CHAPTER 4

Blood Disorders and Blood Safety (BDBS)

Lead Agencies

Health Resources and Services Administration
National Institutes of Health

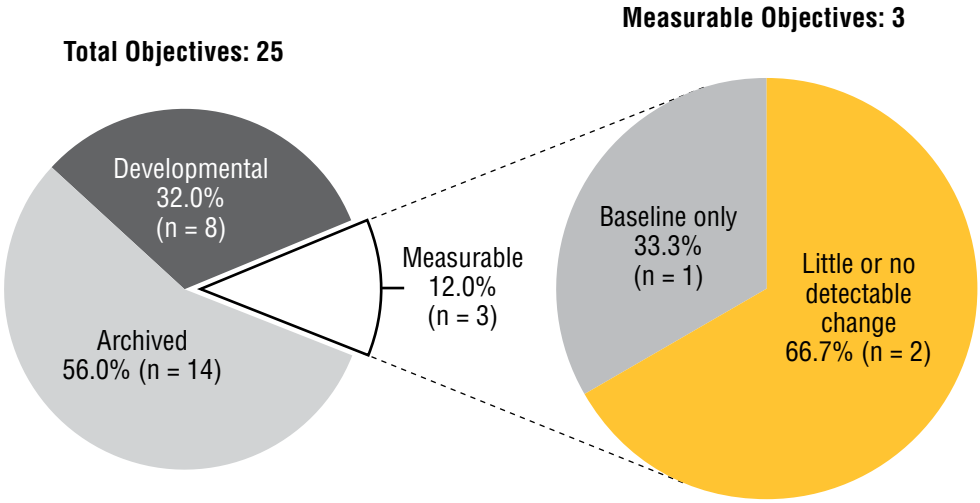
Contents

Goal: Prevent illness and disability related to blood disorders and the use of blood products.

This chapter includes objectives that monitor bleeding and clotting disorders and blood safety. The Reader's Guide provides a step-by-step explanation of the content of this chapter, including criteria for highlighting objectives in the Selected Findings.[1]

Status of Objectives

Figure 4–1. Midcourse Status of the Blood Disorders and Blood Safety Objectives



Of the 25 objectives in the Blood Disorders and Blood Safety Topic Area, 14 were archived,[2] 8 were developmental,[3] and 3 were measurable[4] (Figure 4–1, Table 4–1). The midcourse status of the measurable objectives was as follows (Table 4–2):

- 2 objectives demonstrated little or no detectable change,[5] and
- 1 objective had baseline data only.[6]

Selected Findings

Bleeding and Clotting

- The proportion of **persons with von Willebrand disease (VWD) seen in specialty care centers who were diagnosed by age 21 years** (BDBS-15) demonstrated little or no detectable change between 2012 and 2014 (69.8% and 69.4%, respectively) (Table 4–2).
  - » In 2014, the disparities by sex and race and ethnicity in the proportion of persons with von Willebrand disease (VWD) seen in specialty care centers who were diagnosed by age 21 years (BDBS-15) were not tested for statistical significance (Table 4–3).
- In 2008, 82.9% of **persons with hemophilia developed reduced joint mobility due to bleeding into joints** (BDBS-16). Progress data were not available for this objective, so movement toward the target could not be assessed (Table 4–2).
  - » In 2008, there was a statistically significant disparity by sex in the proportion of persons with hemophilia who developed reduced joint mobility due to bleeding into joints (BDBS-16). The disparity by race and ethnicity was not statistically significant (Table 4–3).

Blood Safety

- Between 2008 and 2010, there was no change in the age-adjusted proportion of **persons aged 18 and over who donated blood** (6.1% and 6.1%, respectively) (Table 4–2, BDBS-17).

» In 2010, there were statistically significant disparities by sex, race and ethnicity, education, family income, and disability status in the age-adjusted proportion of adults who donated blood (BDBS-17). The disparity by geographic location was not statistically significant (Table 4–3).

