



American Society of Hematology  
Helping hematologists conquer blood diseases worldwide

# A Collaborative Approach to Clinical Practice Guidelines

ASH ISTH NHF WFH 2021 Clinical Practice Guidelines on the  
Diagnosis and Management of von Willebrand Disease



## ASH ISTH NHF WFH 2021 guidelines on the management of von Willebrand disease

Nathan T. Connell,<sup>1,\*</sup> Veronica H. Flood,<sup>2,\*</sup> Romina Brignardello-Petersen,<sup>3</sup> Rezan Abdul-Kadir,<sup>4</sup> Alice Arapshian,<sup>5</sup> Susie Couper,<sup>6</sup> Jean M. Grow,<sup>7</sup> Peter Kouides,<sup>8</sup> Michael Laffan,<sup>9</sup> Michelle Lavin,<sup>10</sup> Frank W. G. Leebeek,<sup>11</sup> Sarah H. O'Brien,<sup>12</sup> Margareth C. Ozelo,<sup>13</sup> Alberto Tosetto,<sup>14</sup> Angela C. Weyand,<sup>15</sup> Paula D. James,<sup>16</sup> Mohamad A. Kalot,<sup>17</sup> Nedaa Husainat,<sup>17</sup> and Reem A. Mustafa<sup>17</sup>

<sup>1</sup>Hematology Division, Department of Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, MA; <sup>2</sup>Veritas Blood Research Institute, Medical College of Wisconsin, Milwaukee, WI; <sup>3</sup>Department of Health Research Methods, Evidence, and Impact, McMaster University, Hamilton, ON, Canada; <sup>4</sup>Department of Obstetrics and Gynaecology and Katharine Dormandy Haemophilia and Thrombosis Centre, Royal Free Foundation Hospital and Institute for Women's Health, University College London, London, United Kingdom; <sup>5</sup>Middle Village, NY; <sup>6</sup>Marylands, WA, Australia; <sup>7</sup>Department of Strategic Communication, Marquette University, Milwaukee, WI; <sup>8</sup>Mary M. Gooley Hemophilia Treatment Center, University of Rochester, Rochester, NY; <sup>9</sup>Centre for Haematology, Imperial College London, London, United Kingdom; <sup>10</sup>Irish Centre for Vascular Biology, Royal College of Surgeons in Ireland and National Coagulation Centre, St James's Hospital, Dublin, Ireland; <sup>11</sup>Department of Hematology, Erasmus University Medical Center, Rotterdam, The Netherlands; <sup>12</sup>Division of Hematology/Oncology, Department of Pediatrics, Nationwide Children's Hospital, The Ohio State University College of Medicine, Columbus, OH; <sup>13</sup>Hemocentro UNICAMP, University of Campinas, Campinas, Brazil; <sup>14</sup>Hemophilia and Thrombosis Center, Hematology Department, S. Bortolo Hospital, Vicenza, Italy; <sup>15</sup>Department of Pediatrics, University of Michigan Medical School, Ann Arbor, MI; <sup>16</sup>Department of Medicine, Queen's University, Kingston, ON, Canada; and <sup>17</sup>Outcomes and Implementation Research Unit, Division of Nephrology and Hypertension, Department of Internal Medicine, University of Kansas Medical Center, Kansas City, KS

**Background:** von Willebrand disease (VWD) is a common inherited bleeding disorder. Significant variability exists in management options offered to patients.

**Objective:** These evidence-based guidelines from the American Society of Hematology (ASH), the International Society on Thrombosis and Haemostasis (ISTH), the National Hemophilia Foundation (NHF), and the World Federation of Hemophilia (WFH) are intended to support patients, clinicians, and health care professionals in their decisions about management of VWD.

