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A CASE FOR NARRATIVE MEDICINE ... *and a Prompt*

Corey D. Fogleman, MD, FAAFP
Editor in Chief



Fewer than half of Americans rate the U.S. health care system as “excellent” or “good.” A separate poll reveals that 31% of U.S. adults describe their mental health or emotional well-being as “excellent,” while another 44% rate their mental health as “good.” Each of these are the lowest ratings ever recorded.^{1,2} Simultaneously, physician burnout has reached a historic high.³ Something must change.

Adopting narrative medicine as a technique for interacting with patients is an opportunity to augment these distressing trends. Narrative medicine is a term used to describe close listening and careful reading, interrogating meaning to demonstrate attentiveness and help patients understand and tell their story.⁴ For example: In a busy clinic, when my patient’s PHQ-9 reveals a high score of 15, I might mistakenly diagnose and treat depression in the midst of addressing the metabolic and dermatologic concerns. However, with a more nuanced reading of the situation, I may instead discover what this patient needs is someone to listen.

Narrative medicine teaches us to pay attention and then act by helping our patients construct their story. Perhaps insomnia is related to financial concerns, anxiety due to worry about their family. By using narrative skills, we can help patients understand their diagnosis and prognosis, make connections related to theme, and rewrite outcomes. This skill may be as valuable as discussing the risks and benefits of treatment options.

Storytelling is part of what makes us human. People not only crave a good tale, one might say we need it, and if an explanation is not forthcoming, we may manufacture one. Thus, it behooves us to refine our reading and writing skills. Close reading — from asking why one uses a particular phrase to noticing when our patients pause — can serve us in many ways. It is also worth refining our own writing, which can be therapeutic on many levels and does not require entering the clinic room.

Reading for pleasure allows us to ask from where material is derived, why a character is driven by desire, how age or maturity plays a role, and what seems to motivate and inspire. Responding to the text can mean describing the feelings evoked, considering what we might

have written differently, or finding another meaningful way of telling the story. Describing our patients in poetry or story can help restore texture to documentation that has become rather dull and telegraphic with the use of the electronic medical record.

Rereading and rewriting about what we encounter forces us to emphasize and economize, to pair some ideas and pare others. The best storytellers practice their art and refine their abilities. Our patients will surely appreciate those efforts, as will our colleagues, and *JLGH* might be an ideal forum for sharing these pursuits.

Consider doing some narrative writing yourself. Here are a few prompts:

1. Describe how you felt when a patient told you they declined to follow your recommendations.
2. Describe the last time you conveyed to your patient or colleagues how surprised you were.
3. Write about the last time you were in awe.

While I invite you to read the many important articles in this issue, please spend some time with what we hope will be a new column, “Narrative Medicine,” and what Dr. Scott Paist has written as he recalls afternoons with a dear patient. I am as excited by this kind of writing as I am with the scientific reports we have the privilege to present.

Thanks to all the writers represented within, and a special “Thank you!” to Dr. Paist and his patient for this initial contribution. I encourage you to share your narratives as well.

REFERENCES

1. Saad L. Americans sour on U.S. healthcare quality. Gallup. January 19, 2023. Accessed January 30, 2023. <https://news.gallup.com/poll/468176/americans-sour-healthcare-quality.aspx>
2. Brenan M. Americans’ reported mental health at new low; more seek help. Gallup. December 21, 2022. Accessed January 30, 2023. <https://news.gallup.com/poll/467303/americans-reported-mental-health-new-low-see-help.aspx>
3. Shanafelt TD, West CP, Dyrbye LN, et al. Changes in burnout and satisfaction with work-life integration in physicians during the first 2 years of the COVID-19 pandemic. *Mayo Clin Proc.* 2022;97(12):2248-2258.
4. Charon R. The patient-physician relationship. Narrative medicine: a model for empathy, reflection, profession, and trust. *JAMA.* 2001;286(15):1897-1902.

PREVALENCE OF ASYMPTOMATIC AND SYMPTOMATIC SARS-CoV-2 INFECTION IN A UNIVERSALLY SCREENED OBSTETRIC POPULATION



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OBJECTIVE

The objective of this descriptive study is to determine the rate of symptomatic and asymptomatic carriers of SARS-CoV-2 in a universally screened population of patients admitted to labor and delivery at a suburban community hospital.

BACKGROUND

Early in the COVID-19 pandemic, accurate identification of potentially contagious individuals was recognized as important for adequate protection of hospital staff and appropriate management of patients. This was particularly true in the obstetric population due to a high frequency of contact with health care providers and the concern that the second stage of labor could be an aerosolizing event.¹ Additionally, there was concern that the relatively younger population of laboring mothers would contain a significant number of asymptomatic carriers of the virus with associated potential for spread. It is now thought that at least one-third of SARS-CoV-2 infections in the general population are asymptomatic² and that over half of all infections come through asymptomatic transmission, including presymptomatic and truly asymptomatic cases.³

Studies of obstetric patients admitted to New York City hospitals in March and April 2020 revealed a rate of asymptomatic positive patients as high as 14% to 33% of the presenting population.^{4,6} This finding led to the development of universal testing policies in many obstetric wards throughout the country. It was unclear, however, if these rates could be generalized to areas with comparatively lower prevalence of SARS-CoV-2 infection. Studies in obstetric patients in southern Connecticut and Boston in the spring of 2020 re-

vealed a prevalence of asymptomatic positives of 2.9% and 1.5%, respectively.^{7,8}

Penn Medicine Lancaster General Health Women & Babies Hospital began universal SARS-CoV-2 testing for obstetric patients admitted for delivery on April 22, 2020. At that time, Lancaster County had seen a relatively lower prevalence of SARS-CoV-2 infection compared to New York City.⁹ Prevalence waxed and waned throughout 2020 and peaked during the third wave of the disease in late 2020, though it remained lower than the peak prevalence rates at major epicenters (see Fig. 1).

Region-specific data on asymptomatic carriers, particularly in lower prevalence areas such as Lancaster County, would be useful for anticipatory planning and conservation of tests and personal protective equipment (PPE). This is particularly true since the advent of vaccination and fluctuating prevalence of SARS-CoV-2 in the population at large.

METHODS

Study Design

A retrospective review of health records of all patients admitted for delivery to Women & Babies Hospital from April 22, 2020 through May 1, 2021 was performed. All subjects who were pregnant and presented at our facility for delivery during the study time period were included in the study. The start date denotes the time that universal screening was initiated for all labor and delivery admissions, including planned Cesarean delivery. Antepartum or other non-laboring admissions were excluded. A total of 4,221 subjects were enrolled from this single site, with 3,979 having a SARS-CoV-2 test within five days before de-

livery. Patients with SARS-CoV-2 tests completed after the date of admission were not included.

The electronic medical record for each patient that tested positive for SARS-CoV-2 was reviewed for documentation of the presence or absence of symptoms at the time of presentation. The documentation of any one symptom (including but not limited to fever, cough, shortness of breath, congestion, sore throat, and fatigue) was counted as a symptomatic infection. Vital signs were not directly used to determine if a patient was symptomatic or asymptomatic.

Patients were excluded from the study if they had a prior positive test 14 or more days before admission and therefore were no longer candidates for testing based on current infection-prevention protocols.

This study, reviewed and approved by the institutional review board, was granted a waiver of informed consent.

SARS-CoV-2 Testing Methods

All SARS-CoV-2 testing was performed by collecting nasopharyngeal swabs. Swabs were tested by the Cepheid GeneXpert testing system, which uses real-time reverse transcriptase polymerase chain reaction (RT-PCR) to detect RNA fragments of SARS-CoV-2. The test does

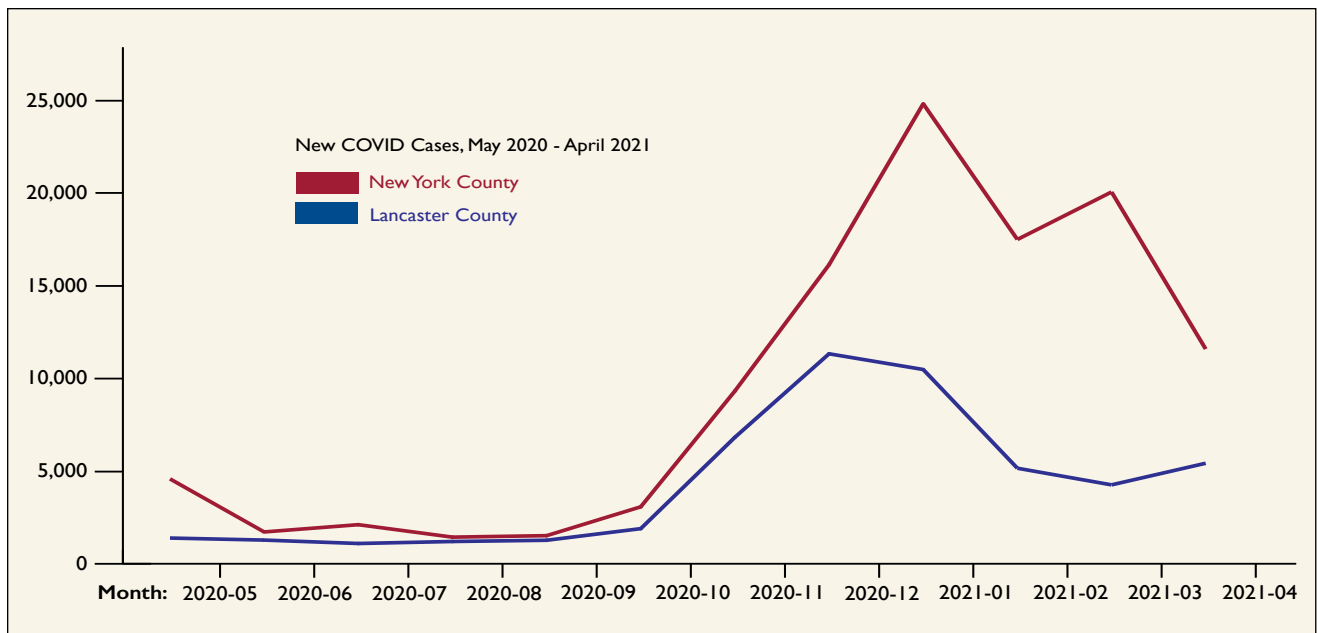
not differentiate between potentially infectious and non-infectious genetic fragments. This test previously demonstrated a sensitivity of 100% and specificity of 80%.¹¹

The rate of asymptomatic positive SARS-CoV-2 among laboring mothers was analyzed, and the rate of positive SARS-CoV-2 tests among laboring mothers was compared to the overall positive rate in the Lancaster General Health patient population, which includes non-obstetric patients in the same health network.

RESULTS

Demographic information on study subjects is summarized in Table 1 on page 4. Body mass index (BMI) was the only demographic factor noted to be associated with a statistically significant increase in SARS-CoV-2 test positivity (p = 0.038).

There were 62 positive tests in the cohort for a test positivity rate of 1.6% (62/3,979). Of those who tested positive, 68% (42/62) were determined to be asymptomatic. Of the symptomatic positive patients, 19 out of 20 had mild disease, with the most frequently reported symptom being mild nasal congestion. One patient had more severe symptoms, which required supplemental oxygen.



New York County 113,929 new cases	4,583	1,717	2,110	1,437	1,517	3,075	9,329	16,147	24,837	17,510	20,074	11,593
Lancaster County 51,625 new cases	1,388	1,278	1,094	1,202	1,268	1,896	6,828	11,337	10,489	5,158	4,260	5,427

Fig. 1. New COVID cases in New York County, New York vs. Lancaster County, Pennsylvania from May 2020 through April 2021. Graph by the LG Health Research Institute including data from Dong, Du, and Gardner, 2020.¹⁰

Fig. 2 summarizes the percent positivity and percent asymptomatic over the study period. The percent positive rate of tests among laboring mothers trended similarly over time while being lower than the overall percent positive rate of tests in the LG Health patient population. During times when the overall prevalence was high (particularly from October 2020 to February 2021), there were higher numbers of women presenting in labor who tested positive for SARS-CoV-2 and a higher percentage who were asymptomatic.

DISCUSSION

This study demonstrated that in a suburban hospital with a universally screened population, the percent positive for SARS-CoV-2 testing overall was 1.6%, with 68%

of these cases being asymptomatic (approximately 1% of the total presenting population). Areas such as New York City that were epicenters early in the COVID-19 pandemic had reported rates of asymptomatic positive patients to be as high as 14% to 33% of the entire presenting population,⁴⁶ leading to protocols that involved universal screening of obstetric populations due to the proclivity for viral spreading in this setting. However, in areas with much lower overall prevalence, the asymptomatic positive rate is expected to be much lower. This finding was confirmed in our study population.

For every symptomatic patient that tested positive during this time period, an additional two asymptomatic carriers of the virus were identified. This finding further highlights the difficulty in preventing

the spread of SARS-CoV-2 in a younger adult population where infection with the virus is frequently asymptomatic.

BMI was the only demographic factor noted to be associated with a statistically significant increase in percent positive test results. Recent research suggests that the SARS-CoV-2 virus infects adipose tissue and there elicits an inflammatory response, which could lead to more severe disease in this population.¹² This may partially explain the findings of our study. However, this finding should be interpreted carefully given the inaccuracy of BMI in pregnant individuals unless calculated prior to pregnancy.

The limitations of this study include low overall numbers of patients who tested positive, recall bias, inaccuracies in documentation of symptoms, and inability to distinguish between noncommunicable viral shedding with current testing protocols. The study also did not evaluate for symptom development following admission, but rather reflects patients who were asymptomatic at the time of testing. Additionally, the majority of the study period was

Table 1. Demographic Data for Patient Population

Variable	Value	Total Patients	Percent Positive	Percent Asymptomatic	P-Value
Race	American Indian or Alaska Native	8	0 (0%)	0 (n/a)	0.320
	Asian	105	1 (1%)	0 (0%)	
	Black or African American	287	5 (2%)	3 (60%)	
	Native Hawaiian/Pacific Islander	4	0 (0%)	0 (n/a)	
	Unknown	369	6 (2%)	6 (100%)	
	White	3,206	50 (2%)	33 (66%)	
Ethnicity	Hispanic/Latino	700	13 (2%)	9 (69%)	1.000
	Non-Hispanic/Latino	3,217	48 (1%)	32 (67%)	
	Unknown	62	1 (2%)	1 (100%)	
Financial Class	Auto	7	1 (14%)	1 (100%)	0.521
	Blue Cross Blue Shield	1,376	20 (1%)	15 (75%)	
	Commercial	945	12 (1%)	6 (50%)	
	Medicare/Medicaid	57	16 (1%)	10 (62%)	
	Other Government Programs	36	0 (0%)	0 (n/a)	
	Self-Pay	375	13 (3%)	10 (77%)	
	Worker's Comp	4	0 (0%)	0 (n/a)	
Age	≤20	231	3 (1%)	3 (100%)	0.192
	20-30	2,114	36 (2%)	26 (72%)	
	30-40	1,568	22 (1%)	13 (59%)	
	40+	66	1 (2%)	0 (0%)	
Gestational Age	≤36 weeks	213	7 (3%)	6 (86%)	0.538
	36-39 weeks	1,388	24 (2%)	15 (62%)	
	39+ weeks	2,351	29 (1%)	20 (69%)	
BMI	<18.5	19	0 (0%)	0 (n/a)	0.038
	18.5-24.9	731	7 (1%)	7 (100%)	
	25-29.9	982	15 (2%)	7 (47%)	
	≥30	1,497	27 (2%)	18 (67%)	

P-values calculated using a Fisher's exact test for each of the variables, comparing the symptomatic to the asymptomatic patients.

conducted prior to the onset of widely available vaccines which may affect the rates of asymptomatic cases in the present day.

