean of Continuous Professional Learning, the Presbyterian Chief Medical and Transformation Officer, the Vice Chair of VA Affairs, the Vice Chancellor for Clinical Affairs, Lead of NM MAT, and the President & CEO CHRISTUS St. Vincent Health System (*Table 1*).

Figure 4. Map showing the number of downloads of UNM daily briefings per country from April 24, 2020 to July 5, 2020. [Base map reference: Sources: Esri, DeLorme, HERE, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, and the GIS User Community]

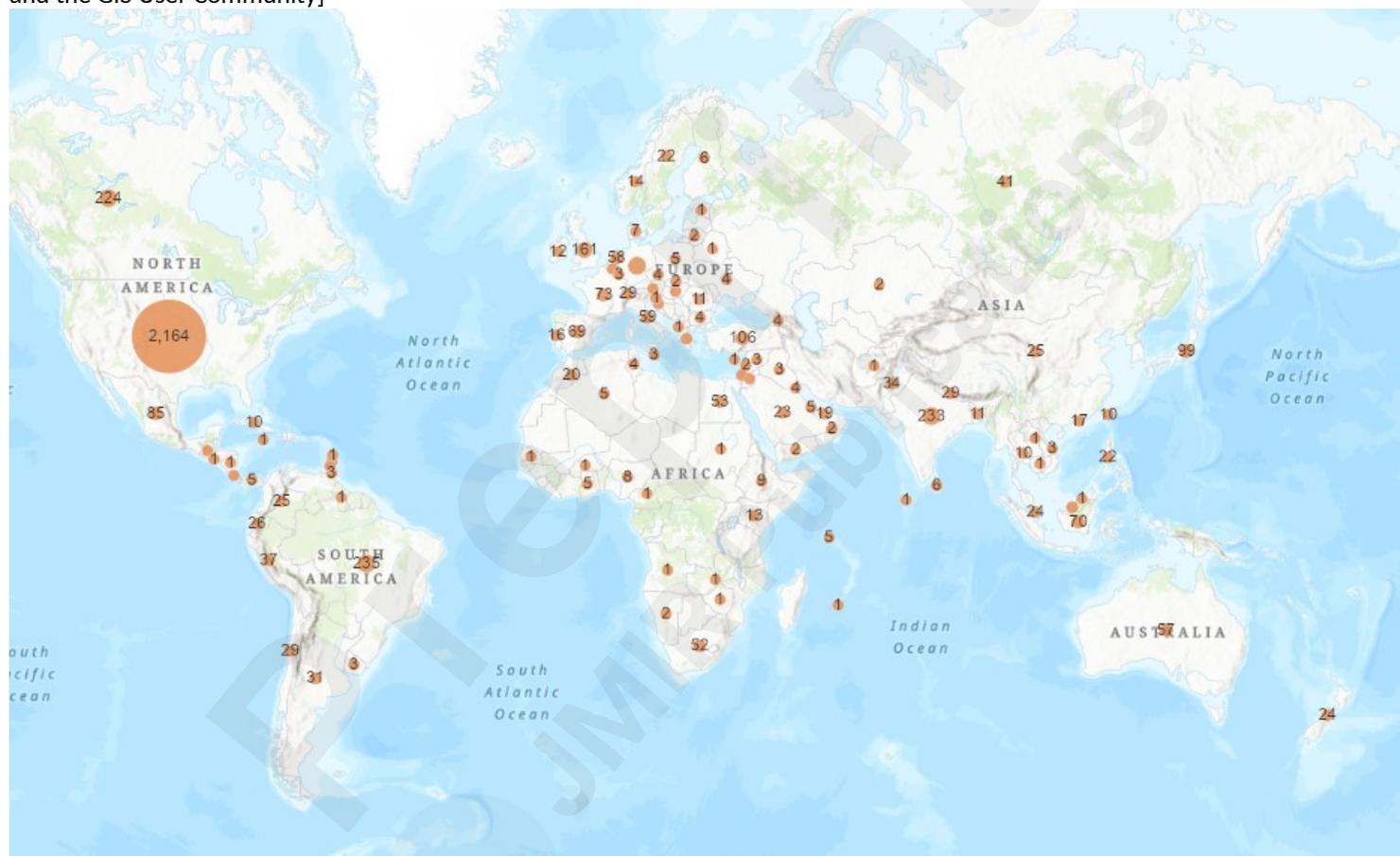
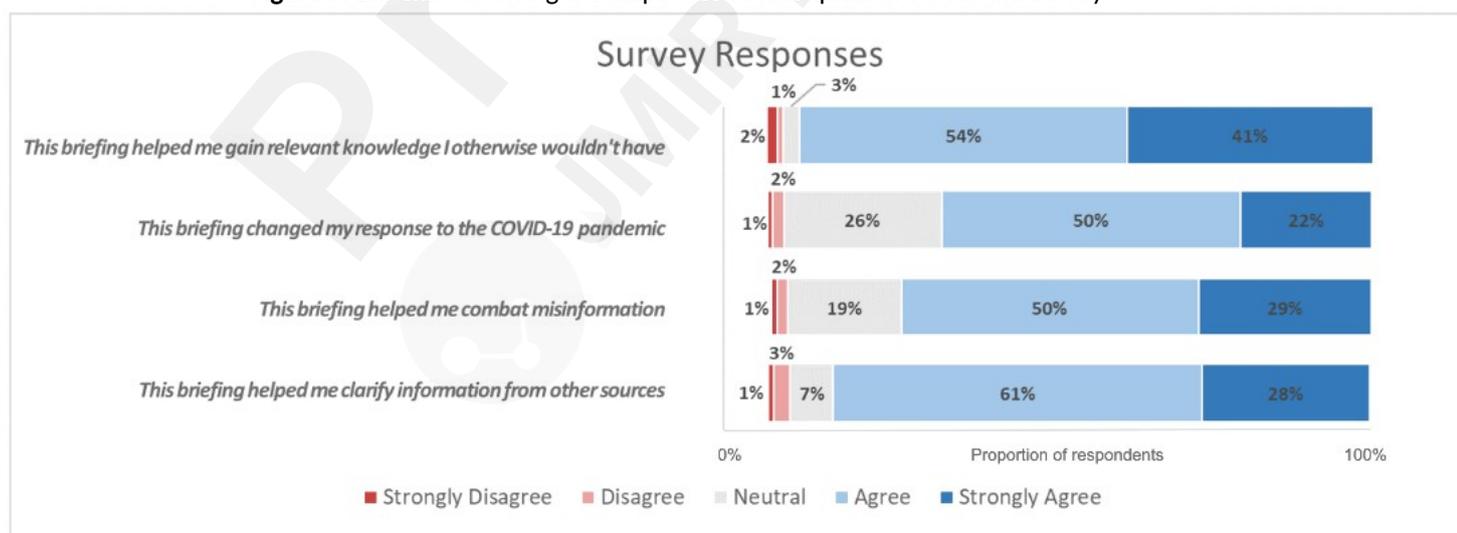