**Methods:** ASH, ISTH, NHF, and WFH formed a multidisciplinary guideline panel. Three patient representatives were included. The panel was balanced to minimize potential bias from conflicts of interest. The University of Kansas Outcomes and Implementation Research Unit and the McMaster Grading of Recommendations Assessment, Development and Evaluation (GRADE) Centre supported the guideline development process, including performing and updating systematic evidence reviews (through November 2019). The panel prioritized clinical questions and outcomes according to their importance to clinicians and patients. The panel used the GRADE approach, including GRADE Evidence-to-Decision frameworks, to assess evidence and make recommendations, which were subject to public comment.

**Results:** The panel agreed on 12 recommendations and outlined future research priorities.

**Conclusions:** These guidelines make key recommendations regarding prophylaxis for frequent recurrent bleeding, desmopressin trials to determine therapy, use of antiplatelet agents and anticoagulant therapy, target VWF and factor VIII activity levels for major surgery, strategies to reduce bleeding during minor surgery or invasive procedures, management options for heavy menstrual bleeding, management of VWD in the context of neuraxial anesthesia during labor and delivery, and management in the postpartum setting.

### Summary of recommendations

These guidelines are based on updated and original systematic reviews of evidence conducted under the direction of the Outcomes and Implementation Research Unit at the University of Kansas Medical Center (KUMC). The panel followed best practices for guideline development recommended by the Institute of Medicine and the Guidelines International Network (G-I-N).<sup>1-3</sup> The panel used the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach to assess the certainty in the evidence and formulate recommendations.<sup>4-10</sup>

Submitted 3 September 2020; accepted 27 October 2020. DOI 10.1182/bloodadvances.2020003264.

\*N.T.C. and V.H.F. contributed equally to this study as first authors.

Data for the Evidence-to-Decision frameworks will be publicly available via Web links from the online version of the document.

The full-text version of this article contains a data supplement.  
© 2020 by The American Society of Hematology

■■■■ 2020 • VOLUME 0, NUMBER 0

1

## ASH ISTH NHF WFH 2021 guidelines on the diagnosis of von Willebrand disease

Paula D. James,<sup>1</sup> Nathan T. Connell,<sup>2</sup> Barbara Ameer,<sup>3,4</sup> Jorge Di Paola,<sup>5</sup> Jeroen Eikenboom,<sup>6</sup> Nicolas Giraud,<sup>7</sup> Sandra Haberichter,<sup>8</sup> Vicki Jacobs-Pratt,<sup>9</sup> Barbara Konkle,<sup>10,11</sup> Claire McLintock,<sup>12</sup> Simon McRae,<sup>13</sup> Robert R. Montgomery,<sup>14</sup> James S. O'Donnell,<sup>15</sup> Nikole Scappe,<sup>16</sup> Robert Sidonio Jr.,<sup>17</sup> Veronica H. Flood,<sup>14,18</sup> Nedaa Husainat,<sup>19</sup> Mohamad A. Kalot,<sup>19</sup> and Reem A. Mustafa<sup>19</sup>

<sup>1</sup>Department of Medicine, Queen's University, Kingston, ON, Canada; <sup>2</sup>Brigham and Women's Hospital, Harvard Medical School, Boston, MA; <sup>3</sup>Pharmacology Consulting, Princeton Junction, NJ; <sup>4</sup>Rutgers–Robert Wood Johnson Medical School, New Brunswick, NJ; <sup>5</sup>Department of Pediatrics, Washington University in St. Louis, St. Louis, MO; <sup>6</sup>Division of Thrombosis and Hemostasis, Department of Internal Medicine, Leiden University Medical Center, Leiden, The Netherlands; <sup>7</sup>Marseille, France; <sup>8</sup>Diagnostic Laboratories, Versiti Blood Research Institute, Milwaukee, WI; <sup>9</sup>Auburn, ME; <sup>10</sup>Bloodworks Northwest, Seattle, WA; <sup>11</sup>Division of Hematology, University of Washington, Seattle, WA; <sup>12</sup>National Women's Health, Auckland City Hospital, Auckland, New Zealand; <sup>13</sup>Northern Cancer Service, Launceston General Hospital, Launceston, TAS, Australia; <sup>14</sup>Versiti Blood Research Institute, Milwaukee, WI; <sup>15</sup>Irish Centre for Vascular Biology, Royal College of Surgeons in Ireland, Dublin, Ireland; <sup>16</sup>Coraopolis, PA; <sup>17</sup>Alfacc Cancer and Blood Disorders, Children's Healthcare of Atlanta, Emory University, Atlanta, GA; <sup>18</sup>Department of Pediatrics, Medical College of Wisconsin, Milwaukee, WI; and <sup>19</sup>Outcomes and Implementation Research Unit, Division of Nephrology and Hypertension, Department of Internal Medicine, University of Kansas Medical Center, Kansas City, KS

