



Bloomberg  
Philanthropies



DATA FOR  
HEALTH INITIATIVE

# CRVS technical guide

Correctly coding deaths due  
to COVID-19: Guidance for  
Iris automated mortality coders

July 2020





## Resources available from the University of Melbourne, Bloomberg Philanthropies Data for Health Initiative

### *CRVS course prospectuses*

These resources outline the context, training approach, course content and course objectives for the suite of CRVS trainings delivered through the Bloomberg Philanthropies Data for Health Initiative. Each course focuses on a specific CRVS intervention or concept, and is designed to support countries to strengthen their CRVS systems and data.

### *CRVS Fellowship reports and profiles*

The CRVS Fellowship Program aims to build technical capacity in both individuals and institutions to enhance the quality, sustainability and health policy utility of CRVS systems in Fellows' home countries. Fellowship reports are written by Fellows as a component of the program, and document, in detail, the research outcomes of their Fellowship. Fellowship profiles provide a summary of Fellows' country context in relation to CRVS, an overview of the Fellowship experiences, the research topic and the projected impact of findings.

### *CRVS analyses and evaluations*

These analytical and evaluative resources, generated through the Initiative, form a concise and accessible knowledge-base of outcomes and lessons learnt from CRVS initiatives and interventions. They report on works in progress, particularly for large or complex technical initiatives, and on specific components of projects that may be of more immediate relevance to stakeholders. These resources have a strong empirical focus, and are intended to provide evidence to assist planning and monitoring of in-country CRVS technical initiatives and other projects.

### *CRVS best-practice and advocacy*

Generated through the Initiative, CRVS best-practice and advocacy resources are based on a combination of technical knowledge, country experiences and scientific literature. These resources are intended to stimulate debate and ideas for in-country CRVS policy, planning, and capacity building, and promote the adoption of best-practice to strengthen CRVS systems worldwide.

### *CRVS country reports*

CRVS country reports describe the capacity-building experiences and successes of strengthening CRVS systems in partner countries. These resources describe the state of CRVS systems-improvement and lessons learnt, and provide a baseline for comparison over time and between countries.

### *CRVS technical guides*

Specific, technical and instructive resources in the form of quick reference guides, user guides and action guides. These guides provide a succinct overview and/or instructions for

the implementation or operation of a specific CRVS-related intervention or tool.

### *CRVS tools*

Interactive and practical resources designed to influence and align CRVS processes with established international or best-practice standards. These resources, which are used extensively in the Initiative's training courses, aim to change practice and ensure countries benefit from such changes by developing critical CRVS capacity among technical officers and ministries.

Published by the University of Melbourne, Civil Registration and Vital Statistics Improvement, Bloomberg Philanthropies Data for Health Initiative

Melbourne School of Population and Global Health  
Building 379  
207 Bouverie Street  
Carlton, VIC 3053  
Australia

CRVS-info@unimelb.edu.au  
[www.mspgh.unimelb.edu.au/dataforhealth](http://www.mspgh.unimelb.edu.au/dataforhealth)

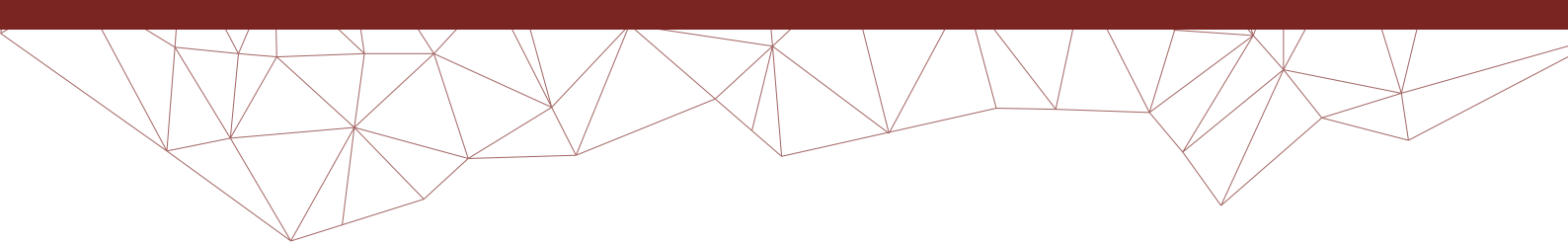
**Made possible through funding from Bloomberg Philanthropies**  
[www.bloomberg.org](http://www.bloomberg.org)

## Acknowledgements

This CRVS technical guide was written by Dr Saman Gamage, and reviewed by Friedrich Heuser from the Iris Institute and members of the MCCOD Technical Working Group at the University of Melbourne.

## Suggested citation

Gamage, U S H. *Correctly coding deaths due to COVID-19: Guidance for Iris automated mortality coders*. CRVS technical guides. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2020.



# Contents

<b>Introduction.....</b>	<b>4</b>
COVID-19 mortality coding guidelines .....	5
Emergency ICD codes for COVID-19.....	5
Dictionary updates for COVID-19 codes.....	5
How to update the Iris dictionary .....	6
Decision table rules for emergency ICD codes U07.1 and U07.2.....	7
Overview of decision table updates, Iris Version 4 .....	8
<b>Coding COVID-19: case examples for automated coders.....</b>	<b>12</b>
Coding example 1 .....	12
Coding example 2.....	14
Coding example 3.....	16
Coding example 4.....	18



# Correctly coding deaths due to COVID-19: Guidance for Iris automated mortality coders

---

This guidance document provides information for Iris automated mortality coders to correctly code deaths due to COVID-19. More information on mortality coding, including guidance for manually coding deaths due to COVID-19, is available at: <https://crvsgateway.info/resources>

---

## Introduction

The COVID-19 global pandemic has been recognised as a public health emergency. In a public health emergency, mortality surveillance is extremely important to monitor the disease progression in the population. Mortality data are also important to assess the impact of interventions.