More Information

Readers interested in more detailed information about the objectives in this topic area are invited to visit the HealthyPeople.gov website, where extensive substantive and technical information is available:

- For the background and importance of the topic area, see: https://www.healthypeople.gov/2020/topics-objectives/topic/blood-disorders-and-blood-safety
- For data details for each objective, including definitions, numerators, denominators, calculations, and data limitations, see: https://www.healthypeople.gov/2020/topics-objectives/topic/blood-disorders-and-blood-safety/objectives
  Select an objective, then click on the "Data Details" icon.
- For objective data by population group (e.g., sex, race and ethnicity, or family income), including rates, percentages, or counts for multiple years, see: https://www.healthypeople.gov/2020/topics-objectives/topic/blood-disorders-and-blood-safety/objectives
  Select an objective, then click on the "Data2020" icon.

Data for the measurable objectives in this chapter were from the following data sources:

- Community Counts Hemophilia Treatment Centers (HTC) Population Profile: https://athn.org/content/public-health-surveillance
- National Health Interview Survey: http://www.cdc.gov/nchs/nhis.htm
- Universal Data Collection System: http://www.cdc.gov/ncbddd/blooddisorders/udc/aboutus.html

Footnotes

[1]The Technical Notes provide more information on Healthy People 2020 statistical methods and issues.

[2]**Archived** objectives are no longer being monitored due to lack of data source, changes in science, or replacement with other objectives.

[3]**Developmental** objectives did not have a national baseline value.

[4]**Measurable** objectives had a national baseline value.

[5]**Little or no detectable change**—One of the following, as specified in the Midcourse Progress Table:
» Movement was toward the target, standard errors were available, and the percentage of targeted change achieved was not statistically significant.
» Movement was toward the target, standard errors were not available, and the objective had achieved less than 10% of the targeted change.
» Movement was away from the baseline and target, standard errors were available, and the percentage change relative to the baseline was not statistically significant.
» Movement was away from the baseline and target, standard errors were not available, and the objective had moved less than 10% relative to the baseline.
» There was no change between the baseline and the midcourse data point.

[6]**Baseline only**—The objective only had one data point, so progress toward target attainment could not be assessed.

Suggested Citation

National Center for Health Statistics. Chapter 4: Blood Disorders and Blood Safety. Healthy People 2020 Midcourse Review. Hyattsville, MD. 2016.

Table 4–1. Blood Disorders and Blood Safety Objectives

LEGEND

Data for this objective are available in this chapter's Midcourse Progress Table.

Disparities data for this objective are available, and this chapter includes a Midcourse Health Disparities Table.

A state or county level map for this objective is available at the end of the chapter.

Not Applicable — Midcourse data availability is not applicable for developmental and archived objectives. **Developmental** objectives did not have a national baseline value. **Archived** objectives are no longer being monitored due to lack of data source, changes in science, or replacement with other objectives.

Objective Number	Objective Statement	Data Sources	Midcourse Data Availability
Hemoglobinopathies			
BDBS-1	(Archived) Increase the proportion of persons with hemoglobinopathies who receive recommended vaccinations	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable
BDBS-2	(Archived) Increase the proportion of persons with a diagnosis of hemoglobinopathies and their families who are referred for evaluation and treatment	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable
BDBS-3	(Archived) Increase the proportion of persons with hemoglobinopathies who receive care in a patient or family-centered medical home	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable
BDBS-4	(Archived) Increase the proportion of persons with a diagnosis of hemoglobinopathies who receive early and continuous screening for complications	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable
BDBS-5	(Archived) Increase the proportion of persons with hemoglobinopathies who receive disease-modifying therapies	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable
BDBS-6	(Archived) Increase the proportion of children with sickle cell disease who receive penicillin prophylaxis from 4 months to 5 years of age	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable
BDBS-7	(Archived) Reduce hospitalizations due to preventable complications of sickle cell disease among children aged 9 years and under	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable
BDBS-8	(Archived) Increase the proportion of persons with a diagnosis of hemoglobinopathies who complete high school education or a General Education or Equivalency Diploma (GED) by 25 years of age	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable
BDBS-9	(Archived) Increase the proportion of community-based organizations (CBOs) that provide outreach and awareness campaigns for hemoglobinopathies	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable
BDBS-10	(Archived) Increase the proportion of hemoglobinopathy carriers who know their own carrier status	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable

Table 4–1. Blood Disorders and Blood Safety Objectives—Continued

LEGEND

 Data for this objective are available in this chapter's Midcourse Progress Table.

