Enhancing Reviews and Surveillance to Eliminate Maternal Mortality (ERASE MM)

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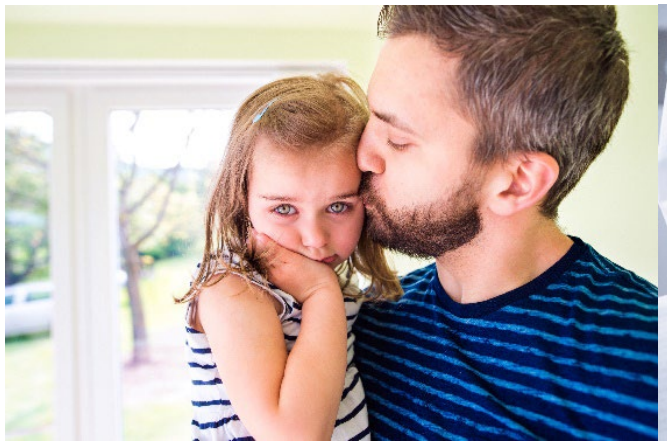
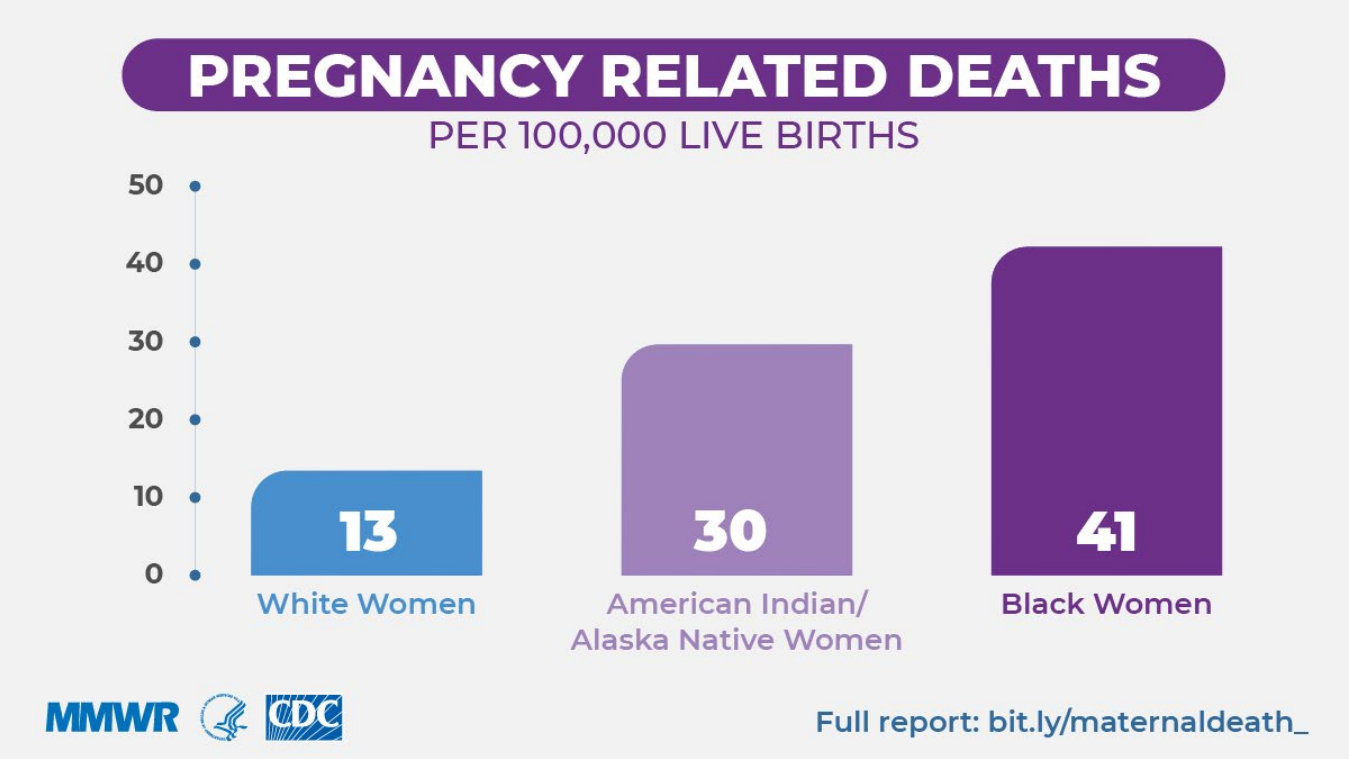



MMRIA MATERNAL MORTALITY REVIEW INFORMATION APP

ERASE MM Enhancing Reviews and Surveillance to Eliminate Maternal Mortality

REVIEW to ACTION WORKING TOGETHER TO PREVENT MATERNAL MORTALITY

In the US, Black and Native persons are **two to three times as likely to die** from a pregnancy-related death than white persons.



https://www.cdc.gov/mmwr/volumes/68/wr/mm6835a3.htm

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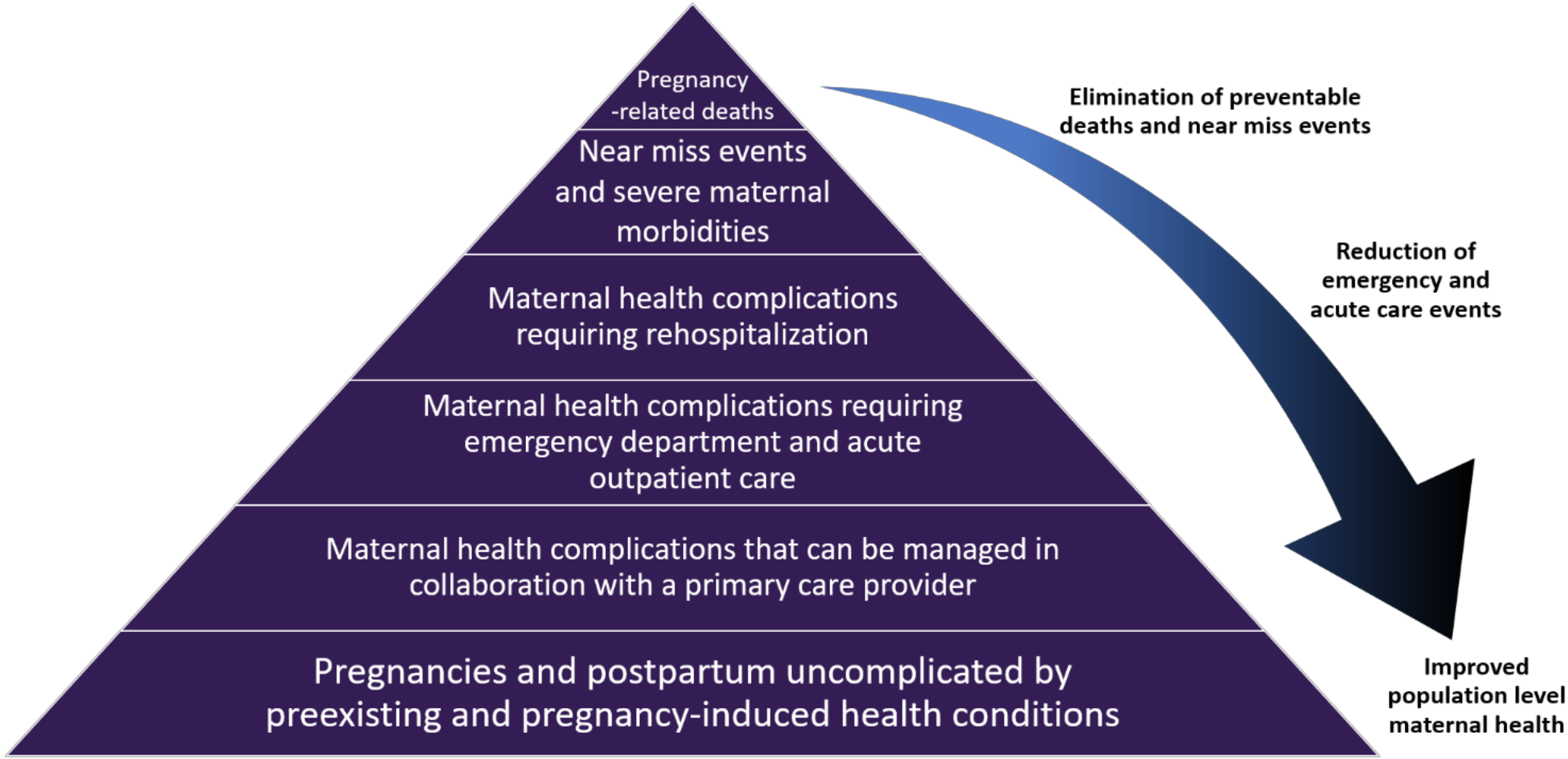
Enhancing Reviews and Surveillance to Eliminate Maternal Mortality

