Are You Using fFN Testing Correctly?

Take the Quiz

RapidfFN®

Volume 67, Number 2, March/April 2022

www.jmwh.org

Journal of Midwifery & Women's Health

The Official Journal of the American College of Nurse-Midwives

Journal of Midwifery & Women's Health

www.jmwh.org

Aims & Scope

The *Journal of Midwifery & Women's Health (JMWH)* is the official journal of the American College of Nurse-Midwives. This peer-reviewed journal includes new research and current knowledge across a broad range of clinical and interprofessional topics including perinatal care, gynecology, sexual and reproductive health, primary care, public health, health care policy, and global health. With a focus on evidence-based practice, *JMWH* promotes health equity and excellence in midwifery.

AMERICAN COLLEGE *of* NURSE-MIDWIVES

8403 Colesville Road, Suite 1230
Silver Spring, Maryland 20910-6374
Tel: 240-485-1800
Fax: 240-485-1818
www.midwife.org

National Office

General ACNM Information
Web: *www.midwife.org*
Email: info@acnm.org

A.C.N.M. Foundation
Web: *http://www.midwife.org/foundation*
Email: fdn@acnm.org

Communications
Web: *www.midwife.org/newsroom*
Email: pr@acnm.org

Consumer Information
Web: *www.ourmomentoftruth.com*

Continuing Education and Practice Resources
Web: *http://acnm.sclivelearningcenter.com*
www.midwife.org/professional-resources

Finance
Email: accounting@acnm.org

Midwifery Practice & Education Global Outreach
Web: *www.midwife.org/global-outreach*
Email: globaloutreach@acnm.org

Government Relations
Web: *www.midwife.org/advocacy*
Email: govaffairs@acnm.org

Meetings
Web: *www.midwife.org/news*
Email: events@acnm.org

Membership & Publications
Web: *www.midwife.org/member-resources*
Email: membership@acnm.org
Email (Quickening): quick@acnm.org

Midwifery Employment
Web: *www.midwifejobs.com*

Midwifery Practice, Education, and Global Outreach
Email: MPEGO@acnm.org

Midwife Practice Locator
Web: *http://www.midwife.org/rp/find.cfm*

Publications
Web: *www.midwife.org/ACNM-newsletters*

Annual Meeting Dates

May 2022: Chicago, Illinois

Mission

The American College of Nurse-Midwives (ACNM) works to establish midwifery as the standard of care for women. We lead the profession through education, clinical practice, research, and advocacy.

THE JOURNAL OF MIDWIFERY & WOMEN'S HEALTH, (Print ISSN: 1526-9523; Online ISSN: 1542-2011), is published bimonthly on behalf of the American College of Nurse-Midwives by Wiley Subscription Services, Inc., a Wiley Company, 111 River St., Hoboken, NJ 07030-5774.

Periodical Postage Paid at Hoboken, NJ and additional offices.

Postmaster: Send all address changes to THE JOURNAL OF MIDWIFERY & WOMEN'S HEALTH, John Wiley & Sons Inc., C/O The Sheridan Press, PO Box 465, Hanover, PA 17331.

INFORMATION FOR SUBSCRIBERS: The *Journal of Midwifery & Women's Health* is published in six issues per year. Institutional subscription prices for 2022 are: Print & Online: US$840 (US), US$840 (Rest of World), €647 (Europe), £595 (UK). Prices are exclusive of tax. Asia-Pacific GST, Canadian GST/HST and European VAT will be applied at the appropriate rates. For more information on current tax rates, please go to https://onlinelibrary.wiley.com/library-info/products/price-lists/payment. The price includes online access to the current issue, and the complete archive back to January 1st 2018, where available. For other pricing options, including access information and terms and conditions, please visit https://onlinelibrary.wiley.com/library-info/products/price-lists. Terms of use can be found here: https://onlinelibrary.wiley.com/terms-and-conditions.

DELIVERY TERMS AND LEGAL TITLE: Where the subscription price includes print issues and delivery is to the recipient's address, delivery terms are Delivered Duty Unpaid (DDU); the recipient is responsible for paying any import duty or taxes. Title to all issues transfers Free of Board (FOB) our shipping point, freight prepaid. We will endeavour to fulfil claims for missing or damaged copies within six months of publication, within our reasonable discretion and subject to availability.

BACK ISSUES: Single issues from current and recent volumes are available at the current single issue price from cs-journals@wiley.com. Earlier issues may be obtained from Periodicals Service Company, 351 Fairview Avenue - Ste 300, Hudson, NY 12534, USA. Tel: +1 518 822-9300, Fax: +1 518 822-9305, Email: psc@periodicals.com.

PUBLISHER: The *Journal of Midwifery & Women's Health* is published by Wiley Periodicals Inc., 101 Station Landing, Suite 300, Medford, MA 02155.

Journal Customer Services: For ordering information, claims and any enquiry concerning your journal subscription please go to https://hub.wiley.com/community/support/onlinelibrary or contact your nearest office.
Americas: Email: cs-journals@wiley.com; Tel: +1 781 388 8598 or +1 800 835 6770 (toll free in the USA & Canada).
Europe, Middle East and Africa: Email: cs-journals@wiley.com; Tel: +44 (0) 1865 778315.
Asia Pacific: Email: cs-journals@wiley.com; Tel: +65 6511 8000.
Japan: For Japanese speaking support, Email: cs-japan@wiley.com.
Visit our Online Customer Get-Help available in 7 languages at https://hub.wiley.com/community/support/onlinelibrary.

PRODUCTION EDITOR: Anju Upadhyay (email: jmwh@wiley.com)

ADVERTISING: MJ Drewn (email: mdrewn@wiley.com)

COMMERCIAL REPRINTS: Lydia Supple-Pollard (email: lsupple@wiley.com)

View this journal online at www.wileyonlinelibrary.com/journal/jmwh.

Wiley is a founding member of the UN-backed HINARI, AGORA, and OARE initiatives. They are now collectively known as Research4Life, making online scientific content available free or at nominal cost to researchers in developing countries. Please visit Wiley's Content Access Corporate Citizenship site: http://www.wiley.com/WileyCDA/Section/id-390082.html

Printed in the USA by The Sheridan Group

Aims and Scope: The *Journal of Midwifery & Women's Health (JMWH)* is the official journal of the American College of Nurse-Midwives. This peer-reviewed journal presents new research and current knowledge across a broad range of clinical and interdisciplinary topics including maternity care, gynecology, primary care for women and newborns, public health, health care policy, and global health.With a focus on evidence-based practice, *JMWH* is dedicated to improving the health care of women throughout their lifespan and promoting excellence in midwifery.

The *Journal of Midwifery & Women's Health* accepts articles for Open Access publication. Please visit https://authorservices.wiley.com/author-resources/Journal-Authors/open-access/onlineopen.html for further information about OnlineOpen.

For submission instructions, subscription and all other information visit www.wileyonlinelibrary.com/journal/jmwh.