Table 1. Direct quotes from healthcare and policy officials across NM regarding the impact of the UNM briefings.

Author	Statement
Associate Dean of Continuous Professional Learning at UNM	"I recently became aware of the great work that you and colleagues are doing to combat COVID-19 through the infodemic to provide useful updates. I'd be grateful if you could add me to the distribution for the DAILY UNM GLOBAL HEALTH COVID-19 BRIEFING"
Presbyterian Chief Medical and Transformation Officer	"These are amazing! Can you help me get on the distribution list?"
Vice Chair VA Affairs	"This compendium is excellent!"
Vice Chancellor for Clinical Affairs, Lead of NM Medical Advisory Team (MAT)	"I wanted to let you know that you and the team know that your briefing is being sent to the PHS leadership team. It is getting rave reviews."
EVP and Chancellor for HSC, Dean of School of Medicine	"You're doing a great job" "Thank you and your team again...for this very comprehensive review of information. It is very useful."
President & CEO CHRISTUS St. Vincent Health System.	"These are excellent briefs. Thank you for sharing."
Cabinet secretary for Health and Human Services Department	"This is just so incredibly helpful... I really appreciate you taking the initiative to do this. Will provide daily highlights to gov and staff"

Survey Results

A survey to assess the impact of the daily COVID-19 briefings was sent electronically to approximately 994 recipients. A total of 111 individuals (~11%) responded to a series of daily solicitations between May 8 and May 19, 2020. Among the responders, 37% were physicians, 37% non-clinical academic faculty, 8% administrators, 7% academic staff, 5% government employees, 4% students, and 3% nurses (Figure 6). A total of 27% of respondents were involved in providing direct clinical care to COVID-19 patients, 42% had MD/DO degrees, 31% had PhDs, and 8% had MPH degrees. The healthcare providers who responded (n=30) had an average of 19 years of clinical practice (95% CI = 15 - 23).

