Covid-19 Associated Deaths among Montana Residents, Provisional Data March—October 2020

Key Findings

- Provisional data indicate COVID-19 associated deaths will be at least the 4th leading cause of death in Montana in 2020.
- Montana AI/AN residents were disproportionately affected by COVID-19. Mortality rates among AI/AN residents were 11.6 times higher than white residents in Montana.
- At least one underlying condition was listed for over two-thirds (68.6%) of all COVID-19 decedents.

Office of Epidemiology and Scientific Support
1400 E Broadway
Helena, Montana 59260-2951
(406) 444-0064
http://www.dphhs.mt.gov/publichealth/epidemiology

November 23, 2020

Introduction

Since January 21, 2020, the coronavirus disease (COVID-19) pandemic has resulted in over 12,000,000 cases* and 255,000 deaths* in the United States (U.S.) and these numbers continue to rise each day.[1] The first cases and COVID-19 associated deaths of COVID-19 in Montana were documented in March 2020, and as of October 30, 2020 there have been over 32,000 COVID-19 cases and over 400 deaths reported to the Montana Department of Public Health and Human Services (DPHHS).[2] This report utilizes provisional death certificate information from the DPHHS Office of Vital Records to describe the characteristics of COVID-19 associated deaths in Montana compared to the U.S. through October 31, 2020.

Data and Analysis

Data

Using incoming data from death certificates to produce provisional COVID-19 death counts, the DPHHS Office of Vital Records identified COVID-19 deaths occurring in Montana among Montana residents. Provisional U.S. COVID-19 death count data came from death certificates reported to the National Vital Statistics System (NVSS) available through the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS). COVID-19 deaths were identified using International Classification of Diseases, Tenth Revision (ICD–10) code U07.1 listed as either the underlying cause or a contributing cause of death.

The data in this report are provisional; provisional counts are not final and are subject to change. Counts from previous weeks are continually revised as more records are received and processed. Counts will not include all deaths that occurred during a given time period, especially for more recent periods. Provisional death counts may not match counts from other sources, such as the daily COVID-19 case information reported by DPHHS, numbers from county health departments, or media reports. This is because death certificates take time to be completed. In Montana, a physician, advanced practice nurse, or coroner is responsible to certify the cause of death (Montana Code Annotated, 50-15-4 part 3). It is the certifier's professional opinion to determine the causal chain of events that are recorded on the death certificate. The CDC issued guidance on how to certify deaths due to COVID-19.[3] DPHHS reviews to ensure completeness and accuracy and then sends the death certificates to NCHS to determine and code the single underlying cause of death according to *International Statistical Classification of Diseases and Related Health Problems* guidelines described in

*as of November 23, 2020

annual issues of Part 2a of the NCHS Instruction Manual.[4]

Analysis

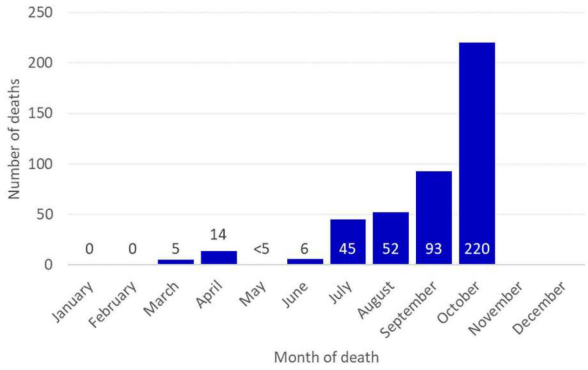
436 COVID-19 deaths occurring in Montana among Montana residents from March 26--October 31, 2020 where the death certificate was considered complete by the DPHHS Office of Vital Records and available for issuance as of November 18, 2020 were included in the analysis. Data for the U.S. included 223,984 COVID-19 deaths occurring from January 26—November 7, 2020 provided by the NCHS's public use data set. Numbers, percentages, and age-adjusted rates by demographic characteristics were calculated and reported. Age-adjusted death rates were calculated using the direct method using the 2000 US standard population and age-specific mortality rates were calculated for deaths by age category.

Results

From March 26--October 31, 2020, 436 COVID-19 deaths were identified among Montana residents. The number of COVID-19 deaths that occurred among Montana residents in July and August were nearly twice that of the early-pandemic (March through June) (Figure). The number of deaths nearly doubled from August to September and the number of deaths more than doubled from September to October, increasing 137% (Figure).

Provisional data indicate that COVID-19-associated deaths will rank as the 4th leading cause of death in Montana or higher for 2020. This ranking may change as death certificate data is finalized. From the average annual number of deaths for the past 5-years (2015-2019), the leading causes of death in Montana were heart disease (n=2,206), cancer (n=2,088), chronic lower respiratory disease (n=720), cerebrovascular disease (n=433), and non-motor vehicle accidents (n=425). The number of COVID-19 associated deaths from March – October 2020 was greater than the average number of influenza and pneumonia deaths (n=164) each year (2015-2019).

