

# INTERNATIONAL GUIDELINES FOR CERTIFICATION AND CLASSIFICATION (CODING) OF COVID-19 AS CAUSE OF DEATH

Based on ICD

**International Statistical Classification of Diseases** 

(16 April 2020)

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## **1. PURPOSE OF THE DOCUMENT**

This document describes certification and classification (coding) of deaths related to COVID-19. The primary goal is to identify all deaths <u>due to</u> COVID-19.

A simplified section specifically addresses the persons that fill in the medical certificate of cause of death. It should be distributed to certifiers separate from the coding instructions.

## 2. DEFINITION FOR DEATHS DUE TO COVID-19

A death due to COVID-19 is defined for surveillance purposes as a death resulting from a clinically compatible illness, in a probable or confirmed COVID-19 case, unless there is a clear alternative cause of death that cannot be related to COVID disease (e.g. trauma). There should be no period of complete recovery from COVID-19 between illness and death.

A death due to COVID-19 may not be attributed to another disease (e.g. cancer) and should be counted independently of preexisting conditions that are suspected of triggering a severe course of COVID-19.

## 3. GUIDELINES FOR CERTIFYING COVID-19 AS A CAUSE OF DEATH

In view of COVID-19 it is important to record and report deaths due to COVID-19 in a uniform way.

#### A- RECORDING COVID-19 ON THE MEDICAL CERTIFICATE OF CAUSE OF DEATH

**COVID-19** should be recorded on the medical certificate of cause of death for ALL decedents where the disease caused, or is assumed to have caused, or contributed to death.

#### **B- TERMINOLOGY**

The use of official terminology, COVID-19, should be used for all certification of this cause of death.

As there are many types of coronaviruses, it is recommended not to use "coronavirus" in place of COVID-19. This helps to reduce uncertainty for the classification or coding and to correctly monitor these deaths.

#### **C- CHAIN OF EVENTS**

Specification of the causal sequence leading to death in Part 1 of the certificate is important. For example, in cases when COVID-19 causes pneumonia and fatal respiratory distress, both pneumonia and respiratory distress should be included, along with COVID-19, in Part 1. Certifiers should include as much detail as possible based on their knowledge of the case, as from medical records, or about laboratory testing.

Here, on the International Form of Medical Certificate of Cause of Death, is an example of how to certify this chain of events for deaths due to **COVID-19** in Part 1:

Frame A: Medical data: Part 1 and 2								
1 Report disease or condition directly leading to death on line a	Q		Cause of death		Time interval from onset to death			
		a	Acute respiratory distress syndrome		2 days			
Report chain of events in due to order (if applicable)	$\int Q$	b	Due to: Pneumonia		10 days			
State the underlying cause on the lowest used line			Due to: COVID-19 (test positive)	14 days				
	Ù	d	Due to:					
2 Other significant conditions contril intervals can be included in brackets				L				
intervais can be included in brackets		conun						
Manner of death:								
🕳 Disease			Assault	👝 Could not b	e determined			
- Accident		_ 1	Legal intervention	Pending investigation				
<ul> <li>Intentional self harm</li> </ul>		ĺ	War	👝 Unknown				

Note: This is a typical course with a certificate that has been filled in correctly. Please remember to indicate whether the virus causing COVID-19 had been identified in the defunct.

#### **D- COMORBIDITIES**

There is increasing evidence that people with existing chronic conditions or compromised immune systems due to disability are at higher risk of death due to COVID-19. Chronic conditions may be non-communicable diseases such as coronary artery disease, chronic obstructive pulmonary disease (COPD), and diabetes or disabilities. If the decedent had existing chronic conditions, such as these, they should be reported in Part 2 of the medical certificate of cause of death.

