

Combatting Anti-Vaccination Misinformation: Improving Immunization Rates of Black/African American Children at UW Health

Sharon-Rose Nartey, BS; Jonathan Temte, MD, PhD, MS; Elizabeth Petty, MD

ABSTRACT

Introduction: Vaccine hesitancy is a rising public health threat, thwarting progress to reduce vaccine-preventable diseases. While drivers of racial disparities in childhood immunization rates (CIR) have been described, none have explored these disparities at UW Health, and few have highlighted the role of anti-vaccination (anti-vaxx) campaigns in the Black/African American (BAA) community.

Objectives: This quality improvement study evaluates childhood immunization data for racial and ethnic disparities, identifies possible drivers, and proposes equitable solutions.

Methods: UW Health CIR were analyzed for racial and ethnic disparities between December 31, 2015, and December 31, 2019. A root cause analysis was done to explore potential drivers. An in-depth media review of targeted anti-vaxx campaigns was chosen for further exploration using “anti-vaccine leaders targeting minority becomes growing concern at NYC forum” as the initial search query template. Google Trend and literature searches were performed to understand questions BAA parents have about vaccines.

Results: UW Health data show significant increasing racial and ethnic disparities in CIR. As of December 31, 2019, the immunization rates were 90.74% for White children, 88.11% for Asian children, and 68.29% for BAA children. Media review suggests anti-vaccination leaders have increasingly targeted the BAA community with vaccine misinformation and skepticism. Analysis of vaccine-related queries suggest 8 core questions BAA parents have about vaccines.

Conclusions: Health systems must assess their CIR for disparities and further dissect drivers to effect change. We focus on suggesting strategies to combat negative media campaigns, among others, to close the gap. Understanding of all factors is needed to develop effective interventions to reduce disparities in childhood immunization rates in the BAA community served by UW Health and beyond.

INTRODUCTION

Vaccine hesitancy, defined as the reluctance or refusal to vaccinate despite its availability, is one of the greatest threats to public health and thwarts years of progress in the fight against vaccine-

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Author Affiliations: University of Wisconsin-School of Medicine and Public Health, Madison, Wis (Nartey, Temte, Petty).

Corresponding Author: Sharon-Rose Nartey, 750 Highland Ave, Madison, WI 53705; email Snartey@wisc.edu; ORCID ID 0000-0003-1952-5758.

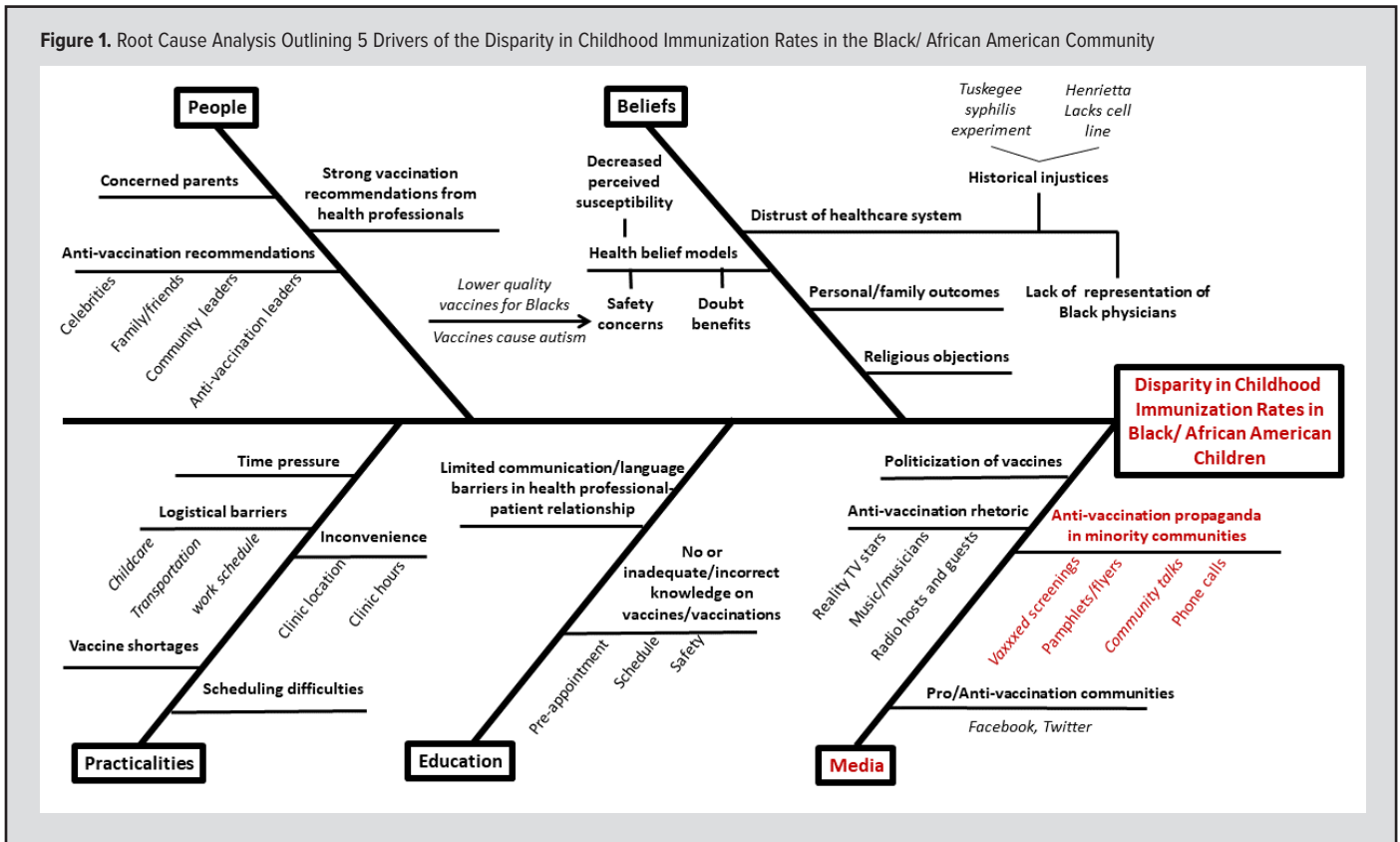
preventable diseases.¹ In 2019, the Centers for Disease Control and Prevention (CDC) reported 1,282 new cases of measles—the highest incidence in the United States since 1992.² Mumps and pertussis exhibited similar trends in the last decade, with the largest outbreaks seen since the introduction of their respective vaccines.