Figure. Number of COVID-19 associated deaths among Montana residents by month, Montana Office of Vital Records, March 26- October 31, 2020.



The age-adjusted COVID-19 mortality rate among Montana residents was 30.1 (95% Confidence Interval [CI] 27.3--33.3) per 100,000 people compared to 55.2 (95% CI 55.0—55.4) in the U.S. (Table 1). There were statistically significant differences in mortality rates by age group, sex, and race. Overall COVID-19 mortality rates among Montanans were lower than the U.S. and by age-group, sex, and race except for American Indian/ Alaska Natives (AI/AN).

The number and rate of COVID-19 deaths increased with increasing age. In Montana, the median age of death was 78 years (range 30—102 years). The mortality rate was 1.5 times higher among males than females in Montana. The age-adjusted mortality rate among Montana AI/AN residents was 2.5 times higher than AI/AN residents in the U.S (Table 1). In Montana, the age-adjusted mortality rate was 11.6 times higher among AI/AN residents than white residents. Median age of death among AI/AN residents was 68 years (range 30—95 years) and the median age of death among white residents was 82 years (range 38—102 years).

At least one underlying condition was reported for 299 of 436 (68.6%) of COVID-19 decedents; 57 of 85 (67.1%) of decedents aged less than 65 years also had at least one underlying condition reported (Table 2). The most reported underlying conditions were cardiovascular diseases, diabetes, and respiratory diseases (Table 2).

In Montana, nearly two-thirds of decedents died in the hospital (65.1%) and nearly one-quarter died at a nursing home or long-term care facility (23.6%). The remainder of COVID-19 deaths occurred at the decedents home (6.7%), the emergency department or other outpatient setting (3%), or other location (1.1%) (data not shown).

Table 1. Number and age-adjusted or age-specific rate of persons who died of COVID-19 in Montana and the U.S. by demographic characteristics, Montana Office of Vital Records and National Center for Health Statistics, 2020.

	Montana*		U.S.†
Characteristic	**n (%)**	**Age-adjusted rate per 100,000 people (95% Confidence Interval [CI])**	**Age-adjusted rate per 100,000 people (95% CI)**
Total	436 (100.0)	30.1 (27.3-33.3)	55.2 (55.0-55.4)
Age group (years)§			
0-17	0 (0.0)	NA	0.1 (0.1-0.1)
18-29	0 (0.0)	NA	1.8 (1.7-1.9)
30-49	21 (4.8)	8.2 (5.0-12.5)	11.9 (11.7-12.2)
50-64	64 (14.7)	30.5 (23.5-39.0)	56.2 (55.6-56.8)
65-74	102 (23.4)	81.8 (66.7-99.3)	153.6 (152.2-154.9)
75-84	121 (27.8)	205.2 (170.3-245.2)	374.2 (371.2-377.2)
≥ 85	128 (29.4)	560 (467.2-665.9)	1,048.4 (1,040.6-1,056.3)
Sex			
Male	249 (57.1)	36.9 (32.3-42.0)	68.9 (68.5-69.3)
Female	187 (42.9)	24.1 (20.6-28.1)	43.9 (43.6-44.2)
Race			
White, non-Hispanic	289 (66.3)	20.8 (18.4-23.5)	40.4 (40.1-40.6)
American Indian/ Alaska Native, non-Hispanic	128 (29.4)	241.8 (199.4-292.1)	95.2 (91.3-99.1)
Hispanic or Latinx	13 (3.0)	NA	113.5 (112.5-114.6)
Black, non-Hispanic	<5	NA	117.9 (116.8-119.0)
Asian, non-Hispanic	<5	NA	46.6 (45.6-47.5)
Unknown	0 (0.0)	NA	NA

NA= Not available. Rates not calculated for categories in which there were less than 20 deaths. Rate not calculated for unknown race because the underlying population (denominator) is unknown.
*Data represents death occurring between March 26—October 31, 2020
† Data represents death occurring between January 21--November 7, 2020
§Age-specific rate per 100,000 people

Table 2. Underlying clinical conditions and place of death among persons who died of COVID-19, overall and by age group in Montana, March 26 – October 31, 2020.

	Overall	Less than 65 years	65 year and greater
	n (%)	n (%)	n (%)
Total	**436 (100.0)**	**85 (100.0)**	**351 (100.0)**
Select Underlying Clinical Conditions*			
≥ 1 underlying clinical condition[†]	299 (68.6)	57 (67.1)	242 (68.9)
≥ 2 underlying clinical conditions[†]	165 (37.8)	33 (38.8)	132 (37.6)
≥3 underlying clinical conditions[†]	48 (11.0)	11 (12.9)	37 (10.5)
Circulatory Disease[¶]	192 (44.0)	32 (37.6)	160 (45.6)
Diabetes[††]	105 (24.1)	23 (27.1)	82 (23.4)
Respiratory diseases[§]	72 (16.5)	17 (20.0)	55 (15.7)
Alzheimer's disease, Vascular and Unspecified Dementia, and other neurologic disorders[§§]	61 (14.0)	0 (0.0)	61 (17.4)
Renal failure and Chronic Kidney disease[¶¶]	43 (9.9)	14 (16.5)	29 (8.3)
Obesity[†††]	26 (6.0)	9 (10.6)	17 (4.8)
Malignant Neoplasms and immunosuppressive disorders[§§§]	18 (4.1)	NA	NA
Chronic liver disease[¶¶¶]	13 (3.0)	NA	NA