CONCLUSION

A universally screened population presenting for delivery in a suburban hospital demonstrated a 1.6% test positivity rate, with 68% of infections being asymptomatic. Approximately 1% of the overall presenting population was found to be an asymptomatic carrier. Although the prevalence of disease was lower in our study than in other populations, a large portion of the positive tests was asymptomatic. This finding adds weight to the importance of universal efforts to reduce viral transmission given the possibility of asymptomatic carriers to infect others.

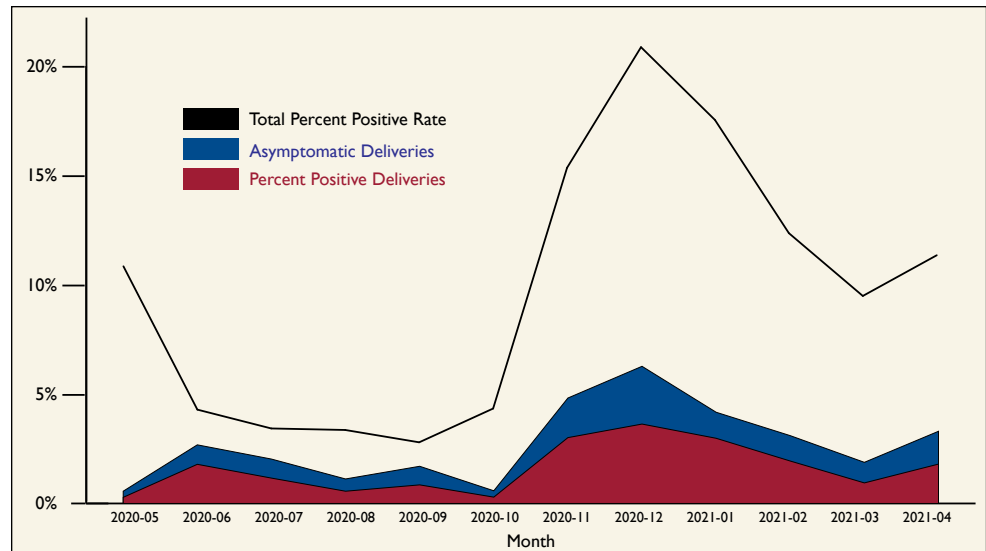


Fig. 2. Percent positive rate of SAR-CoV-2 among mothers who delivered (blue); asymptomatic rate (red) included within positive rate. Black line shows percent positive rate among the entire LG Health population as a comparison.

REFERENCES

- Palatnik A, McIntosh JJ. Protecting labor and delivery personnel from COVID-19 during the second stage of labor. *Am J Perinatol.* 2020;37(8):854-856.
- Oran DP, Topol EJ. The proportion of SARS-CoV-2 infections that are asymptomatic. *Ann Intern Med.* 2021;174(9):1344-1345.
- Johansson MA, Quandelacy TM, Kada S, et al. SARS-CoV-2 transmission from people without COVID-19 symptoms [published correction appears in *JAMA Netw Open.* 2021;4(2):e211383]. *JAMA Netw Open.* 2021;4(1):e2035057.
- Bianco A, Buckley AB, Overbey J, et al. Testing of patients and support persons for coronavirus disease 2019 (COVID-19) infection before scheduled deliveries. *Obstet Gynecol.* 2020;136(2):283-287.
- Breslin N, Baptiste C, Gyamfi-Bannerman C, et al. Coronavirus disease 2019 infection among asymptomatic and symptomatic pregnant women: two weeks of confirmed presentations to an affiliated pair of New York City hospitals. *Am J Obstet Gynecol MFM.* 2020;2(2):100118.
- Sutton D, Fuchs K, D'Alton, M, Goffman D. Universal screening for SARS-CoV-2 in women admitted for delivery. *N Engl J Med.* 2020;382(22):2163-2164.
- Campbell KH, Tornatore JM, Lawrence KE, et al. Prevalence of SARS-CoV-2 among patients admitted for childbirth in southern Connecticut. *JAMA.* 2020;323(24):2520-2522.
- Goldfarb IT, Diouf K, Barth WH, et al. Universal SARS-CoV-2 testing on admission to the labor and delivery unit: low prevalence among asymptomatic obstetric patients. *Infect Control Hosp Epidemiol.* 2020;41(9):1095-1096.
- COVID-19 by County. Centers for Disease Control and Prevention. Updated August 11, 2022. Accessed January 23, 2023. <https://www.cdc.gov/coronavirus/2019-ncov/your-health/covid-by-county.html>
- Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. *Lancet Inf Dis.* 2020;20(5):533-534.
- Rakotosamimanana N, Randrianirina F, Randremanana R, et al. Gene-Xpert for the diagnosis of COVID-19 in LMICs. *Lancet Glob Health.* 2020;8(12):e1457-e1458.
- Martinez-Colón GJ, Ratnasiri K, Chen H, et al. SARS-CoV-2 infects human adipose tissue and elicits an inflammatory response consistent with severe COVID-19. *bioRxiv.* Preprint posted online October 25, 2021.

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TRAUMA-INFORMED CARE

Perspectives from a Rape Crisis Center

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Estimates suggest that between 50% and 60% of adults will experience trauma during their lives, with the incidence of posttraumatic stress disorder (PTSD) in the range of 6% to 7%. For adolescents, as many as 5% (including 8% of female adolescents) suffer from PTSD.¹ Exposure to adverse childhood events (ACEs) is associated with an increased risk for long-term complications, perhaps because it is reflected in the cellular makeup – it is associated with an increased risk for DNA methylation and decreased telomere length.²

The degree of PTSD can be judged using the Sheehan Disability Scale, a brief, validated, proprietary model that helps elucidate impact on a patient’s life.^{1,3} Trauma-informed interventions vary and include outpatient therapy, along with eye movement desensitization and reprocessing. Additionally, cognitive behavioral therapy consistently improves symptoms and associated syndromes, such as depression, anxiety, emotional dysregulation, interpersonal problems, and risk-taking behaviors.⁴

WHAT IS TRAUMA-INFORMED CARE?

Trauma-informed care is an approach to care delivery that assumes patients have experienced a traumatic event. It encompasses approaches to care delivery that are responsive to a trauma history. Trauma-informed care models are defined by multiple institutions and involve a variety of foundational principles and techniques.

Trauma-informed care assumes individuals under care have experienced trauma simply because data suggest most people have experienced some form of trauma. The ACE study, conducted by the Centers for Disease Control and Prevention (CDC) in conjunction with the Kaiser Foundation, showed that as many as two-thirds of U.S. adults carry a history of at least one adverse childhood event.⁵ These initially included adverse events of physical, mental, or sexual abuse; physical or emotional neglect; and household dysfunction, including family members with mental illness, incarceration, substance use, or divorce.⁵

This study further found links between ACEs and multiple poor medical and social outcomes later in life.

These events were cumulative, meaning that the more ACEs one had experienced, the higher the risk for these same mental and physical outcomes. Shockingly, the study revealed that having had four or more ACEs made one twice as likely to smoke, 12 times more likely to have attempted suicide, seven times more likely to be an alcoholic, and 10 times more likely to abuse street drugs.⁵

For perspective, CDC data demonstrate that one in six adults reports experiencing four or more ACEs. This is not to mention the one in four biologically female persons who has been raped or the 43% who have experienced sexual violence other than rape.⁶ Thus, it is vital to develop professional practices that account for and anticipate these experiences in patients.

KEY PRINCIPLES AND CONSIDERATIONS

The Substance Abuse and Mental Health Services Administration (SAMHSA) defines the key principles of trauma-informed care as:⁷

- *Empowerment and Choice*: This principle highlights the importance of using an individual’s strength to empower them in the development of their own treatment. In other words, shared decision-making.
- *Collaboration and Mutuality*: This principle represents the importance of maximizing collaboration among the staff, the patient, and within families.

Key Principles of Trauma-Informed Care

- > Empowerment and choice <
- > Collaboration and mutuality <
 - > Safety <
- > Trustworthiness and transparency <
- > Cultural, historical, and gender issues <
 - > Peer support <

Source: SAMHSA

Both aspects of this principle highlight the value and importance of sharing power.

- **Safety:** This principle means developing health care settings and activities that ensure patients’ physical and emotional safety.
- **Trustworthiness and Transparency:** This principle suggests we create clear expectations about what proposed treatments will entail and how services will be provided, and follow through on plans and expectations with integrity.
- **Cultural, Historical, and Gender Issues:** This principle asks that organizations develop practices of being responsive to the racial, cultural, and social needs of the individuals being served. If these are not recognized and tended to, the institution risks the possibility of retraumatizing whole populations of patients.
- **Peer Support:** This principle ensures that survivors are connecting through networks, offering mutual support that entails self-help and promotes recovery. SAMHSA further outlines guidance to organizations that trauma-informed care be provided through these four Rs⁷:

1. *Realize* the impact of trauma and seek to understand pathways to recovery.

2. *Recognize* the signs and symptoms of trauma in patients and staff alike.

3. *Respond* by integrating knowledge of trauma.

4. *Resist* retraumatization by recognizing and changing stressful or toxic institutional practices that could retrigger painful experiences.

The Sanctuary Model of trauma-informed care is a framework to treatment planning, community conversations, and collaborative decision-making that helps people heal from their trauma.⁸ The model is *SELF: Safety, Emotion management, Loss, and Future*, suggesting providers first recognize that safety was compromised, then understand how emotion management is difficult when safety is compromised. It becomes important to acknowledge what has been lost in this traumatic process and then ultimately turn to the future by focusing on the control we do have over our future outlook, our boundaries, and our choices.

A good example is that of the COVID-19 pandemic. As we faced the uncertainty and assault to our safety, emotions across our society became difficult to manage. Health care workers cried in hallways, people engaged in fist fights over mask-wearing in grocery stores. We lost many loved ones, we lost our ability to travel freely, children lost their ability to attend school in person, we lost our sense of societal stability. As we heal from this collec-

tive trauma, we all have had to sort out what we can still control, and ways we can amend our lives to find a sense of peace and stability as we move forward and heal.

Six main considerations have been proposed when delivering trauma-informed care: believe survivors, share the power, listen actively, help ground survivors, request consent to touch, and offer continued education.⁹

**Key Considerations
When Delivering
Trauma-Informed Care**

- > Believe survivors <
- > Share the power <
- > Listen actively <
- > Help ground survivors <
- > Request consent to touch <
- > Offer continued education <

Source: Texas Association Against Sexual Assault

Believe Survivors

So often survivors are not believed, which means accepting their story as true is a crucial step in creating a safe space for them. The process of disclosing trauma can appear in many ways. We must understand that experiencing a traumatic event like sexual assault can affect a person’s short-term memory, and often details of such an experience come back to the survivor in a piecemeal fashion.

This has historically led legal officials and medical professionals, who did not understand the experience of the survivor, to question the legitimacy of the survivor’s story. If we start from a place where survivors are believed, we begin to create the kind of safe space where the survivor can feel comfortable to process and heal from their experience.

Share the Power

When working with patients who may have experienced trauma, we must be mindful of our position of power as providers and intentionally choose to share that power in the clinical space. One crucial way to share power in the clinical space is to shift our clinical perspective from “What is wrong with this patient?” to “What happened to this patient?” This includes recognizing the survivor experience; assuring the patient that no matter what occurred before, during, or after the traumatic

experience, none of this is their fault; and practicing active, shared decision-making.

Listen Actively

Active listening is an important way to share power and create a safe space for a patient who has endured trauma. It also signals that you are present and available for patients to share their story. Some tips for active listening in the trauma-informed setting include:

- Position yourself at the same physical level as the patient.
- Maintain good eye contact.
- Use verbal and physical cues to signal you are listening, e.g., nodding, eye contact, small affirmative words.
- Never interrupt someone when they are sharing their story.

If you find it difficult to maintain eye contact or listen actively to these patients, it is worthwhile to self-reflect: What is making you uncomfortable and why? Traumatic experiences can be triggering for all parties involved. Do the work to investigate your own feelings as an ongoing reflective process. Doing so will make you a better listener, help you grow as a human and clinician, and allow you to demonstrate to the patient that you are available to support them.

Help Ground Survivors

Often when patients are discussing their trauma, they can find themselves flooded with emotions. It is important for clinicians to be able to help patients ground themselves in the present moment, as the heightened emotions may signify that they are reliving their trauma experience. Here are a few ways to help ground survivors who may be having this experience:

- Ask them to pause and take a few slow deep breaths.
- Ask them to plant their feet on the floor with their back straightened.
- Have them look around the room and name a few of the items that they see.

Many times, having the patient keep their eyes open can help them reorient to the present, which helps pull them out of reliving their trauma.

Request Consent to Touch

Consent is primary in trauma-informed care. It is extremely important to respect the survivor's personal space. No one has permission to touch any other person without consent. This is especially true for health care workers providing trauma-informed care. Even if you think they want to be touched in a comforting or reassuring manner, never touch a patient until you have obtained permission.

Offer Continued Education

Lastly, it is important for trauma-informed providers and institutions to continually seek education about improving their trauma-informed care. As the adverse childhood events study has expanded, the medical community has learned more about the many ways that childhood events affect health. As a result, our practices must evolve to reflect current understanding of the impact and effects of trauma. The trauma-informed provider will commit to lifelong engagement in continued understanding of these experiences and how best to respond to them.

RESOURCES FOR PATIENTS

Penn Medicine Lancaster General Health providers are fortunate to have YWCA Lancaster's Sexual Assault Prevention and Counseling Center (SAPCC) as a resource for patients who are survivors of sexual assault. SAPCC is available for people of all races, genders, ages, and ethnicities who have in any way been impacted by sexual assault, abuse, or harassment. Their mission is to support and advocate for survivors and the social circles of survivors. All services are free.

The center provides counseling services, support groups, medical advocacy services, and legal accompaniment to anyone affected by sexual assault, harassment, or abuse, plus they provide training to organizations and primary prevention services. The center has staff members available 24 hours a day, seven days a week for survivors in our community. The 24-hour crisis line is 717-392-7273. Put this number in your phone now, while reading this article. You never know who will need it and when.