To avoid vaccine-preventable diseases, the CDC recommends a series of 10 vaccinations before age 2. Yet, disparities exist in childhood immunization rates (CIR). The 2019 Wisconsin Health Disparities Report (WHDR), for example, highlights a significant disparity in the immunization series between Black/African American (BAA) children and White children, with coverage rates of 70.54% and 82.74%, respectively.³ Shui et al suggest that concerns about vaccine safety, lack of information, and medical mistrust contribute to vaccine hesitancy in the BAA community,⁴ while Ventola asserts that moral or religious objections and lack of access due to socioeconomic factors are additional drivers.⁵ Schumaker highlights the role of anti-vaccination lead-

ers in vaccine misinformation and hesitancy in the Somali community.⁶

The aim of this initial stage of a quality improvement approach to explore this immunization disparity was threefold: (1) to assess whether increasing hesitancy has resulted in decreasing vaccination rates in BAA children in the past 5 years, using the UW Health as a model health care system; (2) to create a root cause analysis of possible drivers of the CIR disparity in the BAA community; and (3) to focus more deeply on one of the identified arms of the root

Figure 1. Root Cause Analysis Outlining 5 Drivers of the Disparity in Childhood Immunization Rates in the Black/ African American Community



Box. Terms Searched on Google

Initial search queries	Related queries
<ul style="list-style-type: none"> • Antivax targets in minority communities • Antivax in Black community 	<ul style="list-style-type: none"> • Vaxxed in Black community • MMR in Black community • MMR and autism in African American boys • Vaxxed autism Black boys • Nation of Islam antivaxx • Robert F. Kennedy and Nation of Islam • Louis Farrakhan vaccine • Compton Vaxxed screening

cause analysis—the use of media as a means to drive the disparity. We felt that focusing on the media arm at this time was critically important given the urgency of elucidating the role media plays in vaccine hesitancy, as it might inform how immunization is approached in the era of the existing pandemic. With increased understanding of all factors that contribute to the hesitancy, effective interventions can be made to engage the BAA community, improve vaccine education, and decrease the immunization gap.

METHODS

The quality improvement FOCUS model was used to: F-find a problem, O-organize a team, C-clarify the problem, U-understand the problem, and S-select an intervention.

UW Health Disparity Search

The racial and ethnic disparities in childhood immunization rates

observed in the WHDR prompted a search of the UW Health system for similar disparities. UW Health is the integrated health system of the University of Wisconsin (UW)-Madison serving more than 600,000 patients each year in the Upper Midwest and beyond with approximately 1,750 physicians and 21,000 staff at 7 hospitals and more than 80 outpatient sites.

This project did not meet the federal definition of research pursuant to 45 CFR 46, according to UW-Madison’s Quality Improvement/Program Evaluation Self-Certification Tool for education and social/behavioral science, and thus did not require institutional review board approval. A data request was filed using the UW Health ServiceNow portal. Input variables included:

- Year: 2015, 2016, 2017, 2018, 2019
- Childhood immunization coverage for 4:3:1:3:3:1:4 series — This measure calculated completion of the primary childhood series for children age 2, on or before their 2nd birthday.³
- Percent of children immunized by race/ethnicity: BAA, White, American Indian/Alaskan Native, Hispanic/ Latino, Asian/ Pacific Islander.

Root Cause Analysis

To clarify drivers of the CIR disparity in the BAA community, a root cause analysis was performed utilizing the fishbone diagram tool.⁷ Factors addressed in Shui et al⁴ and Ventola et al⁵ were explored as potential drivers. From these drivers, media was chosen for further analysis because of the likely increase in media-related

anti-vaxx misinformation between 2015 and 2020,⁶ while factors including education, practicalities, beliefs, and people were more likely to have remained constant (see Figure 1).

Google and Google Trends Searches

A media search was performed to explore whether minority communities had been targeted with anti-vaccination propaganda in 2015-2020. An incognito Google Chrome browser was used to minimize search bias, and the ABC News article “Anti-vaccine leaders targeting minority becomes growing concern at NYC forum,”⁶ was used as a search query template. From this article, the search queries were created (see Box).