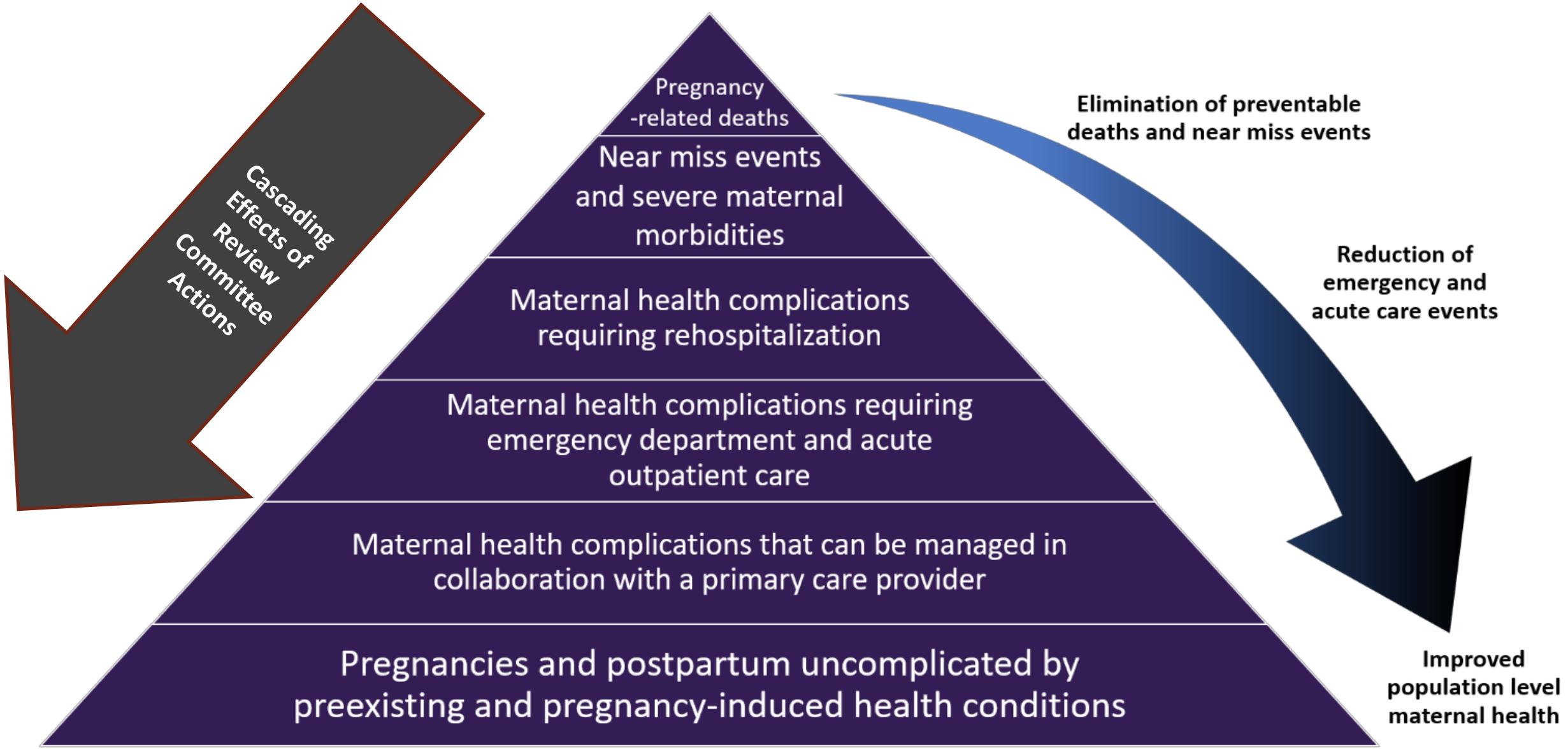
Jurisdiction-level Maternal Mortality Review Committees Provide Local Data

	State and Local Maternal Mortality Review Committees (MMRCs)
Data Source	Death certificates and death certificates linked to birth or fetal death certificates, medical records, social service records, autopsy, informant interviews, etc.
Time Frame	During pregnancy – 1 year
Source of Classification	Multidisciplinary committees
Terms	Pregnancy associated, (Associated and) Pregnancy related, (Associated but) Not pregnancy related
Measure	Pregnancy Related Mortality Ratio - # of Pregnancy Related Deaths per 100,000 live births
Purpose	Understand medical and non-medical contributors to deaths, inform prioritization of interventions to effectively reduce pregnancy-related deaths

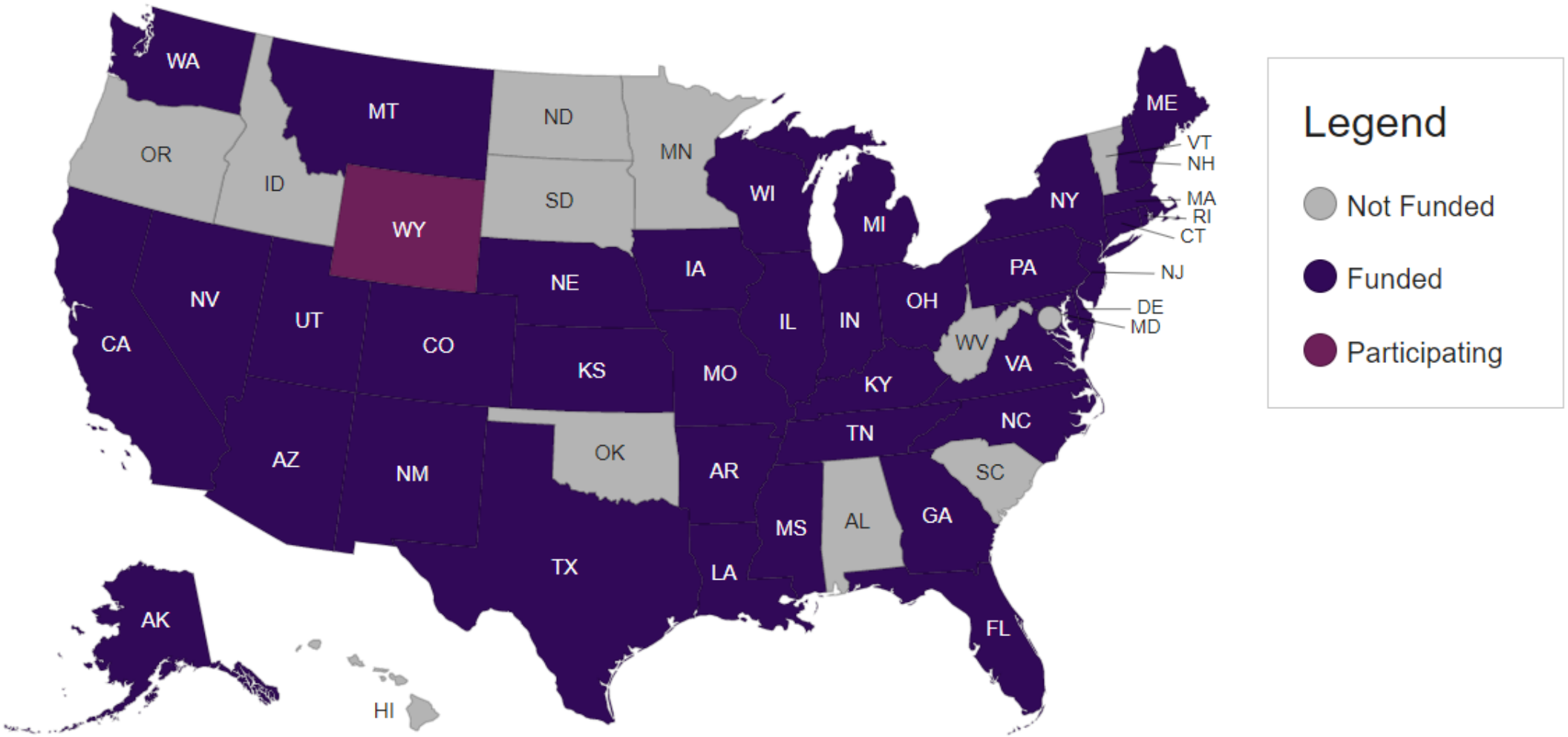
Adapted from: St. Pierre A, Zaharatos J, Goodman D, Callaghan WM. Challenges and opportunities in identifying, reviewing, and preventing maternal deaths. *Obstet Gynecol*. 2018;131(1):138–142.