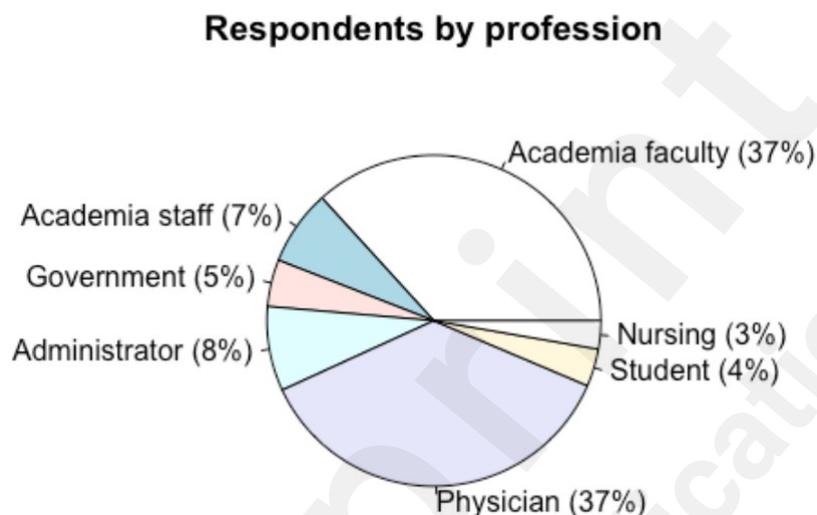
Figure 5. Bar chart showing the responses to four questions from the survey

The proportion of respondents who strongly disagreed or disagreed with the question are shown in dark red and light red, respectively, the percentage of respondents who were neutral is shown in gray, and the percentage of respondents who agreed or strongly agreed are shown in light blue and dark blue, respectively.

The majority of the responders (95%) agreed or strongly agreed that the UNM briefing helped them gain relevant knowledge, 71% changed their response to the pandemic, 79% reported the briefings

helped them combat public misinformation, and 89% said it helped to clarify the information from other data sources (Figure 5). A total of 24% of respondents cited the briefing as their primary source of information on the pandemic, and 73% reported having shared the briefing with their colleagues. On a scale of 0 (would never share) to 10 (will definitely share) respondents reported being very likely to continue to share the briefing with colleagues (mean score 8.8, 95% CI = 8.5 - 9.1).

Figure 6. Pie chart showing the categorization of survey respondents by their profession and position in academia.



Discussion

Principal Conclusions

Through the UNM Global Health COVID-19 Intelligence Briefing, we were able to inform the practice of physicians and other healthcare personnel, facilitate COVID-19 research efforts by faculty and staff in academia, influence policy-making by the government of NM, and alert the public about the most relevant developments that may affect our daily lives. The briefings were well-received based on survey response. Additionally, the briefings were accessed by approximately three times the number of people than those who were directly emailed. The briefings catered to an audience beyond the scientific and medical community with direct subscribers forwarding the briefings and categorization of articles with headers and summaries reported in everyday language. The UNM Global Health COVID-19 Intelligence Briefing influenced policy-making in NM, including the use of masks, PPE, and therapeutic approaches to COVID-19 via approved pharmaceuticals.

Additional Outcomes

A secondary, positive outcome of the daily briefings was enhancement of medical student education. A total of 31 medical students contributed to the creation of the daily briefings. The UNM SOM curriculum committee approved participation in the UNM Global Health COVID-19 Intelligence Report for fourth year elective course credit. For this to be accomplished, a proposal outlining the goals, processes, and target audience for the briefing needed to be drafted and submitted for approval by the lead faculty. Students who participated stated that contributing to the briefings helped them stay updated on the COVID-19 literature (policies, guidelines, medical, etc.)

and allowed them to contribute to global health efforts when direct patient care was not permitted. Students also practiced the skill of analyzing and editing scientific publications and assessing the quality of the papers. They felt the process was rewarding and informative during a time in which their education and environment was going through many changes (Table 2).