Certification of death is one of the first steps in obtaining an overview of the health of individuals (see **Box 1**). A properly completed cause of death certificate provides a description of the order, type and association of events that have resulted in the death. The diagnoses reported on the certificate are coded according to the International Statistical Classification of Diseases and Related Health Problems, 10th edition (ICD-10), and this coded data can then be analysed and used both nationally and internationally regardless of the language used to complete the certification.

### **Box 1: Certifying deaths due to COVID -19: WHO guidelines for doctors**

If a patient dies following a COVID-19 infection, this must be recorded on the death certificate. Generally, patients with a COVID-19 infection die from severe respiratory distress caused by pneumonia. Pneumonia, in these cases, is caused by the coronavirus which results in the COVID-19 disease. In such cases, COVID-19 is the underlying cause of death and should be reported in the lowest used line of Part 1 of the death certificate.

The current understanding is that mortality from COVID-19 is higher among patients with co-existing chronic illnesses such as diabetes mellitus, hypertension, or chronic obstructive pulmonary disease (among others). These co-morbidities increase the risk of dying from COVID-19. Whilst COVID-19 is reported in Part 1 as the underlying cause of death, other co-morbidities that may have contributed to death should be reported in Part 2 of the death certificate.

It is also important to state whether a COVID-19 infection is laboratory confirmed or not. In situations where a COVID-19 infection is not laboratory confirmed, but clinical and epidemiological information are suggestive of the diagnosis, a probable or suspected diagnosis of COVID-19 should still be reported as the underlying cause on the lowest used line in the death certificate.

For more information on how to correctly certify deaths due to COVID-19, see: <https://crvsgateway.info/file/15072/3922>



## COVID-19 mortality coding guidelines

This document guides Iris automated mortality coders to correctly code the death certificates of patients who have died from COVID-19. Guidance is provided for both Iris Version 5, and Iris Version 4 or older.

### Emergency ICD codes for COVID-19

Two new emergency ICD-10 codes for COVID-19 have been designated by the World Health Organization (WHO), assigned from Chapter XXII (Codes for special purposes):

1. **U07.1:** COVID-19, virus identified (laboratory confirmed)
2. **U07.2:** COVID-19, virus not identified (laboratory unconfirmed). Used for:
  - Clinically-epidemiologically diagnosed COVID-19
  - Probable COVID-19
  - Suspected COVID-19

Doctors are required to properly record a COVID-19 diagnosis on the death certificate to allow coders to correctly assign one of the two codes. Both U07.1 and U07.2 may be used for mortality coding as the underlying cause of death.<sup>1</sup>

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 recognised that in many countries, detail regarding the laboratory confirmation (or otherwise) of COVID-19 will not be reported on the death certificate. In the absence of this detail, it is recommended, for mortality coding purposes only, to code COVID-19 provisionally to U07.1 unless it is stated as “probable” or “suspected”.

COVID-19 is considered a global pandemic and, therefore, has become an extremely important public health problem. Due to the disease’s public health importance and the intense requirement of disease data, in ICD mortality coding rules, COVID-19 is not considered as “due to” or as “an obvious consequence of any other disease”. This situation is similar to the coding rules applied for influenza.

### Dictionary updates for COVID-19 codes

Iris users are required to update the dictionary with COVID-19 ICD codes. However, as the Iris Institute no longer supports versions of Iris older than 5, new decision table updates are not available for Iris Version 4. Users of this and previous versions will therefore not be able to automatically select the underlying cause of death when it is COVID-19. COVID-19 deaths will need to be manually selected. To do this, it is advisable for Version 4 users to implement a “reject” function of the record via the dictionary. Instructions for implementing this function are provided below.

---

<sup>1</sup> In ICD-11, the code for a confirmed diagnosis of COVID-19 is RA01.0, and the code for a clinical diagnosis (suspected or probable) is RA01.1. ICD-11



## How to update the Iris dictionary

Detailed instructions to update the dictionary are available in the Iris user manual published by the Iris Institute, available at: <https://www.dimdi.de/dynamic/downloads/iris-institute/manuals/iris-user-reference-manual-v4-5-3s1.pdf>.

### Overview of instructions to update the dictionary:

1. Go to 'Tools' in the Iris file menu
2. Select 'Maintenance'
3. Enter the maintenance default password 'PwdIris'. If you have already changed the password, use the new one
4. Open the dictionary (this opens the developer's dictionary tool)
5. Click 'Add' and then the 'New values' section will be opened
6. Under diagnosis text, enter the new value 'COVID-19, laboratory confirmed'
7. Enter the code 'U071' in the ICD-10 box
8. Set the start and end years
9. Click 'Add'. Now the dictionary is updated
10. Repeat the same steps to enter 'COVID-19, laboratory unconfirmed' (U072)
11. Update the standardisation tables for different diagnostic expressions of COVID-19 (e.g. COVID-19 virus identified, COVID-19, Corona virus disease 2019, etc.).

This is a dictionary update for those using Iris Version 4 only. Updating the dictionary does not mean that the decision tables are updated to recognise U071 and U072. Therefore, a reject for all COVID-19 records must be set up, causing a guidance message to appear whenever COVID-19 needs to be coded manually.

### Instructions to set up the reject function:

12. Go to Iris tables
13. Open the dictionary table
14. Find the newly added diagnosis text 'COVID-19'
15. Go to the 'likelihood' column against COVID-19 and enter '?' (only one character is allowed)
16. Go to the 'prompt' column and enter the reject message you want displayed when the record is rejected (up to 100 characters are allowed)
17. Save the changes and close the dictionary table
18. Restart Iris.