Here, on the International Form of Medical Certificate of Cause of Death, are examples of how to certify this chain of events for deaths due to **COVID-19** in Part 1, with comorbidities reported in Part 2:

Frame A: Medical data: Part 1 and 2									
1 Report disease or condition		(	Cause of death	Time interval from onset to death					
directly leading to death on line a	à	a A	Acute respiratory distress syndrome	2 days					
Report chain of events in due to order (if applicable)	$\sum \int$	b	Due to: Pneumonia	10 days					
State the underlying cause on the lowest used line	C	C	Due to: Suspected COVID-19	12 days					
Underlying cause	of dea	th	10:						
2 Other significant conditions contril intervals can be included in brackets				etes [14 Years], Chronic					
intervals can be included in brackets		conuntion	1)						
Manner of death:									
🕳 Disease		_ Ass	sault _ Could	l not be determined					
- Accident		👝 Leg	gal intervention _ Pendi	ng investigation					
- Intentional self harm		Wa	ur 👝 Unkn	👝 Unknown					

Note: This is a typical course with a certificate that is filled in correctly. COVID-19 cases may have comorbidity. **The comorbidity is recorded in Part 2.** 

Frame A: Medical data: Part 1 and 2									
1 Report disease or condition		С	ause of death		Time interval from onset to death				
directly leading to death on line a	à	a A	a Acute respiratory distress syndrome		2 days				
Report chain of events in due to order (if applicable)	$\sum$	h –	ue to: neumonia		10 days				
State the underlying cause on the lowest used line		c Due to: COVID-19			10 days				
Underlying cause of de	eath [	U D	ue to:						
2 Other significant conditions contrib									
intervals can be included in brackets a	atter the o	condition	)						
Manner of death:									
🕳 Disease		<b>_</b> Assa	ault	👝 Could not b	be determined				
- Accident		- Legal intervention - Pending			vestigation				
<ul> <li>Intentional self harm</li> </ul>		<b>_</b> War		🕳 Unknown					

Note: This is a typical course with a certificate that has been filled in correctly. COVID-19 cases may have comorbidity. **The comorbidity is recorded in Part 2.** 

#### **E- OTHER EXAMPLES**

Frame A: Medical data:	Frame A: Medical data: Part 1 and 2									
1 Report disease or condition directly			Cause of death			Time interval from onset to death				
leading to death on line a	Ð	а	Respiratory failure			2 days				
Report chain of events in due to order (if applicable)	D D	b	Due to: Pneumonia			8 days				
State the underlying cause on the lowest used line	λ Ū	с	Due to: Pregnancy complicated by Co	OVID-19		12 days				
Underlying cause of d	eath F	$\checkmark$	Due to:							
2 Othe intervals can be included in brackets an	d	eath ( nditio								
Manner of death:										
<b>—</b> Disease			Assault		👝 Could no	ot be determined				
📥 Accident		<b>–</b> I	legal intervention		<b>_</b> Pending	investigation				
<ul> <li>Intentional self harm</li> </ul>		_ /	War		👝 Unknow	'n				
For women, was the deceased pregnant?										
🕳 At time of death				Within 42 days before the death						
Between 43 days up to 1 year before	re death			👝 Unknown						
Did the pregnancy contribute to the de	ath?			Yes	<u> </u>	👝 Unknown				

Note: This is a typical course with a certificate is filled in correctly. In case of a pregnancy, puerperium or birth leading to death in conjunction with COVID-19, please record the sequence of events as usual, and remember to enter the additional detail for pregnancies in frame B of the certificate of cause of death.

Frame A: Medical data: Part 1 and 2									
1 Report disease or condition directly		Cause of death				Time interval from onset to death			
leading to death on line a	à	a	Acute r	Acute respiratory distress syndrome				3 days	
Report chain of events in due to order (if applicable)	$\int \langle $	b	Due to: COVIE		19		One week		
State the underlying cause on the lowest used line	C	с	Due to:	Underlying cau		se of death			
	Ù	d	d Due to:						
<b>2</b> Other significant conditions contribution intervals can be included in brackets a				HIV disease	[5 years]				
intervals can be included in brackets a	inter the c	onani	ndition)						
Manner of death:									
🕳 Disease	📥 Assault				👝 Could n	- Could not be determined			
- Accident	_ I	Legal intervention			👝 Pending	Pending investigation			
_ Intentional self harm		<b>—</b> War			_ Unknov	- Unknown			

Note: This is a typical course with a certificate that is filled in correctly. The certifier has identified HIV disease as contributing to the death and recorded it in **Part 2**.