Abstracting and Indexing Services: The Journal is indexed by Science Citation Index, CINAHL, MEDLINE, PsycINFO, & SCOPUS. For a complete listing of A&I services please visit the journal homepage at www.wileyonlinelibrary.com/journal/jmwh.

Wiley's Corporate Citizenship initiative seeks to address the environmental, social, economic, and ethical challenges faced in our business and which are important to our diverse stakeholder groups. Since launching the initiative, we have focused on sharing our content with those in need, enhancing community philanthropy, reducing our carbon impact, creating global guidelines and best practices for paper use, establishing a vendor code of ethics, and engaging our colleagues and other stakeholders in our efforts. Follow our progress at www.wiley.com/go/citizenship.

Journal of Midwifery & Women's Health

Volume 67
Number 2
March/April 2022

Editorials

Commentary

Research Articles and Reviews

THE JOURNAL OF MIDWIFERY & WOMEN'S HEALTH, (ISSN: 1526-9523 [print]; ISSN: 1542-2011 [online]), is published bimonthly on behalf of the American College of Nurse-Midwives by Wiley Subscription Services, Inc., a Wiley Company, 111 River St., Hoboken, NJ 07030-5774.


Are You Using fFN Testing Correctly?
Take the Quiz
RapidfFN®

Editorial

Meet the Associate Editors

Associate Editors are central to helping direct the content, focus, and strategic development of the *Journal of Midwifery & Women's Health* (*JMWH*). They compose the *JMWH* Editorial Board Leadership Team along with the Deputy Editors and Editor-in-Chief. The full *JMWH* Editorial Board includes the Associate Editors as well as Contributing and Consulting Editors.

JMWH Contributing Editors write or provide substantive input into the *JMWH* columns. Mary Barger, an Associate Editor, writes Systematic Reviews to Inform Practice (formerly Current Resources for Evidence-Based Practice). Research and Professional Literature to Inform Practice (formerly Updates from the Literature) is written by Nancy Niemczyk, Rebecca Clark, and Amy Alspaugh. Martha Barry is the new Contributing Editor for Clinical Rounds. Finally, Lindsey Wilson writes the Share with Women column, partnering with authors who contribute expertise to this resource most frequently downloaded by readers to share with their clients. Contributing Editors provide specific expertise to the editors through reviews and consultation and are identified on the *JMWH* website.

Below I introduce you to our Associate Editors, in alphabetical order. The team of Associate Editors appointed for 2022 includes those who have years of experience on the Editorial Board, those who have served more recently, and several new members. My goal is to retain experienced members during our transition and appoint new members, increasing diversity in race and ethnicity, gender, education background, type of midwifery engagement, and stage of midwifery career.

Lauren Arrington, CNM, DNP (she/her) is interested in exploring how tactics that emerge from social justice movements can be used to achieve equity in perinatal health care. She is an assistant professor in the Doctor of Nursing Practice Program at Georgetown University and a practicing midwife in Maryland. She also serves on the Board of Commissioners of the Accreditation Commission for Midwifery Education. She previously worked as a maternal health advisor for Jhpiego and was chair of the communication section of the Division of Global Health (currently Division of Global Engagement) in the American College of Nurse-Midwives (ACNM). Lauren has been an author and reviewer for *JMWH*. As an Associate Editor, she looks forward to supporting scholarly discourse on liberatory approaches to offer structurally competent, equitable care that promotes wellness and joy.

Mary Barger, CNM, PhD, FACNM (she/her) has been an Associate Editor for *JMWH* for 20 years. She has been the editor for 4 *JMWH* special issues on primary care and nutrition. She also co-authored a 6-part series focused on the research contributions of certified nurse-midwives/certified midwives for the 50th anniversary of ACNM in 2015 with Patty Aikins Murphy and Mary Ann Faucher. For the last 3 years, she has written Current Resources for Evidence-Based Practice (now Systematic Reviews to Inform Practice). Mary firmly believes that our profession is only as strong as our research and is delighted to have witnessed the growth of our profession through *JMWH*.

Sharon Bond, CNM, PhD, FACNM (she/her) has been a *JMWH* peer reviewer since 2003 and became a Contributing Editor in 2006. In 2008, as Associate Editor, she authored the column Journal Reviews (2007-2010), then Updates from the Literature (2011-2019). She continues to review manuscripts and mentor new authors. Sharon assisted in selecting Wiley as our new publisher in 2005 and participated in the development of our new logo introduced in 2015. In 2022, she hopes to assist clinically focused midwives who aspire to become authors to publish their most interesting cases in the *JMWH* Clinical Rounds column.

Robyn Churchill, CNM, MSN, FACNM (she/her) is the Maternal Health Lead at the US Agency for International Development, where she guides the Global Health Bureau's maternal health portfolio. She has over 20 years of experience in maternal and reproductive health as a clinical midwife, practice director, researcher, and technical advisor. Robyn has held clinical appointments with Harvard Medical School, Yale University School of Nursing, Boston University Medical School, and Ariadne Labs. She has been the *JMWH* Global Health Consulting Editor and a peer reviewer for many years and is Chair of the ACNM Division of Global Engagement, where she led the development of ACNM's Global Health Competencies for Midwives.

Ali S. Cocco, CNM, MSN (she/her) practices midwifery at Vanderbilt University Medical Center in the Department of Obstetrics and Gynecology in an integrated medical education model teaching resident physicians. She cares for a diverse population of individuals with varying perinatal and medical health care needs. She has served as a peer reviewer for the Journal since 2016. Ali is eager to serve on the Editorial Board and hopes to help increase its accessibility for authors and readers alike.

Simon Adriane Ellis, CNM, MS, FACNM (he/they) is a trans and non-binary midwife in clinical practice providing sexual and reproductive health care for people of all gender identities. Simon has published chapters and articles in *Varney's Midwifery*, *Gynecologic Health Care*, *Trans Bodies Trans Selves*, *American Journal of Obstetrics & Gynecology*, *Women's Healthcare*, and *JMWH*. Simon has been on the *JMWH* Editorial Board since 2018 and received the ACNM Excellence in Leadership and Innovation Award in 2021. They hope to continue the legacy of immediate past Editor-in-Chief Francie Likis by continuing to push the Journal steadily in the direction of equity and hope.

Julia C. Phillippi, CNM, PhD, FACNM, FAAN (she/her) has been a *JMWH* Associate Editor since 2019. She is the Nurse-Midwifery Specialty Director at Vanderbilt University School of Nursing. In 22 years as a midwife, she has practiced in rural and urban birth centers and hospitals. The

1526-9523/09/$36.00 doi:10.1111/jmwh.13361

improvement of perinatal health through education, practice, and research is the focus of her work. As a clinician, she strives to make her research relevant to everyday realities. Julia has experience in multiple methodologies to explore maternal-child health outcomes and was the 2005 ACNM Kitty Ernst Award winner. She has a passion for interprofessional care and frequently serves as a midwifery liaison on national committees crafting guidelines relevant to perinatal health care providers.