REFERENCES

1. Post-Traumatic Stress Disorder (PTSD). National Institute of Mental Health. Accessed September 29, 2022. <https://www.nimh.nih.gov/health/statistics/post-traumatic-stress-disorder-ptsd>
2. Soares S, Rocha V, Kelly-Irving M, Stringhini S, Fraga S. Adverse childhood events and health biomarkers: a systematic review. *Front Public Health*. 2021;9:649825.
3. Sheehan KH, Sheehan DV. Assessing treatment effects in clinical trials with the discan metric of the Sheehan Disability Scale. *Int Clin Psychopharmacol*. 2008;23(2):70-83.
4. Han HR, Miller HN, Nkimbeng M, et al. Trauma informed interventions: a systematic review. *PLoS One*. 2021;16(6):e0252747.
5. About the CDC-Kaiser ACE Study. Centers for Disease Control and Prevention. Updated April 6, 2021. Accessed September 29, 2022. <https://www.cdc.gov/violenceprevention/aces/about.html>

6. Victims of Sexual Violence: Statistics. RAINN. Accessed September 29, 2022. <https://www.rainn.org/statistics/victims-sexual-violence>

7. SAMHSA's Trauma and Justice Strategic Initiative. SAMHSA's concept of trauma and guidance for a trauma-informed approach. July 2014. Accessed September 29, 2022. <https://store.samhsa.gov/sites/default/files/d7/priv/sma14-4884.pdf>

8. Sanctuary Model. Sanctuary Institute. Accessed September 29, 2022. <https://www.thesanctuaryinstitute.org/about-us/the-sanctuary-model/>

9. Texas Association Against Sexual Assault. Sexual assault advocate training manual. Updated November 2019. Accessed September 29, 2022. <https://evawintl.org/wp-content/uploads/2016-Sexual-Assault-Advocate-Training-Manual.pdf>

Editor's note: This article is based in large part on a Penn Medicine Lancaster General Health Family Medicine Grand Rounds Presentation given March 15, 2022, by Brittany Leffler. Aside from those already noted above, citations for that talk include the following:

> Bloom SL, Farragher B. *Restoring Sanctuary: A New Operating System for Trauma-Informed Systems of Care*. Oxford University Press; 2013.

> Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *The Adverse Childhood Experiences (ACE) Study*. *Am J Prev Med*. 1998;14(4):245-258.

> PACEsConnection. *3 Realms of ACEs*. 2022. Accessed September 29, 2022. <https://www.pacesconnection.com/pages/3RealmsACEs>

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JLGH WINTER 2022 RECAP

Q&A for Extended Learning

The last issue of The Journal of Lancaster General Hospital offered a clinical primer on the 2022 monkeypox outbreak in the United States, a case report highlighting ethical considerations in medicine, a photo quiz on helminthiasis in Lancaster County, and tips from several medical specialty organizations. Review the questions and answers below to see how much you remember from the Winter issue. Need a refresher? All issues of JLGH are available online at JLGH.org.

Q Transmission of the 2022 monkeypox outbreak occurred through skin-to-skin contact, fomite transmission, and respiratory secretions. What protection is recommended for providers while interacting with patients with suspected monkeypox infection?

A The CDC recommends that providers wear a gown, gloves, eye protection (goggles or face shield), and an N95 respirator. Additionally, patients should be evaluated and treated in a single-person room whenever possible.

Q The case report from the Family Medicine Residency Program addressed ethical considerations in medicine, including the need for care team support. List some resources available at LG Health.

A Available resources include the Penn Medicine Lancaster General Health Critical Response Team, nurse leadership, Palliative Care team, Chaplain Department, and free counseling services through EAP and Penn Cobalt. The LG Health Ethics Committee is also available for consult to any member of a patient's care team for any patient in the LG Health system.

Q What are the five most common types of soil-transmitted intestinal nematode infections, and what is the most effective treatment for each?

A Enterobiasis (infection with pinworm), ascariasis (infection with large roundworm), necatoriasis (infection with hookworm), trichuriasis (infection with whipworm), and strongyloidiasis (infection with threadworm) are most common. Albendazole is the best treatment in all but strongyloidiasis, which — in uncomplicated cases — is best treated with ivermectin.

Q Referring to the Top Tips section of the Winter issue, which of the following statements are true?

1. In older adults, adding a second antihypertensive rather than maximizing the dose of an initial one results in a greater number of patients stopping their regimen.
2. The American College of Physicians recommends initial treatment of uncomplicated diverticulitis without antibiotics.
3. Nasal irrigation can decrease the progression of mild COVID-19 progression.
4. All of the above are true.

A The answer is:
 4. All of the above are true.

INFLUENCES ON AFRICAN AMERICAN AND BLACK MEN'S DECISIONS ABOUT COLORECTAL CANCER SCREENING



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BACKGROUND

Colorectal cancer (CRC) is the second leading cause of cancer death in Lancaster County.¹ There are racial disparities in cancer screening, diagnosis, and outcomes across the United States, and these disparities also exist in Lancaster County.² The age-adjusted death rate for CRC is higher in Lancaster among Black individuals (15.5 per 100,000) than among white (12.5 per 100,000) and Hispanic (14.5 per 100,000) individuals.³

Research studies have concluded that large numbers of deaths from cancer could be prevented through increased use of evidence-based screenings, including 58% to 68% of CRC deaths.⁴ At Penn Medicine Lancaster General Health, 75.1% of all eligible patients and 72.0% of Black patients were up to date with CRC screening in Fiscal Year (FY) 2022. LG Health has set a goal to increase colorectal cancer screening rates among all patients and to reduce the disparity in screening rates for Black patients. To achieve this goal, LG Health has already implemented several strategies, including a text-based campaign asking patients to make an active decision about scheduling a screening, as well as an initiative to mail at-home fecal immunochemical test (FIT) kits to patients who were not up to date with screening.

In Summer 2022, LG Health partnered with the NAACP Lancaster Branch and researchers at Allium Development Group LLC to study Black men's perceptions about colorectal screenings. Our research questions were:

- How do Black male patients perceive their risk of colorectal cancer?
- What do patients perceive are the benefits of screening for colorectal cancer?
- What are the barriers to completing screening?
- What are the factors that encourage screening?

- What do patients recommend for the content and format of interventions to improve screening rates among Black males?

The overall goal of this project was to gather community feedback to improve LG Health's colorectal cancer screening services for Black male patients.

METHODS

We conducted this study between June and September of 2022. We initially planned to conduct a mixed-methods study, including an online survey and focus group discussions with Black and African American men. However, due to recruitment challenges, we changed our approach to gather data through individual interviews.

To recruit participants, LG Health and the NAACP Lancaster Branch canvassed neighborhoods and Black-owned businesses, passed out flyers at church events, sent out mass emails, and posted information about the study in community centers and at community partner organizations. LG Health staff emailed a study invitation to a list of Black males, ages 50-85 years old, from patient contact information in LG Health's electronic medical record. However, we were unable to recruit any participants for the online survey and few for focus groups. Overall, 11 individuals contacted LG Health with interest in the study, and seven individual interviews were scheduled and completed. Most of the participants were directly asked by NAACP staff to participate in the study.

The final study included seven Black men from Lancaster County between the ages of 50 and 85 years. All seven participants had undergone colorectal cancer screenings. Participants were given \$50 in compensation for their time. The interviews were completed by one interviewer, a staff member at Allium.

The interviews were conducted over the phone using a semi-structured guide developed by LG Health and Allium and lasted approximately 30-45 minutes. Once the interviews were completed, Allium transcribed the conversations to text. Next, the researchers used thematic coding to analyze the transcripts for answers to the research questions. Coding in qualitative research is the process of using short phrases or words to categorize information in the text. A codebook is used to track codes and their definitions to use them consistently across all interviews. These codes were used to identify common themes across all interview transcripts. The themes were summarized in a written report answering the research questions. The Institutional Review Board at LG Health reviewed and approved the study on July 13, 2022, and all participants provided informed consent. The study was supported by LG Health's internal community benefit budget and received no external funding.

RESULTS

Reasons Why Black Men Choose to Be Screened for CRC

Families play an important role in advocating for Black men to be screened for colorectal cancer. The findings from the interviews suggest that men are more likely to be screened if they have a family member who has died from cancer, specifically colorectal cancer. Several of the men interviewed had close family members who had died from cancer. They also had family members, such as spouses, parents, and uncles, who specifically and repeatedly talked to them about the value of being screened. This family influence was

by far the largest outside influence on why individuals went on to participate in colon cancer screening.

Among the men interviewed, medical professionals – specifically primary care physicians – were important advocates for them to complete screening for colorectal cancer. Of the men who participated in the interviews, their physicians' influence was second in importance only to influence provided by their families. The men who mentioned their physicians were important in their screening decision had long-term and trusting relationships with physicians who advocated for screening. Several men mentioned that they respected their physicians' advice because they paired encouragement with up-to-date medical information and genuine care for their patients' well-being.

Looking back, several men felt that the sense of relief they got from a negative test result would encourage them to be screened in the future or to encourage others to be screened. Some of the men interviewed were screened because it would allow them to know their status and experience a feeling of relief if their result was negative. Many of these men had family histories of colorectal cancer and felt being screened was an important step toward peace of mind.

Reasons Why Black Men Aren't Screened for CRC

Based on our interviews, fear, mistrust, avoidance, and information sources all play a role in why Black men are not screened for colorectal cancer. All the men who were interviewed had been screened, but they gave this list of reasons for why they believe other Black men do not want to be screened.

ABSTRACT

Background: Colorectal cancer (CRC) is the second leading cause of cancer death in Lancaster County, and Black individuals are at higher risk of colorectal cancer death than are individuals of other race groups. In the summer of 2022, Penn Medicine Lancaster General Health partnered with the NAACP Lancaster Branch and researchers at Allium Development Group LLC to gather community feedback to improve LG Health's colorectal cancer screening services for Black male patients.

Methods: We conducted interviews with seven Black men from Lancaster County between the ages of 50 and 85 years. The interviews were completed by one interviewer over the phone using a semi-structured interview guide and lasted approximately 30-45 minutes. Once the interviews were completed, we transcribed the conversations to text, used coding to identify themes across all interviews, and summarized the findings.

Results: The Black men who participated in this small qualitative study indicated that family members and trusted physicians influenced their decisions about participating in CRC screening. Further, relief from receiving a negative result also encourages repeat screenings. The barriers to screening include fear and mistrust of health care systems, fear of getting a cancer diagnosis, concerns about cost, and the invasiveness of a colonoscopy. Results of this small survey suggest word of mouth is an important communication tool for the Black community, and communication strategies should include traditional media as well as distribution of clear and updated information through churches, community organizations, and neighborhood leaders.

Conclusion: Based on the participant feedback and existing research, increased CRC screening will require several approaches, including tailored communications for the Black community, patient navigation services, long-term trusting relationships between Black men and primary care providers, and continued efforts to increase diversity and reduce bias and racism in health care.

Number one on this list is fear. Some men fear finding out that they already have colorectal cancer. Said one study participant: “A lot of older Black guys don’t like going to the doctors, and then they tell you a story, ‘Every time I go to the doctor, I come back with something worse.’”

According to the participants, Black men avoid going to the doctor from fear of more medical bad news or because they fear they are being treated like “guinea pigs.” The example that was cited by multiple men was the Tuskegee Syphilis Study, which enrolled hundreds of Black men without consent and for whom appropriate treatment was withheld.⁵ The participants in this LG Health study perceived that the history of the mistreatment of the Black community by the medical community has led many men to avoid seeking medical care.

Several men also noted that when people attempt to do online research, even in medical journals, they find information that scares them about colorectal cancer and other diseases. They also reported hearing misinformation within the Black community that screening is not important, which they suggest discourages men from getting what is seen as an invasive procedure. The participants perceived that fear and desire to avoid colonoscopies was high on many men’s lists for why they do not want to be screened. Many would prefer to not spend their free time undergoing the procedure. Another fear that the men observed was the unknown cost and unknown insurance coverage for screening.

Participant Recommendations to Improve Screening for the Black Community

The men interviewed believe that raising general awareness across the Black community can have a positive impact on the number of people screened. The men interviewed said that when friends and family members are aware, have up-to-date information, and are regularly discussing the need for screening, men are more likely to be screened. Women can play a key role in advocating for screenings by reminding partners and family members about the need to be screened. The interview participants also felt that older males should talk to younger males about their experiences to set an example and to decrease any associated stigma around the procedure.

The men interviewed indicated that word of mouth is very important within the Black community and can be supported by pamphlets and flyers that are available in churches, barber shops, community clinics, and other community centers.

Finally, doctors have an important communication role due to the value of the trust they have built with patients, and they should be prepared to talk in detail about the screening process. The interviewees shared that having a long-term, ongoing, trusting relationship with their doctor played an important role in their willingness to get screened through education and advocacy.

The interviews indicated that the Black community needs clearer information about the benefits of colorectal cancer screening. Topics that the men suggested would be interesting to the community include age recommendations for screening, how much screening costs, and statistics and stories of those who have survived. “It’s your life, and you have to be proactive with your life,” noted a study participant.

The Black men interviewed reported that their community members want to be informed consumers about medical care and are more likely to be screened if they understand the causes of colorectal cancer, the benefits of screening, and the options for screening tests. They would like physicians to share up-to-date recommendations, offer options for different types of screenings, and start the conversation before men reach the medical age for screening. The men interviewed said that physicians, family members, and friends who urged them to be screened out of a desire for their well-being had a significant positive impact on their decision to be screened. Overall, the participants identified a need to shift the narrative from cancer and screening as a negative experience to preventive cancer care as a normal part of a man’s healthy and long life.

DISCUSSION

This study gathered community input from local Black men who had completed a CRC screening. We explored the reasons they chose to be screened, barriers to screening, and their recommendations for increasing screening in the Black community. The themes raised in their interviews aligned with evidence in the literature about effective ways to increase screening.

Multicomponent interventions are one way to intervene. Multicomponent interventions are strategies that combine multiple modalities. There is strong evidence that multicomponent interventions are effective in increasing screening with colonoscopy or fecal occult blood test (median increase of 15.4 percentage points). Based on evidence from a systematic review of 88 studies, the best results come from combining three types of interventions, those that:

1. Increase interest in screening (such as patient re-

mindings, and print and multimedia communication campaigns).

2. Increase access to screening (such as reducing out-of-pocket costs, adding more convenient sites or hours, and assisting with transportation).
3. Increase screening recommendations from providers (such as clinical decision support or provider reminders).⁶

As a result, the Community Preventive Services Task Force recommends multicomponent interventions to increase screening for colorectal cancer.

Recent research studies specifically with African American and Hispanic patients found that combining mailed fecal occult blood test (FOBT) kits, tailored educational materials, follow-up communications, and patient navigation services was effective in increasing CRC screening.⁷⁻¹¹

Our interview participants shared that the recommendation from a trusted doctor was important in their decision to be screened. Other studies have found that the lack of a recommendation from a doctor and lack of awareness about screening do contribute to racial and socioeconomic disparities in cancer screening.¹²

These findings have several practical implications for interventions, including increasing access to primary care for Black men and encouraging relationship-building between primary care providers and patients. Providing tailored education tools and clinical reminders can also help support providers' conversations about screening.