Table 2. Direct quotes from medical students regarding the impact of the briefings on medical education.

Statement
<i>"[The briefing] provided a meaningful purpose as we were able to contribute directly to our community's wellness I appreciated participating, seeing daily updates, and knowing hospital teams were making real-time policy changes with the help of the information provided in the reports"</i>
<i>"Once the COVID-19 block started it was refreshing to use my skills to analyze articles because I was already doing so on my own... It was great to be able to create deliverables as part of the project and feel like I was making an impact to the state of New Mexico, which eased my anxiety significantly"</i>
<i>"This style of project is immensely helpful for students who want to be more involved with research and have a limited history of working in research. I hope that every project I work on subsequently will be so well organized."</i>
<i>"Participating in the daily briefing helped me stay connected to the ever changing world of COVID research. In a world of information overload, helping with this project grounded me to the primary information coming out of the scientific world. I felt confident giving friends and family advice and educating them on this pandemic because of the briefing."</i>
<i>"Being involved in this project has helped me learn more about this novel virus and feel more confident about the information I can disseminate to my friends and family. It also taught me about how difficult it can be to find trustworthy news, and how much of a problem can misinformation be. Even my parents (who are college educated with scientific degrees) presented wrong information to me many times. This reminded me of the importance of reliable news sources these days, and how we struggle to find them."</i>

Limitations

Contributors and authors of briefings had variable expertise and skill in assessing the scientific literature content. Standardized training helped maintain the consistency and quality of the briefings. A potential limitation included the inclusion of articles with different levels of evidence, including preprints, editorials and narrative reviews. The inclusion of preprints, which may be months from peer-reviewed publication, received some criticism. While the quality of preprints has been called into question, recent studies have shown that the standard in preprints for the life sciences is similar to that of peer-reviewed articles, and thus can be considered valid scientific contributions [14]. To clarify the source, our later briefings included the journal name or news source (pre-print, meta-analysis, Reuters, etc.) before each summary. Triaging was initially open to all participants, but due to quality concerns, was reduced to three administrators. It was not obvious how to standardize the judgement process that went into rapid decision-making regarding article inclusion. Individuals who triaged needed to be aware of the body of prior work that had been covered, to have the ability to quickly get the meaning of an article from an abstract, and to further investigate when questions arose about the study methodology. Early in the process, article selection was not as stringent and included speculative articles, while more rigorous criteria were implemented over time. One particular source of concern was the increasing number of sources commenting on the safety and efficacy of chloroquine or hydroxychloroquine (HCQ) at various stages of the pandemic. The US Food and Drug Administration (FDA), but not the European Union, granted Emergency Use Authorization (EUA) for both chloroquine and HCQ for certain hospitalized COVID-19 patients on March 28, 2020; this EUA was officially revoked on June 15, 2020, based on the severity of the cardiovascular side effects and increasing evidence about lack of efficacy.

The effort was brought to a close with the last briefing published on June 30, 2020. A presentation was given that expressed gratitude for all who participated [15].

Acknowledgements

To Laura Gonzalez Bosc, PhD; Malik Alqaqasmi; Sandra Boettcher; Victoria Carpenter; Hannah Dowdy-Sue; Stephen Esguerra; Kitty Foos; Susie Pham; Andrew Pierce; John Powell; Laura Banks, MPH, DVM; Tzion Castillo, MILS; Shahad Mustafa Abdo Hersi; Ivy Hurwitz, PhD; Adam Lambert; Rohini McKee, MD; Gregory Mertz, MD; Angela Achieng Omondi; Jonathan Pringle, MAS; Evans Raballah, PhD; Andrew Rowland, PhD; Lauren Sarkissian; Cleoshia Williams; Jeremy Yang, MS; for their contributions to the briefings.