https://www.reviewtoaction.org/implement/getting-started/members


Pregnancy -related deaths
Near miss events and severe maternal morbidities
Maternal health complications requiring rehospitalization
Maternal health complications requiring emergency department and acute outpatient care
Maternal health complications that can be managed in collaboration with a primary care provider
Pregnancies and postpartum uncomplicated by preexisting and pregnancy-induced health conditions
Elimination of preventable deaths and near miss events
Reduction of emergency and acute care events
Improved population level maternal health


Cascading Effects of Review Committee Actions
Pregnancy -related deaths
Near miss events and severe maternal morbidities
Maternal health complications requiring rehospitalization
Maternal health complications requiring emergency department and acute outpatient care
Maternal health complications that can be managed in collaboration with a primary care provider
Pregnancies and postpartum uncomplicated by preexisting and pregnancy-induced health conditions
Elimination of preventable deaths and near miss events
Reduction of emergency and acute care events
Improved population level maternal health

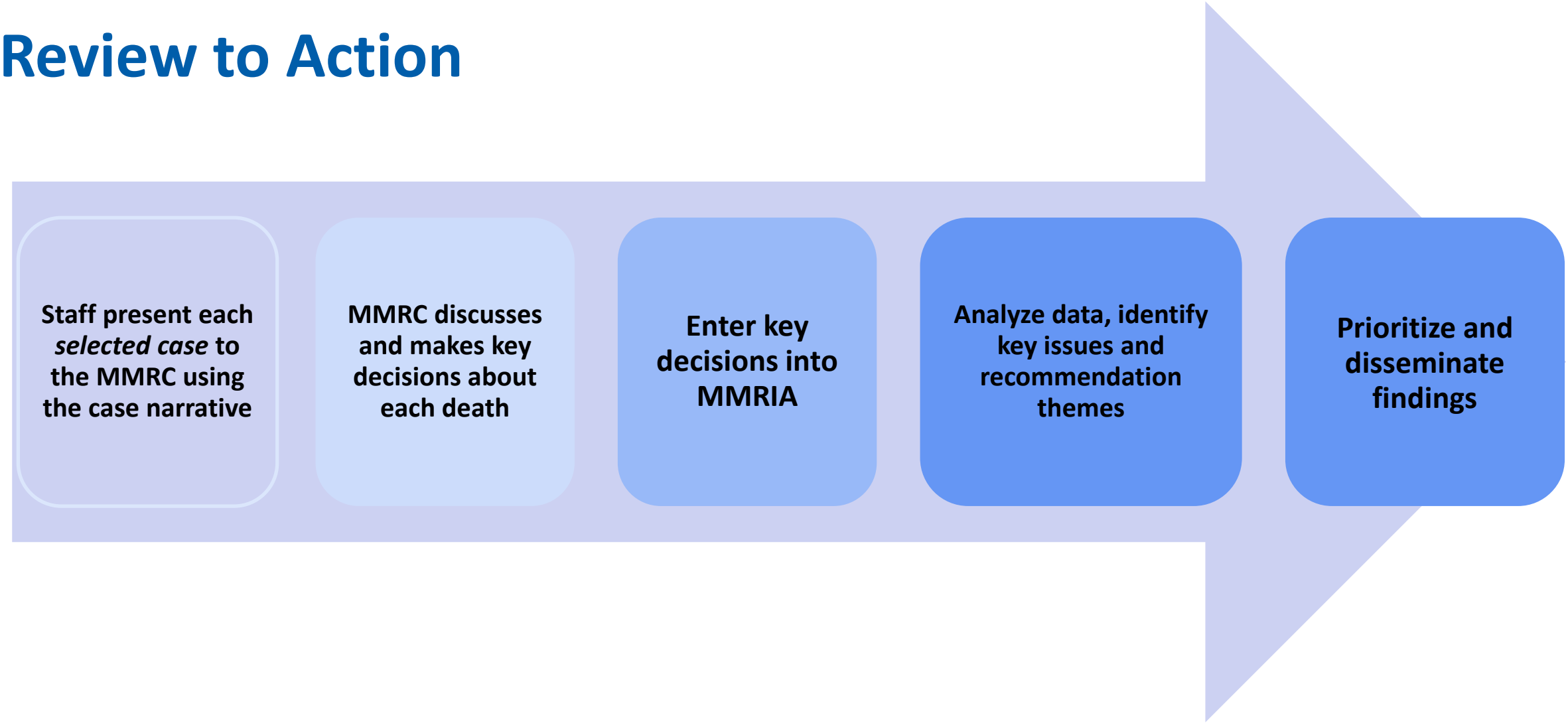
States and US Territories Funded Through ERASE MM



Territories AS GU PR VI MP

www.cdc.gov/erasemm

Review to Action



Adapted from WA State DOH

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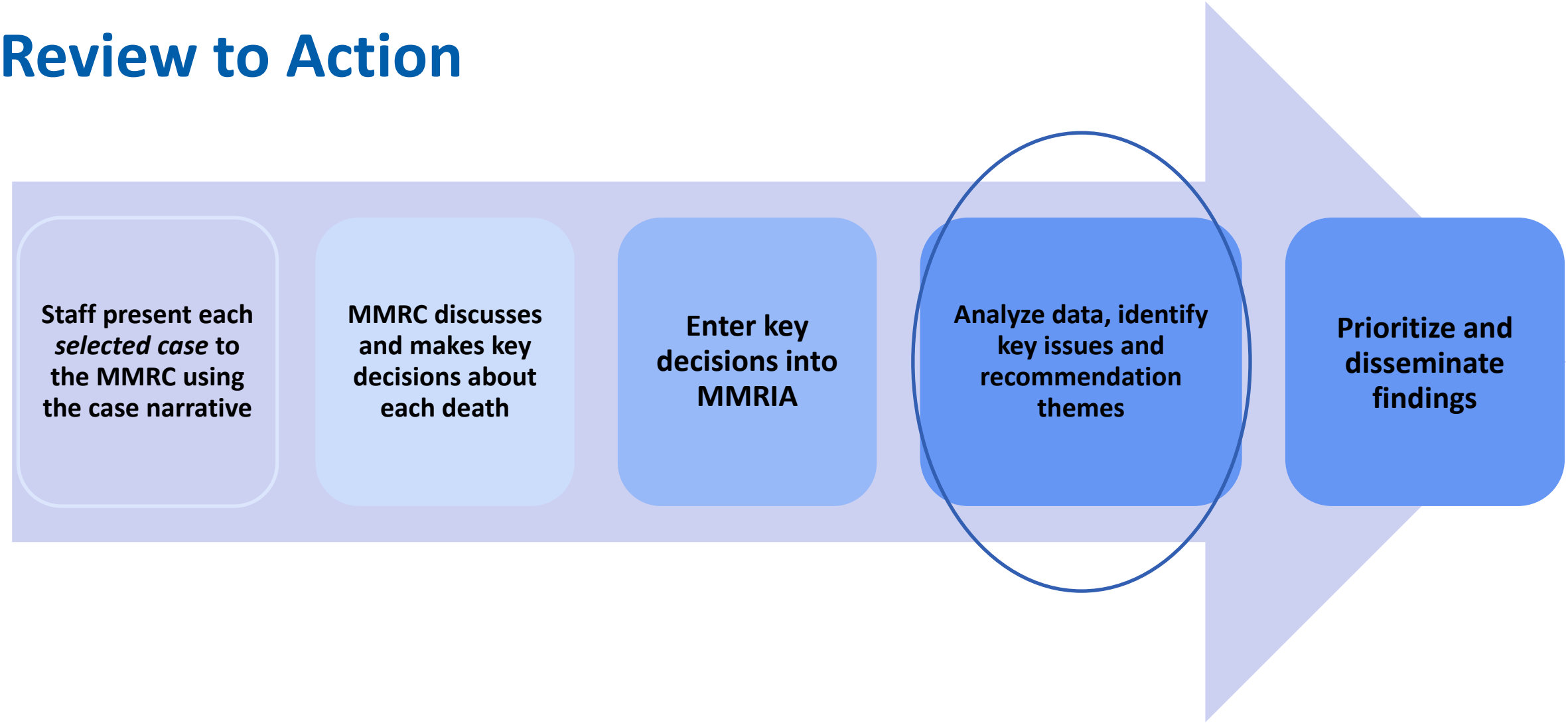