The participants in this small study focused on the need for increasing tailored communication to the Black community. Their suggestions about communication strategies and content reflect best practices in social marketing for health promotion, such as using trusted messengers within the Black community and focusing on communication channels that patients prefer to use. Because word of mouth is an important communication method, information around colorectal cancer and screenings should target two specific audiences: male patients who are nearing or at the age for screening and the Black community as a whole.

In addition to the neighborhood-level communication strategies the men recommended, more traditional marketing strategies would include public health an-

nouncements on TV, on social media, and at sporting events. The public health announcements should include local Black doctors, celebrities, and community members telling their personal stories. All these methods will help raise awareness and increase the volume of trusted voices on this topic. The men also recommended providing clear and updated information, clearly describing options for testing, and framing the messages in a positive way. Many in the community already know people who have died, so changing the narrative to those who caught polyps early and have been screened regularly could change the community perception from a death sentence to an opportunity for life. Using principles of health literacy, health care organizations should tailor communication materials to ensure that Black community members can find, understand, and use information to make an informed decision about CRC screening for themselves and others.¹³

Finally, our interviews raised the issue of racism and mistrust in the health care system, which is also reflected in the literature. Many quantitative studies link higher mistrust scores with lower rates of CRC screening among Black Americans. Fear of experimentation and

intrusiveness of screening methods have appeared in other qualitative studies as unique barriers to CRC screening among Black men.¹⁴ Mistrust may be rooted in the unjust differences that Black patients experience in the health care system, as sug-

gested in a recent systematic review showing that in 38 of 66 studies, Black patients reported experiencing worse patient-physician communication quality and satisfaction, less information-giving, less participatory decision-making with providers, shorter visits, and more experiences with physicians who were verbally dominant in conversations, compared with white patients.¹⁵

A diverse health care workforce with Black staff members, health care providers, and leaders at all levels is important to reduce disparities in care.¹⁶ In addition, all providers and staff should be required to continue participating in Diversity, Equity, and Inclusion initiatives to improve knowledge about unconscious bias, cultural humility, root causes of health disparities, and strategies for reducing inequity in health care. In LG Health's 2022 Community Health Needs Assessment, Black and Hispanic/Latino patients indicated that one

“These findings have several practical implications for interventions, including increasing access to primary care for Black men and encouraging relationship-building between primary care providers and patients.”

of the top three ways to improve access to health care in Lancaster County is to increase the diversity and cultural competence of health care providers.¹⁷

LIMITATIONS

The limitations of this study include the small sample size and the lack of participation from individuals who have not been screened. Despite several months of recruitment using a variety of methods with a community partner organization, we found that men were reluctant to participate in a research study on this topic. Our community partner organization received feedback from eligible men that they were uneasy with the idea of being “research subjects.” In addition, we originally planned for focus group discussions led by Black men in the community, hoping to encourage more open discussion by matching the discussion leader with the participants in race, gender, and age group. However, when we switched to interviews, the interviewer was a younger, white female. The difference in age, race, and gender may have had an impact on the

information shared during the interviews. Finally, we did not have an opportunity to validate the conclusions by sharing the report with the participants and inviting their feedback.

CONCLUSION

The Black men who participated in this small qualitative study indicated that family members and trusted physicians influenced their decisions about participating in CRC screening, and the sense of relief from knowing the result also encourages screening. The barriers to screening include fear and mistrust of health care systems, fear of getting a cancer diagnosis, concerns about cost, and the invasiveness of a colonoscopy. Based on the participant feedback and existing research, increasing CRC screening likely requires a multicomponent approach, including communications tailored for the Black community, patient navigation services, long-term trusting relationships between Black men and primary care providers, and continuing efforts to increase diversity and reduce bias and racism in health care.

REFERENCES

1. Cancer Statistics Dashboard, Number of Deaths, Lancaster County Residents, 2019. Pennsylvania Department of Health. Accessed December 4, 2022. <https://www.health.pa.gov/topics/HealthStatistics/CancerStatistics/dashboard/Pages/Cancer-Dashboard.aspx>
2. Tong M, Hill L, Artiga S. Racial disparities in cancer outcomes, screening, and treatment. Kaiser Family Foundation. February 3, 2022. Accessed December 14, 2022. <https://www.kff.org/racial-equity-and-health-policy/issue-brief/racial-disparities-in-cancer-outcomes-screening-and-treatment/>
3. Cancer Statistics Dashboard, Age-Adjusted Death Rate per 100,000. Pennsylvania Department of Health. Accessed December 4, 2022. <https://www.health.pa.gov/topics/HealthStatistics/CancerStatistics/dashboard/Pages/Cancer-Dashboard.aspx>
4. Sharma KP, Grosse SD, Maciosek MV, et al. Preventing breast, cervical, and colorectal cancer deaths: assessing the impact of increased screening. *Prev Chronic Dis.* 2020;17:E123.
5. The Syphilis Study at Tuskegee Timeline. Centers for Disease Control and Prevention. Updated December 5, 2022. Accessed January 23, 2023. <https://www.cdc.gov/tuskegee/timeline.htm>
6. Cancer Screening: Multicomponent Interventions for Colorectal Cancer. The Community Guide. Updated September 4, 2020. Accessed November 11, 2022. <https://www.thecommunityguide.org/findings/cancer-screening-multicomponent-interventions-colorectal-cancer.html>
7. Rogers CR, Matthews P, Xu L, et al. Interventions for increasing colorectal cancer screening uptake among African American men: a systematic review and meta-analysis. *PLoS One.* 2020;15(9):e0238354.
8. Roy S, Dickey S, Wang HL, et al. Systematic review of interventions to increase stool blood colorectal cancer screening in African Americans. *J Community Health.* 2021;46(1):232-244.
9. Kwaan MR, Jones-Webb R. Colorectal cancer screening in Black men: recommendations for best practices. *Am J Prev Med.* 2018;55(5):S95-S102.
10. Mojica CM, Parra-Medina D, Vernon S. Interventions promoting colorectal cancer screening among Latino men: a systematic review. *Prev Chronic Dis.* 2018;15:E31.
11. Reuland DS, Brenner AT, Hoffman R, et al. Effect of combined patient decision aid and patient navigation vs. usual care for colorectal cancer screening in a vulnerable patient population: a randomized clinical trial. *JAMA Int Med.* 2017;177(7):967-974.
12. Finney Rutten LJ, Nelson DE, Meissner HI. Examination of population-wide trends in barriers to cancer screening from a diffusion of innovation perspective (1987-2000). *Prev Med.* 2004;38(3):258-268.
13. History of Healthy Literacy Definitions. Healthy People 2030. Accessed December 16, 2022. <https://health.gov/healthypeople/priority-areas/health-literacy-healthy-people-2030/history-health-literacy-definitions>
14. Adams LB, Richmond J, Corbie-Smith G, Powell W. Medical mistrust and colorectal cancer screening among African Americans. *J Community Health.* 2017;42(5):1044-1061.
15. Shen MJ, Peterson EB, Costas-Muñiz R, et al. The effects of race and racial concordance on patient-physician communication: a systematic review of the literature. *J Racial Ethn Health Disparities.* 2018;5(1):117-140.
16. Jetty A, Jabbarpour Y, Pollack J, Huerto R, Woo S, Petterson S. Patient-physician racial concordance associated with improved healthcare use and lower healthcare expenditures in minority populations. *J Racial Ethn Health Disparities.* 2022;9(1):68-81.
17. 2022 Community Health Needs Assessment. Penn Medicine Lancaster General Health. Accessed on December 4, 2022. <https://www.lancastergeneralhealth.org/about-lancaster-general-health/caring-for-our-community/needs-assessment-and-improvement-plan>

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IMPLEMENTING CDC'S STEADI FALL RISK SCREENING IN AN OUTPATIENT NEUROLOGY PRACTICE

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INTRODUCTION

Falls are a serious threat to the health and well-being of our aging population. More than 10,000 people in the United States turn 65 every day, and one out of four of these seniors falls each year.¹ The Centers for Disease Control and Prevention (CDC) reported approximately 36 million falls among this age group in 2018. Out of these, 8.4 million falls resulted in an injury that required medical visits or limited regular activities for one day.²

Neurological disorders often result in functional and cognitive impairments that contribute to an even higher risk for falls in this population. When not fatal, falls often result in brain injury, hip fracture, and loss of independence, all of which may cause a substantial economic burden. Each year approximately \$50 billion in medical expenses are incurred as a result of fatal and non-fatal falls.³

The CDC's response to this growing public health problem is an initiative called STEADI: Stopping Elderly Accidents, Deaths & Injuries. This initiative offers a robust set of tools and resources for clinicians, patients, caregivers, and pharmacists. These resources are available for review or download from the CDC at [cdc.gov/steady/index.html](https://www.cdc.gov/steady/index.html).

The foundation of STEADI is an algorithm that integrates the 2010 clinical practice guidelines from both the American and British Geriatric Societies.⁴ The algorithm⁵ outlines the three core elements of:

1. Screening.
2. Assessments of modifiable risk factors.
3. Interventions targeted at those risk factors.

Along with provider training and education, the CDC worked with early adopters to develop guidance on how to implement and evaluate a STEADI-based fall prevention program. Several health systems have successfully implemented the STEADI initiative into their outpatient practices, achieving high screening rates, reducing fall-related hospitalizations, and lowering associated health care expenditures.⁶⁻⁸

Further, studies have proven that falls are preventable by assessing modifiable risk factors (e.g., gait abnormalities, environmental factors, medication adverse effects) and promoting evidence-based interventions like exercise, medication review, behavioral therapy, and vitamin D supplementation, among others (see Table 1).⁹⁻¹¹

The Centers for Medicare and Medicaid Services has included falls screening as one of 10 individual measures in the Medicare Shared Savings Program, targeting high-cost chronic conditions, preventive care, and patient safety.

Traditionally, falls screening at Penn Medicine Lancaster General Health Physicians outpatient services clinics has been performed without a standardized

Table 1. Potential Interventions for Fall Risks Posed By ...

Reduced Visual Acuity	<ul style="list-style-type: none"> • Ophthalmology referral • Optometry referral
Foot Issues	<ul style="list-style-type: none"> • Footwear inspection • Podiatry referral
Use of Psychotropic Medications	<ul style="list-style-type: none"> • Medication review • Medication update
Other Medical Issues	<ul style="list-style-type: none"> • Medication review • Lifestyle changes such as better hydration, enhanced physical activity • Physical therapy referral • Vitamin D supplementation • Patient education
Home Environment	<ul style="list-style-type: none"> • Occupational therapy referral • Physical therapy referral • Patient education

** Adapted from Ang, Low & How, 2020¹¹*

Fig. 1. Self-Assessment Tool to Be Completed by Patient Prior to Appointment¹³

Risk for Falling

I have fallen in the past. (2=Yes, 0=No) -----

I use or have been advised to use a cane or walker to get around safely. (2=Yes, 0=No) -----

Sometimes I feel unsteady when I am walking. (1=Yes, 0=No) -----

I steady myself by holding onto furniture when walking at home. (1=Yes, 0=No) -----

I am worried about falling. (1=Yes, 0=No) -----

I need to push with my hands to stand up from a chair. (1=Yes, 0=No) -----

I have some trouble stepping up onto a curb. (1=Yes, 0=No) -----

I often have to rush to the toilet. (1=Yes, 0=No) -----

I have lost some feeling in my feet. (1=Yes, 0=No) -----

I take medicine that sometimes makes me feel light-headed or more tired than usual. (1=Yes, 0=No) -----

I take medicine to help me sleep or improve my mood. (1=Yes, 0=No) -----

I often feel sad or depressed. (1=Yes, 0=No) -----

Total Score -----
(Positive ≥ 4)

Fig. 2. Short Screening Tool to Be Used by Nursing Staff During Rooming Activity

Sometimes I feel unsteady when I am walking. (1=Yes, 0=No) -----

I am worried about falling. (1=Yes, 0=No) -----

I have fallen in the past year. (2=Yes, 0=No) -----

Total Score -----
(Positive ≥ 1)

workflow/Epic tool; instead, each department chose which screening tools and interventions to use.

Primary care practices have often used the Timed Up and Go test during Annual Wellness screenings. Although validated in geriatric populations¹² when there is lack of standardization, it is challenging to demonstrate compliance for the Medicare Shared Savings Program.

The objective of this study, which is ongoing, is to facilitate a standardized electronic medical record

(EMR) approach to falls screening using the STEADI algorithm and to put in place individual and multifactorial interventions that reduce fall risk. This is a quality and safety improvement initiative.

LGHP Neurology initiated a pilot to facilitate the use of the STEADI guidelines by hardwiring the process into the EMR. The result is an opportunity to assess the individual contributors to risk and modifiable risk factors, as well as implement effective strategies targeted at the identified risk factors.

Our team identified the critical success factor for this pilot as the ability to hardwire screening tools into the EMR. As a result, two tools were built into Epic to help facilitate the process. The Neurology Department rolled out its pilot on January 1, 2022, and began collecting data for new patients who are 65 years of age and older. This phase of the pilot was completed on December 31, 2022.

METHODS

This study was conducted at the neurology outpatient services practice of the LGHP Neuroscience Institute. All neurology providers participated in the study. Data from patients who met the age requirements were included. The first tool is a 12-question self-assessment with built-in clinical calculators (see Fig. 1). It is launched as a MyChart questionnaire that patients can complete prior to an upcoming appointment. Screening is considered abnormal or at risk when a patient scores 4 or higher.

The second tool is the short-screening three-question assessment (see Fig. 2) used during the rooming process, which is performed by the nurse. This is used only if the patient did not complete the first tool. A patient is considered at risk if the score is 1 or higher.

For any abnormal results, a Best Practice Alert (BPA) indicates the clinician needs to evaluate for risk factors and discuss an intervention plan. In addition to triggering this evaluation, the BPA helps facilitate and document the plan of care via a Smartset. Options within the Smartset include:

1. Educational handouts.
2. Option to refer to LGHP Physical Therapy, PMR, or external physical therapy.

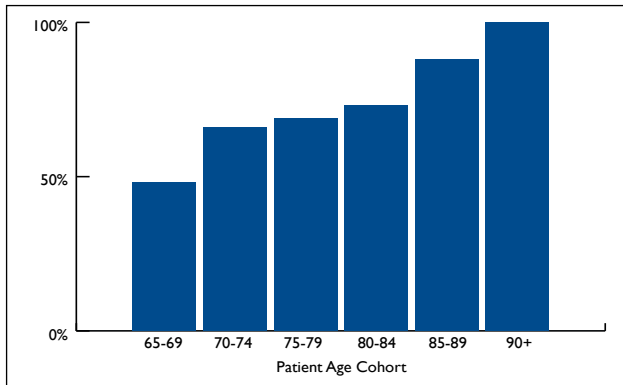


Fig. 3. Percent of each age cohort in study considered at risk for fall as of October 2022.