**Background:** von Willebrand disease (VWD) is the most common inherited bleeding disorder known in humans. Accurate and timely diagnosis presents numerous challenges.

**Objective:** These evidence-based guidelines of the American Society of Hematology (ASH), the International Society on Thrombosis and Haemostasis (ISTH), the National Hemophilia Foundation (NHF), and the World Federation of Hemophilia (WFH) are intended to support patients, clinicians, and other health care professionals in their decisions about VWD diagnosis.

**Methods:** ASH, ISTH, NHF, and WFH established a multidisciplinary guideline panel that included 4 patient representatives and was balanced to minimize potential bias from conflicts of interest. The Outcomes and Implementation Research Unit at the University of Kansas Medical Center (KUMC) supported the guideline-development process, including performing or updating systematic evidence reviews up to 8 January 2020. The panel prioritized clinical questions and outcomes according to their importance for clinicians and patients. The panel used the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach, including GRADE Evidence-to-Decision frameworks, to assess evidence and make recommendations, which were subsequently subject to public comment.

**Results:** The panel agreed on 11 recommendations.

**Conclusions:** Key recommendations of these guidelines include the role of bleeding-assessment tools in the assessment of patients suspected of VWD, diagnostic assays and laboratory cutoffs for type 1 and type 2 VWD, how to approach a type 1 VWD patient with normalized levels over time, and the role of genetic testing vs phenotypic assays for types 2B and 2N. Future critical research priorities are also identified.

### Summary of recommendations

These guidelines are based on updated and original systematic reviews of evidence conducted under the direction of the Outcomes and Implementation Research Unit at the University of Kansas Medical Center (KUMC). The panel followed best practices for guideline development recommended by the Institute of Medicine and the Guidelines International Network (G-I-N).<sup>1-3</sup> The panel used the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach<sup>4-10</sup> to assess the certainty in the evidence and formulate recommendations.

Submitted 3 September 2020; accepted 23 October 2020. DOI 10.1182/bloodadvances.2020003265.

Data for the Evidence-to-Decision frameworks will be publicly available via Web links from the online version of the document.

The full-text version of this article contains a data supplement.  
© 2020 by The American Society of Hematology

■■■■ 2020 • VOLUME 0, NUMBER 0

1

Connell NT, Flood VH, Brignardello-Petersen R, et al. ASH ISTH NHF WFH 2021 guidelines on the management of von Willebrand disease. *Blood Adv.* 2021;5(1):301-325.

James PD, Connell NT, Ameer B, et al. ASH ISTH NHF WFH 2021 guidelines on the diagnosis of von Willebrand disease. *Blood Adv.* 2021;5(1):280-300.



# Meet The Speakers



**Nikole Scappe**  
Manager of Education,  
National Hemophilia  
Foundation



**Ellen Riker**  
Consultant,  
National Hemophilia  
Foundation  
American Society of  
Hematology



**Kailee Boedeker, MPH**  
Manager of Clinical Quality  
Improvement, American  
Society of Hematology



# A Collaborative Approach to Clinical Practice Guidelines: The Patient Lens

Nikole Scappe

Manager of Education

National Hemophilia Foundation



**NATIONAL HEMOPHILIA FOUNDATION**

*for all bleeding disorders*



# Disclosures

N/A



# OUR MISSION

The National Hemophilia Foundation (NHF) is dedicated to finding cures for inheritable blood disorders and to addressing and preventing the complications of these disorders through research, education, and advocacy, enabling people and families to thrive.