Pamela Reis, CNM, PhD, NNP-BC, FACNM (she/her) has been a peer reviewer for *JMWH* since 2014 and Associate Editor since 2020. She is the director of the nursing PhD program at East Carolina University College of Nursing in Greenville, North Carolina, and Chair of the Department of Nursing Science. She is a member of the ACNM Midwives of Color Committee and Vice Chair of the Accreditation Commission for Midwifery Education. Her research focuses on technology in interprofessional education, APRN education, integrative therapies in women's health, and self-care activities that promote health and well-being in ethnically and culturally diverse women. As Associate Editor, Pamela enjoys mentoring students and new authors in preparing their manuscripts for publication.

Have you thought about becoming involved in *JMWH*? Please join us at a session on peer review at the ACNM Annual Meeting & Exhibition in Chicago in May to see what it is all about. Then, consider joining our terrific team of peer reviewers. Experienced peer reviewers should also attend to gain new information and share your expertise. The *JMWH* Editorial Leadership Team is a welcoming bunch and we invite your participation in *JMWH*. Look for the 2022 Reader Survey and share your thoughts and what you'd like to see in the Journal.

Melissa D. Avery, CNM, PhD
Editor-in-Chief

Lauren Arrington, CNM, DNP

Mary Barger, CNM, PhD, FACNM

Sharon Bond, CNM, PhD, FACNM

Robyn Churchill, CNM, MSN, FACNM

Ali S. Cocco, CNM, MSN

Simon Adriane Ellis, CNM, MS, FACNM

Julia C. Phillippi, CNM, PhD, FACNM, FAAN

Pamela Reis, CNM, PhD, NNP-BC, FACNM


Are You Using fFN Testing Correctly?
Take the Quiz
RapidfFN®

Journal of Midwifery & Women's Health
www.jmwh.org
Innovations from the Field

Innovations in Prospective Perinatal Research as a Result Of the COVID-19 Pandemic

Katherine Kissler[1], CNM, PhD, Rachel Blankstein Breman[2], RN, MPH, PhD, Nicole Carlson[3], CNM, PhD, Ellen Tilden[4], CNM, PhD, Elise Erickson[4], CNM, PhD, Julia Phillippi[5], CNM, PhD

In 2020, in-person research activities were stopped because of the spread of the novel coronavirus, severe acute respiratory syndrome coronavirus 2, and the resulting disease, coronavirus disease 2019. Our collaborative team of nurse and midwife scientists at universities across the United States adapted research activities to continue prospective perinatal research during the pandemic. These adaptations included development of new research techniques and the implementation of previously developed, but underused, strategies to conduct research from a distance. These strategies included online recruitment, virtual enrollment and consent, qualitative data collection via video conferencing, new applications of smart phone technology, wearable biological measurement, and participant self-collection of biological samples. In addition to allowing research to continue during the pandemic, these innovative strategies may increase access to research for low-income, rural, and racially diverse pregnant and postpartum populations. Decreased travel requirements, flexible scheduling, wearable devices, and the capacity to self-collect biologic samples may improve recruitment and the experience of research participation. The rapid implementation of these research strategies has advanced innovation toward wider, more inclusive and increasingly diverse perinatal research access, and many of these strategies will continue to be used and refined.
J Midwifery Womens Health 2022;67:264–269 © 2022 by the American College of Nurse-Midwives.

Keywords: prospective studies, research design, midwifery, smartphone, wearable electronic devices, informed consent, COVID-19, recruitment

INTRODUCTION

Researchers and pregnant women face numerous obstacles when conducting and participating in studies focused on the perinatal period. For decades, regulations put in place to prevent fetal injury impeded or prevented individuals from participating in research during pregnancy, making it difficult to use research to assess the risks and benefits of interventions that could be beneficial during pregnancy.[1] The problem of limited research to assist clinical decision-making is compounded for pregnant individuals from minoritized groups, as they are both at increased risk for adverse perinatal outcomes and are underrepresented in existing research.[2] Research specific to pregnancy and research that targets inclusion of minority populations is a national priority as a facet of improving health equity.[3]

There are also multiple, intersectional barriers for pregnant individuals, women, and persons of color for research participation. Specific barriers to research participation include transportation to research sites, a need for childcare, scheduling constraints, language and cultural barriers, and mistrust of the health care and research system.[2] Women may even incur costs to participate in research, including paying for transportation and childcare or missing work to attend research visits. Racism, classism, and rurality are additional areas of intersectionality that contribute to inequality in disparities in research participation and perinatal health outcomes.[2,4]

In 2020, the severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) pandemic further impeded research in many health care settings as research and academic centers paused research activities. In response to the shutdown of in-person research enacted to limit the spread of SARS-COV-2, this team implemented research strategies including online recruitment, virtual enrollment and consent, telephone and video data collection, new applications of smart phone technology, wearable devices, and participant self-collection of biological samples (Table 1). Many of these strategies may also mitigate barriers to research participation for individuals who are underrepresented in research.[2] Use of these strategies supported research during the pandemic and also generated or expanded innovations for engaging pregnant individuals in perinatal research more effectively, efficiently, and equitably for the future.

Our collaborative team consists of nurse and nurse-midwife scientists at 5 academic centers across the United States. We each conduct research on issues surrounding labor and birth individually and frequently collaborate across sites.

[1]College of Nursing, University of Colorado Anschutz Medical Campus, Aurora, Colorado
[2]University of Maryland School of Nursing, Baltimore, Maryland
[3]Emory University Nell Hodgson Woodruff School of Nursing, Atlanta, Georgia
[4]Oregon Health and Science University,School of Nursing, Portland, Oregon
[5]Vanderbilt University School of Nursing, Nashville, Tennessee

Correspondence
Katherine J. Kissler
Email: katherine.kissler@cuanschutz.edu

ORCID
Katherine Kissler https://orcid.org/0000-0002-5753-720X
Rachel Blankstein Breman https://orcid.org/0000-0003-3881-6833
Nicole Carlson https://orcid.org/0000-0003-2642-9174
Ellen Tilden https://orcid.org/0000-0002-2457-1807
Elise Erickson https://orcid.org/0000-0002-6655-3500
Julia Phillippi https://orcid.org/0000-0002-6549-094X

1526-9523/09/$36.00 doi:10.1111/jmwh.13329

Quick Points

- Perinatal researchers adopted or developed new research techniques during the coronavirus disease 2019 pandemic to continue and advance research.
- These new research strategies increase access to research through flexible scheduling, decreased travel, and greater participant engagement.
- Increased access to perinatal research may increase sample sizes, diversify research participation, and improve the quality of data for addressing perinatal health disparities.