- Documentation that a current fall prevention plan may already be in place.
- Documentation that the patient declines intervention.

Patients who screen positive are automatically eligible for educational handouts, which are auto-assigned to the after-visit summary. Orders 2-4 are assigned at the discretion of the clinician.

Data from the first quarter of 2022 showed that compliance with completion of the full self-assessment was low and the nursing Best Practice Alert was frequently firing. As part of a rapid cycle improvement process, in May 2022 the team converted to completing a short screening tool as standard rooming process for all new patients.

RESULTS

To measure the success of the project, the system tracks several key components of the study, including the number of patients and age distribution of patients determined to be at risk for falls, compliance of new patients screened through self-assessment or by nursing staff, and compliance of providers in using the BPA as a tool to evaluate and document an intervention for those patients determined to be at risk.

Currently, we have data collected from January 4 through October 30, 2022. A total of 357 patients were screened; 238 patients (67%)

were at risk of fall. Ages ranged from 65 to 91 years (see Fig. 3), and female-to-male ratio was 1.2:1.

Figs. 4 and 5 show our screening and BPA compliance by month. Fig. 4 further shows that the conversion to completing a short screening tool as standard rooming process for all new patients significantly increased compliance.

DISCUSSION

Several Penn Medicine Lancaster General Health departments actively contributed to the first stage of this project. Collaboration with Information Services was crucial in the development of the two screening tools in our Epic system. Active participation by the nursing staff allowed us to capture and screen the designated patients.

In addition, we initiated chart reviews on at-risk patients who did not show activity on the Best Practice

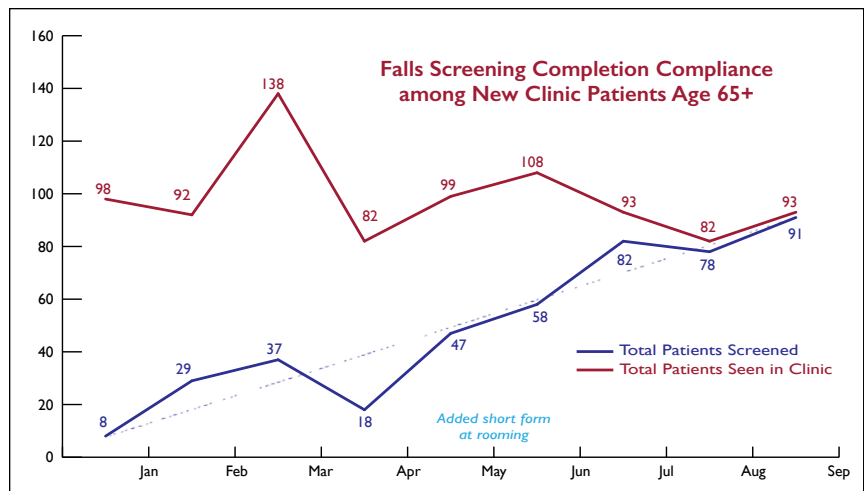


Fig. 4. This graph represents falls screening compliance by new patients or nursing staff. The most desirable outcome is to have Total Patients Screened = Total Patients Seen in Clinic.

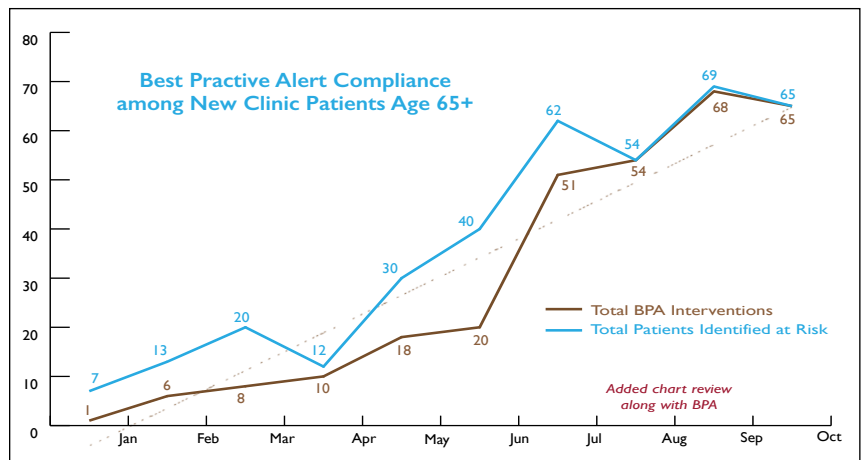


Fig. 5. This graph demonstrates provider compliance with the BPA tool for patients who screen positive for fall risk. The most desirable result is to have Total BPA Interventions = Total Patients Identified at Risk.

Alert report. It was noted that on occasion, providers were documenting an action plan to address risk outside of the Best Practice Alert. This represents an opportunity for further process improvement.

Information Services continues to work with the neurology team to create new solutions to better enhance our intervention plan documentation. More data will be coming in the year ahead. We also expect to follow-up with patients who have not been screened or who had a positive STEADI fall risk screen in the last 11 months, to see if any part of the action plan was beneficial in reducing falls. Future studies will also

target the effectiveness of delivering intervention resources to the community.

Preliminary data validated the easy access of the CDC's STEADI screeners, as demonstrated in our high compliance rate. By identifying our high-risk patients and providing them with resources, we hope to reduce fall-related injuries and eventually reduce associated health care costs.

Based upon the results, the success of this tool may be applicable to primary care, geriatrics, and other interested departments.

REFERENCES

1. STEADI – Older Adult Fall Prevention. Centers for Disease Control and Prevention. Updated July 26, 2021. Accessed December 19, 2022. <https://www.cdc.gov/steadi/>
2. Moreland B, Kakara R, Henry A. Trends in nonfatal falls and fall-related injuries among adults aged ≥65 years – United States, 2012–2018. *MMWR Morb Mortal Wkly Rep.* 2020;69:875-881.
3. Florence CS, Bergen G, Atherly A, Burns ER, Stevens JA, Drake C. Medical costs of fatal and nonfatal falls in older adults. *J Am Geriatr Soc.* 2018;66:693-698.
4. Summary of the Updated American Geriatrics Society/British Geriatrics Society clinical practice guideline for prevention of falls in older persons. *J Am Geriatr Soc.* 2011;59(1):148-157.
5. Algorithm for Fall Risk Screening, Assessment, and Intervention. Centers for Disease Control and Prevention. 2019. Accessed January 30, 2023. <https://www.cdc.gov/steadi/pdf/STEADI-Algorithm-508.pdf>
6. Eckstrom E, Parker EM, Lambert GH, Winkler G, Dowler D, Casey CM. Implementing STEADI in academic primary care to address older adult fall risk. *Innov Aging.* 2017;1(2):ix028.
7. Casey CM, Parker EM, Winkler G, Liu X, Lambert GH, Eckstrom, E. Lessons learned from implementing CDC's STEADI falls prevention algorithm in primary care. *Gerontologist.* 2017;57(4):787-796.
8. Johnston YA, Bergen G, Bauer M, et al. Implementation of the Stopping Elderly Accidents, Deaths, and Injuries Initiative (STEADI) in primary care: an outcome evaluation. *Gerontologist.* 2019;59(6):1182-1191.
9. Bergen G, Stevens MR, Kakara R, Burns ER. Understanding modifiable and unmodifiable older adult fall risk factors to create effective prevention strategies. *Am J Lifestyle Med.* 2019;15(6):580-589.
10. Guirguis-Blake JM, Michael YL, Perdue LA, Coppola EL, Beil TL, Thompson JH. *Interventions to Prevent Falls in Community-Dwelling Older Adults: A Systematic Review for the U.S. Preventive Services Task Force.* Rockville (MD): Agency for Healthcare Research and Quality (US); April 2018.
11. Ang GC, Low SL, How CH. Approach to falls among the elderly in the community. *Singapore Med J.* 2020;61(3):116-121.
12. Christopher A, Kraft E, Olenick H, Kiesling R, Doty A. The reliability and validity of the Timed Up and Go as a clinical tool in individuals with and without disabilities across a lifespan: a systematic review. *Disabil Rehabil.* 2021;43(13):1799-1813.
13. Rubenstein LZ, Vivrette R, Harker JO, et al. Validating an evidence-based, self-rated fall risk questionnaire (FRQ) for older adults. *J Safety Res.* 2011;42(6):493-499.

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ARMED AND READY: How Lancaster County Contributed to the Eradication of Smallpox

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In 1980, the World Health Organization declared smallpox eradicated, an accomplishment that has long been hailed as one of humanity's greatest achievements. Although the origin of smallpox remains unknown, its effect on the world until that time was devastating.¹ Infection could mean pain, scarring, and a high risk of death, and this scourge had ravaged the Americas since the arrival of European immigrants.

Vaccines have made it possible for us to forget a time when a smallpox epidemic was so feared. While many narratives have been dedicated to praising Dr. Edward Jenner's work in 1796, remarkably few have discussed the details of vaccine dissemination. Credit for the latter is owed in large measure to the work of Dr. H.M. Alexander of Marietta, who in 1882 found-



Dr. H.M. Alexander

ed what came to be known as the Marietta – or variously, Lancaster County – Vaccine Farm. It was there that he and his colleagues produced and supplied the country, and indeed, much of the world, with smallpox vaccine.² The success of the Lancaster County Vaccine Farm at producing and distributing vaccine shaped Pennsylvania's and the nation's ability to ultimately eradicate smallpox.^{3,4}

INOCULATION VS. VACCINATION

From 1721 to 1796 the only preventive measure available against smallpox was inoculation. Simply put, inoculation was taking pus from a patient who had been infected with smallpox and creating an incision in a healthy individual into which one could place the pox matter. This action created an immune response that, it was hoped, would be less severe and less deadly than getting smallpox in what was called the "natural" way. Unfortunately, inoculated individuals were themselves contagious, meaning that this practice left

a community one individual away from initiating another epidemic.⁵ Vaccination is a much safer practice.

Credit for developing vaccination is given to Dr. Edward Jenner, who in 1796 used cowpox to stimulate an immune response that afforded protection against smallpox. This followed the observation that milkmaids with a history of cowpox infection were often spared the horrors of smallpox. Thus, the term vaccination was born: *vacca* is cow in Latin.

The concept is largely preserved today, when vaccination often entails injecting an inactive form of virus to induce immune response. However, it must be noted that Jenner's initial form of vaccination was not achieved as it is today. The cowpox used in Jenner's vaccines were not "an attenuated or inactivated form" of the smallpox virus; rather "it was [a] related virus from the same family."⁶ Even though vaccination was a safer alternative to inoculation, it took nearly a century for acceptance of vaccination to become widespread in America, in part due to logistical nightmares that caused massive pushback movements.⁴

Once vaccination achieved a measure of success in America, inoculation was made illegal. Reducing the use of inoculation (arm-to-arm) meant also reducing the inadvertent spread of other diseases such as syphilis.^{7,8} At least as important, eliminating the common use of this outdated method also limited the risk for further epidemics, ones that could be ignited by well-meaning medical personnel who traveled from city to city.

ORIGINS

Born of the mind of Dr. H.M. Alexander, the Lancaster County Vaccine Farm started in 1882 with just one cow. It remains unclear how he harvested his initial vaccine matter. The first heifer at the vaccine farm was thought to have had spontaneous cowpox,^{2,3,9} although Alexander may have inoculated a calf from a local patient's smallpox pustules. Yet another report suggests a "tramp having smallpox" had slept in the stable.¹⁰ Nevertheless, only a year later it became necessary to

expand the farm to include 500 calves, so successful was his enterprise.¹¹

An obstacle Alexander aimed to address was finding alternatives to using arm-to-arm vaccination. Arm-to-arm vaccination was a logistical nightmare, but even after vaccination became a primary preventive measure, doctors continued using this outdated method. Called the “human-chain,” the transmission of vaccination in this way would fail if either “the timing was off or the vaccine failed to take in one person of the sequence.”¹² Thus, it was with the introduction of standardized techniques and procedures, including the development of glycerinated points, that vaccine production could overcome the limitations of inoculation – including the spread of diseases such as syphilis. Alexander studied methods, improved upon them, and ultimately commercialized his ideas. His world renown at the time was a testament to the success of his achievements.⁸



Taking virus from the calf, illustration from Harper's Weekly in 1872 (engraving) (b/w photo) by Fox, Stanley (fl.1872); American, out of copyright.



Among the many historical medical items housed in the National Collections of the Smithsonian are Dr. H.M. Alexander's aseptic vaccinator (left) and an original glycerinated smallpox vaccine lymph (right). Photos from the Smithsonian National Collections, available online at si.edu/collections.

To assure the safety of vaccination, Alexander made certain that all the calves that came to the farm were “graded” and had “a complete family history.”¹³ A standardization measure such as this was unprecedented – when scientists were on the cusp of understanding germ theory – and yet Alexander knew of and responded to the earliest criticisms that could face his enterprise by keeping strict records. By 1884, only two years after initiation of the farm, a wagon was added to transport calves, avoiding unnecessary risk for the owners as well as the cows themselves.¹⁴

Alexander was an innovator and pioneer. While others hypothesized that alternative protocols would produce safer results, Alexander enforced a standard of mixing the retrieved lymph with 40% to 60% glycerol and storing glycerinated lymph at low temperatures to kill off remaining bacteria. Glycerin had many advantages, including antibacterial properties; further, it prevented ice buildup and allowed the vaccine to “stick to the skin.”⁸

GROWTH

A decade later, the Lancaster County Vaccine Farm, known to be the largest of its kind in the world, produced the most vaccine “lymph” in the nation – equaling 100,000 doses per day.^{1,11,15} Thus, in May 1902, when Lancaster itself faced a smallpox epidemic, rules were created that included the role of the farm in stabilizing the community and preventing spread. After establishment of a quarantine and a ban on meetings in any public locations, the Board of Health approved “ordering compulsory vaccination” and employed “patrolmen for the infected districts.” In the event of noncompliance, the county had the authority to “prosecute all persons guilty of violating the quarantine laws,” and infected individuals could be stipulated to specific smallpox hospitals.² This public health plan would not have been possible without the doses from Alexander's farm.