# NUESTRA MISIÓN

La Fundación Nacional de Hemofilia (NHF) se dedica a encontrar curas para los trastornos sanguíneos hereditarios y a abordar y prevenir las complicaciones de estos trastornos a través de la investigación, la educación y la abogacía permitiendo que las personas y familias prosperen.

GO  
TEAM



**NATIONAL HEMOPHILIA FOUNDATION**  
*for all bleeding disorders*

# Agenda

Background of  
von Willebrand  
disease (VWD)

1

My Story

2

Team approach to  
guidelines and  
training

3

Working for NHF  
and education  
around the  
guidelines

4

Goal: By the end of my presentation, I hope that you will see the direct impact that patient's involvement can have on the creation of guidelines and other similar documents and policies that affect the very lives of those patients

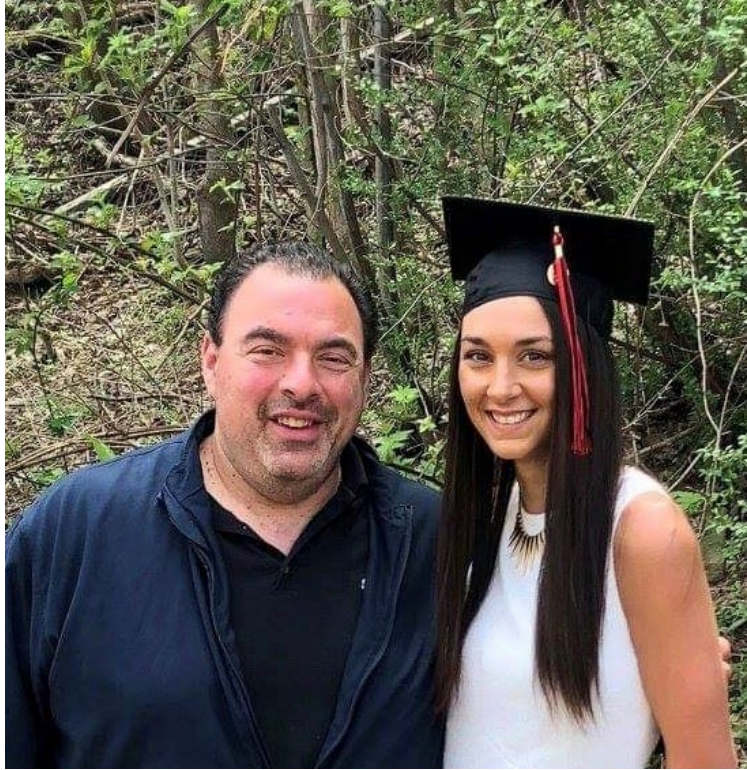


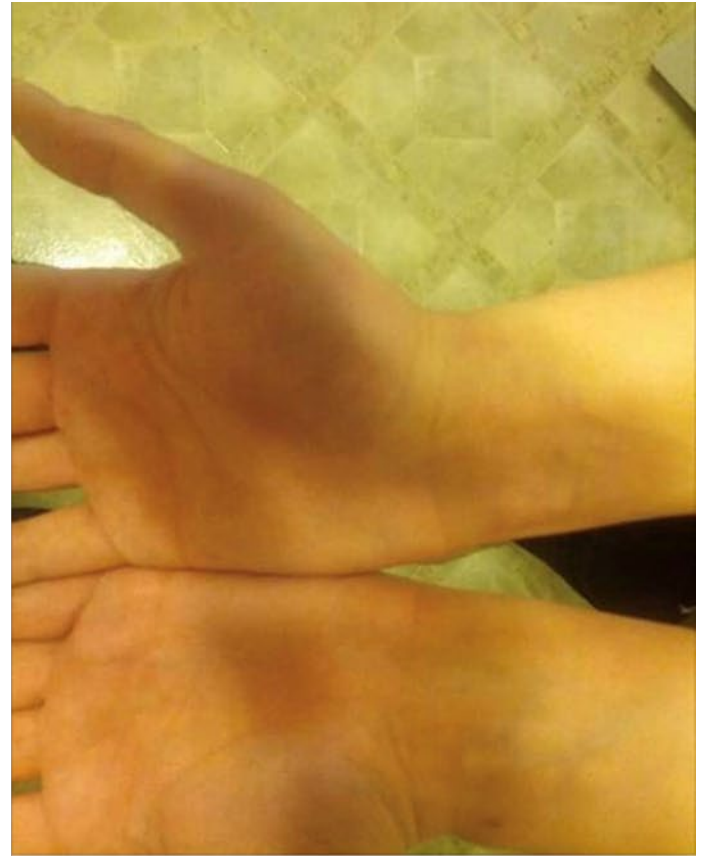
# Von Willebrand Disease (VWD)

- **Most common inherited bleeding disorder:**
  - VWD is the most common bleeding disorder, affecting up to 1% of the US population – or approximately 1 in every 100 people.
- **Can cause unusual bleeding**
  - From small wounds or “minor” procedures
  - Frequent nosebleeds and bruising into joints
- **Inherited equally by men and women**
- **Often impacts women disproportionately through**
  - Heavy or abnormal periods
  - Post-partum bleeding













**Number of patients on panels:**  
**Diagnosis: 4**  
**Management: 3**







# A Collaborative Approach to Clinical Practice Guidelines

Presentation by