The examples below show recording of cases where death may have been influenced by **COVID-19**, but death was caused by another disease or an accident.

Frame A: Medical data: Part 1 and 2										
1 Report disease or condition directly			Cause o	of death			Time interval from onset to death			
leading to death on line a	à	a	Нуроус	1 day						
Report chain of events in due to order (if applicable)		b	Due to: Aortic	dissection			1 day			
State the underlying cause on the lowest used line	C	c	2 days							
lowest used line	Ĉ	d								
<b>2</b> Other significant conditions contribution intervals can be included in brackets a				COVID-19	Underlying ca	use of death				
Manner of death:			T	ID-1	9 Df					
- Disease		_	Assa Ut			Could not b	e determine			
- Accident - Legal intervention -							estigation			
- Intentional self harm			War			👝 Unknown				

Note: Persons with COVID-19 may die of other diseases or accidents, such cases are not deaths due to COVID-19 and should not be certified as such. In case you think that COVID-19 aggravated the consequences of the accident, you may report COVID-19 in Part 2. Please remember to indicate the manner of death and record in part 1 the exact kind of an incident or other external cause.

Frame A: Medical data: Part 1 and 2									
1 Report disease or condition directly			Cause of death	Time interval from onset to death					
leading to death on line a	à	a	Heart failure	1 day					
Report chain of events in due to order (if applicable)	$\langle \mathcal{I} \rangle$	b	Due to: Myocardial infarction	5 days					
State the underlying cause on the lowest used line	C	c	Due to:						
lowest used line	Ĉ	d	Due to: Underlying cause of death						
2 Other significant conditions contrib intervals can be included in brackets a	0								
			ID 19 DUA						
Manner of death		J	VID-12						
🕳 Disease			Assault _ Could no	t be determined					
- Accident			Legal intervention Pending	investigation					
<ul> <li>Intentional self harm</li> </ul>		ľ	War Unknown						

Note: Persons with COVID-19 may die due to other conditions such as myocardial infarction. Such cases are not deaths due to COVID-19 and should not be certified as such.

## 4. GUIDELINES FOR CODING COVID-19 FOR MORTALITY

This document provides information about the ICD-10 codes for COVID-19 and includes mortality classification (coding) instructions for statistical tabulation in the context of COVID-19. It includes a reference to the WHO case definitions for surveillance.

New ICD-10 codes for COVID-19:

• U07.1 COVID-19, virus identified

https://icd.who.int/browse10/2019/en#/U07.1

- U07.2 COVID-19, virus not identified
  - Clinically-epidemiologically diagnosed COVID-19
    - Probable COVID-19
    - Suspected COVID-19

https://icd.who.int/browse10/2019/en#/U07.2

Details of the updates to ICD-10 are available online at:

https://www.who.int/classifications/icd/icd10updates/en/

#### A- ICD-10 Cause of Death coding of COVID-19

Certifiers use a range of terms to describe COVID-19 as a cause of death, a sample can be found in the annex of this document.

Although both categories, U07.1 (COVID-19, virus identified) and U07.2 (COVID-19, virus not identified) are suitable for cause of death coding, it is recognized that in many countries detail as to the laboratory confirmation of COVID-19 will NOT be reported on the death certificate. In the absence of this detail, it is recommended, for mortality purposes only, to code COVID-19 provisionally to U07.1 unless it is stated as "probable" or "suspected".

