

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

Based on ICD

**International Statistical Classification of Diseases** 

(20 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			Cause of death	Time interval from onset to death					
directly leading to death on line a	à	а	Acute respiratory distress syndrome	2 days					
Report chain of events in due to order (if applicable)	$\int $	b	Due to: Pneumonia	10 days					
State the underlying cause on the lowest used line	Ċ	c	Due to: COVID-19 (test positive)	14 days					
	Ĉ	d	Due to:						
2 Other significant conditions contribution intervals can be included in brackets a									
intervals can be included in brackets a		conun							
Manner of death:									
🔀 Disease			Assault Could no	t be determined					
Accident		<b>1</b>	Legal intervention Pending	nvestigation					
Intentional self harm		י <u>ה</u>	Var 🗌 Unknown	1					

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	Acute respiratory distress syndrome		2 days					
Report chain of events in due to order (if applicable)	> D	b	Due to: Pneumonia		10 days					
State the underlying cause on the lowest used line			Due to: Suspected COVID-19		12 days					
Underlying cause of										
2 Other significant conditions contributintervals can be included in brackets aff				2 diabetes [	14 Years], Chronic					
intervals can be included in brackets an	ter the t	conditi								
Manner of death:										
⊠ Disease			Assault	Could not b	e determined					
☐ Accident			Legal intervention	Pending inv	vestigation					
Intentional self harm		`		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			Cause of death	Time interval from onset to death					
directly leading to death on line a	À	a	Acute respiratory distress syndrome	2 days					
Report chain of events in due to order (if applicable)			Due to: Pneumonia	10 days					
State the underlying cause on the lowest used line			Due to: COVID-19	10 days					
Underlying cause of de	eath [	P	Due to:						
2 Other significant conditions contrib intervals can be included in brackets a									
intervais can be included in brackets a		conun							
Manner of death:									
🔀 Disease			Assault 🗌 Co	uld not be determined					
Accident			Legal intervention	nding investigation					
Intentional self harm		<u> </u>	Var 🗌 Un	known					

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: 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	Â	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	c	Due to: Pregnancy complicated by Co	OVID-19		12 days		
2 Othe Underlying cause of death death (time								
intervals can be included in brackets a		manno	II)					
Manner of death:								
Disease		<b></b> <i>P</i>	Assault		Could not be	e determined		
Accident		<b>I</b>	egal intervention		Pending inve	estigation		
Intentional self harm		1	War		Unknown			
For women, was the deceased pr	For women, was the deceased pregnant?							
At time of death	☐ Within 42 day	s before the death						
Between 43 days up to 1 year before death				Unknown				
Did the pregnancy contribute to the de	ath?			🛛 Yes	No	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 respiratory distress syndrome			3 days				
Report chain of events in due to order (if applicable)	$\int \int$	b	Due to: COVID					One week		
State the underlying cause on the lowest used line	C	C	c	Due to:	$\bigvee$	] Unde	erlying cause	of death		
	Ĉ	d	Due to:							
2 Other significant conditions contrib intervals can be included in brackets a				HIV disease	e [5 years]					
Intervals can be included in brackets a	inter the c	onani	011)							
Manner of death:										
Disease Assault							Could not	be determined		
Accident		🗆 I	Legal inte	rvention			Pending i	nvestigation		
Intentional self harm		1	War							

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 of	of death			Time interval from onset to death			
leading to death on line a	à	a	Нурого	plaemic shock			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	с	Due to: Motor	Due to: Motor vehicle accident			2 days			
	Ĉ	d	Due to:							
<b>2</b> Other significant conditions contribution intervals can be included in brackets a				COVID-19	Underlying c	ause of death				
Manner of death:	Manner of death:									
			Assa Ut			Could not b	e determine			
Accident Legal intervention Pending inves							restigation			
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)		b	Due to: Myocardial infarction	5 days					
State the underlying cause on the lowest used line	the C	c	Due to:						
lowest used line		d	Due to: Underlying cause of death	-					
2 Other significant conditions contrib intervals can be included in brackets a				H					
			TTD 19 ULT						
Manner of de <del>at</del> h:	$\mathbf{C}$	J	VID						
🛛 Disease			Assault Could not b	e determined					
			Legal intervention Pending inv	vestigation					
Intentional self harm		۲ 🗌 ۲	Var 🗌 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 o	f death		Time interval from onset to death				
directly leading to death on line a	à	a	Acute r	espiratory distress syndrome	J80	2 days				
Report chain of events in due to order (if applicable)		b	Due to: Pneumo	nia	J18.9	10 days				
State the underlying cause on the lowest used line	C .	c	Due to: COVID	-19 (test positive)	U07.1	14 days				
		d	Due to:		ا					
2 Other significant conditions contril				Underlying cause of death						
intervals can be included in brackets	after the o	conditi	ion)							
Manner of death:										
Disease			Assault		Could not b	be determined				
Accident			Legal inte	rvention P	ending inv	vestigation				
Intentional self harm	i		War	<u>□</u> ι	Jnknown					

