

**TO:** Vermont Health Care Providers and Health Care Facilities  
**FROM:** Jennifer S. Read, MD, Medical Epidemiologist

**Clinical Overview of Deaths Among Vermont Residents  
Testing Positive for SARS-CoV-2 Through April 14, 2020**

As of April 14, 2020, 29 Vermont residents who tested positive for SARS-CoV-2, the etiologic agent for novel coronavirus 2019 (COVID-19) disease, had died. Of these 29 individuals, 13 resided in long-term care facilities (LTCFs) in Chittenden County and 16 lived outside of a care facility in different counties (7 in Chittenden County and others in Windham, Franklin, Addison, Lamoille, and Windsor Counties).

**Of the 13 residents of LTCFs**, the median age was 80 years (range: 70-95 years). Six were men and seven were women. Information on race and ethnicity was available for 11 (85%), and all of these were white/non-Hispanic. None had recent travel outside of Vermont. All resided at LTCFs with at least one resident or staff member with COVID-19. Testing for SARS-CoV-2 was ordered for all of the LTCF residents (and was not based on symptomatology). All of the LTCF residents had multiple co-morbidities including: obesity or morbid obesity, pulmonary disease (including chronic obstructive pulmonary disease), cardiovascular disease (including atrial fibrillation, hypertension, hyperlipidemia), arthritis, systemic lupus erythematosus, diabetes mellitus type 2 (with or without complications), gastroesophageal reflux disease, diverticulosis, hypothyroidism, renal failure, dementia, progressive multifocal leukoencephalopathy, cirrhosis, and a history of smoking. Except for two patients who were hospitalized before death, all died at their residential facility.

**Of the remaining 16 SARS-CoV-2-positive individuals who died through April 14, 2020**, the median age was 80 years (range: 39-93 years). All except two patients were over 65 years old. Twelve were men and four were women. Information on race and ethnicity was available for 15 (94%), of whom 13 were white, non-Hispanic. Two had travelled outside of Vermont [one both domestically (Florida) and internationally (Central America) and another with domestic travel (Florida)]. Five had known contact with a COVID-19 case. All had one or more chronic medical conditions. All presented with (or developed shortly after presentation) hypoxemia and manifested progressive worsening, with increased oxygen requirements. All were hospitalized (unless otherwise indicated). All were intubated and received mechanical ventilation prior to death (unless palliative care was requested by the patient/patient's representative).

These 16 patients' chronic medical conditions and signs/symptoms at presentation are delineated below, with patients grouped according to common underlying medical conditions for ease of review.

**Five were obese or morbidly obese**, with one or more additional chronic conditions. Their concomitant medical conditions, as well as presenting signs and symptoms, were as follows:

1. History of COPD and former smoker with chronic dyspnea (known contact with COVID-19 case): productive cough, worsening shortness of breath, weakness, diarrhea
2. History of obstructive sleep apnea and former smoker with diabetes mellitus type 2 (known contact with COVID-19 case): **fell at home**, evaluated in the emergency room (normal head/cervical spine CT), discharged to home (against medical advice); returned to emergency room with **altered mental status, lethargy, somnolence, confusion**
3. Former smoker with hyperlipidemia (known contact with COVID-19 case): fever, malaise, myalgia, productive cough, wheezing, shortness of breath
4. Atrial fibrillation, hypertension, sarcoidosis: fever, productive cough, wheezing, shortness of breath
5. Poorly controlled diabetes mellitus type 2, hyperlipidemia, atherosclerosis, hypertension (known contact with COVID-19 case): diarrhea, night sweats, cough, **syncopal episodes** (died at home)

**Two had chronic neurologic disorders** (Steele-Richardson-Olszewski syndrome, multiple sclerosis), with one or more additional chronic conditions. Their concomitant medical conditions, as well as presenting signs and symptoms, were as follows:

1. Chronic cough, dyspnea, tachypnea, generalized weakness related to underlying neurologic disorder, former smoker (known contact with COVID-19 case): fever, increased weakness, increased shortness of breath, decreased appetite, myalgia, cough (hospitalized)
2. Hyperlipidemia, Graves' disease: fever, chills, fatigue, cough, shortness of breath, nausea, diarrhea, decreased appetite (hospitalized)

**Five had cardiovascular disease** (hypertension, atherosclerotic cardiovascular disease, and/or hyperlipidemia), with one or more additional chronic conditions. Their concomitant medical conditions, as well as presenting signs and symptoms, were as follows:

1. Diabetes mellitus type 2, hypothyroidism: angina necessitating cardiac catheterization and stent placement (reason for hospitalization), with development of fever and pneumonia in the post-procedure observation period
2. Polymyalgia rheumatica with chronic steroid use, former smoker, gastroesophageal reflux disease: upper respiratory tract infection symptoms, productive cough, malaise, decreased appetite, diarrhea, shortness of breath, tachypnea, **orthostatic hypotension**
3. Diabetes mellitus type 2, recurrent urinary tract infections: fever, weakness, fatigue, decreased appetite, shortness of breath

4. COPD, dementia: productive cough, shortness of breath, weakness, **falls**, decreased appetite, fever
5. Gastroesophageal reflux disease, arthritis: fever, fatigue, malaise, decreased appetite, weakness, myalgia, shortness of breath

**Four had chronic kidney disease**, with one or more additional chronic conditions. Their concomitant medical conditions, as well as presenting signs and symptoms, were as follows:

1. Diabetes mellitus type 2, hypertension, hyperlipidemia, recurrent gastrointestinal bleeding: fever, fatigue, sore throat, non-productive cough, shortness of breath, nausea, diarrhea.
2. Former smoker, diabetes mellitus type 2, hypertension, hyperlipidemia, gastroesophageal reflux disease: fever, myalgia, productive cough, shortness of breath
3. Dementia: presented to the Emergency Department after an **apparent fall at home**; fever, confusion, shortness of breath
4. Atrial fibrillation, hypertension, hyperlipidemia, arthritis, COPD, gastroesophageal reflux disease, former smoker: weakness, diarrhea, somnolence, productive cough

**Summary:** All of the Vermont residents with COVID-19 who died through April 14, 2020 had multiple and significant comorbidities, and most were greater than 65 years old. Sixty percent were male and 40% were female, and of the 26 patients for whom race and ethnicity data were available, 24 were white/non-Hispanic. Thirteen resided in LTCFs that had at least one resident or staff member with COVID-19. Despite a range of signs and symptoms, all appeared to have a common final clinical pathway of hypoxemic respiratory failure. Of note are the patients with a history of syncopal episodes and/or falls at home prior to hospitalization, in many cases associated with confusion and/or somnolence – likely representing hypoxemia prior to arrival at a medical facility where pulse oximetry was available. Another point to note is that several patients had obesity or severe obesity, a condition that can compress the diaphragm and lungs. Also, obesity is associated with chronic inflammation and an increase in pro-inflammatory cytokines, associated with adverse COVID-19 outcomes (*Goyal P et al. Clinical characteristics of COVID-19 in New York City. N Engl J Med 2020.*).

If you have any questions, please contact the HAN Coordinator at 802-859-5900 or [vthan@vermont.gov](mailto:vthan@vermont.gov).

### **HAN Message Type Definitions**

*Health Alert:* Conveys the highest level of importance; warrants immediate action or attention.

*Health Advisory:* Provides important information for a specific incident or situation may not require immediate action.

*Health Update:* Provides updated information regarding an incident or situation; unlikely to require immediate action.

*Info Service Message:* Provides general correspondence from VDH, which is not necessarily considered to be of an emergent nature.