Authors' Contributions

LynnMarie Jarratt: administrative support (student lead for the COVID curriculum; organizing, recruiting, and training students), briefing content, briefing editing, briefing triage, survey development, drafting substantial portions of the manuscript, critical revisions to the manuscript. Jenny Situ: briefing content, briefing editing, manuscript draft and revision. Rachel D. King: administrative (student leader for COVID block 1), founding member, briefing content, briefing editing, briefing triage, manuscript revisions. Estefania Montanez: student coordinator for continuing education, founding member, student leader, briefing content, briefing editing, briefing triage, manuscript revisions. Hannah Groves: training material development, briefing triage, briefing content, briefing editing, manuscript revisions. Ryen Ormesher: briefing content, briefing editing, survey development, data analysis, drafting substantial portions of the manuscript, critical revisions to the manuscript. Melissa Cossé: briefing content, briefing editing, survey development, data analysis, drafting substantial portions of the manuscript, revisions to the manuscript. Alyse Raboff: briefing content, briefing editing, manuscript drafting. Avanika Mahajan: briefing content, briefing editing, manuscript draft and revision. Jennifer Thompson: briefing content, briefing editing, manuscript draft and revision. Randy F. Ko: briefing content, briefing editing, briefing triage, manuscript drafting and revisions. Samantha Paltrow-Krulwich: briefing content, briefing triage, manuscript drafting. Allison Price: briefing content, briefing triage, briefing editing. Ariel Hurwitz: administrative, briefing content, manuscript drafting. Alexandra Yingling: briefing content, briefing editing, briefing triage. Timothy CampBell: briefing content, briefing editing, survey development. Lauren T. Epler: briefing content, briefing editing, manuscript revisions. Fiona Nguyen: Briefing content, briefing editing, manuscript revision. Emma Wolinsky: briefing content, briefing editing. Morgan Edwards-Fligner: briefing content, briefing editing, manuscript revision. Jolene Lobo: briefing content, briefing editing. Danielle Rivera: briefing content, briefing triage, manuscript revisions. Jens Langsjoen: organization and obtaining institutional approval for medical student COVID-19 elective work-force. Contribution to conceptual design of manuscript. Briefing editing, manuscript editing. Lori Sloane: administrative support, briefing content, briefing editing, briefing triage, dissemination activities, survey development, data analysis, substantial manuscript draft and revision. Ingrid Hendrix: briefing content from medRxiv, bioRxiv, PsyArXiv and arXiv. Clinton O. Onyango: briefing content. Perez K Olewe: briefing content. Samuel B Anyona: briefing triage, briefing editing, manuscript revisions, administrative (Kenyan group). Elly O Munde: briefing content. Praveen Kumar: software infrastructure and maintenance, technical maintenance, briefing

triage, briefing content, briefing editing. Nicolas Lauve: software infrastructure and maintenance, technical maintenance, briefing triage, briefing content, briefing editing. Shawn Stoicu: administrative, briefing editing. Anastasiya Nestsiarovich: briefing triage, content, editing, manuscript editing. Cristian G. Bologna: briefing content, briefing editing, briefing triage, dissemination activities, survey development, critical revisions to the manuscript. Tudor I. Oprea: briefing editing, briefing content, dissemination activities, manuscript editing. Kristine Tollestrup: briefing content, briefing editing, manuscript editing. Orrin Myers: briefing content, briefing editing. Douglas J. Perkins: briefing content, briefing editing. Christophe G. Lambert: project and editorial leadership, software infrastructure and maintenance, briefing content, briefing editing, briefing triage, technical maintenance, dissemination activities, survey development, critical revisions to the manuscript.

Conflicts of Interest

Authors have no affiliations with or involvement with any organization or entity with any financial interest (grants, consultancies, stock ownership, patent-licensing arrangements, or expert testimony) or non-financial interests (personal/professional relationship, affiliations, knowledge or beliefs) in the subject matter or materials reported in this manuscript.

Appendix 1

Data Accumulation

Numerous Microsoft Teams™ Flows were set up to gather data from various sources with keywords. These reports were auto-populated into Microsoft Teams™ Planner as tasks to be further triaged. The following represent the automated literature searches.

Google Alert RSS Feed

1. "new mexico" AND (coronavirus | covid-19 | SARS-CoV-2 | governor)
2. (coronavirus | covid-19 | SARS-CoV-2) site:fda.gov
3. (hydroxychloroquine | "coronavirus" | "covid-19" | "SARS-CoV-2") site:medrxiv.org
4. (hydroxychloroquine | "coronavirus" | "covid-19" | "SARS-CoV-2") site:unm.edu

Other RSS Feeds

1. LitCovid: <https://www.ncbi.nlm.nih.gov/research/coronavirus-api/feed/?filters=%7B%7D>
2. Reuters Health: <http://feeds.reuters.com/reuters/healthNews>