Ellen Riker

Principal, Artemis Policy Group

# Disclosures

- Consultant to American Society of Hematology
- Consultant to National Hemophilia Foundation





HEALTHCARE AND HUMAN SERVICES POLICY, RESEARCH, AND CONSULTING—WITH REAL-WORLD PERSPECTIVE.

### Strategic Summit on Von Willebrand Disease

Prepared for: National Hemophilia Foundation

Submitted by: The Lewin Group, Inc.

March 2015

# 2015

“A well-qualified and authoritative organization, or a consortium of such organizations, should develop a new or updated evidence-based clinical practice guideline on VWD.”

Report of November 2014 National Hemophilia Foundation Strategic Summit on VWD



**NATIONAL HEMOPHILIA FOUNDATION**  
*for all bleeding disorders*

# Collaboration Gets Underway...

- ASH and NHF spoke about co-sponsoring the VWD Guidelines and together decided to include the international organizations – International Society of Thrombosis and Hemostasis (ISTH) and the World Federation of Hemophilia (WFH).
- NHF's Medical and Scientific Advisory Council and Chapter leaders identified clinicians and people living with VWD to nominate to serve on the panel. Patient participation was critical to NHF
- As part of our MOU with ASH, NHF and the other organizations would allow staff to attend all panel meetings.
- Recognizing the limitations in the literature, NHF and WFH asked that we survey clinicians and people living with VWD internationally seeking their input on priorities related to the diagnosis and management of VWD.