Next, to understand questions parents have about vaccines, a procedure similar to Elkin et al⁷ was followed, utilizing Google Trends to mimic “real-life” vaccine information searches conducted by parents. Table 1 from Elkin et al was used as a template for search queries and related queries. Queries were updated on June 8, 2020 by entering each one into the Google Trends database and assessing for additional related queries, which were termed “modified related queries.” Search queries, related queries, and modified related queries were pooled to form a comprehensive, stratified list of questions parents shared concerning vaccines.

To mimic search queries by BAA parents, pooled queries were matched with concerns BAA mothers raised in Shui et al,⁴ resulting in 8 core queries:

1. Are vaccines safe?
2. Are vaccines safe for infants?
3. What is in vaccines?
4. Information about vaccines
5. Are vaccines dangerous?
6. Vaccines cause autism
7. Vaccines pros and cons
8. Should I vaccinate my baby?

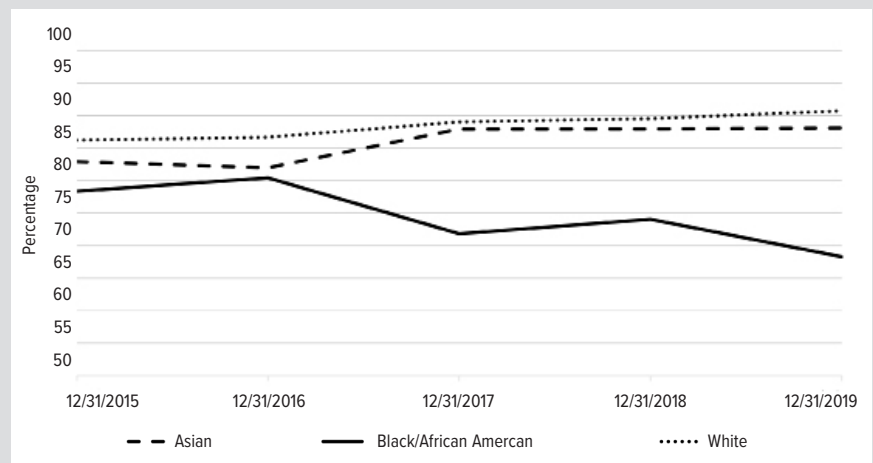
These queries were analyzed for changes over time between January 1, 2015 and June 9, 2020, using advanced search on Google Trends. Data were imported from Google and graphed using Microsoft Excel.

RESULTS

UW Health Childhood Immunization Rates

Data revealed a growing disparity in the CIR of patients of differing racial/ethnic groups at UW Health (Figure 2). A root cause analysis identified a unique rise in anti-vaxx rhetoric and propaganda (Figure 3).

Figure 2. UW Health Childhood Immunization Rates, 2015-2019



As of December 31, 2019, the childhood immunization rate was White: 90.74%, Asian: 88.11%, and Black/African American: 68.29%.

Google Search

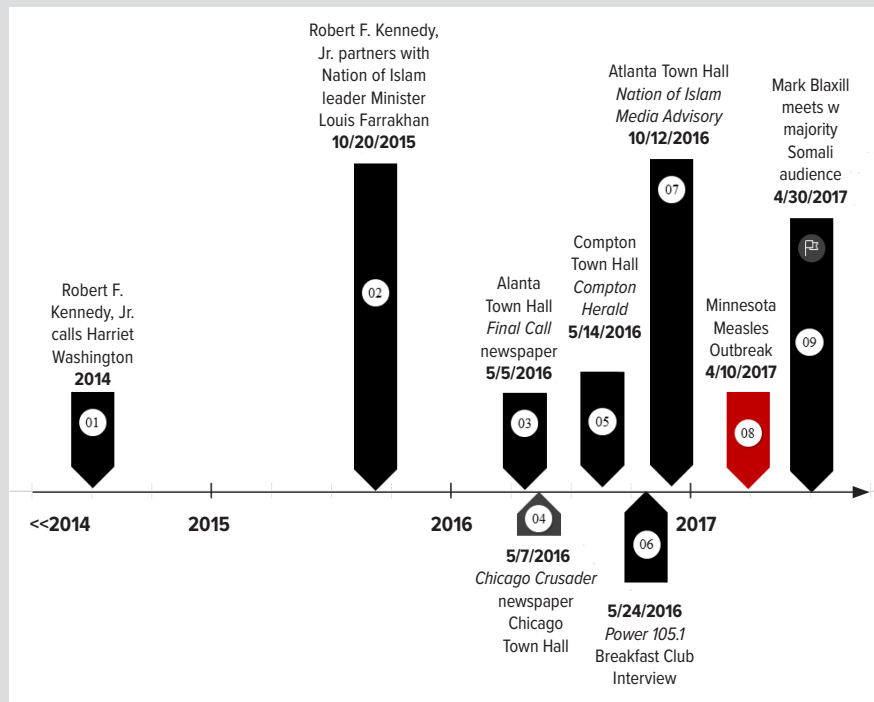
The Google search revealed a number of examples in which the BAA community were targeted through the media with anti-vaccination messages between 2015 and 2019, including the following.