Twitter Sources

1. (#covid19 OR #coronavirus OR #sarscov2) ((from:JAMANetwork) OR (from:JAMA_current)) - filter:retweets
2. (from:WHO) filter:links -filter:replies -filter:retweets since:formatDateTime(addDays(utcNow(),-2),'yyyy-MM-dd')
3. ((coronavirus OR "covid-19" OR (#coronavirus) OR (#covid19)) (from:BBCWorld) - filter:retweets
4. from:@CDCgov -filter:retweets
5. ((coronavirus OR "covid-19" OR (#coronavirus) OR (#covid19)) (from:AJEnglish) - filter:retweets

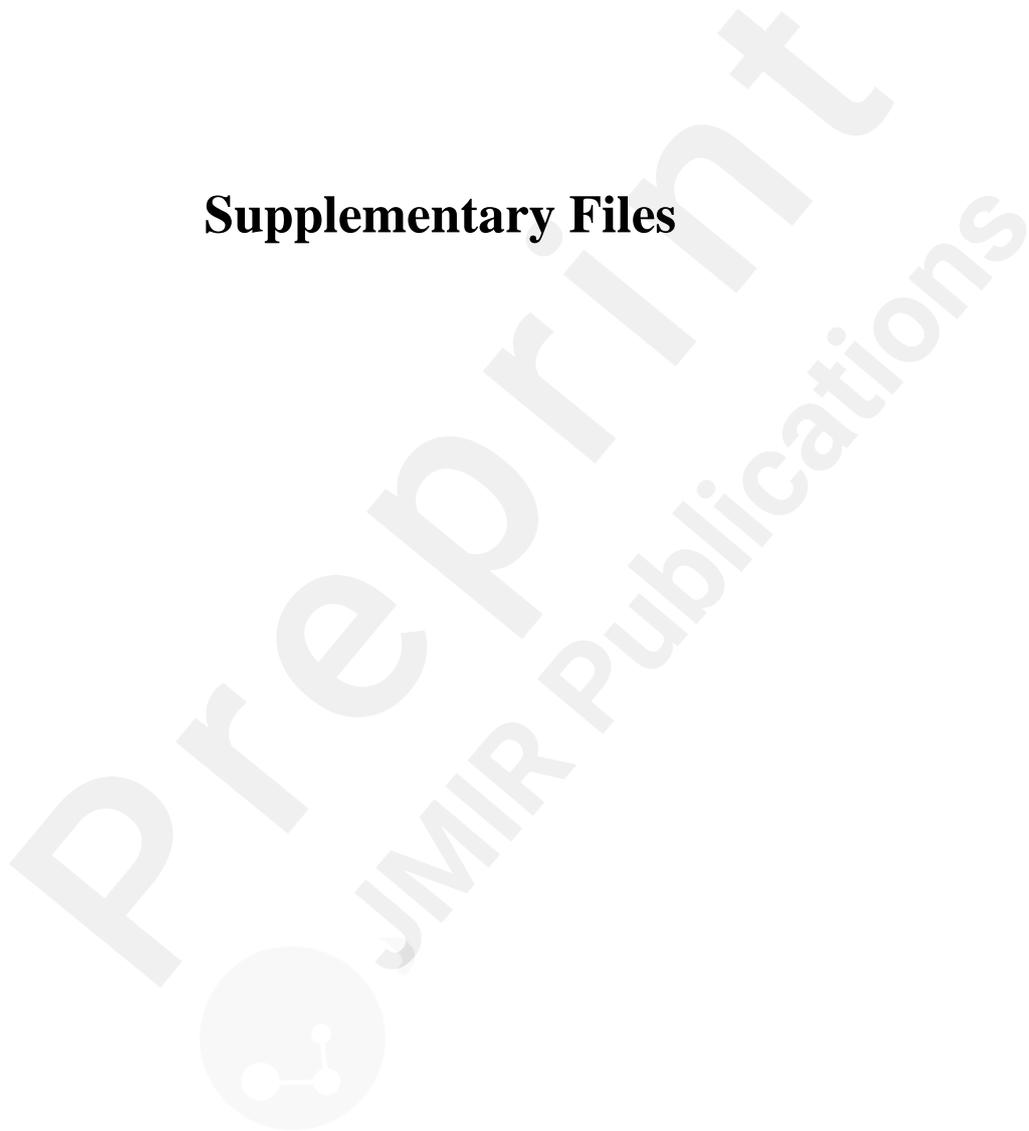
6. from:@NMDOH -filter:retweets
7. (#covid19 OR #coronavirus OR #sarscov2) ((from:ScienceMagazine) OR (from:NewsfromScience) OR (from:nresearchnews) OR (from:nature) OR (from:NEJM)) -filter:retweets
8. from:@realDonaldTrump -filter:retweets
9. from:@GovMLG