Adapted from WA State DOH

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Pregnancy-Related Deaths: Data from Maternal Mortality Review Committees in 36 US States, 2017-2019

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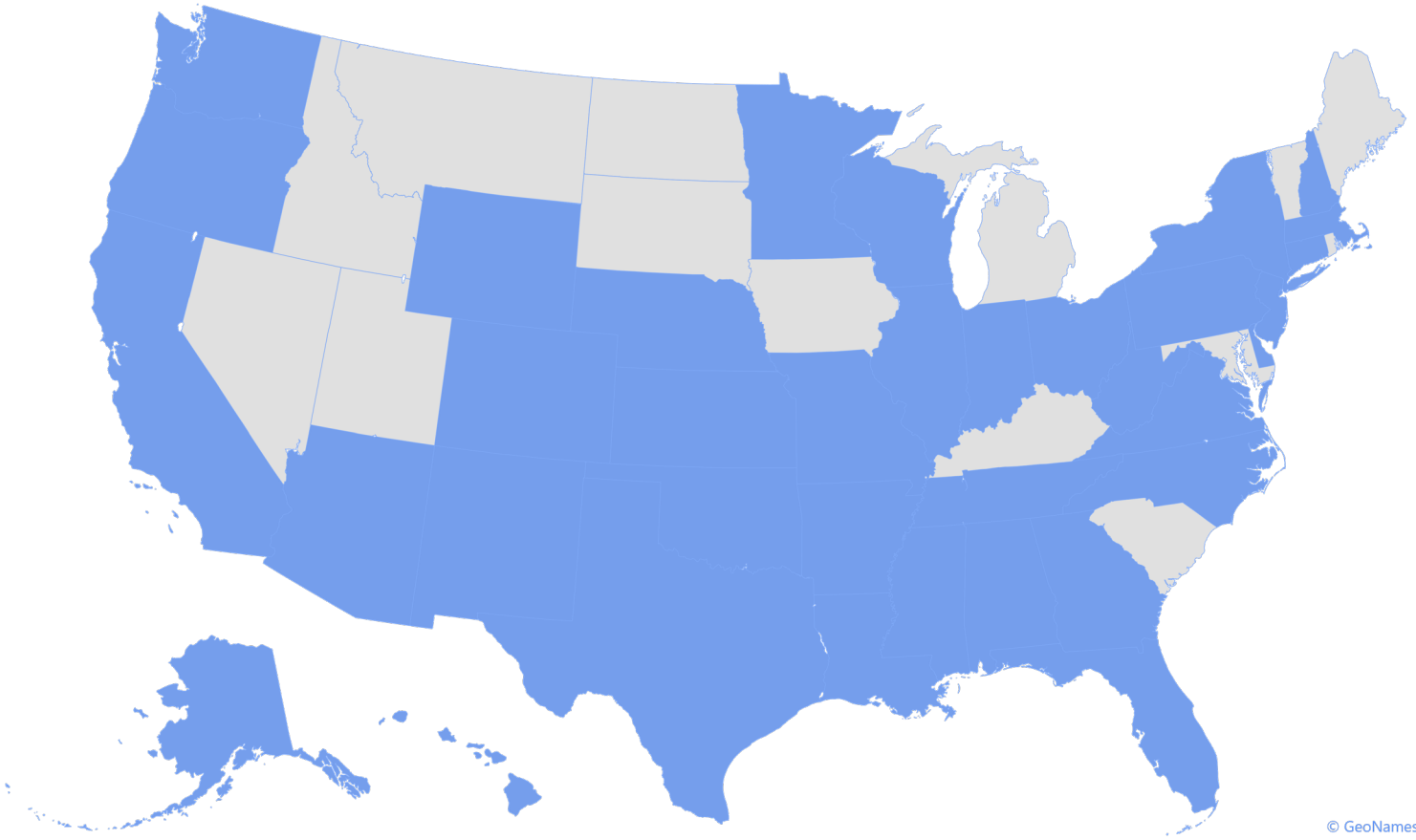
Pregnancy-Related Deaths: Data from Maternal Mortality Review Committees in 36 US States, 2017–2019

MMRCs in 36 states contributed data on 1,018 pregnancy-related deaths among their residents



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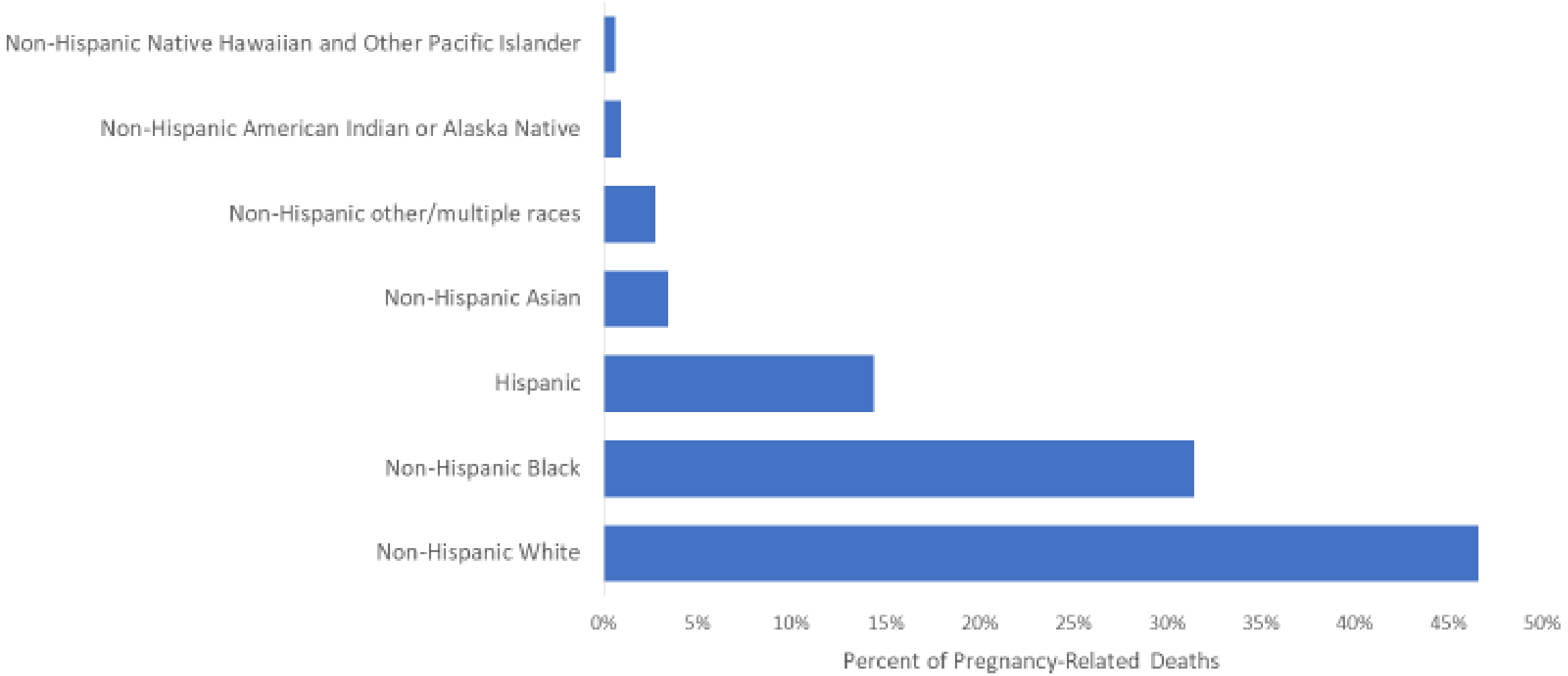
WORKING TOGETHER TO PREVENT MATERNAL MORTALITY