The international rules and guideline for selecting the underlying cause of death for statistical tabulation apply when COVID-19 is reported on a death certificate but, given the intense public health requirements for data, COVID-19 is not considered as due to, or as an obvious consequence of, anything else in analogy to the coding rules applied for INFLUENZA. Further to this, there is no provision in the classification to link COVID-19 to other causes or modify its coding in any way.

With reference to section 4.2.3 of volume 2 of ICD-10, the purpose of mortality classification (coding) is to produce the most useful cause of death statistics possible. Thus, whether a sequence is listed as 'rejected' or 'accepted' may reflect interests of importance for public health rather than what is acceptable from a purely medical point of view. Therefore, always apply these instructions, whether they can be considered medically correct or not. Individual countries should not correct what is

assumed to be an error, since changes at the national level will lead to data that are less comparable to data from other countries, and thus less useful for analysis.

A manual plausibility check is recommended for certificates where COVID-19 is reported, in particular for certificates where COVID-19 was reported but not selected as the underlying cause of death for statistical tabulation.

#### **B- CHAIN OF EVENTS**

Here, on the International Form of Medical Certificate of Cause of Death, is an example of how to code this chain of events and select the underlying cause of death for deaths due to **COVID-19** in Part 1:

Frame A: Medical data: Part 1 and 2									
1 Report disease or condition			Cause of de	eath		Time interval from onset to death			
directly leading to death on line a	$\overrightarrow{a}$	a	Acute respi	iratory distress syndrome	J80	2 days			
Report chain of events in due to order (if applicable)		b	Due to: Pneumonia		J18.9	10 days			
State the underlying cause on the lowest used line	C \	с	Due to: COVID-19	14 days					
	$\subseteq$	d	Due to:						
2 Other significant conditions contril				Underlying cause of death	1				
intervals can be included in brackets	after the o	conditi	ion)						
Manner of death:									
🕳 Disease		A	Assault		. Could not b	be determined			
- Accident		_ I	Legal interver	ntion _	Pending inv	vestigation			
<ul> <li>Intentional self harm</li> </ul>		_ /	_ War			🗕 Unknown			

Note: Select COVID-19 as underlying cause of death. Step SP3 applies as causes have been reported on more than one line in Part 1 and the condition reported first on the lowest used line (COVID-19) can cause all the conditions, pneumonia (J18.9) and acute respiratory distress syndrome (J80), mentioned on the lines above. [See ICD-10 2016 and later, Volume 2, Section 4.2.1].

#### **C- COMORBIDITIES**

- Intentional self harm

Here, on the International Form of Medical Certificate of Cause of Death, are examples of how to code this chain of events and select the underlying cause of death for deaths due to **COVID-19** in Part 1, with comorbidities reported in Part 2:

Frame A: Medical data: 1 Report disease or condition			Cause of death		Time interval from onset to death	
directly leading to death on line a	à	а	Acute respiratory distress syndrome	J80	2 days	
Report chain of events in due to order (if applicable)		b	Due to: Pneumonia	J18.9	10 days	
State the underlying cause on the lowest used line			c Due to: Suspected COVID-19 U07.2		12 days	
Underlying cause			(time Coronary artery disease [5 years], T	vne 2 diabetes [14]	Years] Chronic obstructive	
2 Other signment conditions control intervals can be included in brackets				<u>, , , , , , , , , , , , , , , , , , , </u>	I25.1, E11.9, J44.9	
Manner of death:						
🕳 Disease 📃 Assault			ssault	- Could not be determined		
📥 Accident		_ L	egal intervention	- Pending inv	Pending investigation	

Note: Code all entries in Part 1 and 2, and in this example select COVID-19, specified as suspected (the case has virus not confirmed) as underlying cause of death. Step SP3 applies as causes have been reported on more than one line in Part 1 and the condition reported first on the lowest used line (COVID-19) can cause all the conditions, pneumonia (J18.9) and acute respiratory distress syndrome (J80), mentioned on the lines above. [See ICD-10 2016 and later, Volume 2, Section 4.2.1].