References

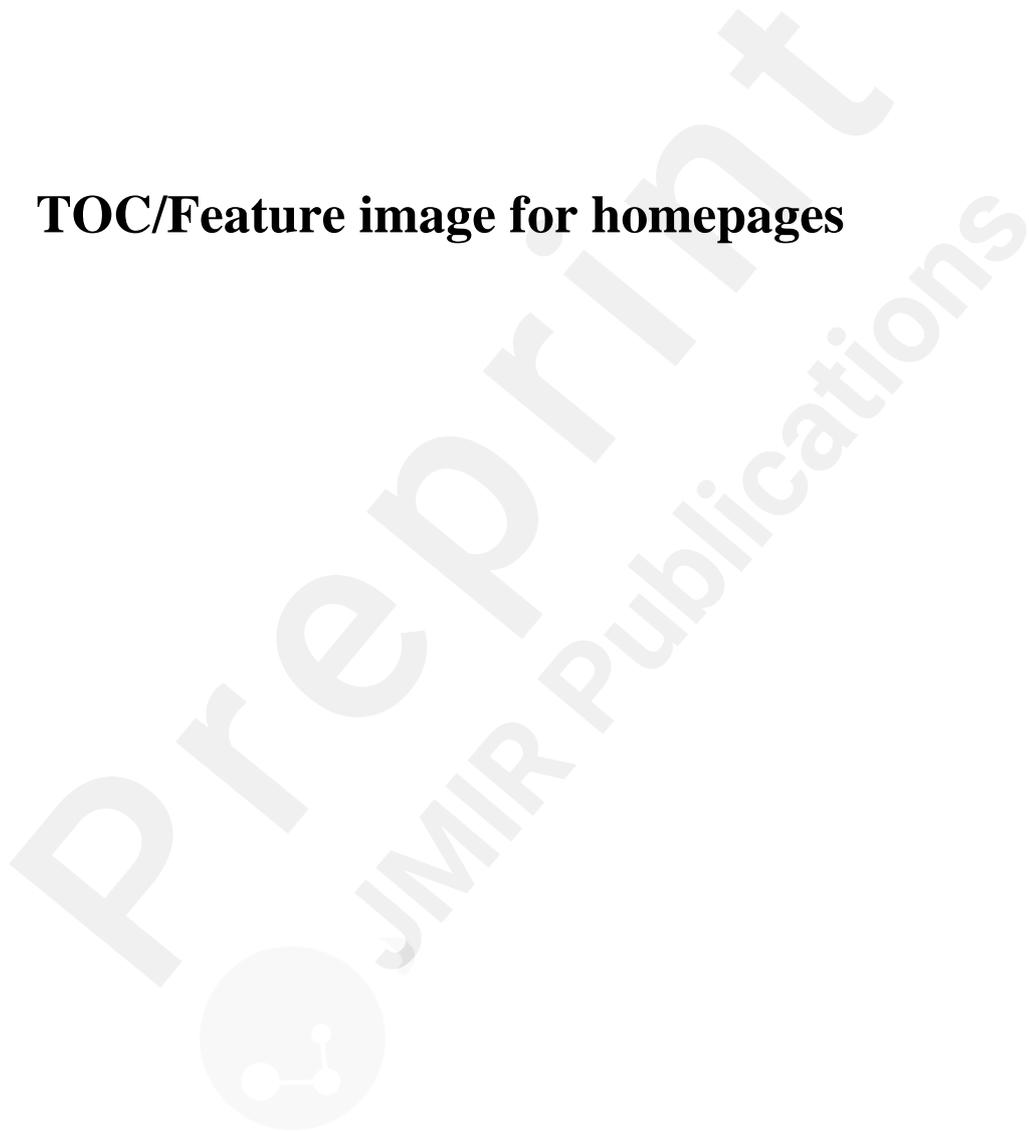
1. New Mexico announces first presumptive positive COVID-19 cases | Office of the Governor - Michelle Lujan Grisham [Internet]. [cited 2020 Jul 19]. Available from: <https://www.governor.state.nm.us/2020/03/11/new-mexico-announces-first-presumptive-positive-covid-19-cases/>
2. Website [Internet]. [cited 2020 Jul 19]. Available from: [https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(20\)30379-2.pdf](https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30379-2.pdf)
3. Song P, Karako T. COVID-19: Real-time dissemination of scientific information to fight a public health emergency of international concern. Biosci Trends [Internet] Biosci Trends; 2020 Mar 16 [cited 2020 Jul 19];14(1). PMID:32092748
4. Rathore FA, Farooq F. Information Overload and Infodemic in the COVID-19 Pandemic. J Pak Med Assoc [Internet] J Pak Med Assoc; 2020 May [cited 2020 Jul 19];70(Suppl 3)(5). PMID:32515403
5. Cuan-Baltazar JY, Muñoz-Perez MJ, Robledo-Vega C, Pérez-Zepeda MF, Soto-Vega E. Misinformation of COVID-19 on the Internet: Infodemiology Study. JMIR Public Health and Surveillance JMIR Public Health and Surveillance; 2020;6(2):e18444.
6. Hernández-García I, Giménez-Júlvez T. Assessment of Health Information About COVID-19 Prevention on the Internet: Infodemiological Study. JMIR public health and surveillance [Internet] JMIR Public Health Surveill; 2020 Apr 1 [cited 2020 Jul 19];6(2). PMID:32217507
7. COVID-19 Literature Surveillance Team [Internet]. COVID-19 LST. [cited 2020 Jul 19]. Available from: <https://www.covid19lst.org>
8. Whitaker J. Librarians fighting COVID-19 pandemic with their best asset: Facts [Internet]. News at IU. 2020 [cited 2020 Jul 19]. Available from: <https://news.iu.edu/stories/2020/04/iupui/inside/16-librarians-fighting-covid-19-with-truth-and-facts.html>
9. JHCHS website designer. Situation Reports on the novel coronavirus identified in China [Internet]. Johns Hopkins Center for Health Security. 2020 [cited 2020 Jul 19]. Available from: <https://www.centerforhealthsecurity.org/resources/COVID-19/COVID-19-SituationReports.html>
10. Authors. HSC Covid 19 Briefings [Internet]. [cited 2020 Aug 14]. Available from: https://digitalrepository.unm.edu/hsc_covid19_briefings/