We use prospective approaches as well as existing health data to study perinatal physiology and health service use with the goal of improved perinatal outcomes. Our current research includes mixed methods evaluation of intersectionality and implementation of telehealth in nurse-led care settings during the coronavirus disease 2019 (COVID-19) pandemic;[5] changes in physiology (eg, temperature, heart rate variability) and hormone metabolism prior to labor; characterization of latent labor symptoms, biomarkers, and experiences; telehealth options to improve access to maternal mental health care; and team-based perinatal care.

When the COVID-19 pandemic started in March 2020, each of our institutions ceased in-person research activities to prevent spread of the SARS-COV-2 virus. We each adapted research strategies to continue to advance perinatal science despite the pandemic and to reopen our individual studies with social distancing efforts in place. We collaborated through mentorship, partnership, sharing ideas, and developing best practices for distance-based research during the pandemic.

APPROACHES TO IMPROVE ACCESS TO RESEARCH

We met throughout the early months of the pandemic in March through May of 2020, to support each other in pivoting projects, adapting research strategies, and disseminating research findings.[6] Individually, together, and among teams in our institutions, we established strategies. This article describes the research strategies we implemented during the COVID-19 pandemic, including online recruitment, virtual enrollment and consent, qualitative data collection via video conferencing, wearable biological measurement, and participant self-collection of biological samples.

Online Recruitment

Traditional methods used to recruit research participants have included flyers, clinical outreach, and convenience sampling. More recently, advertising online and social media platforms have emerged as ways to reach potential participants especially among diverse populations.[2,4,7] During the COVID-19 pandemic, many studies increased use of electronic recruitment strategies. For example, email addresses can be obtained from companies who market services to target audiences, including companies with apps specific to the perinatal period. Crowdsourced databases of participant self-reported data, such as PregSource, which is sponsored by the National Institutes of Health, are also available for researchers to use. In addition, social media influencers who reach a large, specific audience can also be used to promote study enrollment. This strategy of using influencers to build recruitment may open opportunities to improve sampling diversity and build equity in research as individuals may be more likely to participate if they hear about the study from someone they trust.[8] This is similar to snowball sampling, and influencers have the potential to rapidly accelerate sharing and uptake of a message.

Table 1. Examples of Resources Supporting Described Research Innovations[a]

Research Innovations	Currently Commercially Available Products
Pregnancy apps with availability to purchase ads and directly email users	Ovia, BabyCenter
Social Media platforms with availability to purchase ads and target populations through influencers	Facebook, Instagram, Pinterest, NextDoor, YouTube
Crowdsourced perinatal databases	PregSource
HIPAA-compliant virtual enrollment and consent platform with survey and other data collection capabilities	REDCap, MyCap, ResearchKit
HIPAA compliant with autotranscription capability	Zoom, Cisco Webex, Microsoft Teams
Smartphone survey collection tools	JotForm, Smartsheets, Fulcrum, MyCap
Wearable biologic measurement devices	Bloomlife (contraction monitor), Oura (ring), Garmin (watch), Apple Watch
Microbial collection and stabilization (stool)	DNA Genotek
Microsampling (blood)	Neoteryx

HIPAA, Health Insurance Portability and Accountability Act; REDCap, Research Electronic Data Capture.
[a] These are products that are used or considered by our research team at the time of publication but only represent a small set of the products available commercially.

An example of use of these recruitment modalities is an institutional review board-approved study on decision-making during birth that was conducted by one of the authors in 2020-2021 via a survey of postpartum people (n = 1072). Paper advertisements with a quick response code resulted in a total of 50 responses, less than 5% of the total sample. Online recruitment strategies included paid and snowball personal online sharing about the survey. Paid advertisements on Facebook and Instagram, which cost $0.76 to $0.86 per click and totaled $1000, generated 5 to 10 responses every 24 hours over a one-month period. In addition, approximately 350 participants were reached through emailing users of the Ovia pregnancy app.

Social media sharing of recruitment materials among individuals generated the most participants of any recruitment methods for this study. Specifically, our study team reached out to an influencer who is a young mother who has thousands of social media followers and asked her to encourage participation in the research study via her Instagram postings and YouTube channel. Her viral (unpaid) social media posts yielded 115 completed responses to the survey in just 24 hours. In addition, participants recruited through this influencer had a younger mean age and were more likely to have public insurance when compared with the total sample. All of the participants the influencer recruited were younger than the age of 38 years, with 86% (n = 99) age 29 years or younger, and 37% were recipients of Medicaid insurance.

Virtual Enrollment and Consent

In addition to greater use of online recruitment, many researchers implemented new processes for enrollment and consent during the COVID-19 pandemic.[3] Documentation of consent historically involved the research participant meeting with a member of the study team and signing a paper in ink to affirm their understanding of research risks, benefits, and alternatives as well as their desire to participate. In-person meetings can be particularly difficult to arrange in rural areas and low-volume clinics and for people with rare conditions. Although online methods of consent have been accepted and even preferred by the National Institutes of Health for several years,[9] the COVID-19 pandemic hastened adoption by researchers. Online consent for research has many advantages, such as ready access to the current consent form, creation of accurate time stamps, streamlined auditing, and access to signed forms. The ability to consent to research without having to be in a specific location can reduce barriers to research participation.[10]

Several secure research platforms protect research and health care-related data and have e-consent templates.[11] Some sites include e-consent features such as videos of study procedures, translation, and literacy tools (eg, hovering over words for a definition).[12,13] These embedded features bolster participant understanding beyond what a paper form could offer, include multiple languages, and increase information access for participants with low literacy.[2]

Members of the author team have implemented online consent processes using a federally supported platform, Research Electronic Data Capture (REDCap).[11] Participant access to online documents was paired with telephone or video conferencing to answer participant questions and to interact with potential research participants. These methods have allowed connection and dialogue with interested individuals, even when they are in a different geographic area or have scheduling or language constraints. Preliminary assessment of online consent modalities suggests they are appropriate across different demographic groups of pregnant individuals.[10,14] Online consent, especially when paired with telephone or online access to research staff, has the potential to increase access to research and streamline research efforts while meeting the needs of a diverse research population and may become the most common method for research consent documentation.[2]

Data Collection

Several different methods for collecting data capitalizing on distance research strategies were identified and implemented by members of our team to meet their unique research needs.

Qualitative Data Collection via Video Conferencing

Prior to the COVID-19 pandemic, use of video conferencing for research interviews and focus groups was controversial.[15,16] Some qualitative researchers have observed that data collected virtually may lack some nuance and richness because of missed nonverbal cues and barriers to establishing rapport.[17,18] Additionally, concerns about privacy, confidentiality, data security, access, and comfort with the technology contributed to a preference among many researchers to conduct in-person meetings for qualitative data collection.[16] However, the COVID-19 pandemic spurred rapid expansion of use of video conferencing. In addition, web conference platforms made functional improvements that addressed many previous concerns.