Once the reject function has been set up, whenever a COVID-19 record is encountered the message will display reminding users to code COVID-19 deaths manually.

## Decision table rules for emergency ICD codes U07.1 and U07.2

In accordance with the WHO recommendations, the Iris Institute developed new causal relations in the decision tables, considering that:

- Public health interest is to give priority to U07.1 and U07.2 as underlying causes of death
- The selection rules should not limit the acceptance of sequences reported by certifiers as concerning the consequences of COVID-19.

The tables have been prepared by the Iris Core Group based on current knowledge, and the possibility exists that they could change following international advice. Iris preserves the codes of COVID-19 (U07.1 and U07.2) in the multiple cause string, so the multiple cause data can be used for the count of certificates mentioning COVID-19. The new tables also allow users to check cases where COVID-19, although mentioned, is not selected as the final underlying cause of death.

There is also the possibility to implement a reject function for these cases via the dictionary and/or the 'NonConsistentICDCodes' (NCIC) table in Iris.

Updated decision tables contained within MUSE (Multicausal and Unicausal Selection Engine) are available for the users of Iris Version 5, at: <https://www.dimdi.de/dynamic/en/classifications/iris-institute/downloads/?dir=tables-updates/muse>

### Users of Iris Version 5

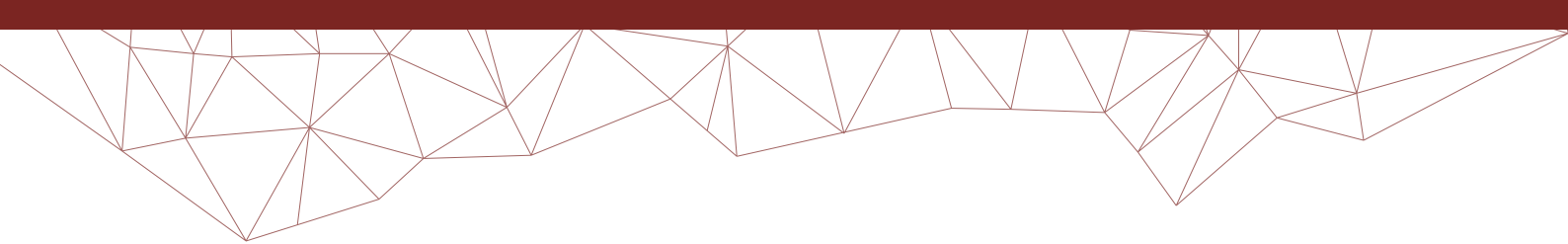
Users of Iris Version 5 are advised to install the updated tables through the Iris website at: <https://www.dimdi.de/dynamic/en/classifications/iris-institute/downloads/?dir=tables-updates/muse>

### Users of Iris Version 4 and older

For users of Iris Version 4, an overview of decision table updates is available in Microsoft Excel format (see **Figure 1**). This can be downloaded at: <https://www.dimdi.de/dynamic/en/classifications/iris-institute/downloads/?dir=tables-updates/overview-updates>

**Figure 1: Decision table updates for Iris Version 4**

	A	B	C	D	E
1	ADDRESS_FROM	ADDRESS_TO	RULE	SUBADDRESS_FROM	SUBADDRESS_TO
2					
3	A040	A050	DUE	U071	U072
4	A052	A099	DUE	U071	U072
5	A240	A269	DUE	U071	U072
6	A280	A289	DUE	U071	U072
7	A310	A329	DUE	U071	U072
8	A400	A699	DUE	U071	U072
9	A740	A749	DUE	U071	U072
10	A812	A819	DUE	U071	U072
11	A870	A89	DUE	U071	U072
12	A930	A94	DUE	U071	U072
13	A968	A969	DUE	U071	U072
14	A99	B029	DUE	U071	U072
15	B07	B159	DUE	U071	U072
16	B172	B178	DUE	U071	U072
17	B188	B199	DUE	U071	U072
18	B250	B259	DUE	U071	U072
19	B270	B49	DUE	U071	U072
20	B580	B89	DUE	U071	U072
21	B99		DUE	U071	U072
22	D500	D65	DUE	U071	U072
23	D682	D682	DUE	U071	U072



## Overview of decision table updates, Iris Version 4

Users of Iris Version 4, as well as those coding manually, can download the latest decision table updates for overview in Microsoft Excel format from the Iris website.

In the Excel updates, the span of codes within the 'ADDRESS\_FROM – ADDRESS\_TO' indicates the range of address codes (Figure 2). The 'RULE' column indicates the mortality coding rule being applied. The rule 'DUE' means a Table D causal relationship. The span of codes in the within the 'SUBADDRESS\_FROM – SUBADDRESS\_TO' indicate sub-address codes

Figure 2: Column headings of decision table updates

	A	B	C	D	E
1	ADDRESS_FROM	ADDRESS_TO	RULE	SUBADDRESS_FROM	SUBADDRESS_TO
2					
3	A040	A050	DUE	U071	U072
4	A052	A099	DUE	U071	U072
5	A240	A269	DUE	U071	U072
6	A280	A289	DUE	U071	U072
7	A310	A329	DUE	U071	U072
8	A400	A699	DUE	U071	U072
9	A740	A749	DUE	U071	U072