After the 2014 measles outbreak at Disneyland, California Senate Bill (SB) 277 was introduced, outlawing personal and religious immunization exemptions for children attending school.⁸ This was opposed by Nation of Islam Minister Tony Muhammad, who warned African American lawmakers and members of the California Legislative Black Caucus that supporting the bill was a “traitorous act” and that “they [would] not be welcome in the Black community if they vote[d] like that.”⁹ Nation of Islam head Minister Louis Farrakhan also urged Black families in Los Angeles to keep their children home from school if SB 277 was passed, asserting that vaccines were linked to autism, particularly in Black male children.¹⁰

On October 20, 2015, Send2Press Newswire released an article indicating anti-vaccination leader Robert F. Kennedy, Jr., had requested a meeting and subsequently partnered with Farrakhan.^{11,12} On May 5, 2016, the official Nation of Islam newspaper, *The Final Call*, advertised an anti-vaccine conference in Atlanta featuring the documentary “*Vaxxed: From Cover-Up to Catastrophe*.” The film alleged the CDC withheld information about the dangers of vaccines and that the MMR vaccine resulted in a 3.36 increased risk for autism in BAA boys. The article also noted that a similar townhall meeting was scheduled on May 7, 2016 in Chicago.

The Chicago townhall was publicized by the *Chicago Crusader*, a newspaper circulating in 23 predominately BAA Chicago communities.¹³ In its April 29, 2016 publication “Did the CDC Cover-Up a Vaccine/ Autism Connection?”, the authors encouraged readers to attend the town hall to watch the *Vaxxed* documentary, discuss questions like “have certain childhood vaccines

Figure 3. The Spread of Vaccine Hesitancy via Media and Community Events



Between 2015 and 2017, the Robert F. Kennedy, Jr. and Nation of Islam partnership, led to town halls in Atlanta, Chicago, and Compton that were advertised via news media. Additional outlets included radio shows such as *The Breakfast Club*.

[their] children...walk out of the doctors' offices and decide, no, [they were] not going to take that shot in the dark."¹⁶ On May 24, 2016, the Breakfast Club, a prominent radio show on Power 105.1 in New York City, aired an interview with Farrakhan where he stated, "There are scientists who worked for the CDC, that have blown the whistle and admitted that they were a part of creating genetically specific vaccines that do damage to Black boys...If you're pregnant right now, I pray to God you are wise enough to protect what's growing in your womb...we are too trusting of our enemies."¹⁷

On October 12, 2016, the Nation of Islam released a media advisory calling for "safe vaccines now!" and encouraged readers to attend another Atlanta-based protest and town hall meeting. Like the Compton town hall, this included Wakefield, Hooker, Bigtree, Farrakhan, and Kennedy via skype. This also focused on the "CDC cover-up of research showing links between...vaccines and autism in Black boys."¹⁸ Protestors and

caused an increase in autism in Black children, particularly boys?" and participate in a discussion with the documentary's producer and director, Andrew Wakefield and Del Bigtree. Nation of Islam Ministers Ishmael Muhammed and Tony Muhammad and epidemiologist Brian Hooker, PhD, PE, also were there.¹⁴

On May 14, 2016, the *Compton Herald* released the article "Vaxxed: Smoking gun on autism in Black boys, others,"¹⁵ which detailed claims of the Vaxxed documentary and advertised a movie screening on May 19, 2016. During the Compton question and answer session, Del BigTree stated:

"Medicine is supposed to be about health. The CDC is supposed to be about protecting everybody in the country and in the world, and they've failed us there...I just want anyone that has a vaccine-injured family member, could you please stand up right now? This is not right. You've been harmed, you've been lied to, we've all been lied to, but I want you to know this: we have heard your story. We are here. This story is now being told and tonight from here on out you are going to be listened to and we are going to make sure the world hears your story."¹⁶

The next speaker relayed historical injustices in the Black community, including experimentation on slaves by Dr. Marion Sims, The Tuskegee Syphilis experiment, and the current "holocaust" of Black children via "autism-causing" vaccines, encouraging the crowd to "take back [their] communities, take back

participants were expected from across the country.

Google search also revealed a pdf titled "Mandates-African-American-Facts," which was linked to childrenshealthdefense.org, an organization for which Kennedy serves as chair of the board of directors and senior prosecuting attorney. The pdf lists the following 8 "facts," along with supporting statements and reference links.¹⁹

1. CDC has destroyed evidence that Black boys are 3.36 times more likely to develop autism if they receive the MMR vaccine before age 3.
2. CDC published their results in *Pediatrics* in 2004, but they omitted the damaging data. The study fraudulently declared there was no risk of autism from the MMR vaccination.
3. An estimated 162,000 African American male children might have been spared debilitating neurological injury if the CDC scientists had told the truth when the increased risk was first known to them in 2001.
4. Black children with autism are more likely to have severe autism.
5. African Americans may have increased susceptibility to neurological disorders such as autism.
6. African Americans may be more susceptible to vaccine injuries.
7. The Tuskegee Experiment shows CDC's continued blatant disregard for the health of Black sharecroppers.
8. CDC experiments on low-income black and Hispanic infants without informing the parents.¹⁹