The rapid expansion of telehealth services and research use of video conferencing during the COVID-19 pandemic has encouraged increased availability of video conferencing platforms that are compliant with the Health Insurance Portability and Accountability Act (HIPAA). These platforms include functionality for secure data collection and storage. Video conference platforms also now facilitate audio and video recording and autotranscription services. Generating a video and audio recording along with the autotranscription facilitates analysis.[15,16] When conducting qualitative interviews and focus groups via video conferencing during the pandemic, study authors had similar levels of connection, rapport, and depth of data collection compared with in-person interviews. Participants may also feel more comfortable participating in research from their own homes and appreciate the flexible scheduling and reduced transportation costs and time.

New Applications of Smartphone Technology

Data for intrapartum and immediate postpartum research is typically collected during inpatient care. Many pregnancy, birth, and postpartum events involve emotions (eg, excitement or anxiety) and/or decision-making (eg, deciding when to transition to the hospital during labor) that routinely occur in the community setting. Retrospective self-report of these

events may miss nuances that would be better captured during the experience itself. Increasing interest in smartphone technologies, with nearly ubiquitous use and proliferation of applications targeting pregnancy and labor, has sparked parallel proliferation of smartphone-based research innovations.[19] Smartphone technologies facilitate real-time data collection in all settings. This functionality can help build knowledge about childbearing processes that commonly occur outside of perinatal care facilities, such as the onset of spontaneous labor, postpartum involution, or perinatal sleep patterns.

There are several smartphone apps designed for survey data collection; however, not all of these prioritize study participant security. REDCap now has a HIPPA-compliant application for smartphones, known as MyCap. The app can collect data in a variety of formats relevant to quantitative research (eg, binary, continuous, or categorical variables) and qualitative research (eg, voice to text functionality). Real-time data collection can reduce recall bias, improve data accuracy and detail, and center patient experiences. MyCap is also designed to share content, including text, video links, and study reminders. This opens the exciting opportunity to deliver content to pregnant people while simultaneously capturing data about their frequency and intensity of engagement with this content. For example, the app could share a video with study participants while tracking how much of the video each participant played. Although the application has the same research capacities of REDCap, the patient-facing MyCap interface can be tailored and gamified to enhance interest and engagement.

Our study team is currently using MyCap to collect real-time information about people's experiences during the period between the onset of spontaneous labor through hospital admission for birth. After consenting to participate, the research staff help participants download the study's MyCap app. Subsequently, the participant completes a brief (5 minute) training in the use of the app with the research staff available to answer questions. When the participant begins to have symptoms of spontaneous labor, they use the MyCap app regularly to track contraction frequency and duration and document symptoms and coping methods as the latent phase of labor progresses. Data related to decision points, such as contacting the provider team and presenting to the hospital, are captured via quantitative questions (eg, were you or your partner more motivated to go to the hospital?) and qualitative questions (eg, what is the experience of transitioning to the hospital like for you?). Real-time characterization of people's symptoms of the latent phase of labor, experiences, and decision-making will be used to refine understanding of individual's experience of spontaneous labor.

In addition to this example of MyCap use, many smartphones are routinely designed to capture a variety of data points that might be relevant to perinatal research. There are multiple examples of smartphone data collection using built-in feature of the device.[20,21] Examples include information on activity (eg, acceleration), visual information (eg, light sensors, photo and video information), location (eg, Global Positioning System), sleep patterns (eg, movement), and sound (eg, microphone). Smartphone and digital app technologies are rapidly evolving and will facilitate participant-led perinatal data collection.

Wearable Biological Measurement

Previous monitors for measuring biologic variables tended to be bulky, expensive, and heavily wired, making them cumbersome and difficult to use. Newer wearable devices, such as those embedded in watches or rings, are increasingly comfortable and lightweight, making them easy to use.[22] Some of these devices are Food and Drug Administration (FDA)-approved for temperature monitoring, but many are considered wellness trackers and lack FDA regulation.[23] Wearable devices designed specifically for reproductive health are increasing in number. Examples include uterine contraction monitors and a host of wearable thermometers for tracking body temperature for fertility monitoring.[23,24]

Application of wearable devices to perinatal research may provide highly personalized data in the context of the individual's own environment. Biological tracking with wearable monitors could provide biobehavioral information to research pregnancy, birth, or postpartum experience. Thus, questions such as sleep quality in pregnancy[25] or exercise could be examined in far greater detail and depth than with periodic or self-reported measures.[26] The applications also permit direct data entry, allowing participants to self-report data to augment smartphone-collected measurements. One of our team members is using a wearable ring to measure changes in peripheral physiology (eg, temperature, heart rate variability, movement, and sleep measures) prior to the onset of labor. The ease of use of this device allows continuous data collection throughout pregnancy and the postpartum period with minimal participant burden.

Participant Self-Collection of Biological Samples

Traditional sampling methods require research participants to come to a laboratory or clinic for collection of samples such as blood, serum, urine, stool, hair, or cells via use of check swabs. During the COVID-19 pandemic, many research studies used participant self-collection to avoid in-person contact. For example, one author worked on a multisite study in which all biological samples (blood, stool, saliva) were self-collected by participants, a dramatic departure from prepandemic collection in clinical settings.[27] To make this shift possible, participants received collection materials in the mail and met with research coordinators via the video conferencing software Zoom to make sure they felt comfortable with the self-collection procedures. Self-addressed envelopes were provided for samples to be mailed to the laboratory.

Participant self-collection of biological samples offers several advantages over obtaining specimens at clinical or research sites. Self-collection can simplify biological sampling by reducing the travel time, expenditures, and clinical procedures for collecting samples. Currently, self-collection kits are available for blood, saliva, and feces, and most are stable at room temperature for several days before

processing or freezer storage is necessary. For example, microsampling collection of blood or urine can be used for clinical assays or methods such as metabolomics (the study of small molecule metabolites). Samples are stable for 48 hours at room temperature, negating the need for costly cold-chain shipping.

Self-collection of biological samples can also engage the participant as an active member of the research. Successful self-collection methodologies provide participants with a rationale for sample collection and clear instructions, often using different formats (ie, written, video, conference call with research coordinator).[28] In this way, control of sample collection is moved from the research team to the participant, encouraging research teams to optimize their participant communication to ensure sample quality. When paired with community-based participatory research methods, sample self-collection can foster greater understanding between participants and researchers of each other's needs and priorities.[29] For example, in the multisite study referenced above evaluating metabolites that may underpin symptom burden in Black people with chronic conditions, research coordinators met via video conferencing with participants to answer questions about sample self-collection and, in the process, had more time to hear participant questions about the types of assays that were planned for the samples and suggestions about how to describe the processes of self-collection.[27] Following these conversations, researchers integrated some of these suggestions from participants into updated recruitment and collection script materials.