Distribution of Pregnancy-Related Deaths by Race/Ethnicity



Demographic characteristics of pregnancy-related deaths

Age at death (years)	n	%
10-19	29	2.9
20-24	155	15.3
25-29	227	22.4
30-34	297	29.3
35-39	225	22.2
40-44	70	6.9
≥45	10	1.0

Age was missing for 5 (0.5%) pregnancy-related deaths; ages ranged from 16 to 49 years

Demographic characteristics of pregnancy-related deaths

Education Level	n	%
12th grade or less; no diploma	135	13.7
High school graduate or GED completed	396	40.1
Some college credit, but no degree	192	19.4
Associate or bachelor's degree	218	22.1
Advanced degree	47	4.8

Education was missing for 30 (2.9%) pregnancy-related deaths

Timing of Pregnancy-Related Deaths

22%
While pregnant

13%
Day of delivery

12%
1-6 days after end of pregnancy

23%
7-42 days after end of pregnancy

30%
43 days to 1 year after end of pregnancy

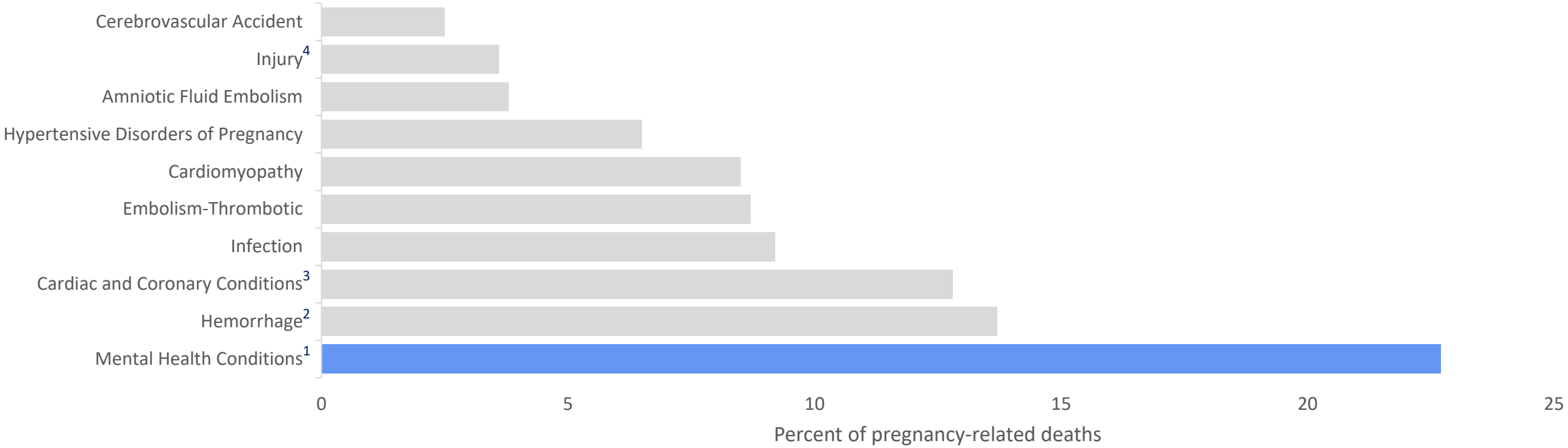
Timing was missing (n=2) or unknown (n=14) for 16 (1.6%) pregnancy-related deaths.

More than

80%

of pregnancy-related deaths were determined to be preventable.

Most Frequent Underlying Causes of Pregnancy-Related Deaths*



[1] Mental health conditions include deaths to suicide, unintentional or unknown intent overdose/poisoning related to substance use disorder, and other deaths determined by the MMRC to be related to a mental health condition, including substance use disorder

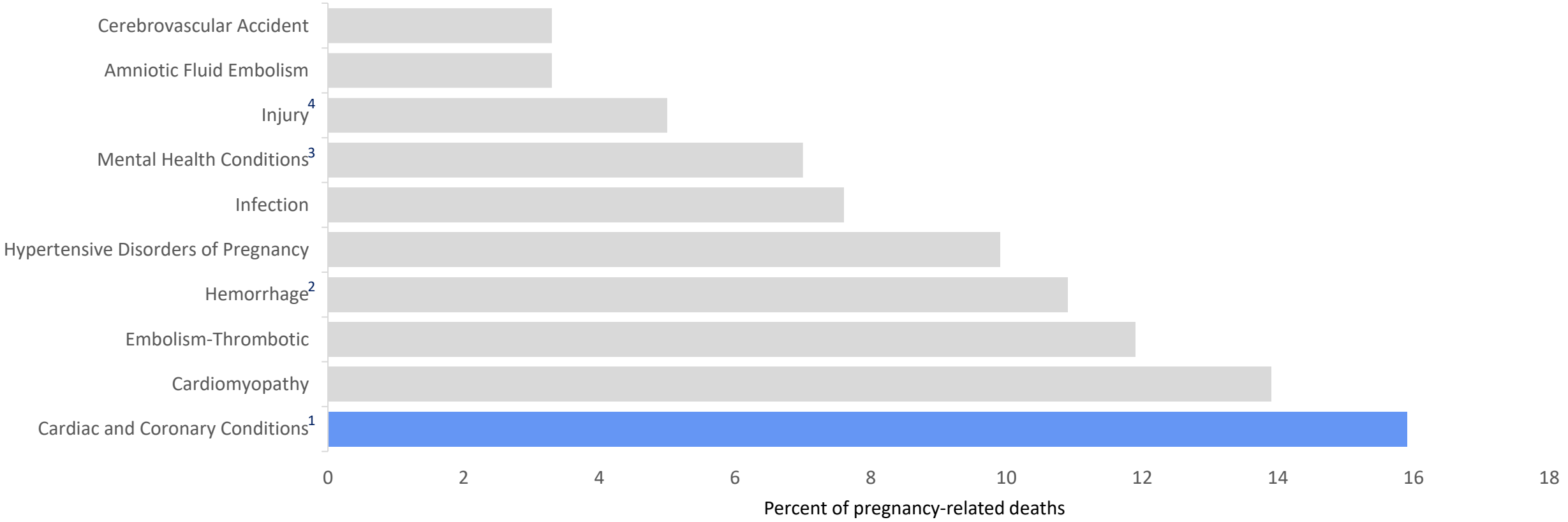
[2] Excludes aneurysms or cerebrovascular accident (CVA)

[3] Cardiac and coronary conditions include deaths to coronary artery disease, pulmonary hypertension, acquired and congenital valvular heart disease, vascular aneurysm, hypertensive cardiovascular disease, Marfan Syndrome, conduction defects, vascular malformations, and other cardiovascular disease; and excludes cardiomyopathy and hypertensive disorders of pregnancy.

[4] Injury includes intentional injury (homicide), unintentional injury, including overdose/poisoning deaths not related to substance use disorder, and injury of unknown intent or not otherwise specified.

*Only 10 most frequent underlying causes of death are shown; underlying cause of death was missing (n=10) or unknown (n=21) for 31 (3.0%) pregnancy-related deaths

Most Frequent Underlying Causes of Pregnancy-Related Deaths Among non-Hispanic Black Persons*



[1] Cardiac and coronary conditions include deaths to coronary artery disease, pulmonary hypertension, acquired and congenital valvular heart disease, vascular aneurysm, hypertensive cardiovascular disease, Marfan Syndrome, conduction defects, vascular malformations, and other cardiovascular disease; and excludes cardiomyopathy and hypertensive disorders of pregnancy.