On May 5, 2017, *Time Magazine* reported Minnesota was in the midst of its largest measles outbreak in 30 years, with 41 confirmed cases and 11 hospitalizations.¹⁰ Doug Shultz, spokesman for the Minnesota Department of Health, told *The New York Times* that “anti-vaccine activists had targeted members of the Somali community in Minnesota.”²⁰ US-born children of Somali descent previously had the highest rates of MMR vaccination in Minnesota.²¹ However, in 2008, Somali-American parents noticed more of their children were being enrolled in school programs for children with autism spectrum. According to a University of Minnesota study, however, the rate of autism in Somali versus White children in Minneapolis was 1 in 32 versus 1 in 36, respectively; statistically insignificant.²² Despite this finding, rates of childhood vaccination plummeted from 92% to 42% between 2004 and 2014. Additionally, Wakefield made at least 3 private appearances to Somali parents of autistic children between 2010 and 2011.²¹ Sharif Abdirahman, Muslim leader at the Dar al Hijrah mosque in the Cedar-Riverside neighborhood of Minneapolis, stated, “I think the impact [of Wakefield] was very, very, very severe because he linked MMR and autism and, because of that, the Somali community feared the MMR.”²³ Also during the 2017 Minnesota measles outbreak, anti-vaccination leader Mark Blaxill met with a group of 90 Minnesotans—mostly Somali parents—and presented information on measles, autism rates, and the MMR vaccine and how parents could opt out of vaccinations, providing forms and access to a notary public.²⁴

In a 2019 *ABC News* report, Harriet Washington, author of “Medical Apartheid” and activist whose work focuses on the mistreatment of African Americans by certain medical professionals throughout history, recalled her unexpected phone call from Kennedy in 2014.⁶ She remembered discussing his claim that African-American boys were being used in secret vaccine experiments and the parallel he drew to the Tuskegee experiment. When asked for proof, she said “he became very angry and started shouting at [her],” claiming she “was somehow being disloyal to African Americans.”⁶

Anti-vaccination targets are not unique to the BAA community. In New York, unvaccinated and under-vaccinated Orthodox Jews—particularly children—were targeted by anti-vaccination groups such as Parents Educating and Advocating for Children’s Health, which provided misinformation about vaccine safety while citing rabbis as authorities.²⁵ This tight-knit under-vaccinated community that went to school, worshiped, lived, and traveled together, was especially susceptible to a measles outbreak, just like the Somali community in Minnesota, the Amish in Ohio, and the Russian-language immigrants in Washington.²⁵

Google Trends Search

Trends showed a recent increase in the following search queries: “should I vaccinate my baby,” “are vaccines dangerous,” “what is in vaccines,” and “are vaccines safe?”

DISCUSSION

Childhood Immunization Disparity in the UW Health System

UW Health is a Wisconsin leader in childhood immunization coverage. Between January 2015 and June 2019, the Wisconsin Collaborative for Healthcare Quality reported UW Health CIR increased from 85.58% to 87.78%, compared with statewide averages of 78.32% and 81.91%, respectively.²⁶ However, there are significant racial and ethnic disparities. The 2019 WHDR revealed a statewide disparity between BAAs and Whites, with CIR of 70.54% and 82.74%, respectively. At the time of the report, the immunization rate of BAA children at UW Health was 74.04%. In December 2019, it dropped to 68.29%. Importantly, continual declines in CIR were observed only in the BAA community. Vaccination rates in the White community remained relatively constant, while rates in the Asian community increased between 2015 and 2019. The American Indian/Alaska Native and Native Hawaiian/Pacific Islander groups were excluded due to their small sample size (n = 13 and n = 11, respectively).

This glaring disparity prompted a root cause analysis of possible factors contributing to the low vaccination rate in BAA children. We identified 5 overarching categories: people, beliefs, practicalities, education, and media. Because of the sudden drop in CIR between 2016 and 2017 and the continual drop thereafter, we explored factors that may have contributed between 2015 and 2020 and were particularly interested in the possible media contribution.

Anti-vaccination Leaders Exploit Fears of Minority Communities

Anti-vaccination leaders continue to target minority groups, such as the BAA community, and promote medical mistrust, using anecdotes and historical injustices as their standard of proof. When Kennedy reached out to Harriet Washington in 2014, he expected an easy target as she had a history of critiquing racism in the medical establishment. However, after calling him to a higher burden of proof, he retorted with an emotional appeal: she was being disloyal to her race. Despite this “setback,” he continued to pursue partnerships with Black community leaders. In 2015, he found an entry via Nation of Islam leader Farrakhan. After the release of *Vaxxed*, the duo partnered with Wakefield and Bigtree.

This group strategically marketed misinformation in BAA communities, specifically in Compton, Atlanta, Chicago, and Minnesota. They publicized their events using Nation of Islam press releases or newspapers and radio broadcasts with a predominantly BAA audience. During town halls, they employed emotional appeals, first asking if attendees had been “victims of vaccines” and then likening the increase in autism in the Black community to Tuskegee and the Holocaust. After inciting the audience, they screened *Vaxxed* and focused on the claim that Black boys were more likely to become autistic after the MMR vaccine.

Anti-vaccination leaders may have believed they were acting in the best interest of the Black community. However, the Minnesota measles outbreak suggests otherwise. The Somali community

initially had one of the highest vaccination rates in the state. However, after repeated visits from Wakefield and misinformation about the MMR vaccine and autism, vaccine coverage plummeted to 42% in children under age 2. This stark drop in herd immunity made the Somali community an easy target in the 2017 measles outbreak, with 81% of total cases. During the outbreak, Blaxill convened with a group of mostly Somali parents and continued to offer information on how to avoid vaccinations, curtailing efforts of physicians and public health leaders, and worsening the outbreak.²⁴

Tuskegee and Years of Medical Distrust

To prevent further outbreaks in Black communities that already face the burden of systemic racism and inadequate access to health care, health systems and professionals must be intentional in their quest for understanding and address the fears anti-vaccination leaders inflame. The last widow receiving benefits from the Tuskegee Health Benefit Program died in 2009. Thus, we cannot expect an easy answer when confronting generations of trauma and distrust of the health care system.