Technology used in participant self-collection of biological samples can also decrease harm to participants, as smaller amounts of biologic materials can be used compared to traditional sample collection. Participants in the multisite metabolomics study used microsampling devices to self-collect blood samples from a finger stick.[27] This was possible because microsampling only requires a single drop of blood, which is approximately 10 mcL. This is in comparison with the average 10 mL, or 500 to 800 times less blood than is typically collected via normal venipuncture.[30] This reduced amount of biologic material can be especially important when researchers are working with medically fragile or pediatric populations.[29]

Finally, self-collection of specimens allows participants to more easily fit sample collection into their lives. Depending on specimen needs, traditional research studies might ask participants to come to a collection site multiple times per week or day. This requires time off from work or childcare responsibilities and travel to the collection location. Thus, self-collection can increase recruitment and retention of more diverse participants, increasing generalizability to reduce health disparities.

DISCUSSION

Although many of these strategies had been in development, the urgency created by the COVID-19 pandemic along with the sudden volume of individuals requiring clinical and research strategies conducted at a physical distance catalyzed changed in research recruitment, consent, and methods. Use of these strategies has allowed research to continue during the COVID-19 pandemic and also increased access to populations typically underrepresented in research. Implementation of data collection methods such as smartphone apps, wearable devices, and self-collection of samples may have been preferable to in-person data collection methods. Participants reported anecdotally that distant research strategies were convenient, efficient, and empowering and made them more likely to participate, warranting further qualitative and quantitative inquiry.

Given the vulnerabilities faced by many pregnant women who experience disparities related to gender, race, class, and rurality, targeting research toward addressing health inequity is a priority for perinatal research. The research strategies implemented by this team during the COVID-19 pandemic address many of the barriers to research participation for underrepresented populations by encouraging active engagement in sampling, reducing transportation time and costs, increasing flexibility of scheduling, and improving understanding of research purposes and processes.[2] Continued analysis is needed to evaluate these strategies. For example, lack of internet or smartphone access or mistrust of and/or discomfort with technology may offset some of the benefits of efficiency.[4] Although these innovations address some barriers to research participation, sociocultural issues also require further attention, and respectful, equity-focused, patient-centered research requires continuous awareness and research-team education.

CONCLUSION

The COVID-19 pandemic has increased implementation of research innovations. Useful strategies include virtual recruitment and enrollment, e-consent, online qualitative data capture, smart phone data entry, wearable biological measurement, and participant self-collection of biological samples. Further evaluation is needed to thoroughly access if these processes and measures increase access to research participation among all underrepresented populations, including Black, Indigenous, and Hispanic persons, people living in rural areas, and people with low incomes. However, these strategies may have profound positive benefits to perinatal research through increasing participant recruitment and improving engagement and retention.

CONFLICT OF INTEREST

The authors have no conflicts of interest to disclose.

ACKNOWLEDGMENTS

Dr. Kissler's work is supported by the Agency for Health care Research and Quality under award number 1 R01 HS028085 (Barton, Amy). Dr. Erickson's work is supported by the National Institutes of Health (NIH), National Institute for Nursing Research (NINR) under award number 1K99NR019596-01. This study was also supported by the Building Interdisciplinary Research Careers in Women's Health K12 Program funded by the Eunice Kennedy Shriver National Institute of Child Health and Human Development of the NIH under award numbers K12HD043488 (Dr. Erickson). Dr. Carlson's work is supported by the Center for the Study of Symptom Science, Metabolomics and

Multiple Chronic Conditions under award number NIH/NINR P30NR018090

All authors consent to the publication of this work. No other consent is required.

All data and material are available upon request to the corresponding author.

REFERENCES

1. Blehar MC, Spong C, Grady C, Goldkind SF, Sahin L, Clayton JA. Enrolling pregnant women: issues in clinical research. *Womens Health Issues*. 2013;23(1):e39-45. doi:10.1016/j.whi.2012.10.003
2. George S, Duran N, Norris K. A systematic review of barriers and facilitators to minority research participation among African Americans, Latinos, Asian Americans, and Pacific Islanders. *Am J Public Health*. 2014;104(2):e16-31. doi:10.2105/AJPH.2013.301706
3. Office of Research on Women's Health. *Moving into the Future with New Dimensions and Strategies: A Vision for 2020 for Women's Health Research*. National Institutes of Health; 2020.
4. Mwangi EW, Constance-Huggins M. Intersectionality and Black Women's Health: Making Room for Rurality. *J Progress Hum Serv*. 2017;30(1):11-24. doi:10.1080/10428232.2017.1399037
5. Johnson R, Kissler K, Wood R, Weiss C, Jones J. Qualitative exploration of rapid implementation of telehealth in nurse-led care settings during the COVID-19 Pandemic. Poster presented at: International Thinking Qualitatively Virtual Conference; July 5, 2021; Virtual.
6. Erickson E, Phillippi JC, Kissler K, Carlson NS & Tilden EL Physiologic latent labor: a critical collaboration of midwife scientists. Presented at: American College of Nurse-Midwives 65th Annual Meeting and Exhibition; June 1, 2020; Virtual.
7. Topolovec-Vranic J, Natarajan K. The use of social media in recruitment for medical research studies: a scoping review. *J Med Internet Res*. 2016;18(11):e286. doi:10.2196/jmir.5698
8. Pechmann C, Phillips C, Calder D, Prochaska JJ. Facebook recruitment using zip codes to improve diversity in health research: longitudinal observational study. *J Med Internet Res*. 2020;22(6):e17554. doi:10.2196/17554
9. US Food and Drug Administration. Use of electronic informed consent. in *Clinical Investigations: Questions and Answers. Guidance for Institutional Review Boards, Investigators, and Sponsors*. US Department of Health and Human Services; 2016.
10. Phillippi JC, Doersam JK, Neal JL, Roumie CL. Electronic informed consent to facilitate recruitment of pregnant women into research. *J Obstet Gynecol Neonatal Nurs*. 2018;47(4):529-534. doi:10.1016/j.jogn.2018.04.134
11. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)–a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377-381. doi:10.1016/j.jbi.2008.08.010
12. Lawrence CE, Dunkel L, McEver M, et al. A REDCap-based model for electronic consent (eConsent): moving toward a more personalized consent. *J Clin Transl Sci*. 2020;4(4):345-353. doi:10.1017/cts.2020.30
13. Prictor M, Teare HJA, Kaye J. Equitable participation in biobanks: the risks and benefits of a "dynamic consent" approach. *Front Public Health*. 2018;6:253. doi:10.3389/fpubh.2018.00253
14. Rothwell E, Wong B, Rose NC, et al. A randomized controlled trial of an electronic informed consent process. *J Empir Res Hum Res Ethics*. 2014;9(5):1-7. doi:10.1177/1556264614552627
15. Gray LM, Wong-Wylie G, Rempel GR, Cook K. Expanding qualitative research interviewing strategies: Zoom video communications. *Qual Rep*. 2020;25(5):1292-1301.
16. Lobe B, Morgan D, Hoffman KA. Qualitative data collection in an era of social distancing. *Int J Qual Methods*. 2020;19. https://doi.org/10.1177/1609406920937875
17. Weller S. Using internet video calls in qualitative (longitudinal) interviews: some implications for rapport. *Int J Soc Res Methodol*. 2017;20(6):613-625. doi:10.1080/13645579.2016.1269505
18. Deakin H, Wakefield K. Skype interviewing: reflections of two PhD researchers. *Qual Res*. 2013;14(5):603-616. doi:10.1177/1468794113488126
19. Thomas GM, Lupton D. Threats and thrills: pregnancy apps, risk and consumption. *Health Risk Soc*. 2015;17(7-8):495-509. doi:10.1080/13698575.2015.1127333
20. Chen W, Yao Y, Chen T, Shen W, Tang S, Lee HK. Application of smartphone-based spectroscopy to biosample analysis: a review. *Biosens Bioelectron*. 2021;172:112788. doi:10.1016/j.bios.2020.112788
21. Sana F, Isselbacher EM, Singh JP, Heist EK, Pathik B, Armoundas AA. Wearable devices for ambulatory cardiac monitoring: JACC state-of-the-art review. *J Am Coll Cardiol*. 2020;75(13):1582-1592. doi:10.1016/j.jacc.2020.01.046
22. Haghi M, Thurow K, Stoll R. Wearable devices in medical internet of things: scientific research and commercially available devices. *Healthc Inform Res*. 2017;23(1):4-15. doi:10.4258/hir.2017.23.1.4
23. Femtech– time for a digital revolution in the women's health market. Frost & Sullivan. 2018. Accessed May 1, 2021. https://www.frost.com/frost-perspectives/femtechtime-digital-revolution-womens-health-market/
24. Maijala A, Kinnunen H, Koskimaki H, Jamsa T, Kangas M. Nocturnal finger skin temperature in menstrual cycle tracking: ambulatory pilot study using a wearable Oura ring. *BMC Womens Health*. 2019;19(1):150. doi:10.1186/s12905-019-0844-9
25. Farabi SS, Barbour LA, Heiss K, Hirsch NM, Dunn E, Hernandez TL. Obstructive sleep apnea is associated with altered glycemic patterns in pregnant women with obesity. *J Clin Endocrinol Metab*. 2019;104(7):2569-2579. doi:10.1210/jc.2019-00159
26. Flanagan EW, Most J, Broskey NT, et al. Identification of changes in sleep across pregnancy and the impact on cardiometabolic health and energy intake in women with obesity. *Sleep Med*. 2021;77:120-127. doi:10.1016/j.sleep.2020.11.031
27. Corwin EJ, Brewster G, Dunbar SB, et al. The metabolomic underpinnings of symptom burden in patients with multiple chronic conditions. *Biol Res Nurs*. 2021;23(2):270-279. doi:10.1177/1099800420958196
28. Chen CX, Carpenter JS, Murphy T, Brooks P, Fortenberry JD. Engaging adolescent and young adults in microbiome sample self-collection: strategies for success. *Biol Res Nurs*. 2020;23(3):402-407. doi:10.1177/1099800420979606
29. O'Campo P, BeLue R, Borenstein H, et al. Issues and solutions for collecting biological specimen in longitudinal studies: experience from the Community Child Health Network Research Network. *J Health Care Poor Underserved*. 2016;27(1):339-351. doi:10.1353/hpu.2016.0021
30. Volani C, Caprioli G, Calderisi G, et al. Pre-analytic evaluation of volumetric absorptive microsampling and integration in a mass spectrometry-based metabolomics workflow. *Anal Bioanal Chem*. 2017;409(26):6263-6276. doi:10.1007/s00216-017-0571-8