Soon the Lancaster County Vaccine Farm gained the confidence of those across the nation. During the 1894 “business depression,” the farm was more profitable than ever; for a time the city of Chicago was placing an order for 10,000 points per day.¹⁶ While Alexander's was not the only vaccine farm operating in this era, none were as illustrious or as trusted as the one in Marietta,¹²

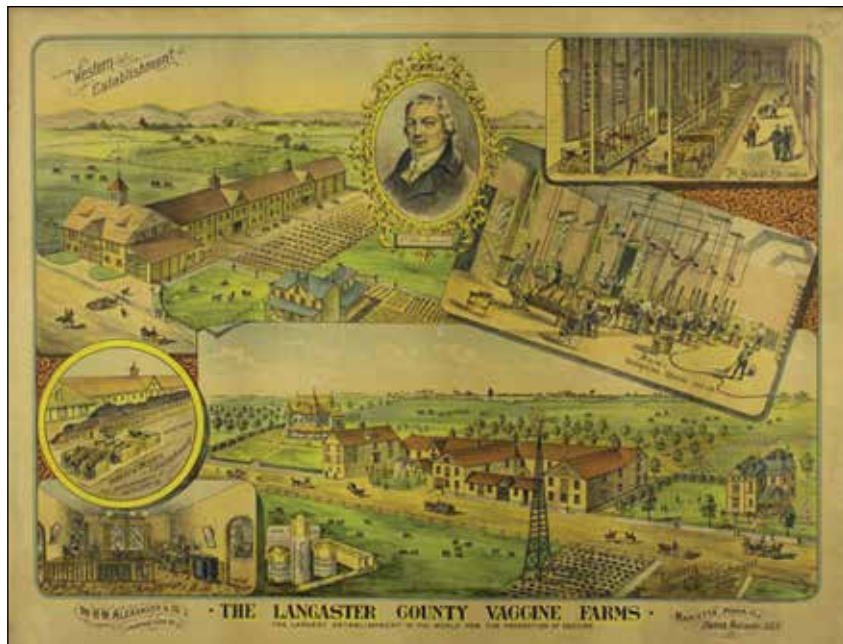
and it soon outgrew its location. Alexander added another farm in Northumberland County,² as well as one in Omaha, Nebraska.¹⁷ News reports favored Alexander for remaining the largest and one of the most successful suppliers of smallpox vaccine in the United States and the world.³

VALIDATION

Although the Lancaster County Vaccine Farm was a household name, questions regarding the safety of vaccine lymph did threaten to dismantle this and all operations. It was not until 1902 that Congress passed the Biologics Control Act, which obligated businesses selling biological products to apply for and maintain licensing.¹² This legislation worked to Alexander's advantage, as it differentiated his operation, which already had safety mechanisms in place, from so-called "backyard producers."⁸ The Lancaster County Vaccine Farm continued to add protocols, including measures to ensure the animals were "well fed and well groomed," as well as quarantined for a month before they were inoculated. In terms of the facilities themselves, the reports from the time state it followed "strict aseptic and antiseptic precautions ... as in any modern hospital."¹⁸ When inoculation of the animal began, the Lancaster farm personnel specifically selected samples from the inner thigh, an area less likely to become secondarily infected after the procedure.¹⁹

Further protocols regarded how the vaccine lymph was stored. As noted, the fact that Alexander's glycerinated lymph was stored at low temperature had many advantages.⁸ Thus, his vaccine had a good "reputation for purity."³ This was backed up by views from the Philadelphia Board of Medicine, which declared only the Lancaster County Vaccine Farm's vaccine was "entirely free from pus bacteria," saprophytic bacteria, and blood cells.²⁰

In 1893, Alexander took his idea to the World's Fair in Chicago, where he was the recipient of the only "award on vaccine virus."^{9,21-24} Three years later, the Lancaster County Vaccine Farm was selected to host the centennial celebration for the development of Jenner's vaccination process.^{25,26} Not only was this an extravagant event meant to celebrate the accomplishments of Edward Jenner, but the choice of



This undated color lithograph of the plan of the Lancaster County Vaccine Farms notes locations in Marietta, Northumberland County, and Omaha, Nebraska.

location exemplified H.M. Alexander's success and demonstrated that his was the model for vaccine farm production. It was soon described as "by far the largest and most complete [laboratory] in the world."²⁷

DISSEMINATION

By 1903, the Marietta farm was producing "more [vaccine] virus than all similar establishments in the United States combined."²¹ Further, publications from that time were overwhelmingly positive, frequently touting the purity of Lancaster's lymph. A *Minneapolis Journal* headline from 1883 described "Absolutely pure vaccine virus: from the Marietta [farms]."²⁸ Years later, a newspaper in the state of Washington urged parents to have confidence because the "supply points come from the government vaccine farm at Marietta, Pa., and every possible precaution is being used."²⁹ Indeed, this sentiment became common; vaccines from Marietta were considered superior to any others.

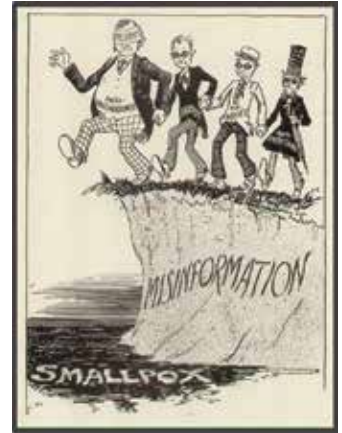
Alexander was also a shrewd negotiator of public opinion. In a 1901 advertisement in the *New York Medical Journal*, he stated: "In small-pox vaccination the greatest number of definite protective inoculations [have] followed the use of our lymph ... it is surely better than to follow blindly in the trail of a dangerous foreign fad."³⁰ Such comments served multiple purposes. First, if someone in the community had a bad experience after vaccination from a so-called "backyard" producer, devastating community-wide consequences could ensue as peers lost faith in the entire practice.

On the other hand, by explicitly explaining the practice and regularly inviting others to examine his processes, Alexander helped eliminate mystery from the lay mind, making others more likely to seek preventive treatment. Newspapers and the medical community took notice, agreeing that “few know of ... the many precautions used to ensure the obtaining of the virus [is] physiologically pure.” Similar accounts could be found across the nation, proclaiming the Lancaster vaccine’s purity as a justification for encouraging vaccination.^{13,21,31-34} Orders eventually came in from countries around the world, and Lancaster’s shipments were sent far and wide, to Canada and Mexico, to China, as well as countries in South America and Europe.³⁰

CONCLUSION

The Lancaster County Vaccine Farm paved the way for modern medicine in the United States. It

was beyond its years in biological products regulation and vaccine standards. What started out as one man and a calf had a profound and lasting impact on the lives of millions of people across the globe. Smallpox was a dreaded disease, and while society owes a great debt to the innovations of Dr. Edward



1930s cartoon

Jenner, Dr. H.M. Alexander and the Lancaster County Vaccine Farm surely deserve their share of recognition and appreciation for the strides they made in Marietta.

REFERENCES

1. Safekeeping stockpile of smallpox stored in Marietta. *The Intelligencer Journal*. July 16, 1999.
2. Lahr JW. *Hale Columbia: A True and Complete Study of Infectious Disease & Medicine in a Small Pennsylvania Town at the Turn of the Century*. 2017.
3. Chapman Publishing Company. *Portrait and Biographical Record of Lancaster County, Pennsylvania: Containing Biographical Sketches of Prominent and Representative Citizens ... Together with Biographies and Portraits of All the Presidents of the United States*. Chapman; 1894:597. Accessed July 7, 2022. <http://archive.org/details/portraitbiograph00inchap>
4. Reinert J. Here’s how a farm in Marietta became a global vaccine production site. *LNP*. July 1, 2020. Accessed June 12, 2022. <https://www.proquest.com/docview/2419347481/citation/2CB7A250A0D4C6APQ/1>
5. For more on inoculation in colonial America, see: Fenn EA. *Pox Americana: The Great Smallpox Epidemic of 1775-82*. Sutton; 2004.
6. Esparza J, Nitsche A, Damaso CR. Beyond the myths: novel findings for old paradigms in the history of the smallpox vaccine. *PLoS Pathogens*. 2018;14(7):e1007082.1.
7. Marquez M. Animal vaccine – why it should be preferred to human vaccine. *Public Health Papers and Reports*. 1893;84.
8. Didgeon J. Development of smallpox vaccine in England in the eighteenth and nineteenth centuries. *Br Med J*. 1963;1(5342):1367-1372.
9. *The Inquirer*. October 21, 1893.
10. *Theocrat*. December 5, 1914.
11. Lancaster City and County Medical Society. *Our Medical Heritage 1844-1994: Lancaster City and County Medical Society*. 1st ed. Lancaster City and County Medical Society;1995:140.
12. History of the Smallpox Vaccine. Indiana University Bloomington. Accessed October 31, 2022. <https://collections.libraries.indiana.edu/iulibraries/s/smallpox-vaccine-exhibit/page/welcome>
13. Reilly RF. Medical and surgical care during the American Civil War, 1861-1865. *Proc (Bayl Univ Med Cent)*. 2016;29(2):138-142.
14. *Lancaster New Era*. October 4, 1884.
15. *Sunday News*. March 2, 1930.
16. *The Semi-Weekly New Era*. May 12, 1894.
17. *Philadelphia Inquirer*. October 15, 1903.
18. *The Medical and Surgical Reporter 1896-10-17:Vol 75 Iss 16*. Open Court;1896:489. Accessed January 30, 2023. http://archive.org/details/sim_medical-and-surgical-reporter_1896-10-17_75_16
19. Eleventh annual report of the board of managers of the Columbia Hospital at Columbia, Lancaster County, Pennsylvania. *The Columbia Herald Print*. 1906:311.
20. Tenth annual report of the board of managers of the Columbia Hospital at Columbia, Lancaster County, Pennsylvania. *The Columbia Herald Print*. 1906:254-255.
21. *Lancaster New Era*. October 14, 1903. Virus is how the vaccine would be referenced in the newspaper ads at this time.
22. *The Lancaster Examiner*. June 10, 1893.
23. *Akron Daily Democrat*. December 1, 1892.
24. *Tyrone Daily Herald*. December 1, 1892.
25. *The Semi-Weekly New Era*. May 27, 1896.
26. *The Buffalo Sunday Morning News*. May 17, 1896.
27. *The News-Journal*. May 21, 1898.
28. *The Minneapolis Journal*. February 8, 1883.
29. *The Tacoma Daily Ledger*. July 26, 1892.
30. Pamphlets – homoeopathic: vaccination. *Compulsory Medicine*. 1907:3.
31. *The San Francisco Examiner*. October 18, 1899.
32. *The Yonkers Herald*. May 19, 1898.
33. *The North Adams Transcript*. May 6, 1898.
34. *The Commercial Appeal*. February 18, 1899.

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House Calls and Health

S. Scott Paist, MD



“Falling ill typically involves for the patient a disruption in that unique continuity of knowing and understanding that ordinarily characterizes health and well-being.”

— George Engel, MD

At one time, I had occasion to make a lot of house calls. These were sometimes the stuff of home visit legend – doily-covered chairs in a small living room crowded with family heirloom furniture, my patient serving me tea on a wood-inlaid tray. More often, however, they were visits to urine-tainted row homes with a back room that contained someone unable to get out of that room, let alone to get out of the house.

Seeing these people was a weekly highlight for me, not only because it got me outside, away from the fluorescent lights and scything clock hands of the office, but because house calls also allowed me to study people under the gun, to see how they were handling their extreme losses, to rehearse a role mentally that most of us will have to play eventually.

Among the people on my home visit list was Esther. She was in her 70s, a large woman who continued to flaunt Big Platinum Hair long after the bouffant style had languished, and who wore blue-frame glasses with upper corners that drew to points armed with four small diamonds. These glasses were rarely seen on Esther’s nose, though; she preferred to hang them from a gold chain around her neck.

She was big in a grand style, growing up in an era when such females were called “large boned.” She had wide shoulders and long arms, and her hair pushed her height to nearly six feet. Her face was worthy of all this, large and oval with a prominent nose, wide lips – always coated with fire-engine lipstick – and huge eyes made to look even larger with

many carefully placed layers of mascara. At one time, she must have been heavy, but by the time I knew her, her magnificent frame supported only the loose flesh that her metastatic ovarian cancer continued to allow her.

If one were making a TV sitcom that needed an archetype of “The Brassy, Opinionated Older Woman,” Esther was it. She started an argument even when there was nothing to argue about, and she was loud, interrupted constantly, and had to have the last word. I very much enjoyed arguing with her, shouting back and forth about some local politician, the price of handbags, or how what I had told her to do for some medical problem was clearly stupid (according to Esther).

Her main attendant was a woman who had been living with her as a hired hand since before I came on the scene. Her name was Ophelia, and she was married to a man who still lived overseas and whom she saw twice a year when she was allowed a week off. She appeared to prefer their relationship that way, two weeks a year apparently just right to maintain matrimonial happiness. Ophelia made the meals and attended to Esther’s bodily needs, including bathing and dressing her.

As Esther declined, Ophelia’s role increased, and proud Esther resented it. She berated Ophelia constantly, abusing her for everything she did. Esther’s tongue was sharp and pierced poor Ophelia over the food she served, her choices of jewelry, and her alleged lack of speed to service. When I attempted to intervene on Ophelia’s behalf, both women looked at me in surprise – I had interrupted a complicated

Regarding the names used in this article, Dr. Paist states: “They are, in every sense of the word, fictitious.”

game that only the two of them understood. I learned this dance that they shared had little or nothing to do with the words spoken and everything to do with the love they shared.

Esther always received me sitting on a gold sofa in her bright living room with French Provincial furniture placed artfully in front of gold-flocked wallpaper. The sofa held a dark-green pillow beautifully embroidered with the words, “The Golden Years Suck.” She lived in the penthouse of a 20-story apartment building and owned a powder-blue Cadillac of the large-fin persuasion that, since she could no longer walk, she never drove. Esther had the garage attendant drive the car around every day so she could look at it from her 20th-floor perch. I never saw it less than perfectly washed and waxed.

Here, obviously, was a woman used to having things her way, someone for whom wealth had allowed her to do pretty much as she pleased. These circumstances may produce small-thinking people pinched in their interpersonal dealings, but, in Esther, they had produced a wit as expansive as her eye makeup, a love of laughter, and storytelling produced in the most grandiose style. When she was rolling, one was bathed in the glow, laughing and laughing. Even when she was in great pain, she maintained at least a bemused reserve, taking it all in, her eyes doing the laughing.

I always saved my visit to Esther for last, the way one might save the tastiest bit of a meal. I felt a little guilty: was I getting more from Esther than I was giving? This was relatively early in my career before I

knew that, when interactions with patients were going well, I would always get more than they got from me. If things were unfolding well, my health would be improving just as theirs would.

This is no small thing, but rather the single essential part of any patient interaction. The joining of doctor and sick person is exhilarating and provides the opportunity for energy to flow from patient to physician and back. That exchange can allow real healing to occur.

One day, as Esther and I were laughing at something or other, I said in my best Seinfeld delivery, “Esther, we can’t be sitting laughing like this, don’t you know you’re dying of cancer here?” She turned to look at me. “Cancer Schmancer,” she said, “at least I’ve got my health.”

Esther died a few weeks later. Ophelia called me, crying into the phone that “The Mistress is dead.”

I continued to make home visits for many years after that, despite the mounting barriers and the obvious loss of income as a result of time spent in the car. Now, in a retirement forced at least in part by the electronic health record — checking computer boxes directly inhibits healthy energy flow — it is clear to me that I sought out house calls because the energy moving from patient to physician can be greater in the patient home than can ever be achieved in the clinic.

With her steady laugh and sharp wit, Esther had been teaching me how to join, how to be with my patients, how to stay healthy in the face of life’s catastrophes.

At least I’ve got my health.