📥 Unknown

**\_** War

Frame A: Medical data: Part 1 and 2										
1 Report disease or condition			Cause of death		Time interval from onset to death					
directly leading to death on line a	À	a	Acute respiratory distress syndrome	J80	2 days					
Report chain of events in due to order (if applicable)	$\int \int$	b	b Due to: Pneumonia		10 days					
State the underlying cause on the			C Due to: COVID-19		10 days					
Underlying cause of death		d	Due to:							
2 Other significant conditions contri					<mark>G80.9</mark>					
intervals can be included in brackets	after the	condit	lon)							
Manner of death:	Manner of death:									
🕳 Disease			Assault	Could not b	uld not be determined					
- Accident		_ I	Legal intervention	- Pending inv	- Pending investigation					
<ul> <li>Intentional self harm</li> </ul>			Var	📥 Unknown						

Note: Code all entries in Part 1 and 2, and in this example select COVID-19 as underlying cause of death (the case probably has been tested positive). Step SP3 applies as causes have been reported on

more than one line in Part 1 and the condition reported first on the lowest used line (COVID-19) can cause all the conditions, pneumonia (J18.9) and acute respiratory distress syndrome (J80), mentioned on the lines above. [See ICD-10 2016 and later, Volume 2, Section 4.2.1].

Frame A: Medical data:	Frame A: Medical data: Part 1 and 2									
1 Report disease or condition directly leading to death on line a			Cause of death					Time interval from onset to death		
Report chain of events in due to	Â	a	Respiratory failure		Code	both, O99.5 and J	196.9	2 days		
order (if applicable)		b	Due to: Pneumonia		Code	both, O99.5 and J	118.9	8 days		
State the underlying cause on the lowest used line	Ç	с	Due to:         Pregnancy complicated by COVID-19         Code both, 098.5 and U07.1			007.1	12 days			
Underlying cause of death										
2 Other significant conditio intervals can be included in brackets at										
Manner of death:										
- Disease			Assault			- Could not be	datam	ainad		
Accident			Legal intervention			— Could not be — Pending inve				
_ Intentional self harm			·				estigatio	<u></u>		
			w ai							
For women, was the deceased pr	For women, was the deceased pregnant?									
At time of death Within 42 days before the death										
Between 43 days up to 1 year before death										
Did the pregnancy contribute to the de	ath?			Yes			Unknov	<i>w</i> n		

#### **D- OTHER EXAMPLES**

Note: Code all entries in Part 1 and 2, and in this example select other viral diseases complicating pregnancy, childbirth and the puerperium (O98.5) as underlying cause of death. Step SP3 applies as causes have been reported on more than one line in Part 1 and the condition reported first on the lowest used line (other viral diseases complicating pregnancy, childbirth and the puerperium) can cause all the conditions, pneumonia (O99.5 and J18.9) and acute respiratory distress syndrome (O99.5 and J80), mentioned on the lines above. [See ICD-10 2016 and later, Volume 2, Section 4.2.1]. Use additional code to retain COVID-19. [See ICD-10 2016 and later, Volume 2, Section 4.2.8 Special instructions on maternal mortality (Step M4)].

Frame A: Medical data: Part 1 and 2							
1 Report disease or condition directly			Cause of death		Time interval from onset to death		
leading to death on line a	à	a	Acute respiratory distress syndrome	J80	3 days		
Report chain of events in due to order (if applicable)		b	Due to: COVID-19	U07.1	One week		
St Underlying cause of death		cDue to:HIV diseaseB24dDue to:			5 years		
2 Other significant conditions contributing to death (time							
intervals can be included in brackets after the condition)							
Manner of death:							
🕳 Disease 🔤 Assault			Assault	- Could not be determined			
_ Accident _ Le			Legal intervention Pending in		estigation		
<ul> <li>Intentional self harm</li> </ul>			War	👝 Unknown			

Note: The certifier should have added the HIV disease as a comorbidity in Part 2 of the certificate, however the selection rules of ICD allow to identify COVID-19 as underlying cause of death. (COVID-19) is reported in a sequence ending with a terminal condition (Acute respiratory distress syndrome due to COVID-19). Mortality coding rule step SP4 applies as causes have been reported on more than one line in Part 1 and the condition reported first on the lowest used line (HIV disease) cannot cause all the conditions. [See ICD-10 2016 and later, Volume 2, Section 4.2.1].