# Scoping Survey

71  
countries

6  
continents

601  
participants

9,500  
discrete  
comments

51%  
patients

49%  
healthcare  
providers

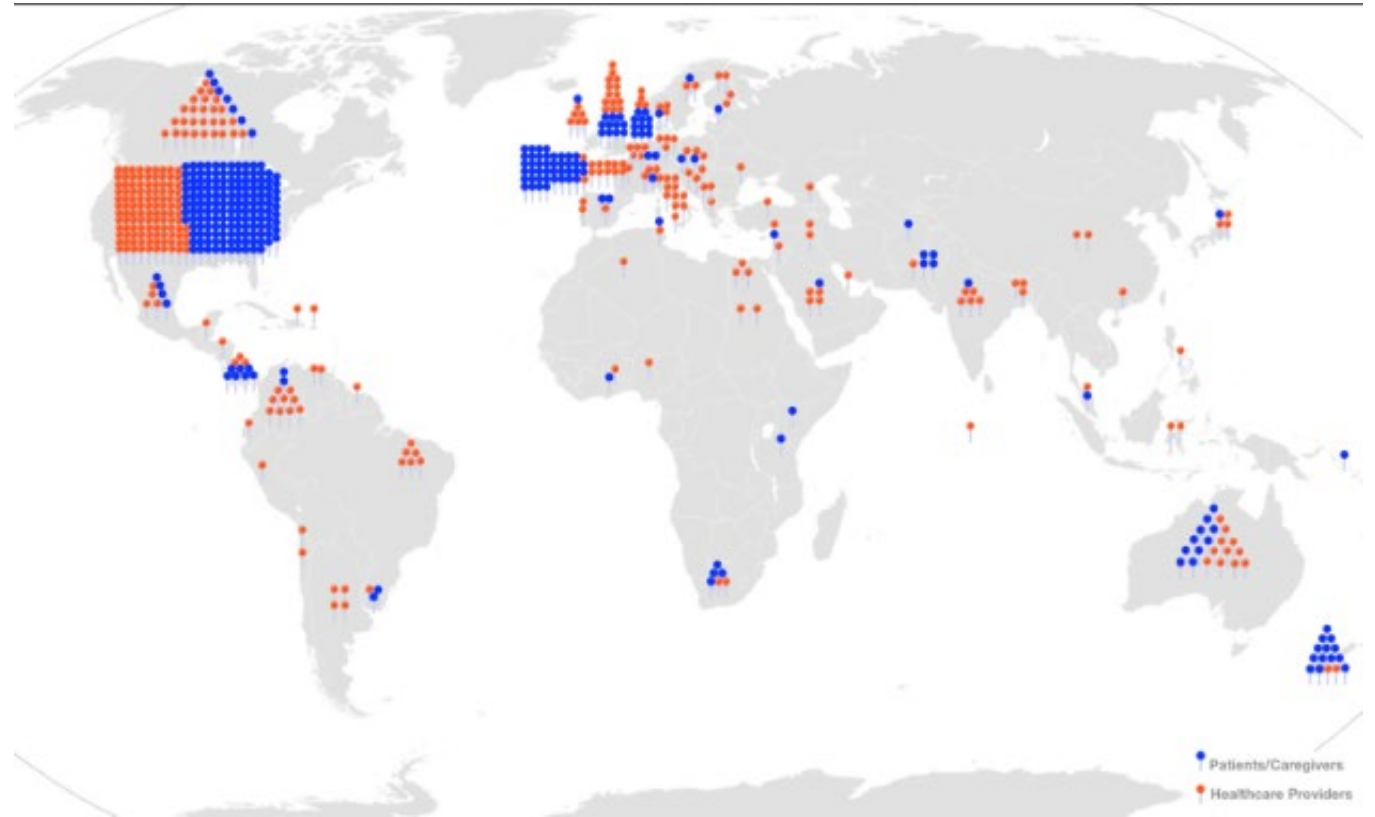
21%  
male

54%  
female

26% no  
gender  
identified

18% low /  
middle-  
income

82% high-  
income  
countries



Kalot, MA, et al; An international survey to inform priorities for new guidelines on von Willebrand disease. *Haemophilia*. 2020; 26: 106– 116  
<https://onlinelibrary.wiley.com/doi/full/10.1111/hae.13881>



# Results - New ICD-10 VWD Diagnosis Codes

- Previously, one ICD-10 diagnosis code, D68.0, Von Willebrand disease, for VWD and all subtypes
- New clinical practice guidelines for diagnosis and treatment of VWD - recommendations varied by type of VWD
- Submitted to CDC ICD-10 Coordination and Maintenance Committee March 2021
- Proposal was accepted and codes were published in the Medicare Inpatient PPS proposed rule for FY 2023