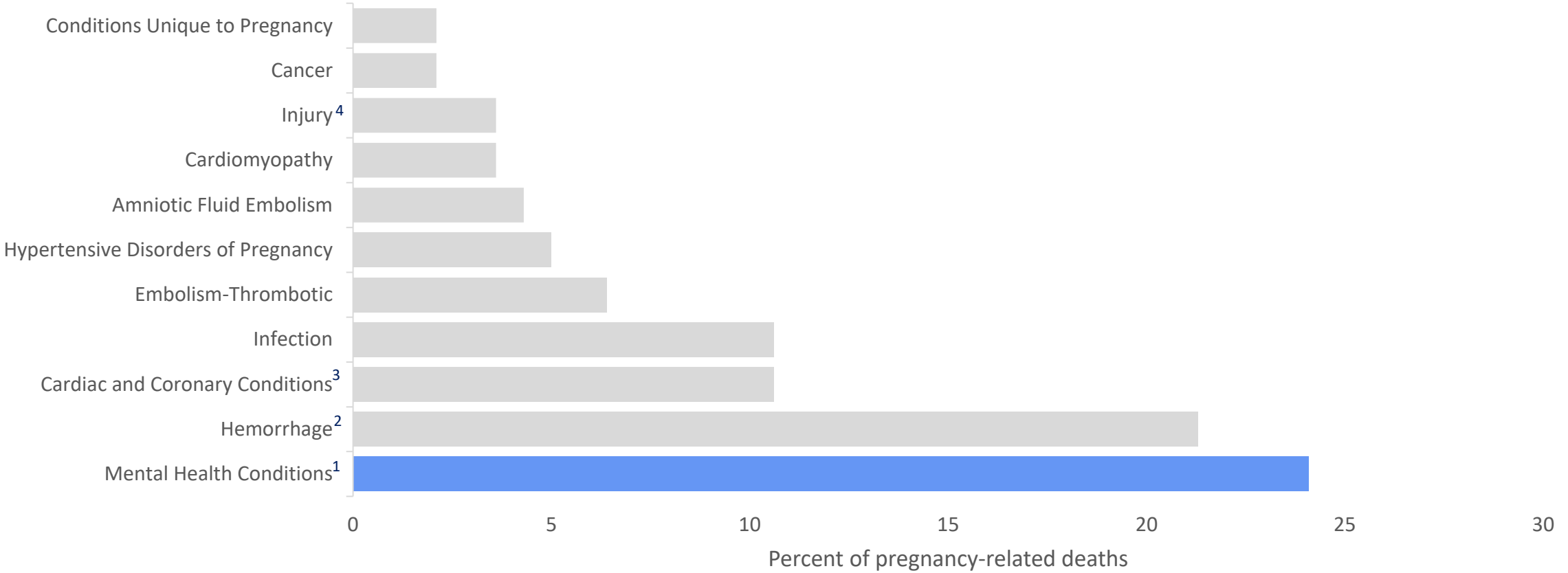
[2] Excludes aneurysms or cerebrovascular accident (CVA)

[3] Mental health conditions include deaths to suicide, unintentional or unknown intent overdose/poisoning related to substance use disorder, and other deaths determined by the MMRC to be related to a mental health condition, including substance use disorder

[4] Injury includes intentional injury (homicide), unintentional injury, including overdose/poisoning deaths not related to substance use disorder, and injury of unknown intent or not otherwise specified.

*Only 10 most frequent underlying causes of death are shown; underlying cause of death was missing (n=6) or unknown (n=7) for 13 (4.1%) pregnancy-related deaths

Most Frequent Underlying Causes of Pregnancy-Related Deaths Among Hispanic Persons*



[1] Mental health conditions include deaths to suicide, unintentional or unknown intent overdose/poisoning related to substance use disorder, and other deaths determined by the MMRC to be related to a mental health condition, including substance use disorder

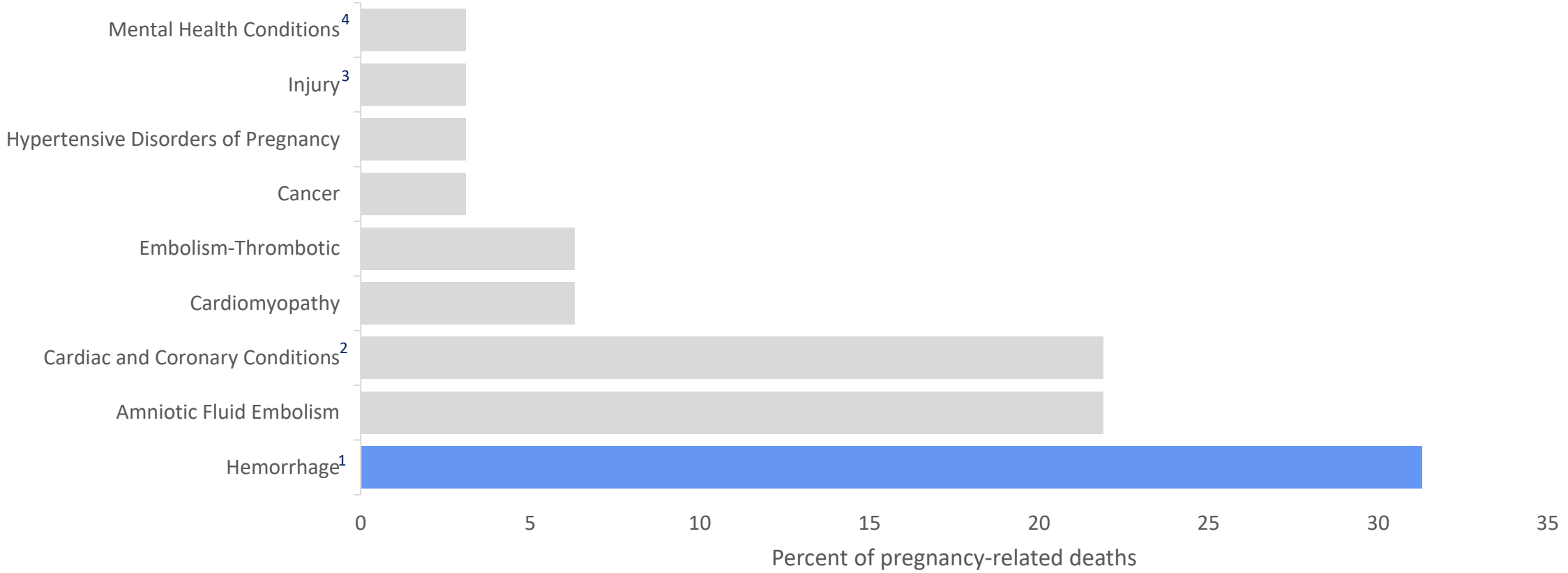
[2] Excludes aneurysms or cerebrovascular accident (CVA)

[3] Cardiac and coronary conditions include deaths to coronary artery disease, pulmonary hypertension, acquired and congenital valvular heart disease, vascular aneurysm, hypertensive cardiovascular disease, Marfan Syndrome, conduction defects, vascular malformations, and other cardiovascular disease; and excludes cardiomyopathy and hypertensive disorders of pregnancy.

[4] Injury includes intentional injury (homicide), unintentional injury, including overdose/poisoning deaths not related to substance use disorder, and injury of unknown intent or not otherwise specified.

*Only 10 most frequent underlying causes of death are shown. More than 10 are shown because the frequency was the same for the 10th cause for 2 causes; underlying cause of death was unknown for 3 (2.1%) pregnancy-related deaths.