Combatting the Negative Media Campaign and Building Trust

Antivaccination leaders have highlighted the importance of strategic partnerships with community leaders and trust-building through active involvement with the community. To alleviate health disparities, health systems must follow a similar model.

The Black Barbershop Outreach Program (BBOP) is a national organization with the aim of decreasing the cardiovascular disease and diabetic burden in the BAA male population. Through these previously established networks of trust, they have reached over 10,000 men nationwide and contend that community-partnered principles are necessary when seeking solutions for health disparities.²⁷

Health care-beauty salon partnerships can be mobilized to reach, educate, and reinforce public health interventions aimed at BAA women.²⁸ Linnan et al contend the cosmetologist-customer relationship is a unique blend of loyalty, trust, support, and comfort.²⁸ Madigan et al find clients regard their stylist as trusted advisors,²⁹ and health is a typical topic of conversation during visits that range from 45 minutes to 5 hours.²⁸ Thus, beauty salons present captive audiences of mostly female clientele and offer safe, resourceful, and culturally appropriate ways to exchange information between the medical and BAA community.²⁸

Health care organizations must show their dedication to building trust and diminishing disparities within the BAA community by allocating funding to their community and public health departments. These departments in turn should create committees of key stakeholders, including community leaders and organizations (such as churches and beauty and barber shops),^{27,28,30,31} physicians, and public health experts. Such partnerships are effective ways to improve health outcomes. Willis et al demonstrate the efficacy of such partnerships in their study exploring interventions to

reduce CIR disparities in predominantly BAA, low socioeconomic children in Milwaukee.³² Through their community-based participatory research approach, they demonstrate increases in CIR from 45% baseline to 82% in children age 19 to 35 months. Thus, the cocreational model with key stakeholders is essential for building trust, planning culturally competent health care interventions, and improving health outcomes in underserved communities.

Decreasing the Childhood Immunization Rate Disparity in the Black Patient Population

The Google Trends search indicated a recent rise in vaccine-related queries, specifically, “should I vaccinate my baby,” “are vaccines dangerous,” “what is in vaccines,” and “are vaccines safe?” Increased vaccine hesitancy increases risk for misinformation. To prevent this, health care providers must find strategic ways to correctly and adequately inform Black parents about the necessity of childhood vaccinations.

The Gundersen Health System provides a model for prenatal visits that can be adapted to improve childhood vaccination rates in the BAA community. On its website, there is an appointment planner and checklist for expecting mothers. During months 4, 5, and 6, the checklist includes signing up for prenatal classes. As access to care is an identified barrier in the BAA patient population, the transition to virtual classes may address issues of transportation and childcare barriers in prenatal education. Additionally, Wisconsin has the highest Black infant mortality rate in the country and high rates of prematurity.³⁴ Fifteen percent of Black babies are born prematurely versus 8.6% of White babies, and 60.3% of BAA mothers have adequate prenatal care rates, compared to 83.4% of White mothers.³⁴ Thus, prenatal classes are critical for the Wisconsin BAA population.

Prior to classes, expecting mothers should be asked to complete a questionnaire of items they wish to cover during prenatal classes. This questionnaire also should include a survey on vaccination beliefs, using the 8 core queries listed previously as a model. After completing the survey, high-risk parents should be enrolled in a free, live virtual class on vaccine safety,³⁵ in addition to their itemized prenatal classes. Moderate and low-risk parents should be given a prerecorded video on vaccine safety but have the option to opt-in to a live session. Mothers also should be given the option to have a virtual class with a racially concordant physician, as this has been shown to increase perceived trust in the patient-physician relationship.³⁶ All sessions should provide a historical context for vaccinations and address the 8 core queries. Live sessions should also include an additional question-and-answer session.

Community partnerships with beauty salons and churches present additional opportunities to engage BAA women. The BBOP model uses trained hairstylists to deliver health promotion messages, including diabetes, hypertension, and chronic kidney disease prevention and management.²⁷ Similarly, health care systems should partner with and train cosmetologists to provide prenatal

and vaccine-related information to expecting mothers, incorporating highlights from virtual prenatal classes and addressing the 8 core queries. Church partnerships could be used to expand on this model by providing prenatal classes with trained community leaders during the week. These classes would cover all elements of virtual classes and provide a vaccine hesitancy class, answering the queries in a culturally sensitive manner. Church partnerships also may build trust between the medical community and older generations who have stronger ties to experiences like Tuskegee. This multigenerational, multifaceted approach is a step towards uprooting years of distrust between the medical and BAA community and improving childhood immunization rates.

Future Directions

In the initial phase of this quality improvement approach to address immunization disparities in the BAA community, we did a root cause analysis, conducted a detailed review of one of the possible factors driving the CIR disparity in the BAA community, and propose an innovative virtual approach to engage the BAA community. COVID-19 presents a unique opportunity to address practicalities, such as logistical barriers and clinic hours, by providing patient education via telehealth. In future phases, we will explore strategic ways to market this approach through community partnerships and secure buy-in from key stakeholders in the BAA community and health care system to implement interventions and test their efficacy. Additionally, future focus groups will assess current immunization attitudes in the BAA community, including the impact of anti-vaccination exposure on social media and its influence on parent attitudes and decisions about childhood immunizations.