S. Scott Paist, MD, is a retired family physician who spent 30 years caring for patients in Lancaster County.



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A Late-Term Pregnant Female with Ear Pain

Zachary Jupin, PA-C

Physician Assistant

Penn Medicine Lancaster General Health Urgent Care



CASE HISTORY

A 32-year-old non-smoking female who is 39 weeks gestation presents complaining of ear pain, pruritus, and decreased hearing in the left ear for the past two days. She denies tinnitus, vertigo, otorrhea, headaches, fevers, symptoms of a urinary tract infection, or problems with the right ear. She denies any recent antibiotic or corticosteroid use. She is nondiabetic. There was no reported recent swimming.

EXAM

The left ear canal is edematous with a white purulent collection and black budding spores (see Fig. 1). The tympanic membrane cannot be visualized. There is no external erythema or swelling. There is mildly tender posterior auricular lymphadenopathy.

QUESTIONS

1. What is the cause of this patient's ear pain, and what are the most common offending pathogens?
2. What are some risk factors for developing this infection?
3. What are the most appropriate next steps for this patient?
4. What are potential complications if left untreated?

ANSWERS

1. Fungal otitis externa/otomycosis is commonly caused by *Aspergillus* and *Candida*.
2. Risk factors include type 2 diabetes mellitus, recent corticosteroid or antibiotic use (particularly fluoroquinolone drops), history of immunosuppression, humid climate, recent instrumentation of ear, and use of hearing aids.¹
3. Next steps might include one or more of the following:
 - a. Once or twice daily debridement or flushing of the ear canal.
 - b. Treatment with local or systemic antifungal agents.
 - c. Discontinuation, if appropriate, of any unnecessary agents.
 - d. Appropriate management of any chronic medical disorders.
 - e. Discontinuation or appropriate cleaning of any hearing aids or other ear protection/listening devices.
 - f. Consideration of ENT referral for refractory cases.
4. Complications may include serous otitis media (30% of patients), tympanic membrane perforation (15%), and external auditory canal osteitis (5%).²



Fig. 1. Ear canal with white purulent collection and black budding spores.

Photo by Kevin Kavanagh, MD.
Used with permission.

DISCUSSION

Otomycosis is a superficial mycotic infection of the outer ear canal that can usually be diagnosed clinically by direct examination of the ear in conjunction with reported symptoms. The mycosis results in inflammation, swelling, and superficial epithelial masses of debris containing hyphae and suppuration. Pruritus has been frequently cited as one of the hallmark symptoms, present in up to 93% of cases, followed closely by hearing loss and aural fullness, which are the result of accumulation of fungal debris in the canal.³

Aspergillus and *Candida* species are the most identified fungal pathogens in otomycosis. *Aspergillus* reveals a characteristic black dots debris, but infection with *Candida* can be more difficult to detect clinically because of its lack of a characteristic appearance; it can present as otorrhea not responding to aural

antimicrobial. Otomycosis attributed to *Candida* can be identified by culture data.⁴

Multiple studies have examined the efficacy of various antifungal agents, however there is no consensus on the most effective agent. Topical 1% clotrimazole seems to be the preferred antifungal medication for its action against both *Aspergillus* and *Candida* species. Salicylic acid (2%) in alcohol has also been used but seems less effective. Oral fluconazole may be considered but carries greater risk of side effects, including hepatotoxicity.^{5,6}

Application of appropriate topical antifungal agents coupled with frequent mechanical debridement usually results in prompt resolution of symptoms, although recurrent or residual disease can be common. Duration of treatment may vary, but most patients have resolution of infection within two weeks. Refractory cases should be referred to ENT.

REFERENCES

1. Osguthorpe JD, Nielsen DR. Otitis externa: review and clinical update. *Am Fam Physician*. 2006;74(9):1510-1516.
2. Anwar K, Gohar MS. Otomycosis; clinical features, predisposing factors, and treatment implications. *Pak J Med Sci*. 2014;30(3):564-567.
3. Pradhan B, Tuladhar NR, Amatya RM. Prevalence of otomycosis in outpatient department of otolaryngology in Tribhuvan University Teaching Hospital, Kathmandu, Nepal. *Ann Otol Rhinol Laryngol*. 2003;112(4):384-387.
4. Vennewald I, Klemm E. Otomycosis: diagnosis and treatment. *Clin Dermatol*. 2010;28(2):202-211.
5. Navaneethan N, YaadhavaKrishnan RP. Type of antifungals: does it matter in empirical treatment of otomycosis? *Indian J Otolaryngol Head Neck Surg*. 2015;67(1):64-67.
6. Munguia R, Daniel SJ. Otological antifungals and otomycosis: a review. *Int J Pediatr Otorhinolaryngol*. 2008;72(4):453-459.

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Studies in the Division of Vascular Surgery

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Editor's note: This is the 14th in a series of articles from the Penn Medicine Lancaster General Health Research Institute that describes ongoing research studies. Other active studies have been described in previous issues of this journal.

The Research Institute welcomes Dr. Meghan Dermody of the LGHP Surgical Group as the guest co-author of this Spotlight. Physicians who wish to refer patients for any of the studies mentioned below are encouraged to contact the LG Health Research Institute at 717-544-1777. Other members of the LG Health staff who are conducting research and wish to have their studies described here are encouraged to contact the offices of JLGH at 717-544-8004.

The Penn Medicine Lancaster General Health Physicians Surgical Group has three board-certified vascular surgeons and a recent graduate who is board eligible in vascular surgery. We all perform a wide breadth of open and endovascular surgery from treatment of carotid and peripheral artery occlusive disease to aneurysms to creating dialysis access.

LG Health's Division of Vascular Surgery began entering surgical cases into a national database, called the Vascular Quality Initiative, in 2018. We are able to track all peripheral endovascular procedures, aneurysm repairs, leg bypasses, as well as carotid endarterectomy and stent procedures, through this database. We have a direct line of sight on our patients' outcomes and how we compare to our regional and national colleagues. Across the board, LG Health continues to lead the way in excellent patient outcomes. We hope to continue using our wide range of experience to improve the devices we use to treat these diseases and improve patient outcomes in the years to come.

In this article, we report on two studies. First, we recently obtained institutional review board approval to begin enrolling patients into a national clinical trial of transcatheter aortic valve replacement in standard

surgical risk patients (ROADSTER-3). In addition, we began enrolling dialysis patients into a post-market registry, which will follow their fistula patency over time after we perform a paclitaxel-coated balloon angioplasty to treat stenosis within the access.

The post-market registry includes cohort analysis, into which we will further enroll, which looks at durability of thoracic aortic endovascular stent grafts to treat thoracic aortic aneurysms and dissection. Our hope is to be able to provide long-term surveillance data for these complicated conditions and procedures that are not typically followed in our national database.

The ROADSTER-3 Study: Post-approval Study of Transcatheter Aortic Valve Replacement in Standard Risk Patients with Significant Carotid Artery Disease

Sponsor: Silk Road Medical

Principal Investigator: Meghan Dermody, MD

This open-label, multicenter, single-arm, prospective post-approval study (PAS) plans to evaluate the ENROUTE Transcatheter Aortic Valve System when used with the ENROUTE Transcatheter Aortic Valve Neuroprotection System. The study will explore the treatment of patients at standard risk for adverse events from carotid endarterectomy who require carotid revascularization and meet the study eligibility criteria. The sponsor plans to enroll a maximum of 400 patients at up to 65 U.S. and European sites. There are two primary outcome measures:

1. Composite of Major Adverse Events defined as any death, stroke, or myocardial infarction (MI) within 30 days of the procedure.
2. Ipsilateral stroke within 31-365 days following the procedure.

Multiple secondary outcomes will be measured, including incidence of cranial nerve injury, stroke, death,

MI, access site complications, serious bleeding complications, and rates of stent thrombosis or occlusion and carotid dissection. To be included in the study, patients must have either symptomatic stenosis of $\geq 70\%$ by ultrasound or $\geq 50\%$ by conventional or CT angiogram or have asymptomatic stenosis of $\geq 70\%$ by ultrasound or $\geq 60\%$ by conventional or CT angiogram.

Patients must be between the ages of 18 and 80 years. Exclusion criteria include patients with high anatomic risk (contralateral carotid occlusion, tandem stenoses, stenosis distal to C2 vertebra, restenosis after endarterectomy, bilateral severe carotid stenoses, or a hostile neck) or those with clinical high risk (≥ 2 vessel coronary artery disease, history of angina or congestive heart failure, ejection fraction $< 30\%$, MI within six weeks, severe chronic obstructive pulmonary disease, or late-stage renal failure).

There are multiple additional exclusion criteria, the most common being patients with chronic atrial fibrillation, those with a potential cardiac source of embolism, a recently implanted heart valve, or severe ipsilateral intracranial carotid stenosis.

LG Health was activated as a site in October 2022 and plans to enroll 20 participants.

**PSR-APV: Product Surveillance Registry —
Aortic, Peripheral & Venous**

Sponsor: Medtronic

Principal Investigator: Meghan Dermody, MD

The Product Surveillance Registry (PSR) collects data about the safety and effectiveness of Medtronic products on the market. The original registry has been active for many years, but there are multiple cohorts under the PSR umbrella. LG Health recently received approval to enroll participants in two of the cohorts.

IN.PACT™ AV Access Cohort

This Post Approval Study (PAS) specifically evaluates the safety and effectiveness of the IN.PACT™ AV Access Drug Coated Balloon (DCB). It will compare the DCB to transluminal angioplasty (PTA) by collecting data about target lesion primary patency (measured at six months post-procedure) and any serious adverse events that occur within 30 days post-procedure. Additional data will be collected about revascularizations, additional required reinterventions, and occurrence of access circuit thrombosis.

The study enrolls patients who have a documented de novo or non-stented restenotic obstructive lesion of

native arteriovenous dialysis fistulae (AVF) in their upper extremity. Enrolled participants will be followed as long as they have the AVF or until the study closes. LG Health plans to enroll one to two patients per month over an enrollment period of approximately eight years.

Aortic Cohort

This cohort seeks to enroll patients who received any eligible Medtronic product (stent graft) used to treat diseases of the thoracic aorta, such as aneurysms or dissections. Participants are followed per standard of care post-implant procedure with data collected at their regularly scheduled visits. The registry will collect data regarding reinterventions, current health status, adverse events, imaging results, and device issues. Enrolled participants will be followed as long as they have the eligible implanted Medtronic product or until the study closes.

**Active Clinical Studies
at Lancaster General Health**

A complete list of active clinical studies at Lancaster General Health is available online. To access the most current list, scan the QR code, or find the link on the Resources/Links page at JLGH.org. To make a referral to any study on the list, call the Penn Medicine Lancaster General Health Research Institute at 717-544-1777.



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Recommendations from Pediatric Hospital Medicine and the American Academy of Pediatrics

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This is my 40th article on Choosing Wisely from the American Board of Internal Medicine (ABIM) Foundation. As noted in previous issues of *JLGH*, each specialty group is developing “Five or More Things That Physicians and Patients Should Question.”

All items are developed to encourage discussion between physicians and their patients about which tests and procedures are best in each case. Additional resources are available online at choosingwisely.org.

RECOMMENDATIONS FROM PEDIATRIC HOSPITAL MEDICINE

1. IV antibiotics for predetermined durations for patients hospitalized with infections such as pyelonephritis, osteomyelitis, and complicated pneumonia should not be prescribed. Consider early transition to oral antibiotics. Recent publications have demonstrated that strategies for early transition to oral antibiotics achieve equal or better outcomes for common inpatient infections and are safer than prolonged intravenous antibiotics in children. Antibiotic courses with predetermined durations are often not based on high-quality evidence and ignore individual response to treatments, which can vary significantly from patient to patient.¹

2. Hospitalization in well-appearing febrile infants once bacterial cultures (i.e., blood, cerebral spinal, and/or urine) have been confirmed negative for 24-36 hours should not be continued if adequate outpatient follow-up can be assured. Routinely continuing hospitalization beyond 24-36 hours of confirmed negative bacterial cultures for well-appearing infants admitted for concern of serious bacterial infections does not improve clinical outcomes.

3. Phototherapy should not be initiated in term or late preterm well-appearing infants with neonatal hyperbilirubinemia if their bilirubin is below levels at which the clinician AAP guidelines recommend treatment. The risk of poor neurologic outcomes, such as cerebral palsy due to kernicterus, is extremely low for term and late preterm newborns with modestly

elevated bilirubin levels. Confirmed cases of kernicterus have average bilirubin levels near 40 mg/dL and are typically associated with hemolysis. While phototherapy for bilirubin with values above published thresholds may be useful to prevent severe hyperbilirubinemia and exchange transfusions, its use for bilirubin values below published thresholds is unnecessary and is associated with additional costs and unnecessary hospitalization.²

4. Broad-spectrum antibiotics such as ceftriaxone for children hospitalized with uncomplicated community-acquired pneumonia (CAP) should not be used. Use narrow-spectrum antibiotics such as penicillin, ampicillin, or amoxicillin. The use of narrow-spectrum antibiotics for children hospitalized with CAP can limit the development of multi-drug-resistant organisms while achieving similar or better outcomes.

5. IV antibiotic therapy should not be started on well-appearing newborn infants with isolated risk factors for sepsis such as maternal chorioamnionitis, prolonged rupture of membranes, or untreated group-B streptococcal colonization. Use clinical tools such as an evidence-based sepsis risk calculator to guide management. Unnecessary exposure of infants to antibiotics is associated with increased parental anxiety, length of stay, increased cost, gut microbiome dysbiosis, necrotizing enterocolitis, and possibly allergic and autoimmune diseases. The use of evidence-based sepsis calculators has demonstrated reductions in antibiotic use of 50% or more without a concomitant increase in the incidence of early onset sepsis.

RECOMMENDATIONS FROM THE AMERICAN ACADEMY OF PEDIATRICS — SECTION ON EMERGENCY MEDICINE AND THE CANADIAN ASSOCIATION OF EMERGENCY PHYSICIANS

1. Radiographs should not be obtained in children with bronchiolitis, croup, asthma, or first-time wheezing. Radiographs rarely yield important positive findings and expose patients to radiation, increased cost of care, and prolonged emergency department

length of stay. Radiography performed in the absence of significant findings has been shown to be associated with overuse of antibiotics. Findings of significant hypoxia, focal abnormalities, prolonged course of illness, or severe distress are situations prompting radiographs. If wheezing is occurring without a clear atopic etiology or with upper respiratory tract infection symptoms (e.g., rhinorrhea, nasal congestion, and/or fever), appropriate diagnostic imaging should be considered on a case-by-case basis.³

2. Screening laboratory tests should not be obtained in the medical clearance process of pediatric patients who require inpatient psychiatric admission unless clinically indicated. A large body of evidence, in both adults and children, has shown that routine laboratory testing without clinical indication is unnecessary and adds to health care costs.