Most Frequent Underlying Causes of Pregnancy-Related Deaths Among non-Hispanic Asian Persons*



[1]Excludes aneurysms or cerebrovascular accident (CVA)

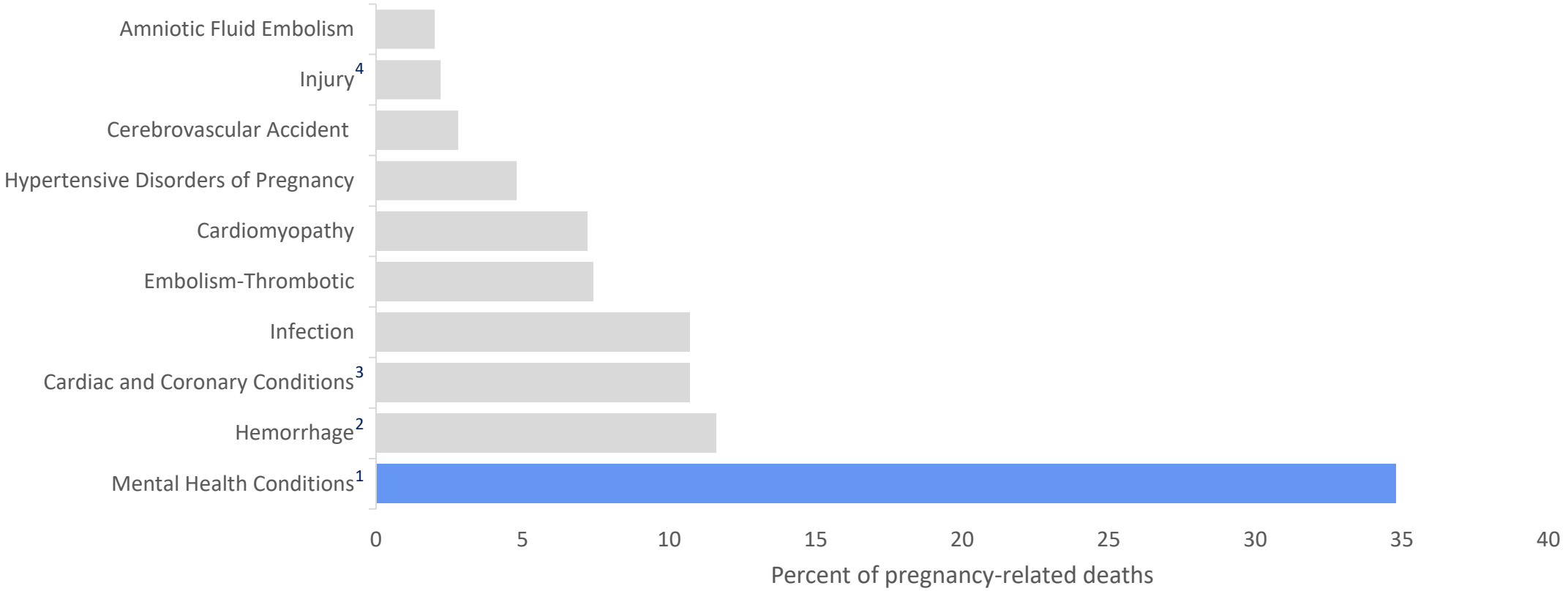
[2]Cardiac and coronary conditions include deaths to coronary artery disease, pulmonary hypertension, acquired and congenital valvular heart disease, vascular aneurysm, hypertensive cardiovascular disease, Marfan Syndrome, conduction defects, vascular malformations, and other cardiovascular disease; and excludes cardiomyopathy and hypertensive disorders of pregnancy.

[3]Injury includes intentional injury (homicide), unintentional injury, including overdose/poisoning deaths not related to substance use disorder, and injury of unknown intent or not otherwise specified.

[4]Mental health conditions include deaths to suicide, unintentional or unknown intent overdose/poisoning related to substance use disorder, and other deaths determined by the MMRC to be related to a mental health condition, including substance use disorder

*Underlying cause was unknown for 2 (5.9%) pregnancy-related deaths

Most Frequent Underlying Causes of Pregnancy-Related Deaths Among non-Hispanic White Persons*



[1] Mental health conditions include deaths to suicide, unintentional or unknown intent overdose/poisoning related to substance use disorder, and other deaths determined by the MMRC to be related to a mental health condition, including substance use disorder

[2] Excludes aneurysms or CVA

[3] Cardiac and coronary conditions include deaths to coronary artery disease, pulmonary hypertension, acquired and congenital valvular heart disease, vascular aneurysm, hypertensive cardiovascular disease, Marfan Syndrome, conduction defects, vascular malformations, and other cardiovascular disease; and excludes cardiomyopathy and hypertensive disorders of pregnancy.

[4] Injury includes intentional injury (homicide), unintentional injury, including overdose/poisoning deaths not related to substance use disorder, and injury of unknown intent or not otherwise specified.

*Only 10 most frequent underlying causes of death are shown; underlying cause of death was missing (n=4) or unknown (n=6) for 10 (2.1%) pregnancy-related deaths.

Pregnancy-Related Deaths Among American Indian or Alaska Native Persons: Data from Maternal Mortality Review Committees in 36 U.S. States, 2017–2019

Classification of Race/Ethnicity

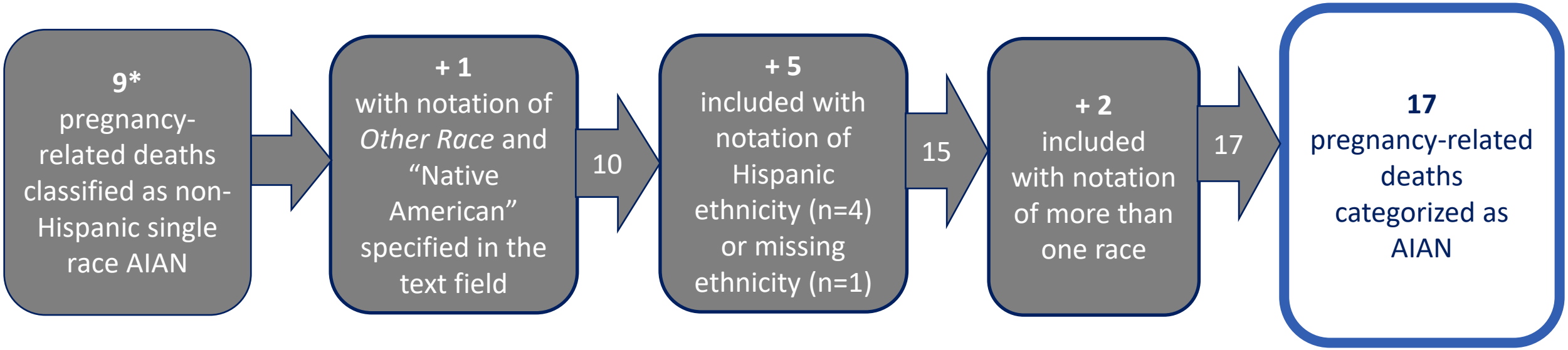
- Accurate classification of race and ethnicity can be complicated
- Typically, CDC prioritizes use of the mother's race and ethnicity reported on the birth or fetal death record, with use of the death record race and ethnicity when a linked birth or fetal death record is not available

Pregnancy-Related Deaths Among American Indian or Alaska Native Persons

- Pregnancy Mortality Surveillance System (PMSS) data tell us that there are disparities in pregnancy-related death among American Indian or Alaska Native persons[1]
- Assessments from other groups[2,3,4] have demonstrated the importance of examining pregnancy-related deaths among all American Indian or Alaska Native persons, regardless of Hispanic origin and bi-racial or multi-racial classification
- What happens when we apply a more inclusive definition of American Indian or Alaska Native persons to the MMRIA data?

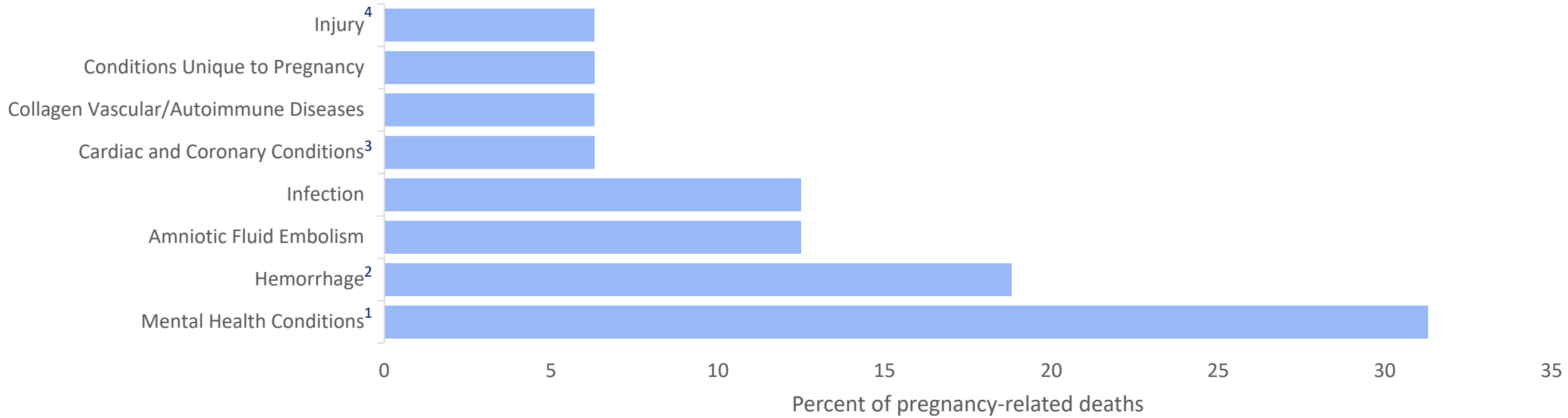
[1] Petersen EE, Davis NL, Goodman D, et al. Racial/Ethnic Disparities in Pregnancy-Related Deaths — United States, 2007–2016. MMWR Morb Mortal Wkly Rep 2019;68:762–765.
[2] Improving Data Capacity for American Indian/Alaska Native (AIAN) Populations in Federal Health Surveys. HHS Office of the Assistant Secretary for Planning and Evaluation; 2019.
[3] Best Practices for American Indian and Alaska Native Data Collection. Seattle, WA: Urban Indian Health Institute; 2020.
[4] Joshi S, Warren-Mears V. Identification of American Indians and Alaska Natives in Public Health Data Sets: A Comparison Using Linkage-Corrected Washington State Death Certificates. J Public Health Manag Pract. 2019 Sep/Oct;25 Suppl 5, Tribal Epidemiology Centers: Advancing Public Health in Indian Country for Over 20 Years:S48-S53.