Abnormal Pap Test Results

What is a Pap test?

A Pap test is a screening test for cervical cancer (cancer of the cervix). Your cervix is the opening from your vagina into your uterus. A Pap test looks at cells from the cervix to find changes in the cells that might be cervical cancer or turn into cervical cancer. To do a Pap test, a health care provider puts a speculum in your vagina so they can see your cervix. The provider will then gently take a sample of cells from the surface of your cervix. The cells are looked at under a microscope to see if they are normal or not.

What does an abnormal Pap test result mean?

An abnormal Pap test means there are changes in your cervical cells that might not be normal changes. Most abnormal changes in cervical cells are caused by a virus called the human papillomavirus (HPV). Most cervical cells with HPV can become normal again over time. But some abnormal cells with HPV become worse instead of better and may need treatment. Treatment will help prevent cervical cancer. An abnormal Pap test does not mean you have cancer. But all abnormal Pap tests need follow-up with a health care provider. The list on the next page describes the different types of abnormal Pap test results.

What is HPV?

HPV is a very common virus. You get HPV from having sex or skin-to-skin contact with someone who has the virus. There are more than 100 types of HPV. Most do not cause any health problems. A few cause genital warts, which are growths on the skin around the opening of the vagina and the anus. Some types of HPV can cause cancer of the cervix, anus, throat, vagina, or vulva (area around the opening of the vagina).

What follow-up do I need if I have an abnormal Pap test result?

There are different ways to learn more about why your Pap test result is abnormal. What is best for you will depend on the type of abnormal Pap test result you have, your past Pap test results, and your age. Your health care provider may recommend one or more of these follow-up options:

- Another Pap test in 12 months
- An HPV test to see if cells from your cervix have types of HPV that cause cervical cancer
- A colposcopy

What is a colposcopy?

During a colposcopy, a health care provider looks at your cervix with a special microscope called a colposcope. The health care provider puts a speculum in your vagina then looks through the colposcope to get a very close look at your cervix. The colposcope doesn't go inside your vagina. If any area on your cervix does not look normal, the provider will take a very small piece of tissue from that area. This is called a cervical biopsy. The tissue is tested to see if the cells are normal or not. Looking at the tissue from a cervical biopsy gives more information about your cervix than a Pap test.

How can I lower my chance of getting cervical cancer?

There are several things you can do to lower your chance of getting cervical cancer:

- **Have cervical cancer screening on a regular basis**. Pap and HPV tests are used to screen (look) for cervical cancer. Abnormal cells in the cervix usually happen before cervical cancer occurs. Finding and treating abnormal cells in the cervix can prevent cervical cancer. You should start being checked for cervical cancer when you are 21 to 25 years old. How often you have cervical cancer screening and when you can stop depends

1526-9523/09/$36.00 doi:10.1111/jmwh.13346

on your age and your risk for cervical cancer. Talk with your health care provider about how often you need screening.

- **Get an HPV vaccine**. This vaccine helps prevent cancers caused by HPV. The HPV vaccine is recommended for everyone who is 11 to 26 years old. It can be given starting at age 9 years. If you are 27 to 45 years old and have not had an HPV vaccine, talk with your health care provider about whether you should get one. The vaccine works best if you get it before you start having sex.
- **Protect yourself from getting HPV**. Use a condom every time you have vaginal, oral, or anal sex. Condoms lower the chance you will get HPV and other sexually transmitted infections. Only have sex with one person who agrees to only have sex with you.
- **Don't smoke**. Women who smoke cigarettes have a higher chance of getting cervical cancer than women who don't smoke.