## New ICD-10 VWD Diagnosis Codes as of 10/1/22

- D68.00, Von Willebrand disease, unspecified
- D68.01, Von Willebrand disease, type 1
- D68.020, Von Willebrand disease, type 2A
- D68.021, Von Willebrand disease, type 2B
- D68.022, Von Willebrand disease, type 2M
- D68.023, Von Willebrand disease, type 2N
- D68.029, Von Willebrand disease, type 2, unspecified
- D68.03, Von Willebrand disease, type 3
- D68.04, Acquired von Willebrand disease
- D68.09, Other von Willebrand disease



American Society of Hematology  
Helping hematologists conquer blood diseases worldwide

# Disseminating and Implementing Guideline Recommendations

Kailee Boedeker, MPH  
American Society of Hematology

# Disclosures

- N/A





# Strategic Approach



Raise Awareness



Dissemination



Implementation

# Raising Awareness of the Guidelines

- Joint Press Release
- Social Media Campaigns
- E-newsletters
- Video Interviews with Panelists
- Presentation and Promotional Activities at Relevant Meetings



**PRESS RELEASES**

AMERICAN SOCIETY OF HEMATOLOGY / NEWSROOM / PRESS RELEASES / ORGANIZATIONS COLLABORATE TO DEVELOP INTERNATIONAL STATE-OF-THE-ART

## Organizations Collaborate to Develop International State-of-the-Art Guidelines on the Diagnosis and Management of von Willebrand Disease

CITATIONS

PUBLISHED ON:  
JAN 12 2021

(WASHINGTON – January 12, 2021) The American Society of Hematology (ASH), the International Society on Thrombosis and Haemostasis (ISTH), National Hemophilia Foundation (NHF), and World Federation of Hemophilia (WFH) have developed joint clinical practice guidelines on the diagnosis and management of von Willebrand Disease (VWD), the world’s most common inherited bleeding disorder. The guidelines were published today in *Blood Advances*.

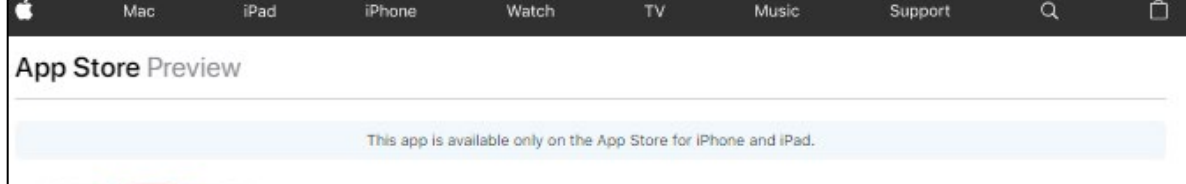
VWD affects approximately 1% of the world’s population, and it is the most common bleeding disorder. Although VWD occurs among men and women equally, women are more likely to notice the symptoms because of heavy or abnormal bleeding during their menstrual periods and after childbirth. This inherited condition results in the decreased production, absence, or abnormal function of the clotting protein von Willebrand factor.

VWD can cause unusual bleeding from small wounds or minor procedures, frequent nosebleeds, bruising, bleeding in joints, and heavy menstrual periods and post-partum bleeding in women. Symptoms may vary from patient to patient or in a single patient over the course of his or her life. Primary care providers, pediatricians, obstetricians, and gynecologists who observe unusual bleeding often refer their patients to a hematologist for further testing and management. Many individuals with mild symptoms do not receive a diagnosis right away and live for many years with untreated bleeding or do not realize they have VWD until they experience a severe bleed that could have been prevented.