Summary of an alternative approach to classifying pregnancy-related deaths among American Indian or Alaska Native persons



* Consistent with previously described methods

Underlying Causes of Pregnancy-Related Deaths Among American Indian or Alaska Native Persons (N=16*)



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[4] Injury includes intentional injury (homicide), unintentional injury, including overdose/poisoning deaths not related to substance use disorder, and injury of unknown intent or not otherwise specified.

*Underlying cause was unknown for 1 (5.9%) pregnancy-related death

93% of AIAN pregnancy-related deaths with a MMRC preventability determination were determined to be **preventable**

A preventability determination was missing (n=1) or unable to determine (n=1) for 2 (12%) pregnancy-related deaths.

Key Findings

- Pregnancy-related deaths occurred during pregnancy, delivery, and up to a year after the end of pregnancy
- The leading cause of pregnancy-related death varied by race and ethnicity
- Over 80% of pregnancy-related deaths were determined to be preventable

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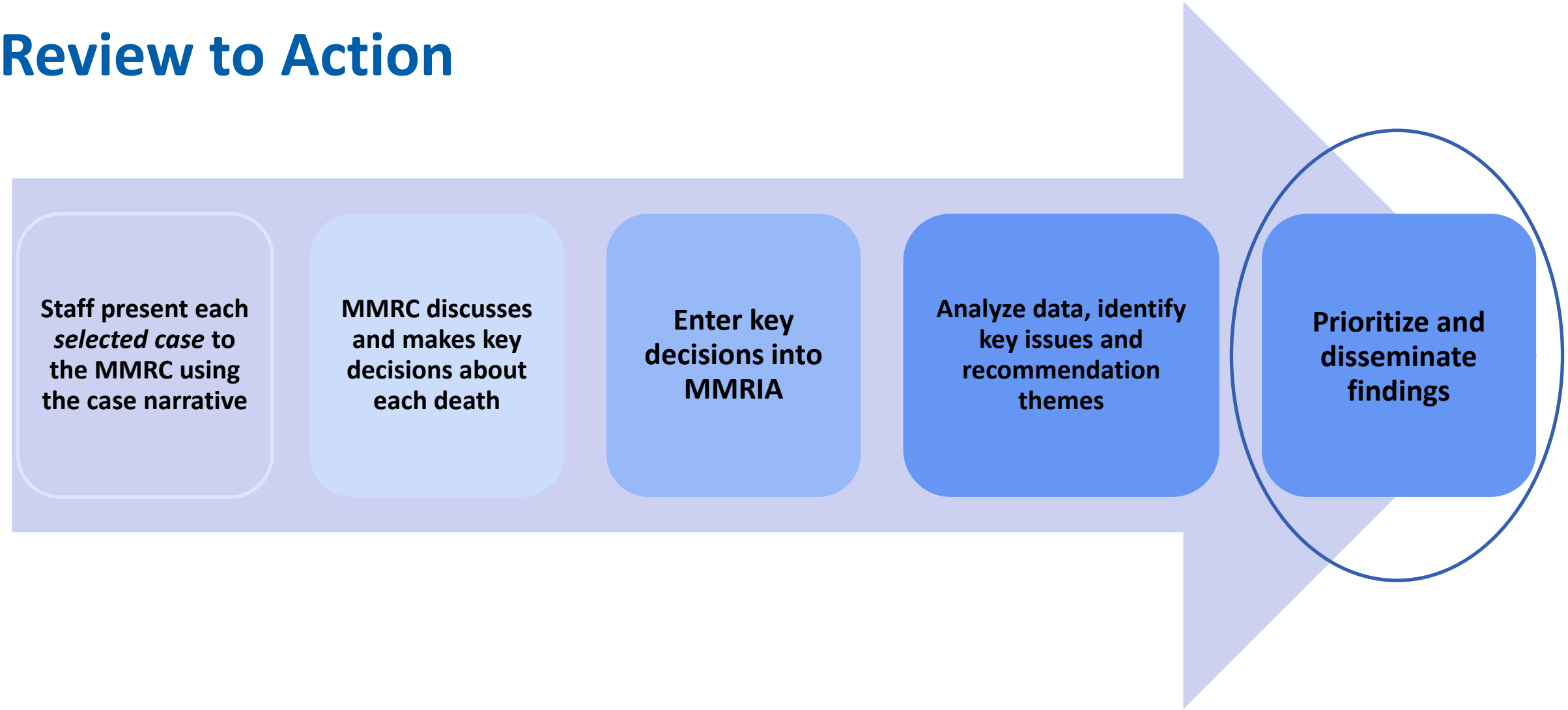

Adapted from WA State DOH

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Examples from Prior Qualitative Analyses of MMRIA Data

Community and Facility

Contributing Factor	Recommendations to Address Contributing Factor
Access to clinical care	Expand office hours; Increase number of providers who accept Medicaid; Increase availability of group prenatal care
Unstable housing	Prioritize pregnant women for temporary housing programs
Lack of/inadequate transportation options	Strengthen/build systems that link persons to affordable transportation; Provide vouchers for non-emergency transportation
Obesity and associated chronic condition complications	Improve access to healthy food options; Improve education and promotion of health eating habits and weight management strategies
Limited experience with OB emergencies	Implement OB emergency simulation training for Emergency Dept. staff; Ensure Emergency Dept staff ask about recent pregnancy history and consult with OB on call if pregnant within prior year
Lack of appropriate personnel or services	Increase access to telemedicine by facilities with no OB onsite; Ensure Medicaid managed care organizations' contracts include sufficient access to high risk care specialists
Lack of guiding protocols	Ensure sepsis, hemorrhage, and mass transfusion protocols are in place and monitor for staff use; Develop/implement relevant patient safety bundles; Implement systems that foster care coordination across providers; Increase use of patient navigators

Examples from Prior Qualitative Analyses of MMRIA Data

System(s)

Contributing Factor	Recommendations to Address Contributing Factor
Inadequate receipt of care	Develop/expand implementation of policies that ensure women deliver at/are transported to a hospital with a level of maternal care that matches her health risk; Enlist state perinatal quality collaboratives to identify quality improvement procedures and periodic drills/simulation training for birth facilities, including OB emergencies; Design/expand implementation of education initiatives
Case coordination/management	Extend/expand Medicaid eligibility for pregnant women to include 1 year of postpartum care; Create a quality improvement entity to manage outpatient care gaps and implement and monitor care coordination improvements; Develop/implement a postpartum care bundle that integrates services for high risk women; Develop and implement protocols and polices that improve hospital documentation of abnormal test results, follow-up care plans, and condition management plans; Develop a universal electronic health record system that allows sharing medical records within and between hospitals
Guiding policies, procedures, or standards not in place	Develop and implement protocols and policies that increase timely referrals and consultation; Increase (and monitor for) consistency of protocols and policies within healthcare systems

THANK YOU

For more information, contact:

ERASEmm@cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.