Limitations

Although we present factors in the media paralleling the time of the CIR decline at UW Health, this is not enough to state they were drivers of the CIR disparity. Thus, we present our findings as possible drivers of the disparity. Additionally, our 8 core queries were based on findings from Google Trends and the 2005 focus group study by Shui et al.⁴ Current factors influencing African American mothers' concerns about vaccine safety may differ from those reported in their study. Hence, the queries should be used as initial guiding questions on vaccine beliefs.

CONCLUSION

It is more critical than ever to understand the fears parents have about vaccines as this may inform transgenerational immunization approaches during the current COVID-19 pandemic. Although the BAA population has been disproportionately affected by COVID-19, surveys suggest they are the least likely to receive the vaccine.³⁷ Thus, understanding drivers is vital in protecting the BAA community at large.

Fears may stem from years of systemic racism and the failure of

the medical system to listen to and build trust with the community. More recently, misinformation from anti-vaccination groups has increased mistrust in the Black community. Moving forward, health systems must assess their own CIR for racial/ethnic disparities and further dissect the people, beliefs, practicalities, education, and media that drive this disparity. From there, they must develop 5-year strategic plans to improve the CIR in the Black community to the Healthiest Wisconsin 2020 standard of 90%. Here, we have presented 8 core queries in the BAA community that are consistent with both literature and Google search queries. Combined with the Gundersen Health System model, the queries are a step in combatting misinformation and ensuring our pediatric population is protected in the fight against racism and for health equity.

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REFERENCES

1. Improving vaccination demand and addressing hesitancy. Essential Programme on Immunization. World Health Organization. Updated June 17, 2020. Accessed July 28, 2020. <https://www.who.int/teams/immunization-vaccines-and-biologicals/essential-programme-on-immunization/demand/>
2. Center for Disease Control and Prevention. Measles (Rubeola). Updated June 9, 2020. Accessed July 28, 2020. <https://www.cdc.gov/measles/cases-outbreaks.html>
3. Wisconsin Collaborative for Healthcare Quality and the University of Wisconsin Health Innovation Program. 2019 Wisconsin Health Disparities Report. Published 2019. Accessed July 28, 2020. <https://www.wchq.org/disparities.php>
4. Shui I, Kennedy A, Wooten K, Schwartz B, Gust D. Factors influencing African-American mothers' concerns about immunization safety: a summary of focus group findings. *J Natl Med Assoc.* 2005;97(5):657-666.
5. Ventola CL. Immunization in the United States: recommendations, barriers, and measures to improve compliance: part 1: childhood vaccinations. *P T.* 2016;41(7):426-436.
6. Schumaker E. Anti-vaccine leaders targeting minority becomes growing concern at NYC forum. *ABC News.* November 10, 2019. Accessed January 31, 2020. <https://abcnews.go.com/Health/rfk-jrs-york-city-vaccine-forum-highlights-concerns/story?id=66158336>
7. Elkin LE, Pullon SRH, Stubbe MH. 'Should I vaccinate my child?' comparing the displayed stances of vaccine information retrieved from Google, Facebook and YouTube. *Vaccine.* 2020;38(13):2771-2778. doi:10.1016/j.vaccine.2020.02.041
8. Martinez M. California vaccine bill that bans personal, religious exemptions advances. *CNN Health.* June 25, 2015. Accessed July 28, 2020. <https://www.cnn.com/2015/06/25/health/california-vaccine-bill/index.html>
9. McGreevy P. Nation of Islam opposes California vaccine mandate bill. *Los Angeles Times.* June 22, 2015. Accessed June 18, 2020. <https://www.latimes.com/local/political/la-me-pc-nation-of-islam-california-vaccine-mandate-bill-20150622-story.html>
10. Playing the race card on vaccines. *The Sacramento Bee.* June 24, 2015. Accessed June 21, 2020. <https://www.sacbee.com/opinion/editorials/article25368613.html>
11. Robert F. Kennedy Jr. and Minister Louis Farrakhan uniting to demand truth and transparency from alleged fraud by CDC. *Send2Press Newswire.* October 20, 2015. Accessed June 18, 2020. <https://www.send2press.com/wire/robert-f-kennedy-jr-and-minister-louis-farrakhan-uniting-to-demand-truth-and-transparency-from-alleged-fraud-committed-by-cdc-2015-1020-02/>