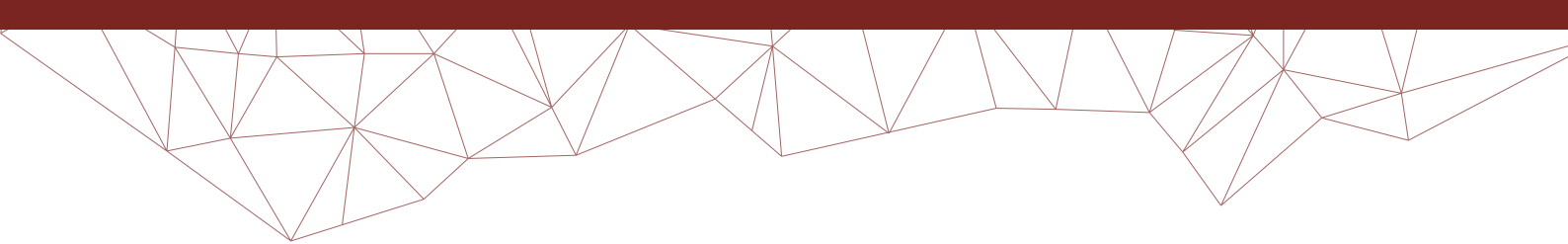
In the below Excel file (Figure 3), the 'Causal relations' sheet is for Table D relationships (i.e. the codes for the conditions having a 'DUE TO' causal relationship with COVID-19 U07.1 and U07.2).

Figure 3: Causal relationships excel sheet

20	B580	B89	DUE	U071	U072
21	B99		DUE	U071	U072
22	D500	D65	DUE	U071	U072
23	D682	D999	DUE	U071	U072

Navigation tabs: Causal relations | Obvious causes | Specificity | (+)





The 'Obvious causes' sheet (**Figure 4**) contains the codes for the conditions obviously caused by U07.1 – U07.2. These relationships indicate the mortality coding rule SP6 (Table E acronym DS).

**Figure 4: Step SP6 (Starting point rule 6): Obvious causes excel sheet**

9	G970	G979	DS	U071	U072
10	H590	H599	DS	U071	U072
11	H660		DS	U071	U072
12	H669		DS	U071	U072
13	H950	H959	DS	U071	U072
14	I409		DS	U071	U072
15	I514		DS	U071	U072
16	I970	I979	DS	U071	U072
17	J120	J168	DS	U071	U072
18	J180	J189	DS	U071	U072
19	J22		DS	U071	U072

Navigation: Causal relations | **Obvious causes** | Specificity | (+)

The 'Specificity' Excel sheet (**Figure 5**) contains the codes for the conditions that are considered to be less specific, and better described in more precise terms by the COVID-19 codes U07.1 or U07.2.

**Figure 5: Step M2: Specificity excel sheet**

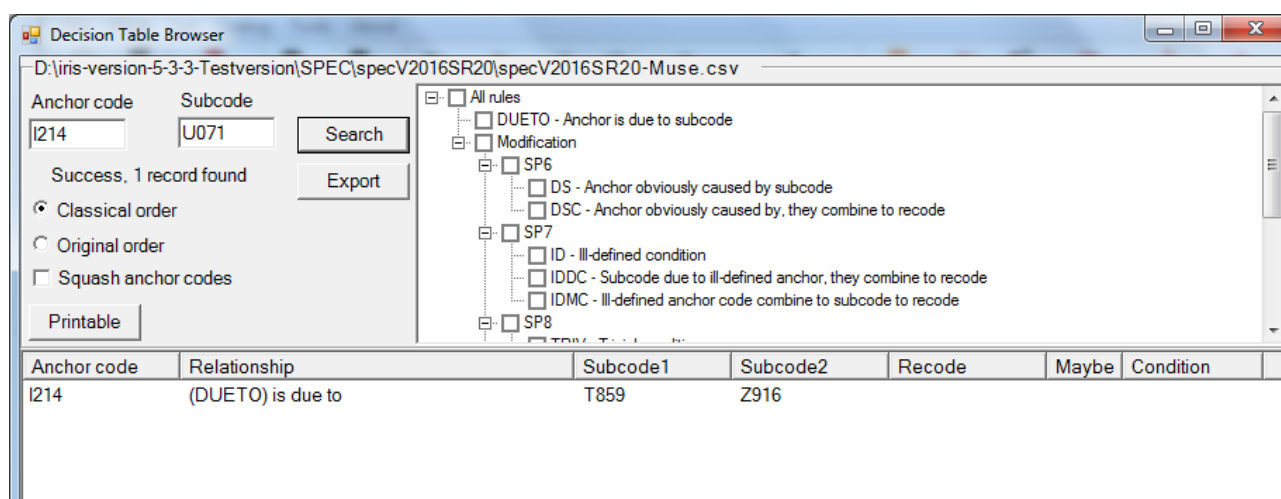
1	ADDRESS_FROM	ADDRESS_TO	RULE	SUBADDRESS_FROM	SUBADDRESS_TO
2					
3	B342		SMP	U071	U072
4	B349		SMP	U071	U072
5	J110	J118	SMP	U071	U072
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					

Navigation: Causal relations | Obvious causes | **Specificity** | (+)

## Iris Version 5.7 decision table browser - for Iris Version 4 users

Iris Version 4 coders are able to use the decision table browser of the Iris Version 5.7 to use updated decision tables for the application of mortality coding rules (**Figure 6**). The decision table browser also allows coders to print the decision tables as PDF files (**Figures 7a and 7b**). To do this, coders need to download Version 5.7 from the Iris website and save it in a separate folder on the computer. This is only for the purpose of applying coding rules using the updated decision table browser.