 Disparities data for this objective are available, and this chapter includes a Midcourse Health Disparities Table.

 A state or county level map for this objective is available at the end of the chapter.

Not Applicable — Midcourse data availability is not applicable for developmental and archived objectives. **Developmental** objectives did not have a national baseline value. **Archived** objectives are no longer being monitored due to lack of data source, changes in science, or replacement with other objectives.

Objective Number	Objective Statement	Data Sources	Midcourse Data Availability
Bleeding and Clotting			
BDBS-11	(Archived) Increase the proportion of persons with bleeding disorders who receive recommended vaccinations	(Potential) Universal Data Collection System (UDC), CDC/NCBDDD	Not Applicable
BDBS-12	(Archived) Reduce the number of persons who develop venous thromboembolism (VTE)	National Ambulatory Medical Care Survey (NAMCS), CDC/NCHS; National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC/NCHS	Not Applicable
BDBS-13.1	(Archived) Reduce venous thromboembolism (VTE) among adult medical inpatients	(Potential) National Hospital Discharge Survey (NHDS), CDC/NCHS	Not Applicable
BDBS-13.2	(Developmental) Reduce venous thromboembolism (VTE) among adult surgical patients	(Potential) National Hospital Discharge Survey (NHDS), CDC/NCHS	Not Applicable
BDBS-14	(Archived) Increase the proportion of providers who refer women with symptoms suggestive of inherited bleeding disorders for diagnosis and treatment		Not Applicable
BDBS-15	Increase the proportion of persons with von Willebrand disease (VWD) seen in specialty care centers who were diagnosed by 21 years of age	Community Counts Hemophilia Treatment Centers Population Profile (HTC Population Profile), CDC/NCBDDD and American Thrombosis and Hemostasis Network (ATHN)	
BDBS-16	Reduce the proportion of persons with hemophilia who develop reduced joint mobility due to bleeding into joints	Universal Data Collection System (UDC), CDC/NCBDDD	
Blood Safety			
BDBS-17	Increase the proportion of persons who donate blood	National Health Interview Survey (NHIS), CDC/NCHS	
BDBS-18.1	(Developmental) Reduce the proportion of persons who develop adverse events due to transfusion-related acute lung injury (TRALI)	(Potential) National Blood Collection and Utilization Survey (NBCUS), DHHS	Not Applicable
BDBS-18.2	(Developmental) Reduce the proportion of persons who develop adverse events due to blood incompatibility	(Potential) National Blood Collection and Utilization Survey (NBCUS), DHHS	Not Applicable

Table 4–1. Blood Disorders and Blood Safety Objectives—Continued

LEGEND

 Data for this objective are available in this chapter's Midcourse Progress Table.

 Disparities data for this objective are available, and this chapter includes a Midcourse Health Disparities Table.

 A state or county level map for this objective is available at the end of the chapter.

Not Applicable — Midcourse data availability is not applicable for developmental and archived objectives. **Developmental** objectives did not have a national baseline value. **Archived** objectives are no longer being monitored due to lack of data source, changes in science, or replacement with other objectives.

Objective Number	Objective Statement	Data Sources	Midcourse Data Availability
Blood Safety—Continued			
BDBS-18.3	(Developmental) Reduce the proportion of persons who develop adverse events due to transfusion-transmitted infections	(Potential) National Blood Collection and Utilization Survey (NBCUS), DHHS	Not Applicable
BDBS-18.4	(Developmental) Reduce the proportion of persons who develop adverse events due to alloimmunization among persons with hemoglobinopathies	(Potential) Registry and Surveillance in Hemoglobinopathies (RuSH), NIH	Not Applicable
BDBS-19.1	(Developmental) Reduce the proportion of persons who did not receive red blood cells due to a blood product shortage	(Potential) National Blood Collection and Utilization Survey (NBCUS), DHHS	Not Applicable
BDBS-19.2	(Developmental) Reduce the proportion of persons who did not receive platelets due to a blood product shortage	(Potential) National Blood Collection and Utilization Survey (NBCUS), DHHS	Not Applicable
BDBS-19.3	(Developmental) Reduce the proportion of persons who did not receive plasma derivatives due to a blood product shortage	(Potential) National Blood Collection and Utilization Survey (NBCUS), DHHS	Not Applicable