12. Muhammad ET. Demanding CDC transparency and protesting unsafe vaccines. *The Final Call*. May 5, 2016. Accessed June 18, 2020. https://www.finalcall.com/artman/publish/National_News_2/article_103085.shtml
13. The Crusader Newspaper. About the Crusader. Accessed July 28, 2020. <https://chicagocrusader.com/about/>
14. Did the CDC cover-up a vaccine/autism connection? *Chicago Crusader*. April 29, 2016. Accessed June 18, 2020. <https://chicagocrusader.com/cdc-cover-vaccineautism-connection/>
15. Grgodjaian M. Vaxxed: Smoking gun on autism in Black boys, others. *Compton Herald*. May 14, 2016. Accessed February 16, 2021. <https://arlenehowardpr.com/proven-results/smoking-gun/>
16. Kesel A. Vaxxed; Del Bigtree has Q&A with Compton and the Nation of Islam. *We Are Change*. May, 20 2016. Accessed July, 28, 2020. <https://news4achange.com/vaxxed-qa-compton/>
17. Minister Farrakhan full interview at The Breakfast Club Power 105.1. Breakfast Club Power 105.1 FM. May 24, 2016. Accessed July 12, 2020. <https://www.youtube.com/watch?v=-xe7G4VnZE>
18. Safe vaccines now! Friday protest and town hall meeting highlight links between autism, tainted vaccines and children. Media advisory. Nation of Islam. October 12, 2016. Accessed July 28, 2020. <https://www.noi.org/cdc-protest-autism-vaccines/>
19. Children's Health Defense. Mandates African American facts. Accessed ???. <https://childrenshealthdefense.org/wp-content/uploads/Mandates-African-American-Facts.pdf>
20. Jenkins A. Minnesota is experiencing its largest outbreak of measles in nearly 30 years. *TIME Health Newsletter*. May 5, 2017. Accessed June 19, 2020. <https://time.com/4769385/minnesota-measles-outbreak-vaccine/>
21. Sun LH. Anti-vaccine activists spark a state's worst measles outbreak in decades. *The Washington Post*. May 5, 2017. Accessed June 19, 2020. https://www.washingtonpost.com/national/health-science/anti-vaccine-activists-spark-a-states-worst-measles-outbreak-in-decades/2017/05/04/a1fac952-2f39-11e7-9dec-764dc781686f_story.html
22. Benson L. Study: Mpls. Somali, white children equally susceptible to autism. *MPR News*. December 16, 2013. Accessed June 20, 2020. <https://www.mprnews.org/story/2013/12/16/study-mpls-somali-white-children-equally-susceptible-to-autism>
23. Buncombe A. How a Muslim community overcame disinformation linking vaccines to autism. *Independent*. May 6, 2018. Accessed June 19, 2020. <https://www.independent.co.uk/news/world/americas/andrew-wakefield-anti-vaxxer-measles-outbreak-minneapolis-muslim-anti-vaccine-a8331866.html>
24. Alder E. Speaker says vaccines and autism may be linked, a view denied by public health officials. *Star Tribune*. May 2, 2017. Accessed June 21, 2020?. <https://www.startribune.com/speaker-says-vaccines-and-autism-may-be-linked-a-view-denied-by-public-health-officials/420859653/>
25. Belluz J. New York's Orthodox Jewish community is battling measles outbreaks. Vaccine deniers are to blame. *Vox*. April 10, 2019. Accessed June 12, 2020. <https://www.vox.com/science-and-health/2018/11/9/18068036/measles-new-york-orthodox-jewish-community-vaccines>
26. Wisconsin Collaborative for Healthcare Quality. Measure results: childhood immunization status. Accessed July 28, 2020. <https://reports.wchq.org/measure-results/215>
27. Releford BJ, Frencher SK Jr, Yancey AK. Health promotion in barbershops: balancing outreach and research in African American communities. *Ethn Dis*. 2010;20(2):185-188.
28. Linnan LA, Ferguson YO. Beauty salons: a promising health promotion setting for reaching and promoting health among African American women. *Health Educ Behav*. 2007;34(3):517-530. doi:10.1177/1090198106295531
29. Madigan ME, Smith-Wheelock L, Krein SL. Healthy hair starts with a healthy body: hair stylists as lay health advisors to prevent chronic kidney disease. *Prev Chronic Dis*. 2007;4(3):A64.
30. Palmer K, Rivers P, Melton F, et al. Protocol for a systematic review of health promotion interventions for African Americans delivered in US barbershops and hair salons. *BMJ Open*. 2020;10(4):e035940. doi:10.1136/bmjopen-2019-035940
31. Linnan LA, D'Angelo H, Harrington CB. A literature synthesis of health promotion research in salons and barbershops. *Am J Prev Med*. 2014;47(1):77-85. doi:10.1016/j.amepre.2014.02.007
32. Willis E, Sabnis S, Hamilton C, et al. Improving immunization rates through community-based participatory research: community health improvement for Milwaukee's Children Program. *Prog Community Health Partnersh*. 2016;10(1):19-30. doi:10.1353/cpr.2016.0009
33. Victor RG, Ravenell JE, Freeman A, et al. Effectiveness of a barber-based intervention for improving hypertension control in black men: the BARBER-1 study: a cluster randomized trial. *Arch Intern Med*. 2011;171(4):342-350. doi:10.1001/archinternmed.2010.390
34. Annual Wisconsin Birth and Infant Mortality Report 2017. Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services; 2019. Accessed July 3, 2020. <https://www.dhs.wisconsin.gov/publications/p01161-19.pdf>
35. Children's Hospital of Philadelphia. Vaccine Education Center. Accessed January 7, 2021. <https://www.chop.edu/centers-programs/vaccine-education-center>
36. Capers Q IV, Sharalaya Z. Racial disparities in cardiovascular care: a review of culprits and potential solutions. *J Racial Ethn Health Disparities*. 2014;1(3):171-180. doi:10.1007/s40615-014-0021-7
37. Szilagyi PG, Thomas K, Shah MD, et al. National trends in the US public's likelihood of getting a COVID-19 vaccine-April 1 to December 8, 2020. *JAMA*. 2020;325(4):396-398. doi:10.1001/jama.2020.26419

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