3. Laboratory testing or a CT scan of the head should not be ordered for a patient with an unprovoked, generalized seizure or a simple febrile seizure who has returned to baseline mental status. CT scans are associated with radiation-related risk of cancer, increased cost of care, and added risk if sedation is required to complete the scan. A head CT scan may be indicated in patients with a new focal seizure, new focal neurologic findings, or high-risk medical history (such as neoplasm, stroke, coagulopathy, sickle cell disease, age <6 months).⁴

4. Abdominal radiograph should not be obtained for suspected constipation. Constipation is a clinical diagnosis and does not require testing, yet many of these children receive an abdominal radiograph. Use of abdominal radiographs to diagnose constipation has been associated with increased diagnostic error.

5. Comprehensive viral panel testing should not be obtained for patients who have suspected respiratory viral illnesses. This Choosing Wisely item was released on December 1, 2022, with a note that there is a lack of consistent evidence to demonstrate the impact of comprehensive viral panel (i.e., panels simultaneously testing for 8-20+ viruses) results on clinical outcomes or management, especially in emergency department settings.

Testing for specific viruses might be indicated if the results of the testing may alter treatment plans (e.g., antivirals for influenza) or public health recommendations (e.g., isolation for SARS-CoV-2). For more specific recommendations related to diagnosis and management for SARS-CoV-2, please see [aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/](https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/).⁵

Top Tips

DO MOUTHWASHES AND/OR SALINE NASAL IRRIGATION SUPPRESS SARS-COV-2?

Covid spreads from the oral and nasal cavities transmitted by aerosols. In addition to the well-known division and spread of the virus in the cells of the respiratory tract, SARS-CoV-2 is also known to infect the cells of the lining of the mouth and the salivary glands.

Commercially available mouthwashes contain antibiotic and antiviral components that act against microorganisms in the mouth. As shown by a team of researchers at Hokkaido University, one of these – cetylpyridinium chloride (CPC) – reduces the viral load of SARS-CoV-2 in the mouth, primarily by disrupting the lipid membrane surrounding the virus. While other chemicals have similar effects, CPC has the advantage of being tasteless and odorless.

Mouthwashes in Japan typically contain a fraction of the CPC compared to previously tested mouthwashes, thus researchers were interested in studying Japanese mouthwashes. They tested the effects of CPC on cell cultures that express trans-membrane protease serine 2 (TMPRSS2), which is required for SARS-CoV-2 entry into the cell.

They found that, within 10 minutes of application, 30-50 µg/mL of CPC inhibited the infectivity and capability for cell entry of SARS-CoV-2. Interestingly, commercially available mouthwashes that contain CPC perform better than CPC alone. Researchers also showed that saliva did not alter the effects of CPC. Most significantly, they tested four variants of SARS-CoV-2 and showed that the effects of CPC were similar across all strains.

This study shows that low concentrations of CPC in commercial mouthwash suppress the infectivity of four variants of SARS-CoV-2. The authors are now assessing the effect of CPC-containing mouthwashes on viral loads in saliva of COVID-19 patients. Future work will also focus on fully understanding the mechanism of the effect, as lower concentrations of CPC do not disrupt lipid membranes.⁶

As reported in the Winter 2022 issue of *JLGH*, the Medical College of Georgia at Augusta University has found that irrigating your nose twice a day with a saline solution after testing positive for COVID-19 can decrease your chances of hospitalization and death in higher-risk patients. In that study, those who per-

formed nasal irrigation were more than eight times less likely to be hospitalized than the national rate.

DOES COVID-19 CONFER RISK FOR VENOUS THROMBOEMBOLISM IN AMBULATORY PATIENTS?

Evidence has been mixed about risk for venous thromboembolism (VTE) among patients with ambulatory SARS-CoV-2 infections, but in this U.K. population-based cohort study, researchers determined the 30-day risk for VTE (i.e., deep venous thrombosis or pulmonary embolism) among 19,000 outpatients (mean age: 64) with ambulatory COVID-19.

SARS-CoV-2 positive patients had significantly higher risk for VTE within 30 days than did matched controls (incident rate: 51 vs. 2 per 1,000 person-years; hazard ratio: 21). Excess risk was higher for unvaccinated people (hazard ratio: 28) than for vaccinated people (hazard ratio: 6). Among patients with SARS-CoV-2 infections, older age, male sex, obesity, inherited thrombophilia, and no or partial vaccination were independent risk factors for VTE.

These results reinforce the value of vaccination. Whether thromboprophylaxis also would be beneficial

in ambulatory patients, as it is in hospitalized COVID-19 patients, remains unclear.⁷

HEART FAILURE CLINICAL PRACTICE GUIDELINES UPDATED

Updated and revised guidelines on the management of heart failure (HF) were published in 2022 by the American College of Cardiology (ACC), American Heart Association (AHA), and Heart Failure Society of America (HFSA) in the journal *Circulation*. The top 10 key points are:

1. Four core foundational medication classes are now included in the guideline-directed medical therapy recommendations for heart failure with reduced ejection fraction (HFrEF). These are sodium-glucose cotransporter-2 inhibitors (SGLT2Is), beta blockers, mineralocorticoid receptor antagonists (MRAs), and renin-angiotensin system (RAS) inhibitors.
2. SGLT2Is are a class 2a (moderate) recommendation for heart failure with moderately reduced ejection fraction (HFmrEF), whereas angiotensin receptor-neprilysin inhibitors (ARNIs), angiotensin-



Elizabethtown University Student Art on Exhibit at Lancaster Medical Heritage Museum

“We are proud to be a community space as well as a museum,” says Kim Jovinelli, executive director of the Lancaster Medical Heritage Museum. “Education, exhibition, and research have been a major tenet of our mission since our founding in 1982, and we will continue that tradition,” she adds. In this vein, the museum has been working with Elizabethtown College and Millersville University to connect with the academic community.

At Elizabethtown College, Dr. Anya Goldina, professor of biology, each year encourages her students to complete an art project as part of an extra-credit initiative. Dr. Goldina and her students graciously lent the art pieces pictured above to the museum as part of a joint exhibition, currently on display at the museum’s new location at 410 North Lime Street, Lancaster. At Millersville University, history and anthropology students can complete museum-related work for extra credit, plus the museum benefits from summer research internships graciously sponsored by Penn Medicine Lancaster General Health and WellSpan Ephrata Community Hospital. Internship applications are open to students from all over the country to learn what it’s like to work in a museum, while also completing a research topic of their choice. Turn to page 19 for an article from this year’s LG Health intern, who researched the Lancaster County Vaccine Farm.

The museum is open Monday/Wednesday/Friday, 10:00 a.m. to 3:00 p.m. Summer hours (Tuesday-Saturday, 10:00 a.m. to 3:00 p.m.) begin April 28. Admission is free to LG Health employees with a badge and children under 3; \$8.00 for all others. Follow the museum on social media (Facebook: LancasterMedicalMuseum; Instagram & TikTok: lnh_museum) or visit lancastermedicalheritagemuseum.org for the most current information.

converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), MRAs, and beta blockers are class 2b (weak) recommendations for this patient population.

3. There are new recommendations for heart failure with preserved ejection fraction (HFpEF) for SGLT2Is (class 2a), MRAs (class 2b), and ARNIs (class 2b).
4. Patients with previous HFrEF who now have a left ventricular (LV) EF above 40% should be referred to as having improved LVEF; they should continue their HFrEF treatment.
5. The ACC/AHA/HFSA created value statements for select recommendations in which there are high-quality cost-effectiveness studies of the intervention published.
6. New amyloid heart disease recommendations include screening for serum and urine monoclonal light chains, bone scintigraphy, genetic sequencing, tetramer stabilizer therapy, and anticoagulation.
7. Of importance is evidence to support increased filling pressures for the diagnosis of HF if the LVEF is over 40%. Such evidence can be obtained from noninvasive or invasive testing.
8. Refer those with advanced HF who desire prolonged survival to a team that specializes in HF.
9. Primary prevention is crucial for those at high risk of HF (stage A) or pre-HF (stage B). The revised stages of HF emphasize the new terminologies of “at risk” for HF for stage A and pre-HF for stage B.
10. Updated and new recommendations cover select patients with HF and iron deficiency anemia, coronary artery disease, AF, valvular heart disease, cardiomyopathy, hypertension, type 2 diabetes, sleep disorders, and malignancy.⁸

MEDICARE SPENT BILLIONS ON DRUGS WITHOUT CONFIRMED BENEFITS

The Centers for Medicare and Medicaid Services (CMS) spent \$18 billion on drugs without confirmed benefits, according to findings of an Office of Inspector General (OIG) for the Department of Health and Human Services report. The money was spent over three years on medications for which there was no proof of significant clinical benefit. The goal of this process is to speed the approval of promising medications for serious and fatal diseases even though evidence of efficacy is limited.

The Federal Drug Administration’s expectation is that drug companies will continue research to defini-

tively prove the efficacy of medications approved via this process. However, sponsors don’t always complete trials promptly for a variety of reasons, which can result in drugs staying on the market – and being administered to patients – for years without their predicted clinical benefit being verified and insurers (including Medicare and Medicaid) paying billions for treatments that are not verified to have clinical benefit.

In a statement, the drug makers’ trade group, the Pharmaceutical Research and Manufacturers of America, said its members tried to hold up their end of the agreements for further studies of drugs granted accelerated approvals. Confirmatory trials sometimes take longer than expected owing to several factors, including the inability to enroll patients as quickly as anticipated because of patients enrolling in other studies aimed at the same population, patients being less willing to volunteer for studies of FDA-approved medicines, or small patient populations.

REFERENCES

1. Shah SS, Srivastava R, Wu S, et al. Intravenous versus oral antibiotics for post-discharge treatment of complicated pneumonia. *Pediatrics*. 2016;138(6):e20161692.
2. Wickremasinghe AC, Kuzniewicz MW, Grimes BA, et al. Neonatal phototherapy and infantile cancer. *Pediatrics*. 2016;137(6):e20151353.
3. Trotter ED, Chan K, Allain D, et al. Managing an acute asthma exacerbation in children. *Paediatr Child Health*. 2021;26(7):438-438.
4. McKenzie KC, Hahn CD, Friedman JN; Canadian Paediatric Society, Acute Care Committee. Emergency management of the paediatric patient with convulsive status epilepticus. *Paediatr Child Health*. 2021;26(1):50-57.
5. Innis K, Hasson D, Bodilly L, et al. Do I need proof of the culprit? Decreasing respiratory viral testing in critically ill patients. *Hosp Pediatr*. 2021;11(1):e1-e5.
6. Hokkaido University. Mouthwashes may suppress SARS-CoV-2. MedicalXpress. Published October 6, 2022. Accessed January 3, 2023. <https://medicalxpress.com/news/2022-10-mouthwashes-suppress-sars-cov.html>
7. Zxie J, Prats-Urbe A, Feng Q, et al. Clinical and genetic risk factors for acute incident venous thromboembolism in ambulatory patients with COVID-19 [published correction appears in *JAMA Intern Med*. 2022;182(11):1234]. *JAMA Intern Med*. 2022;182(10):1063-1070.
8. Heidenreich PA, Bozkurt B, Aguilar D, et al. AHA/ACC/HFSA guideline for the management of heart failure: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation*. 2022;145(18):e876-e1032.

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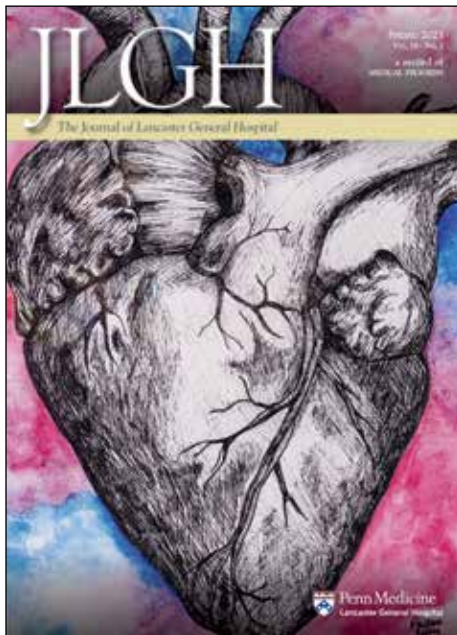
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Cover photo by Lancaster County photographer Nick Gould for JLGH.

The photo captures the artwork of Paiton Kelly, a graduate of the Occupational Therapy program at Elizabethtown College. Paiton's art is one of a collection of student work currently on display at the Lancaster Medical Heritage Museum. Read more about the collection and the museum on page 31 of this issue.

INTERESTED IN WRITING FOR JLGH?

The following is a summary of the general guidelines for submitting an article to *The Journal of Lancaster General Hospital*. Details are located online at JLGH.org.

- Scientific manuscripts are typically between 2,500-4,500 words. Perspective articles are usually shorter; and photo quizzes average about 725 words plus illustrations.
- Medical articles should report research, introduce new diagnostic or therapeutic modalities, describe innovations in health care delivery, or review complex or controversial clinical issues in patient care.
- Reports of research involving human subjects must include a statement that the subjects gave informed consent to participate in the study and that the study has been approved by the institutional review board (IRB).
- Patient confidentiality must be protected according to the U.S. Health Insurance Portability and Accountability Act (HIPAA).
- The Journal of Lancaster General Hospital *does not allow chatbot tools such as ChatGPT to be listed as authors*. JLGH editors warn authors that the use of these tools can be high risk for plagiarism with inappropriate use of citations, and we require that use of such tools be disclosed.

Please contact the Managing Editor, Maria M. Boyer (717-544-8004), Maria.Boyer@penmedicine.upenn.edu, to discuss submitting an article or for further information.

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DID YOU KNOW, PHYSICIANS CAN EARN CATEGORY 2 CREDIT FOR READING JLGH?

American Medical Association Category 2 activities consist of self-directed learning or courses that have not been through a formal approval process. According to the Pennsylvania State Board of Medicine, this includes “learning experiences that have improved the care [physicians] provide their patients.” Reading authoritative medical literature – like *JLGH* – is one such activity. More information and the Pennsylvania Board of Medicine CME Reporting Form are available at LGHealth.org/CME. Physicians can also log credit through their [eeds](#) account online.



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Upcoming CME Offerings at LG Health

Hospital Interprofessional Case-Based (HICB) Conference
March 15, April 19, May 17, 12:30-1:00 p.m.

Pediatric Grand Rounds
March 16, April 20, 7:00-8:00 a.m.

Department of Medicine Grand Rounds
April 5, May 3, June 7, 12:00 noon-1:00 p.m.

Pediatric Hospitalist Case Conference & Literature Review
April 11, May 9, June 13, 7:00-8:00 a.m.

Special Event — Registration Required

Laurence E. Carroll, MD, Legacy Event, March 13
Reception: 5:45-6:30 p.m.; Presentation: 6:30-7:30 p.m.
The Laurence E. Carroll, MD Lecture Endowment was established by gifts from his friends and family to honor his memory, legacy, passion, and lifelong commitment to medical ethics and continuing medical education. To make a gift to the endowment, call 717-544-7126.

CME On Demand

LG Health offers a number of programs on demand, plus regularly updates and makes available recordings of Grand Rounds sessions.