**Figure 6: Iris 5.7 decision table browser**



**Figure 7a: Decision tables TABA (Causal relationships) in PDF**

### TABA - specV2020SR30

```

--- I958-I959 ---
A000 - A969
A980 - E281
E283 - G232
G238 - G834
G836 - G942
G948 - Q999
R02
R090 - R098
R54
R58 - R5800
R75
S000 - Y98

--- I970-I978 ---
A000 - Y98

--- I979 ---
A000 - I979
I99 - Y98

--- J120-J168 ---
A000 - E281
E283 - G942
G948 - R002
R008 - R961
R98 - Y98

--- J170 ---
D45 - D469
D70
D800 - D849
D890 - D899
J170
M300 - M319
T451
U070 - U072

--- J171 ---
D45 - D469
D70
D800 - D849

--- J178 ---
CONTINUED
U070 - U072

--- J180-J22 ---
A000 - E281
E283 - G942
G948 - R002
R008 - R961
R98 - Y98

--- J300-J304 ---
A429
A439
E840 - E849
E859
J300 - J304
T780 - T789
T885 - T887
U070 - U072

```

Figure 7b: Decision tables TABB (modifications) in PDF

TABB - specV2020SR30

--- B161 ---

CONTINUED

LMC M K729 B160  
LDC K740 - K742 B180  
LDC K744 - K746 B180

--- B162 ---

LDC K721 - K7210 B181  
LDC K740 - K742 B181  
LDC K744 - K746 B181

--- B169 ---

SMP B160 - B162  
LDC K721 - K7210 B181  
LMC M K729 B162  
LDC K740 - K742 B181  
LDC K744 - K746 B181

--- B170 ---

LDC K721 - K7210 B180

--- B178 ---

CONTINUED

LDC K721 - K7210 B188  
LDC K740 - K742 B188  
LDC K744 - K746 B188

--- B179 ---

SMP B150 - B178  
LDC K721 - K7210 B189  
LDC K740 - K742 B189  
LDC K744 - K746 B189

--- B181 ---

SMP B180

--- B188 ---

DSC B200 - B202 B207  
DS B203  
DSC B204 - B206 B207  
DS B207

# Coding COVID-19: case examples for automated coders

## Coding example 1

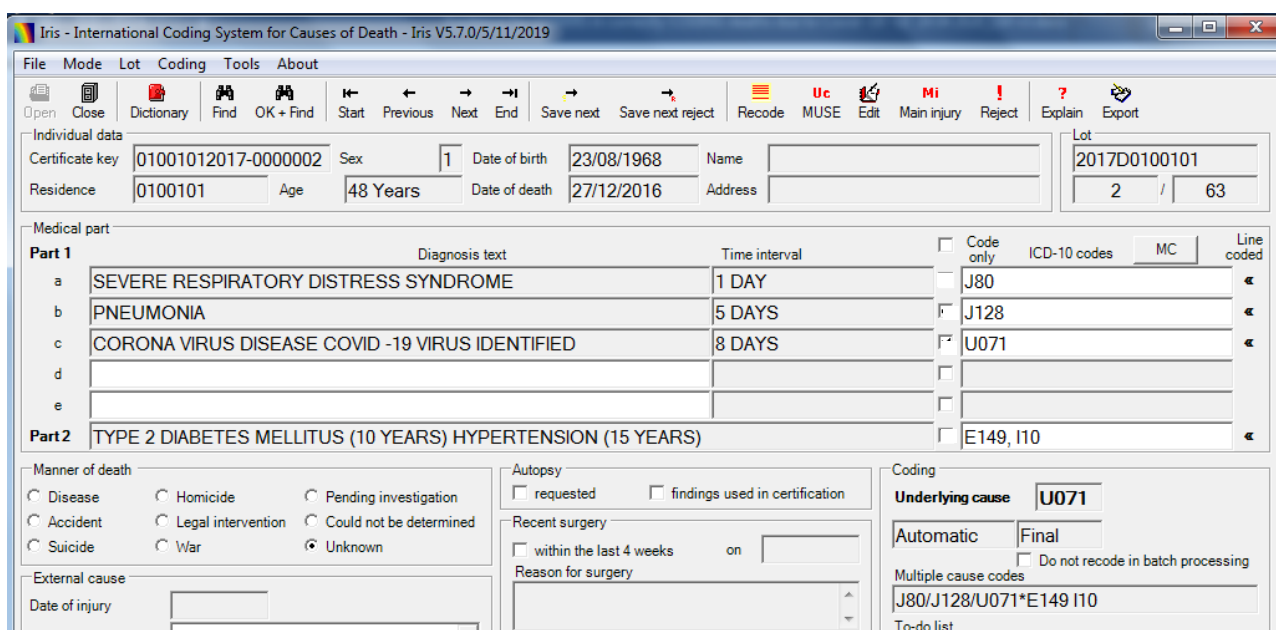
Coding instructions for this case are based on the example completed International Form of Medical Certificate of Cause of Death, Frame A, shown in **Figure 8**.

**Figure 8: Completed International Form of Medical Certificate of Cause of Death, Frame A – case example 1**

Frame A: Medical data: Part 1 and 2			
<b>1</b> Report disease or condition directly leading to death on line a  Report chain of events in due order (if applicable)  State the underlying cause on the lowest used line		Cause of death	Time interval from onset to death
	a	<b>Severe Respiratory distress syndrome</b>	<b>1 day</b>
	b	<b>Pneumonia</b>	<b>5 days</b>
	c	<b>COVID – 19 virus identified</b>	<b>8 days</b>
	d	Due to:	
<b>2</b> Other significant conditions contributing to death (time intervals can be included in brackets after the condition)		<b>Hypertension (10 years)</b> <b>Diabetes mellitus type 2 (15 years)</b>	

**Figure 9** shows the screen of the Iris Version 5.7 main window, displaying the results of the automatic coding of case example 1 (**Figure 8**).

**Figure 9: Iris Version 5.7 automated coding**



The MUSE 2.8 window (Figure 10) explains the above automatic Iris Version 5.7 coding process.