11. Sign in to your account [Internet]. [cited 2020 Aug 6]. Available from: https://unmm.sharepoint.com/:w:/r/teams/GlobalHealthCOVID-19/_layouts/15/WopiFrame2.aspx?sourcedoc=%7B947b684a-ee86-4e55-811c-327172bae509%7D&action=edit
12. Website [Internet]. [cited 2020 Aug 6]. Available from: https://unmm.sharepoint.com/:w:/r/teams/GlobalHealthCOVID-19/_layouts/15/WopiFrame2.aspx?sourcedoc={b9084926-37ce-4cb6-bcb8-cd9aaf8ceb23}&action=edit
13. Authors. HSC Covid 19 Briefings | HSC Institutional and Academic Materials | University of New Mexico [Internet]. [cited 2020 Jul 19]. Available from: https://digitalrepository.unm.edu/hsc_covid19_briefings/
14. Berg JM, Bhalla N, Bourne PE, Chalfie M, Drubin DG, Fraser JS, Greider CW, Hendricks M, Jones C, Kiley R, King S, Kirschner MW, Krumholz HM, Lehmann R, Leptin M, Pulverer B, Rosenzweig B, Spiro JE, Stebbins M, Strasser C, Swaminathan S, Turner P, Vale RD, VijayRaghavan K, Wolberger C. Preprints for the life sciences. Science American Association for the Advancement of Science; 2016 May 20;352(6288):899–901. PMID:27199406
15. Lambert CG, Stoicu S. UNM Global Health COVID-19 Briefing Participants. 2020 [cited 2020 Aug 20]; Available from: https://digitalrepository.unm.edu/hsc_covid19_briefings/58

Supplementary Files



TOC/Feature image for homepages



A conceptual overview of the methods used to generate the daily briefings.

