

Coronavirus Disease 2019 (COVID-19)

Evidence used to update the list of underlying medical conditions that increase a person's risk of severe illness from COVID-19

Updates to the list of underlying medical conditions that put individuals at increased risk for severe illness from COVID-19 were based on published reports, articles in press, unreviewed pre-prints, and internal data available between December 1, 2019 and May 29, 2020. **This list is a living document that will be periodically updated by CDC, and it could rapidly change as the science evolves.** Severe illness from COVID-19 was defined as hospitalization, admission to the ICU, intubation or mechanical ventilation, or death.

The level of evidence for each condition was determined by CDC reviewers based on available information about COVID-19. Conditions were added to the list (if not already on the previous underlying medical conditions list [originally released in March 2020]) if evidence for an association with severe illness from COVID-19 met any of the following criteria:

- **Strongest and most consistent evidence:** Defined as consistent evidence from multiple small studies or a strong association from a large study,
- **Mixed evidence:** Defined as multiple studies that reached different conclusions about risk associated with a condition, or
- **Limited evidence:** Defined as consistent evidence from a small number of studies. categorization for a condition's association with severe illness from COVID-19, the condition was added to the list (if not already on the previous underlying medical conditions list [originally released in March 2020]).

Qualifiers to previously listed conditions were added or removed if there was strong evidence to support that the condition be expanded. Conditions previously listed were to be removed if there was strong and consistent evidence demonstrating no association with severe outcomes. Based on this criterion, no conditions were removed from the previous underlying medical conditions list dated March 2020.

Level of Evidence	Condition	Evidence of Impact on COVID-19 Severity	Notes
Strongest and Most Consistent Evidence	Serious heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies	Cohort Study [1, 2] Meta Analyses [3, 4] Case Series [5]	On previous version of list as "Serious Heart Conditions"
	Chronic kidney disease	Case Series [6, 7, 8] Cohort Studies [9, 10, 11]	On previous version of list as "Chronic Kidney Disease Requiring Dialysis"
	COPD	Meta Analyses [4, 12] Case Series [13] Cohort Study [10]	On previous version of list
	Obesity (BMI ≥ 30)	Cohort Studies [14, 15, 16, 17, 18]	On previous version of list as "Severe Obesity (BMI ≥ 40)"

		Cross-sectional [19]	
	Sickle cell disease	Case Series [20, 21, 22, 23, 24]	On previous version of list
	Solid organ transplantation	Case Series [8, 25, 26, 27, 28, 29, 30]	New to updated list as of June 25, 2020
	Type 2 diabetes mellitus	Case Series [7] Longitudinal Study [31] Cohort Study [32, 33] Meta Analysis [34]	On previous version of list
Mixed Evidence	Asthma	Cohort Study [10, 35, 36, 37] Case Series [13]	On previous version of list
	Cerebrovascular disease	Meta Analysis [38, 39, 40, 41] Synthesis of Evidence [42] Cohort Study [1, 2, 43, 44, 45]	New to updated list as of June 25, 2020
	Hypertension	Cohort Study [1, 2, 45, 46, 47] Systematic Review [48] Meta Analyses [3, 4, 49]	New to updated list as of June 25, 2020
	Pregnancy	Systematic Review [50] Case Control Study [51] Case Series [52, 53, 54, 55] Cohort Study [56, 57, 58]	
	Smoking	Meta Analyses [3, 59, 60, 61, 62]	On previous version of list
	Use of corticosteroids or other immunosuppressive medications	Case Series [63, 64, 65] Cohort Study [66, 67]	On previous version of list
Limited Evidence	Bone marrow transplantation	Review [68]	On previous version of list
	HIV	Case Series [69, 70]	On previous version of list
	Immune deficiencies	Case Series [71] Systematic Review [72]	On previous version of list
	Inherited metabolic disorders	Cohort Study [43, 73]	New to updated list as of June 25, 2020; specific to pediatric populations at this time
	Neurologic conditions	Cross-Sectional Study [74] Cohort Study [37, 45, 73]	New to updated list as of June 25, 2020; specific to pediatric populations at this time
	Other chronic lung diseases	Meta Analysis [4] Case Series [13] Cohort Study [10, 75]	On previous version of list
	Liver disease	Meta Analysis [76] Cohort Study [77, 78] Literature Review [79]	On previous version of list
	Type 1 diabetes mellitus	Case Series [7] Cohort Study [32, 33] Meta Analysis [34]	On previous version of list

	Thalassemia	Case Series [80] Cross-Sectional Study [81]	On previous version of list
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Bold citations indicate the reference is published

Italicized citations indicate the reference is not peer reviewed

Non-bold, non-italicized citations indicate the reference is in press

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