

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 COVID-19</u>.

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 aı	nd 2							
1 Report disease or condition			Cause of d		Time interval from onset to death					
directly leading to death on line a	\Rightarrow	a	Acute resp	iratory 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		c	c Due to: COVID-19 (test positive)		14 days					
2 Other significant conditions contributervals can be included in brackets	h									
Manner of death:										
Disease		— A	Assault		Could not	Could not be determined				
- Accident		_ I	egal interve	tervention Pendin		vestigation				
_ Intentional self harm		_ V	Var	■ 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 ar	nd 2		
1 Report disease or condition			Cause of death		Time interval from onset to death
directly leading to death on line a	\Rightarrow	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	7	с	Due to: Suspected COVID-19	12 days	
Underlying cause	of deat	h	10:		
2 Other significant conditions contrib intervals can be included in brackets a					14 Years], Chronic
intervals can be increased in brackets a	inci inc c	onani			
Manner of death:					
■ Disease		— A	ssault	Could not b	e determined
- Accident		_ L	egal intervention	Pending investigation	
■ Intentional self harm		_ v	/ar =	■ 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		a .	Acute respiratory distress syndrome		2 days				
Report chain of events in due to order (if applicable)	$\bigcup \ \Diamond$	l b	Due to: Pneumonia		10 days				
State the underlying cause on the lowest used line	\(\sigma\) \(\lambda\)	c Due to: COVID-19			10 days				
Underlying cause of d	eath [U	Due to:						
2 Other significant conditions contril									
intervals can be included in brackets	after the	conditio	on)						
Manner of death:									
■ Disease ■ Assau			ssault	■ Could not be determined					
- Accident		_ Le	egal intervention	Pending in	vestigation				
■ Intentional self harm		_ W	'ar	□ 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	\Rightarrow	a	Respiratory failure	Respiratory failure						
Report chain of events in due to order (if applicable)	D &	ь	Due to: Pneumonia			8 days				
State the underlying cause on the lowest used line) {	с	Due to: Pregnancy complicated by Complex Compl	OVID-19		12 days				
2 Othe	Underlying cause of death leath (time intervals can be included in brackets after the condition)									
Manner of death:										
■ Disease		— A	Assault		Could not	be determined				
- Accident		— I	■ Legal intervention		Pending in	nvestigation				
Intentional self harm		_ \	War		■ Unknown					
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	∟ 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.

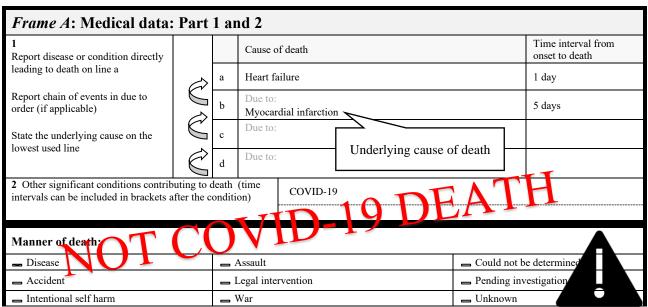
Frame A: Medical data: Part 1 and 2										
1 Report disease or condition directly			Cause of	f death						Time interval from onset to death
leading to death on line a	\Rightarrow	a	a Acute respiratory distress syndrome					3 days		
Report chain of events in due to order (if applicable)	J 🕅	b	Due to: COVID-	Due to: COVID-19				One week		
State the underlying cause on the lowest used line	<i>J</i> '	c	Due to:	Underlying cause of			ause of o	of death		
		d	Due to:							
2 Other significant conditions contributervals can be included in brackets a				HIV disease	e [5 yea	ars]				
Manner of death:										
■ Disease	Assault	sault — Could no			ot b	e determined				
- Accident	Legal inter	intervention — Pending in			g inv	estigation				
➡ Intentional self harm		_ '	■ War			_	➡ 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 ar	nd 2					
1 Report disease or condition directly			Cause	of death			Time interval from onset to death	
leading to death on line a		a	Hypove	olaemic 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		с	c Due to: Motor vehicle accident				2 days	
lowest used line		d	Due to:					
2 Other significant conditions contributervals can be included in brackets a				COVID-19	Underlying ca	use of death		
Manner of death:		\sim	T T	1D-1	9 DI		A	
■ Disease	e determine							
Accident	Accident							
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.