Types of Abnormal Pap Test Results

Pap Test Result	Short Name for This Result	Description
Atypical squamous cells of undetermined significance	ASC-US	This is the most common abnormal Pap test result. Changes in the cervical cells were found, but the reason is not clear. Your health care provider can find out if the changes are from HPV or another cause, such as a vaginal infection or menopause.
Low-grade squamous intraepithelial lesion	LSIL	Small changes in the cervical cells were found. These changes are usually caused by HPV. These changes may go away on their own but need follow-up to be sure they do not get worse.
Atypical squamous cells, cannot rule out high-grade squamous intraepithelial lesion (HSIL)	ASC-H	Abnormal cervical cells were found. It is possible that these cells may be precancer (cells that are likely to turn into cancer if they are not treated) or cancer.
High-grade squamous intraepithelial lesion	HSIL	Abnormal cervical cells were found. These cells are more likely to be precancer or cancer than an abnormal Pap test result of ASC-US, LSIL, or ASC-H.
Atypical glandular cells	AGC	Glandular cells are found just inside the cervix and appear abnormal. This means there could be precancer or cancer.
Adenocarcinoma in situ	AIS	An area of abnormal growth was found in the glandular cells. This may become cancer if it is not treated.
Squamous cell cancer	SCC	It is likely that there is cervical cancer. This is a very rare Pap test result in women who have Pap tests when they are recommended.

For More Information

Center for Young Women's Health

https://youngwomenshealth.org/2010/06/10/abnormal-pap-test/

American College of Obstetricians and Gynecologists

https://www.acog.org/Patients/FAQs/Abnormal-Cervical-Cancer-Screening-Test-Results

National Cancer Institute

https://www.cancer.gov/types/cervical/understanding-cervical-changes

Flesch-Kincaid Grade Level: 6.6

Approved January 2022. This handout replaces "Abnormal Pap Test Results?" published in Volume 65, Number 2, March/April 2020.

Cervical Cancer Screening

What is cervical cancer?

Cervical cancer is cancer of the cervix. Your cervix is the opening from your vagina into your uterus. Cervical cancer happens when cells in the cervix become cancer cells. Most cervical cancer can be prevented if the cervical cells are checked on a regular basis to see if they are starting to change.

What causes cervical cancer?

A virus called the human papillomavirus (HPV) is the cause of almost all cases of cervical cancer. You get HPV from having sex or skin-to-skin contact with someone who has the virus. HPV is a very common virus. About 8 out of every 10 women get HPV at some point in their life. There are more than 100 types of HPV. Most do not cause any health problems. A few cause genital warts, which are growths on the skin around the opening of the vagina and the anus. Some types of HPV can cause cancer of the cervix, anus, throat, vagina, or vulva (area around the opening of the vagina).

Most women who get HPV will not get cervical cancer. HPV often goes away on its own within 2 years after it first appears. In about 1 to 2 out of every 10 women, HPV will stay in the cells of the cervix. These women have a chance of having abnormal cells that can turn into cervical cancer. We do not know why some women keep HPV while others do not. We do know some things, like smoking, increase the chance of HPV causing cervical cancer.

What tests are used to screen for cervical cancer?

There are 2 tests used to screen (look) for cervical cancer:

Pap Test: Cells from the cervix are looked at under a microscope to see if they are normal or not

HPV Test: Cells from the cervix are tested for types of HPV that cause cervical cancer

You can have a Pap test, an HPV test, or both tests at the same time.

How are Pap and HPV tests done?

To do a Pap or HPV test, a health care provider puts a speculum in your vagina so they can see your cervix. The provider will then gently take a sample of cells from the surface of your cervix. These cells are looked at under a microscope or tested for HPV.

How often should I have cervical cancer screening?

Most women should have cervical cancer screening every 3 to 5 years. If you have a history of an abnormal Pap test result, you may need screening more often. How often you have screening depends on your age and your risk for cervical cancer. Talk with your health care provider about how often you need screening and which test is best for you.

When do I need to start being checked for cervical cancer?

You should start being checked for cervical cancer when you are 21 to 25 years old. You are very unlikely to get cervical cancer before you are 21 even if you are having sex. In young women, the virus goes away on its own most of the time and does not cause problems.

1526-9523/09/$36.00 doi:10.1111/jmwh.13347

Journal of Midwifery & Women's Health

When can I stop being checked for cervical cancer?

Most women can stop being checked for cervical cancer after they are 65 years old as long as they have had normal screening test results for several years. If you have a hysterectomy and your cervix is removed, you may also stop being tested unless you have had high-grade dysplasia (very abnormal cells) or cervical cancer.

What happens if my Pap or HPV test results are abnormal?

If your Pap or HPV test results are abnormal, talk with your health care provider about what type of follow-up testing you will need. Most abnormal Pap test results are from HPV infections and are not cancer. It is important to have follow-up testing to find out why your results were abnormal and if you need more screening or treatment. You may need to have more testing now or another Pap or HPV test in one year.

Your provider might recommend an exam called a colposcopy. During a colposcopy, a health care provider looks at your cervix with a special microscope called a colposcope. The health care provider puts a speculum in your vagina then looks through the colposcope to get a very close look at your cervix. The colposcope doesn't go inside your vagina. If any area on your cervix does not look normal, the provider will take a very small piece of tissue from that area. This is called a cervical biopsy. The tissue is tested to see if the cells are normal or not. Looking at the tissue from a cervical biopsy gives more information about your cervix than a Pap test.

How can I lower my chance of getting cervical cancer?

There are several things you can do to lower your chance of getting cervical cancer:

- **Have cervical cancer screening on a regular basis.** Abnormal cells in the cervix usually happen before cervical cancer occurs. Finding and treating abnormal cells in the cervix can prevent cervical cancer.
- **Get an HPV vaccine.** This vaccine helps prevent cancers caused by HPV. The HPV vaccine is recommended for everyone who is 11 to 26 years old. It can be given starting at age 9 years. If you are 27 to 45 years old and have not had an HPV vaccine, talk with your health care provider about whether you should get one. The vaccine works best if you get it before you start having sex.
- **Protect yourself from getting HPV.** Use a condom every time you have vaginal, oral, or anal sex. Condoms lower the chance you will get HPV and other sexually transmitted infections. Only have sex with one person who agrees to only have sex with you.
- **Don't smoke.** Women who smoke cigarettes have a higher chance of getting cervical cancer than women who don't smoke.

For More Information

American College of Obstetricians and Gynecologists
https://www.acog.org/womens-health/faqs/cervical-cancer-screening

Centers for Disease Control and Prevention
https://www.cdc.gov/cancer/cervical/basic_info/screening.htm

National Cancer Institute
https://www.cancer.gov/types/cervical/patient/cervical-screening-pdq

Flesch-Kincaid Grade Level: 7.0
Approved January 2022. This handout replaces "Cervical Cancer Screening" published in Volume 60, Number 2, March/April 2015.