**Figure 10: MUSE 2.8 coding explanation.**

The screenshot shows the MUSE 2.8 interface. The 'Settings' section is divided into three parts: '1b' with 'J128', '1c' with 'U071' (highlighted in yellow), and '2' with 'E149' and 'I10'. Below this is the 'Coding log' section, which includes a 'Full log' checkbox and a table with the following data:

No	type	UC	?	message	details
1				START OF SELECTION:	J80 / J128 / U071 + E149,I10
2	SP3			(+) U071 causes the other conditions of part 1!	
3		U071		Emergency use of U07.1	

## Iris Version 4

Assuming that your Iris dictionary has been updated with the new emergency ICD-10 COVID-19 codes (U07.1 and U07.2) and that you have implemented the “reject” function as explained above, the record will be rejected and you will be able to review the record manually.

Since the decision tables for this version of Iris have not been updated to include U07.1 and U07.2, the causal relationships for COVID-19 emergency codes U07.1 and U07.2 must be manually checked. Use the ‘Edit underlying cause’ function under the coding menu to select U07.1 as the underlying cause.

### Procedure for Iris Version 4

Use the decision table browser in Iris Version 5 or PDF tables obtained via the decision table browser.

As more than one line is used in Part 1, Step SP3 is applied.

- Look up Table D Address ---J80--- in the TABA (Causal relationships table): ---J80---, (---J80-J81---), U07.1 (R98-Y98) is listed
- Look up Table D Address ---J12.8--- in the DUE TO table in MMDS updates: ---J12.8---, (---J120-J16.8---), U07.1 (R98-Y98) is listed
  - ✓ **U071 selected as tentative starting point using the Step SP3.**
- Look up Table E Address ---U071--- in the MMDS table updates: U071 address code is not found
  - ✓ No modification required
  - ✓ **U07.1 is selected as final underlying cause of death.**

## Coding example 2

Coding instructions for this case are based on the example completed International Form of Medical Certificate of Cause of Death, Frame A, shown in **Figure 11**.

**Figure 11: Completed International Form of Medical Certificate of Cause of Death, Frame A – case example 2**

Frame A: Medical data: Part 1 and 2			
<b>1</b> Report disease or condition directly leading to death on line a  Report chain of events in due to order (if applicable)  State the underlying cause on the lowest used line		Cause of death	Time interval from onset to death
	a	<b>Respiratory failure</b>	<b>1 day</b>
	b	<b>Pneumonia</b>	<b>5 days</b>
	c	<b>Corona Virus Disease (COVID - 19) No laboratory confirmation</b>	<b>8 days</b>
	d	Due to:	
<b>2</b> Other significant conditions contributing to death (time intervals can be included in brackets after the condition)		<b>Hypertension (10 years) Diabetes mellitus type 2 (15 years) Bronchial Asthma (10 years)</b> -----	

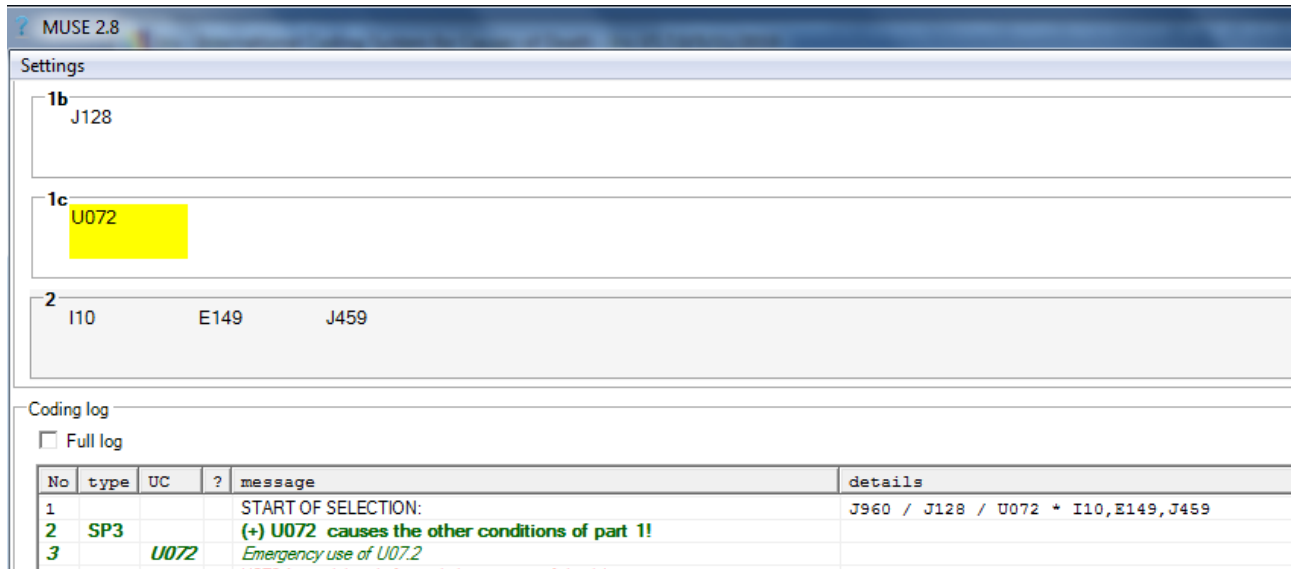
**Figure 12** shows the screen of the Iris Version 5.7 main window, displaying the results of the automatic coding of case example 2 (**Figure 11**).

**Figure 12: Iris Version 5.7 automated coding**

The screenshot displays the Iris Version 5.7 main window. The 'Individual data' section includes fields for Certificate key (01001012017-0000003), Sex (2), Date of birth (8/01/1936), Name, Residence (0100101), Age (80 Years), Date of death (1/01/2017), and Address. The 'Medical part' section is divided into Part 1 and Part 2. Part 1 lists diagnoses with their time intervals and corresponding ICD-10 codes: a) RESPIRATORY FAILURE (1 DAY, J960), b) PNEUMONIA (5 DAYS, J128), and c) COVID - 19 NO LABORATORY CONFIRMATION (8 DAYS, U072). Part 2 lists HYPERTENSION, DIABETES MELLITU TYPE 2, BRONCHIAL ASTHMA (I10, E149, J459). The 'Manner of death' section shows 'Unknown' selected. The 'Autopsy' section has 'requested' checked. The 'Coding' section shows 'Underlying cause' as U072, 'Automatic' coding selected, and 'Multiple cause codes' as J960/J128/U072\*I10 E149 J459.