NA= Not available. Rates not calculated for categories in which there were less than 20 deaths.
* Select significant conditions contributing to due to COVID-19 death as listed on the death certificate. More than one significant condition may be listed so totals may exceed 100%.
[†] Includes decedents for whom at least one of the following conditions were reported: chronic lower respiratory disease, tuberculosis, hypertensive diseases, ischemic heart disease, cardiac arrythmia, heart failure, cerebrovascular diseases, other diseases of the circulatory system, congenital heart disease, diabetes, Alzheimer's disease, vascular and unspecified dementia, other neurologic disorders, chronic kidney diseases, obesity, malignant neoplasms, immunosuppressive disorders, chronic liver disease.
[§] chronic lower respiratory disease (International Classification of Disease 10 [ICD 10] codes J40-J47) and tuberculosis (A15-A19)
[¶] hypertensive diseases (I10-I15), ischemic heart disease (I20-I25), cardiac arrhythmia (I44, I45, I47-I49), heart failure (I50), cerebrovascular diseases (I60-I69), other diseases of the circulatory system (I00-I09, I26-I43, I51, I52, I70-I99), congenital heart disease (Q20-Q24)
[††] diabetes (E10-E14)
[§§] Alzheimer's disease (G30), vascular and unspecified dementia (F01, F03), and other neurologic disorders (G40)
[¶¶] chronic kidney diseases (N00-N19), which includes renal failure (N17-N19)
[†††] obesity (E65-E68)
[§§§] malignant neoplasms (C00-C97), HIV (B20), Immunosuppressive disorders (D80-D89)
[¶¶¶] chronic liver disease (K70-K77)

Conclusions

In 2020, provisional data indicate that COVID-19 associated deaths will be at least the 4th leading cause of death in Montana. The COVID-19 associated mortality rate increased with increasing age and was higher among males than females. This analysis documented that Montana AI/AN residents were disproportionately affected by COVID-19. Mortality rates among Montana AI/AN residents were 11.6 times higher than white Montana residents and were 2.5 times higher than AI/AN residents in the U.S. The overall age-adjusted COVID-19 associated mortality rate in Montana was lower than the U.S.

At least one underlying condition was listed for over two-thirds (68.6%) of all COVID-19 decedents, including two-thirds of COVID-19 decedents under age 65 years (67.1%). The most reported underlying conditions were cardiovascular diseases, diabetes, and respiratory diseases. Many adults in Montana are at increased risk for severe COVID-19 illness or death. In 2019, 57% of Montana adults reported one or more diagnosed chronic condition(s) and 17% were current cigarette smokers.[5]

This analysis is subject to at least one major limitation. The DPHHS Office of Vital Record and NCHS data in this report come from death certificates and these data are not yet complete and are subject to change. Therefore, this analysis likely underestimates the number of deaths that occurred, particularly for more recent time periods.

The number of COVID-19 associated deaths was relatively low in Montana during the early-pandemic period (March-June) when other parts of the U.S. experienced large numbers of COVID-19 cases and associated deaths. Montana's experience during the early-pandemic period likely explains why Montana's overall mortality rate was lower than the U.S. Unfortunately, the number of COVID-19 associated deaths in Montana sharply increased in October and given the accelerated incidence of COVID-19 in November, the COVID-19 mortality rate will rise and may be similar to the national rate by the end of 2020. The COVID-19 mortality rate among AI/AN residents was considerably higher than white residents in Montana. This may be associated with the higher prevalence of underlying health conditions and socioeconomic factors (*e.g.*, large household size, poor access to health care, low income).

References

1. Centers for Disease Control and Prevention. COVID Data Tracker. Available at https://covid.cdc.gov/covid-data-tracker/. Accessed on November 23, 2020.
2. Montana Department of Public Health and Human Services. Interim Analysis of COVID-19 cases in Montana (as of 10/30/2020). Available at https://dphhs.mt.gov/publichealth/cdepi/diseases/coronavirusmt/demographics. Accessed on November 23, 2020.
3. National Center for Health Statistics. Guidance for certifying deaths due to COVID–19. Hyattsville, MD. 2020. Available at https://www.cdc.gov/nchs/data/nvss/vsrg/vsrg03-508.pdf . Accessed on November 23, 2020.
4. National Vital Statistics System. Instructions for classifying the underlying cause of death. In: NCHS instruction manual; Part 2a. Published annually.
5. Montana Department of Public Health and Human Services. 2019 Montana Behavioral Risk Factor Surveillance System.