Table 4–2. Midcourse Progress for Measurable[1] Blood Disorders and Blood Safety Objectives

LEGEND

✓ Target met or exceeded[2,3] | + Improving[4,5] | ○ Little or no detectable change[6–10] | − Getting worse[11,12] | Baseline only[13] | Informational[14]

Objective Description	Baseline Value (Year)	Midcourse Value (Year)	Target	Movement Toward Target[15]	Movement Away From Baseline[16]	Movement Statistically Significant[17]
Bleeding and Clotting						
○ [9] **BDBS-15** Persons with von Willebrand disease (VWD) diagnosed by age 21 (percent)	69.8% (2012)	69.4% (2014)	76.8%		0.6%	
[13] **BDBS-16** Persons with hemophilia and reduced joint mobility due to bleeding into joints (percent)	82.9% (2008)		74.6%			
Blood Safety						
○ [10] **BDBS-17** Persons donating blood (age-adjusted, percent, 18+ years)	6.1% (2008)	6.1% (2010)	6.7%	0.0%		

NOTES

See HealthyPeople.gov for all Healthy People 2020 data. The Technical Notes provide more information on the measures of progress.

FOOTNOTES

[1]**Measurable** objectives had a national baseline value.

Target met or exceeded:

[2]At baseline the target was not met or exceeded and the midcourse value was equal to or exceeded the target. (The percentage of targeted change achieved was equal to or greater than 100%.)

[3]The baseline and midcourse values were equal to or exceeded the target. (The percentage of targeted change achieved was not assessed.)

Improving:

[4]Movement was toward the target, standard errors were available, and the percentage of targeted change achieved was statistically significant.

[5]Movement was toward the target, standard errors were not available, and the objective had achieved 10% or more of the targeted change.

Little or no detectable change:

[6]Movement was toward the target, standard errors were available, and the percentage of targeted change achieved was not statistically significant.

[7]Movement was toward the target, standard errors were not available, and the objective had achieved less than 10% of the targeted change.

[8]Movement was away from the baseline and target, standard errors were available, and the percentage change relative to the baseline was not statistically significant.

[9]Movement was away from the baseline and target, standard errors were not available, and the objective had moved less than 10% relative to the baseline.

[10]There was no change between the baseline and the midcourse data point.

Getting worse:

[11]Movement was away from the baseline and target, standard errors were available, and the percentage change relative to the baseline was statistically significant.

[12]Movement was away from the baseline and target, standard errors were not available, and the objective had moved 10% or more relative to the baseline.

FOOTNOTES—Continued

[13]**Baseline only:** The objective only had one data point, so progress toward target attainment could not be assessed.

[14]**Informational:** A target was not set for this objective, so progress toward target attainment could not be assessed.

[15]For objectives that **moved toward** their targets, movement toward the target was measured as the percentage of targeted change achieved (unless the target was already met or exceeded at baseline):

$$\text{Percentage of targeted change achieved} = \frac{\text{Midcourse value} - \text{Baseline value}}{\text{HP2020 target} - \text{Baseline value}} \times 100$$

[16]For objectives that **moved away** from their baselines and targets, movement away from the baseline was measured as the magnitude of the percentage change from baseline:

$$\text{Magnitude of percentage change from baseline} = \frac{|\,\text{Midcourse value} - \text{Baseline value}\,|}{\text{Baseline value}} \times 100$$

[17]Statistical significance was tested when the objective had a target and at least two data points, standard errors of the data were available, and a normal distribution could be assumed. Statistical significance of the percentage of targeted change achieved or the magnitude of the percentage change from baseline was assessed at the 0.05 level using a normal one-sided test.