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
 - o 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 death				Time interval from onset to death		
directly leading to death on line a	\Rightarrow	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 lowest used line		с	Due to: COVID-19 (test positive) U07.1			14 days			
	\bigcup	d	Due to:		L				
2 Other significant conditions contributervals can be included in brackets a				Underlying cause of de	eath				
intervals can be included in brackets a	inter the t	zonan	ion)						
Manner of death:									
■ Disease		_ /	Assault	sault = C			Could not be determined		
- Accident		_ I	■ Legal intervention			■ Pending investigation			
■ Intentional self harm		➡ 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

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	\Rightarrow	a	Acute r	espiratory distress syndrome	2 days				
Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line			Due to:		J18.9	10 days			
			Due to: Suspec	ted COVID-19	U07.2	12 days			
Underlying cause	of dea	th	(0:						
2 Other signature concurrence contrib	uting to	acam	(time	Coronary artery disease [5 years], Typ	e 2 diabetes [14]	Years], Chronic obstructive			
intervals can be included in brackets a	fter the o	condit	ion)	pulmonary disease [8 years]		I25.1, E11.9, J44.9			
Manner of death:									
■ Disease			Assault	■ Could not be determined					
- Accident			Legal inte	intervention — Pending in		vestigation			
■ Intentional self harm		_ `	War		_ Unknown				

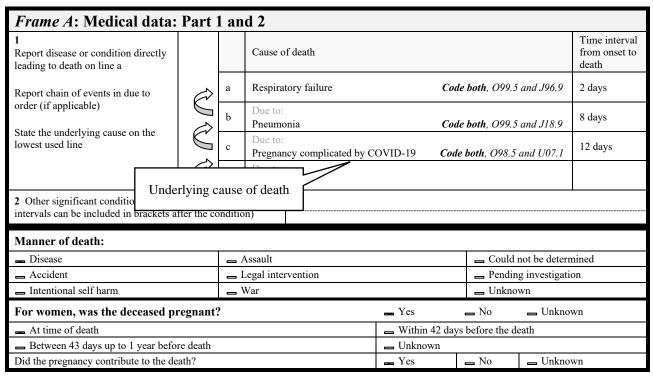
Note: Code all entries in Part 1 and 2, and in this example select COVID-19, specified as suspected (the case has virus not confirmed) as underlying cause of death. Step SP3 applies as causes have been reported on more than one line in Part 1 and the condition reported first on the lowest used line (COVID-19) 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].

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	\Rightarrow	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		c Due to: COVID-19			10 days					
Underlying cause of death		d	Due to:							
2 Other significant conditions contributions can be included in brackets a					G80.9					
Manner of death:	Manner of death:									
Disease			Assault	Could not be determined						
- Accident		_ I	Legal intervention	→ Pending investigation						
■ 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].

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:	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	\Rightarrow	a	Acute respiratory distress syndrome	J80	3 days						
Report chain of events in due to order (if applicable)	$\int \Big\{$	h	Due to: COVID-19	U07.1	One week						
St Underlying cause of death		C	Due to: HIV disease	B24	5 years						
		d	Due to:								
2 Other significant conditions contrib intervals can be included in brackets a											
			,								
Manner of death:											
■ Disease			ssault	Could not be determined							
- Accident			gal intervention	Pending investigation							
Intentional self harm		_ Wa	ar	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 ar	nd 2			
1 Report disease or condition directly			Cause o	of death		Time interval from onset to death
leading to death on line a	\Rightarrow	a	Hypovo	plaemic shock	T79.4	1 day
Report chain of events in due to order (if applicable)			Due to:	dissection	S25.0	1 day
State the underlying cause on the lowest used line			c Due to: Motor vehicle accident V89.2			2 days
Underlying cause of deat		d	Due to:			
2	to	death		COVID-19	_	U07.1
intervals can be included in brackets a	ifter the c	onditi	on)			
Manner of death:	~	<u> </u>	T 71	m-19 DE		A
■ Disease			Ass vlt		Could not b	e determined
- Accident			Legal inte	rvention	Pending inv	restigation
■ Intentional self harm		_ \	Var		■ 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						
Report disease or condition directly leading to death on line a			Cause of deat	h		Time interval from onset to death
		a	Heart failure		150.9	1 day
Report chain of events in due to order (if applicable)		b	Due to: Myocardial in	ue to: yocardial infarction		5 days
State the underlying cause on the lowest used line		c	Due to:	Underlying cause of death	6.1 4	
		d	Due to:	Underlying	cause of death	
2 Other significant conditions contributing to death (time coverage of the condition)						
intervals can be included in brackets after the condition)					TAT	
Manner of death:						
■ Disease						be determined
➡ Acciden		egal interventi	on	Pending in	→ Pending investigation	
■ Intentional sea hasen ■ 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