Frame A: Medical data: Part 1 and 2							
1 Report disease or condition directly leading to death on line a	G		Cause o	of death		Time interval from onset to death	
		a	Нурочо	plaemic shock	T79.4	1 day	
Report chain of events in due to order (if applicable)		b	Due to: Aortic	dissection	S25.0	1 day	
State the underlying cause on the lowest used line	C S	c Due to: Motor vehicle accident V89.2				2 days	
Underlying cause of dear	th	d	Due to:				
2 death (time				COVID-19		U07.1	
intervals can be included in brackets after the condition)						Η	
Manner of death:							
_ Disease _ Could no						e determined	
- Accident - Legal intervention - Pendi					📥 Pending inv	vestigation	
- Intentional self harm		- '	War		👝 Unknown		

Note: Code all entries in Part 1 and 2, and in this example select motor vehicle accident (V89.2) as underlying cause of death. Step SP3 applies as causes have been reported on more than one line in Part 1 and the condition reported first on the lowest used line, motor vehicle accident (V89.2), can cause all the conditions, traumatic aortic dissection (S25.0) and traumatic hypovolemic shock (T79.4), mentioned on the lines above. [See ICD-10 2016 and later, Volume 2, Section 4.2.1].

Frame A: Medical data: Part 1 and 2						
1 Report disease or condition directly leading to death on line a			Cause o	of death	Time interval from onset to death	
		a	Heart fa	ailure I50.9	1 day	
Report chain of events in due to order (if applicable)		b	Due to: Myocar	dial infarction I21.9	5 days	
State the underlying cause on the lowest used line		c	Due to:			
		d	Due to:	Underlying cause of death		
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)				COVID-19	U07.1	
Intervals can be included in brackets a	H					
Manner of death:						
🖿 Disease	be determiner					
🕳 Accidem	vestigation					
- Intentional set haven		_ '	War	👝 Unknown		

Note: Code all entries in Part 1 and 2, and in this example select acute myocardial infarction (I21.9) as underlying cause of death. Step SP3 applies as causes have been reported on more than one line in Part 1 and the condition reported first on the lowest used line, myocardial infarction (I21.9), can cause the condition, heart failure (I50.9), mentioned on the line above. [See ICD-10 2016 and later, Volume 2, Section 4.2.1].

#### E- Additional WHO cause of death certification links

• How to fill in a death certificate: Interactive Self Learning Tool (WHO)

http://apps.who.int/classifications/apps/icd/icd10training/ICD-10 DeathCertificate/html/index.html

- Cause of Death on the Death Certificate: Quick Reference Guide (Section 7.1.2) https://icd.who.int/browse10/Content/statichtml/ICD10Volume2\_en\_2016.pdf
- International form of medical certificate of cause of death (Section 7.1.1) https://icd.who.int/browse10/Content/statichtml/ICD10Volume2\_en\_2016.pdf

### 5. ANNEX

Examples of terms used by certifiers to describe COVID-19 and that can be coded as synonyms of COVID-19:

COVID Positive Coronavirus Pneumonia COVID negative COVID-19 Infection Sars-Cov-2 Infection (Coronavirus Two Infection) COVID-19 Coronavirus Infection – COVID-19 (Coroner Informed) Hospital Acquired Pneumonia - COVID-Positive COVID-19 possible - tested negative Corona Virus two infection (SARS-Cov-2) Corona Virus Pneumonia (COVID-19) Coronavirus-Two Infection Novel coronavirus