The MUSE 2.8 window (**Figure 13**) explains the above automatic Iris Version 5.7 coding process.

**Figure 13: MUSE 2.8 coding explanation**



## Iris Version 4

Refer to the MMDS table updates above to manually check the causal relationships for COVID-19 emergency codes U07.1 and U07.2.

Use the function 'Edit underlying cause' under coding menu to select U07.1 as the underlying cause.

### Procedure for Iris Version 4

Use the decision table browser in Iris Version 5 or PDF tables obtained via the decision table browser.

As more than one line is used in Part 1, Step SP3 is applied.

- Look up Table D addresses in the TABA causal relationships table
- Look up Table D Address ---J960---, (---J960 -J969---): U07.2 (R98-Y98) is listed.
- Look up Table D Address ---J12.8---, (---J120-J168---), U07.2 (R98-Y98) is listed.
  - ✓ **U072 selected as tentative starting point using the Step SP 3.**
- Look up Table E TABB modification table
- Look up Table E Address ---U072--- U072 address code is not found
  - ✓ No modification required
  - ✓ **U07.2 is selected as the final underlying cause of death.**

### Coding example 3

Coding instructions for this case are based on the example completed International Form of Medical Certificate of Cause of Death, Frame A, shown in **Figure 14**.

**Figure 14: Completed International Form of Medical Certificate of Cause of Death, Frame A – case example 3**

Frame A: Medical data: Part 1 and 2			
<b>1</b> Report disease or condition directly leading to death on line a  Report chain of events in due to order (if applicable)  State the underlying cause on the lowest used line		Cause of death	Time interval from onset to death
	a	<b>Cardiac arrest</b>	<b>30 minutes</b>
	b	<b>Non ST elevated myocardial infarction</b>	<b>2 days</b>
	c	<b>Coronary arteriosclerosis</b>	<b>2 Years</b>
	d	Due to:	
<b>2</b> Other significant conditions contributing to death (time intervals can be included in brackets after the condition)		<b>COVID - 19 laboratory confirmed (17 days), Diabetes mellitus type 2 (10 years), Smoking (30 years), Hypertension (10years), Obesity, Hypercholesterolaemia</b>	

**Figure 15** shows the screen of the Iris Version 5.7 main window, displaying the results of the automatic coding of case example 3 (**Figure 14**).

**Figure 15: Iris Version 5.7 automated coding**

The screenshot displays the Iris Version 5.7 main window. The 'Individual data' section includes fields for Certificate key (01001012017-0000004), Sex (1), Date of birth (8/10/1956), Name, Residence (0100000), Age (60 Years), Date of death (28/12/2016), Address, and Lot (2017D0100000). The 'Medical part' section shows a table with columns for Part, Diagnosis text, Time interval, Code only, ICD-10 codes, MC, and Line coded. The table contains the following data:

Part	Diagnosis text	Time interval	Code only	ICD-10 codes	MC	Line coded
a	CARDIAC ARREST	30 MINUTES	<input type="checkbox"/>	I469		
b	NON ST ELEVATED MYOCARDIAL INFARCTION	2 DAYS	<input checked="" type="checkbox"/>	I214		
c	CORONARY ARTERIOSCLEROSIS	2 YEARS	<input type="checkbox"/>	I251		
d			<input type="checkbox"/>			
e			<input type="checkbox"/>			
Part 2	covid 19 virus identified, Type 2 Diabetes, Hypertension, Hypercholesterolaemia, Smoking		<input checked="" type="checkbox"/>	U071, E119, I10, F171, E780		

Below the table, there are sections for 'Manner of death' (Disease selected), 'Autopsy' (requested), 'Recent surgery' (within the last 4 weeks), and 'Coding' (Underlying cause I214, Automatic selected). The 'Multiple cause codes' field shows I469/I214/I251\*U071 E119 I10 F171 E780.



The MUSE 2.8 window (Figure 16) explains the above automatic Iris Version 5.7 coding process.

**Figure 16: MUSE 2.8 coding explanation**



## Iris Version 4

Refer to MMDS table updates above, to manually check the causal relationships for COVID-19 emergency codes U07.1 and U07.2.

### Procedure for Iris Version 4

Use the decision table browser in Iris Version 5 or PDF tables obtained via the decision table browser.

As more than one line is used in Part 1, Step SP3 is applied.

- Look up Table D addresses in the TABA causal relationships table
- Look up Table D Address ---I469---(---I440-I569---) I251 (H000 – L599) is listed
- Look up Table D Address ---I214---(---I210-I214---) I251 (I10 – I359) is listed
  - ✓ **I251 selected as tentative starting point using the Step SP 3.**
- Look up Table E addresses in TABB modification table Look up Table E Address ---I251---(---I250-I256---) I214 (I210 – I229) is listed. Table E acronym LMP, Rule M1
  - ✓ **I214 is not further modified.**

Please note that in this example, the certifier has considered that myocardial infarction is due to the patient’s pre-existing coronary arteriosclerosis. However, hypertension, obesity, smoking and hypercholesterolaemia may have contributed to it. This underlying cause of death selection in this case is, therefore, myocardial infarction.

In cases where the certifier has considered a myocardial infarction is due to a COVID-19 infection, and COVID-19 is reported in the lowest used line of Part 1, COVID-19 will be selected as the underlying cause of death. Updated MMDS tables supports a ‘DUE TO’ relationship between codes in the range I20.0 – I24.9 with U07.1 – U07.2.