# Dissemination Activities

- Infographics and Snapshots
- Translations
- Patient Summaries
- Mobile App
- Educational Teaching Slides
- Guideline International Library Repository
- Podcasts
- Community Workshops



**ASH CLINICAL PRACTICE GUIDELINES**  
**VON WILLEBRAND DISEASE (VWD)**

**Diagnosis and Management  
of von Willebrand Disease**

*An Educational Slide Set*

ASH ISTH NHF WFH 2021 Guidelines for Diagnosis and Management  
of von Willebrand Disease

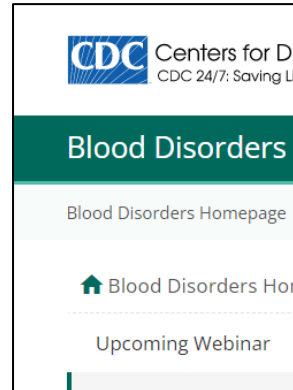
**Slide Set Authors:**  
Kristin Maher, MD, PhD, University of Michigan  
Christopher Ng, MD, University of Colorado

The ASH Practice Guidelines app provides easy access to every recommendation from all guidelines published by the American Society of Hematology (ASH), including rationale for each recommendation and benefits and harms associated with each recommended course of action. The app currently includes guidelines covering venous thromboembolism (VTE), sickle cell anemia (SCD), and immune thrombocytopenia (ITP). The app also provides access to other tools and resources designed to aid [more](#)



# Dissemination Activities

- Virtual Summits
- Commentaries
- CDC Blood Disorders
- Pocket Guides
- Annual Meeting Sessions
- Webinar Series



The poster features a purple and white color scheme. At the top, it says "ASH ISTH NHF WEDNESDAY WEBINAR". Below that, the main title is "VWD GUIDELINES, SHARED DECISION-MAKING". The speakers listed are "SPEAKERS: NATHAN CONNOR, MD; PAULA JAMES, MD; NICHOLE L. HARRIS, MD". A date box indicates "30 Jun". The main text of the poster reads "VWD Guidelines and Shared Decision-making". At the bottom, it specifies the dates "Jun 30, 2021 - Jun 30, 2021". The background of the poster shows an illustration of people in a meeting setting.

The registration page has a white background with a red header. The header contains the text "Advocating for Better Care for People with VWD | September 1, 2021" and a "share" icon. The main title is "ADVOCATING FOR BETTER CARE FOR PEOPLE WITH VWD" in large, bold, black letters. Below the title is a red banner with white text providing event details: "DATE: Wednesday, 1 September 2021", "TIME: 8:00 AM EDT", "DURATION: 90 minutes", and "LANGUAGE: English, with simultaneous interpretation in Spanish, French, Arabic and Russian". The WFH logo is in the bottom right of the banner. Below the banner, the text "Watch on YouTube" is visible. The main title is repeated in blue: "ADVOCATING FOR BETTER CARE FOR PEOPLE WITH VWD | SEPTEMBER 1 2021". Underneath, the section "ADDITIONAL INFORMATION" contains the following text: "Listen to this 90-minute webinar presented on September 1, 2021 to learn about advocating for better care using the ASH ISTH NHF WFH 2021 *Guidelines on the Diagnosis and Management of von Willebrand Disease (VWD)*. The session was moderated by Magdy El Ekiaby, MD (WFH VWD & RBD Committee). Susie Couper (Member of the WFH WIBD Committee), Jameela Sathar, MD (WFH VWD & RBD Committee), Shahla T. Sohail, MD (Hemophilia Patients Welfare Society of Pakistan), Abira Maheen, MD (Hemophilia Foundation-Pakistan) and Charity Pikiti (Haemophilia Foundation of Zambia), discussed advocacy for VWD, specific recommendations from the guidelines, and how NMOs have successfully advocated for better care."



# Implementation

- ICD Codes
- Patient Decision Aids
- Guideline Implementation Champions
- Examples of possible future activities
  - Quality Measures
  - QI Toolkits
  - Clinical Decision Support



# Next Steps



Impact Evaluation



Monitoring and Updating

**Thank You!**  
Questions?