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: 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		a	Acute respiratory distress syndrome	J80	2 days					
Report chain of events in due to order (if applicable)	$\int \langle $	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	e of der	uth								
2 Other signmean conditions control			(time Coronary artery disease [5 years], T	ype 2 diabetes [14]	Years], Chronic obstructive					
intervals can be included in brackets a					<mark>I25.1, E11.9, J44.9</mark>					
Manner of death:	Manner of death:									
Disease			ssault	Could not k	be determined					
Accident	I	<u>Г</u> П '	egal intervention	Pending inv	vestigation					

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)		b	Due to: Pneumonia	J18.9	10 days					
State the underlying cause on the			Due to: COVID-19	U07.1	10 days					
Underlying cause of death		d	Due to:							
2 Other significant conditions contri					G80.9					
intervals can be included in brackets	after the	condit	10n)							
Manner of death:	Manner of death:									
🔀 Disease			Assault	Could not b	be determined					
Accident			Legal intervention	Pending inv	vestigation					
Intentional self harm			War	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: 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	Û	a	Respiratory failure <i>Code both, O99.5 and J96.9</i>	2 days						
order (if applicable)	₽ []	b	Due to:PneumoniaCode both, 099.5 and J18.9	8 days						
State the underlying cause on the lowest used line			Due to: Code both, 098.5 and U07.1	12 days						
Unde	Underlying cause of death									
2 Other significant conditio intervals can be included in brackets at										
Manner of death:										
⊠ Disease		$\square I$	Assault Could not be deter	mined						
Accident			Legal intervention Pending investigat	ion						
Intentional self harm		1	Var 🗌 Unknown							
For women, was the deceased pr	For women, was the deceased pregnant?									
At time of death Ukithin 42 days before the death										
Between 43 days up to 1 year before death										
Did the pregnancy contribute to the de	ath?		Yes INO Unkno	own						

#### **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		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 lo Underlying cause of death		c	Due to: HIV disease	B24	5 years		
		d	Due to:				
2 Other significant conditions contributing to death (time							
intervals can be included in brackets after the condition)							
Manner of death:							
⊠ Disease			Assault	Could not be determined			
Accident Legal inter			egal intervention	Pending investigation			
☐ Intentional self harm ☐ War			Var	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			Cause of death			Time interval from onset to death	
	à	a	Hypovolaemic shock T79.4			1 day	
Report chain of events in due to order (if applicable)	$\int \int $	b Due to: Aortic dissection S25.				1 day	
State the underlying cause on the lowest used line	Č,	c Due to: Motor vehicle accident V89.2			V89.2	2 days	
Underlying cause of deat		d	Due to:				
2 death (time				COVID-19		U07.1	
intervals can be included in brackets after the condition)							
Manner of death:							
Disease	$\square$		Asstult		Could not b	e determined	
🛛 Accident	Legal intervention Pending				Pending inv	vestigation	
Intentional self harm		ים	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	150.9	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		с	Due to:			
		d	Due to:	Underlying cause o	of death	
2 Other significant conditions contributing to death (time				COVID-19		U07.1
intervals can be included in brackets after the condition)						
Manner of death:						
🛛 Disease	$\frown$		Astault		Could not b	be determiner
Accidem Legal intervention					Pending inv	vestigation
Intentional set have		· □	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-19 Infection Sars-Cov-2 Infection (Coronavirus Two Infection) COVID-19 Coronavirus Infection – COVID-19 (Coroner Informed) Hospital Acquired Pneumonia - COVID-Positive Corona Virus two infection (SARS-Cov-2) Corona Virus Pneumonia (COVID-19) Coronavirus-Two Infection Novel coronavirus