## Coding example 4

Coding instructions for this case are based on the example completed International Form of Medical Certificate of Cause of Death, Frame A, shown in **Figure 17**.

**Figure 17: Completed International Form of Medical Certificate of Cause of Death, Frame A – case example 4**

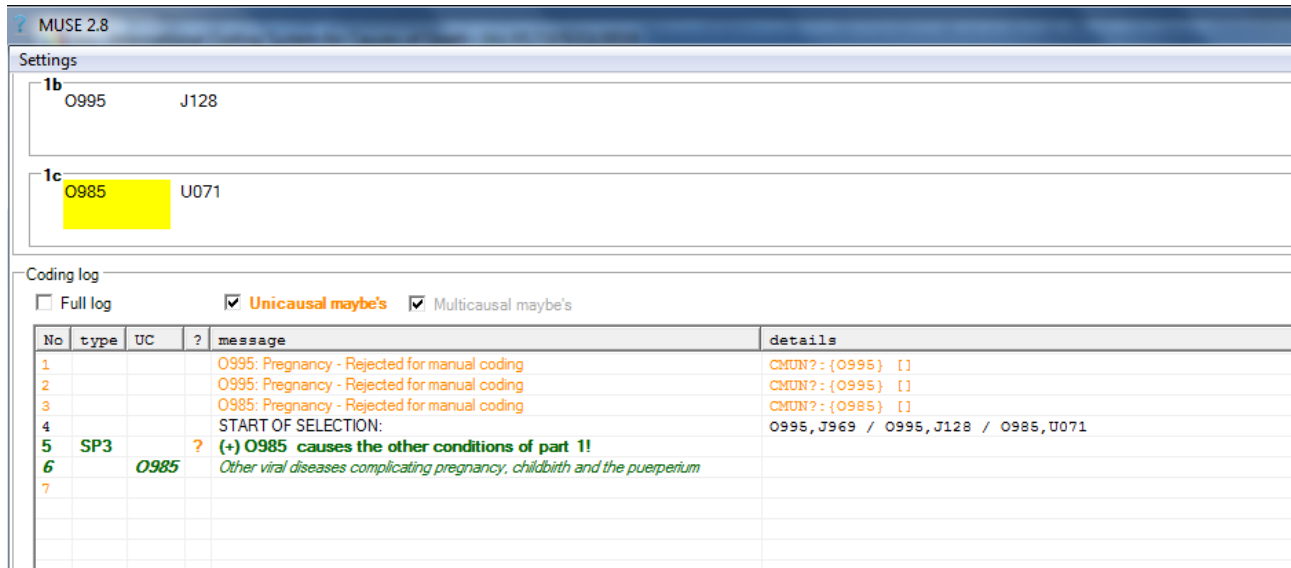
Frame A: Medical data: Part 1 and 2			
<b>1</b> Report disease or condition directly leading to death on line a  Report chain of events in due to order (if applicable)  State the underlying cause on the lowest used line		Cause of death	Time interval from onset to death
	a	<b>Respiratory failure</b>	<b>3 days</b>
	b	<sup>Du</sup> <b>Pneumonia</b>	<b>7 days</b>
	c	<sup>Du</sup> <b>Pregnancy complicated by COVID -19, 32 weeks pregnant</b>	<b>14 days</b>
	d	Due to:	
<b>2</b> Other significant conditions contributing to death (time intervals can be included in brackets after the condition)			

**Figure 18** shows the screen of the Iris Version 5.7 main window, displaying the results of the automatic coding of case example 4 (**Figure 17**).

**Figure 18: Iris Version 5.7 automated coding**

The MUSE 2.8 window (Figure 19) explains the above automatic Iris Version 5.7 coding process.

**Figure 19: MUSE 2.8 coding explanation**



## Iris Version 4

Refer to MMDS table updates above to manually check the causal relationships for COVID-19 emergency codes U07.1 and U07.2.

### Procedure for Iris Version 4

Use the decision table browser in Iris Version 5 or PDF tables obtained via the decision table browser.

As more than one line is used in Part 1, Step SP3 is applied.

- Look up Table D addresses in the TABA causal relationships table
- Look up Table D Address ---O99.5---(---O995-O997---), O98.5 (O00.0 – O99.8) is listed
- Look up Table D Address ---J96.0---(---J960 -J969---): O98.5 (G942-R002) is listed
- Look up Table D Address ---J12.8---(---J120-J168---) O98.5 (G942-R002) is listed
  - ✓ **O98.5 selected as tentative starting point.**
- Look up Table E addresses in TABB modifications table
- Look up table E address O98.5
  - ✓ No modification required
  - ✓ **O98.5 selected as the final underlying cause of death. U07.1 is retained as an additional code.**

The program partners on this initiative include: The University of Melbourne, Australia; CDC Foundation, USA; Vital Strategies, USA; Johns Hopkins Bloomberg School of Public Health, USA; World Health Organization, Switzerland.

Civil Registration and Vital Statistics partners:



## For more information contact:

CRVS-info@unimelb.edu.au  
crvsgateway.info

CRICOS Provider Code: 00116K

Version: 0720-01

### Copyright

© Copyright University of Melbourne July 2020.

The University of Melbourne owns the copyright in this publication, and no part of it may be reproduced without their permission.

### Disclaimer

The University of Melbourne has used its best endeavours to ensure that the material contained in this publication was correct at the time of printing. The University gives no warranty and accepts no responsibility for the accuracy or completeness of information and the University reserves the right to make changes without notice at any time in its absolute discretion.

### Intellectual property

For further information refer to: [unimelb.edu.au/governance/statutes](http://unimelb.edu.au/governance/statutes)