DATA SOURCES

BDBS-15	Community Counts Hemophilia Treatment Centers Population Profile (HTC Population Profile), CDC/NCBDDD and American Thrombosis and Hemostasis Network (ATHN)
BDBS-16	Universal Data Collection System (UDC), CDC/NCBDDD
BDBS-17	National Health Interview Survey (NHIS), CDC/NCHS

Table 4–3. Midcourse Health Disparities[1] for Population-based Blood Disorders and Blood Safety Objectives

Most favorable (least adverse) and least favorable (most adverse) group rates and summary disparity ratios[2,3] for selected characteristics at the midcourse data point

LEGEND

At the midcourse data point

- Group with the most favorable (least adverse) rate
- Group with the least favorable (most adverse) rate
- Data are available, but this group did not have the highest or lowest rate.
- Data are not available for this group because the data were statistically unreliable, not collected, or not analyzed.

Population-based Objectives	Characteristics and Groups																												
	Sex			Race and Ethnicity								Education[4]							Family Income[5]						Disability			Location		
	Male	Female	**Summary Disparity Ratio[2]**	American Indian or Alaska Native	Asian	Native Hawaiian or other Pacific Islander	Two or more races	Hispanic or Latino	Black, not Hispanic	White, not Hispanic	**Summary Disparity Ratio[3]**	Less than high school	High school graduate	At least some college	Associate's degree	4-year college degree	Advanced degree	**Summary Disparity Ratio[3]**	Poor	Near-poor	Middle	Near-high	High	**Summary Disparity Ratio[3]**	Persons with disabilities	Persons without disabilities	**Summary Disparity Ratio[2]**	Metropolitan	Nonmetropolitan	**Summary Disparity Ratio[2]**
Bleeding and Clotting																													
BDBS-15 Persons with von Willebrand disease (VWD) diagnosed by 21 years of age (percent) (2014)			1.304†								1.178†																		
BDBS-16 Persons with hemophilia and reduced joint mobility due to bleeding into joints (percent) (2008)			1.242*						a	a	1.029																		
Blood Safety																													
BDBS-17 Persons donating blood (age-adjusted, percent, 18+ years) (2010)			1.130*								2.121*							1.756*						1.722*			2.137*			1.026

NOTES

See HealthyPeople.gov for all Healthy People 2020 data. The Technical Notes provide more information on the measures of disparities.

FOOTNOTES

[1]**Health disparities** were assessed among population groups within specified demographic characteristics (sex, race and ethnicity, educational attainment, etc.). This assessment did not include objectives that were not population-based, such as those based on states, worksites, or those monitoring the number of events.
[2]When there were only two groups (e.g., male and female), the **summary disparity ratio** was the ratio of the higher to the lower rate.
[3]When there were three or more groups (e.g., white non-Hispanic, black non-Hispanic, Hispanic) and the most favorable rate (R_b) was the highest rate, the **summary disparity ratio** was calculated as R_b/R_a, where R_a = the average of the rates for all other groups. When there were three or more groups and the most favorable rate was the lowest rate, the summary disparity ratio was calculated as R_a/R_b.
[4]Unless otherwise footnoted, data do not include persons under age 25 years.

FOOTNOTES—Continued

[5]Unless otherwise footnoted, the poor, near-poor, middle, near-high, and high income groups are for persons whose family incomes were less than 100%, 100%–199%, 200%–399%, 400%–599%, and at or above 600% of the poverty threshold, respectively.
†The summary disparity ratio was not tested for statistical significance because standard errors of the data were not available or normality on the natural logarithm scale could not be assumed.
*The summary disparity ratio was significantly greater than 1.000. Statistical significance was assessed at the 0.05 level using a normal one-sided test on the natural logarithm scale.
[a]Data include persons of Hispanic origin.

DATA SOURCES

BDBS-15	Community Counts Hemophilia Treatment Centers Population Profile (HTC Population Profile), CDC/NCBDDD and American Thrombosis and Hemostasis Network (ATHN)
BDBS-16	Universal Data Collection System (UDC), CDC/NCBDDD
BDBS-17	National Health Interview Survey (NHIS), CDC/NCHS