

Information Paper

Cause of Death Information in Northern Ireland: A user guide

April 2021

Introduction

The purpose of this paper is to give a short background on the information NISRA holds on deaths in Northern Ireland, and how data on the number of deaths are produced. It includes where the data come from, how cause of death is identified and the definitional differences between single or sole cause of death and underlying cause of death – to help users better understand and interpret the data.

Contents

Introduction.....	1
Death Certification.....	2
Cause of Death.....	2
Single Cause of Death.....	3
Covid-19	4

Death Certification

When someone dies, the death must be registered with the General Register Office for Northern Ireland (GRO). Before it can be registered, the Registrar must be provided with notification of the death and either a Medical Certificate of the Cause of Death (MCCD) from a medical doctor or authorisation from a Coroner. For most deaths, the doctor who attended and provided care within twenty-eight days of death completes the MCCD to the best of their knowledge and belief; a statutory requirement. This is delivered to the local Registrar who issues the formal Death Certificate and an authority for the disposal of the body (Form GRO21). The completion of the MCCD is guided by [specific instructions](#) for health and social care professionals.

The document on [Death Certification](#) on ni.gov.uk gives a full background the process of registering a death and how MCCDs are completed and why.

The MCCD then informs the contents of the death certificate when the family goes to register the death through the General Register Office. It is this information that NISRA uses to produce data on the number of deaths and their causes.

Cause of Death

The Cause of Death section of the MCCD is set out in two parts, in accordance with World Health Organisation (WHO) recommendations in the International Statistical Classification of Diseases and Related Health Problems (ICD) as shown below.

I		CAUSE OF DEATH		I	
Disease or condition directly leading to death*	(a)	IMMEDIATE CAUSE OF DEATH	These particulars are to be entered in Death Register	
		due to (or as a consequence of)			
	Antecedent causes	(b)	ANTECEDENT CAUSE(S)		
Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last		due to (or as a consequence of)			
	(c)	UNDERLYING CAUSE(S) OF DEATH		
II	II				
Other significant conditions contributing to the death, but not related to the disease or condition causing it		OTHER SIGNIFICANT CONDITIONS	

* This does not mean the mode of dying e.g. heart failure, asthma, etc. It means the disease, injury or complication which caused death. Part 1 contains the disease or condition directly leading to death and any antecedent causes (i.e. conditions that gave rise to the condition leading to death) with the underlying cause stated last. Part 2 contains significant conditions that contributed, but were not related to the diseases causing the death.

Underlying cause of death is defined as:

- (a) the disease or injury which initiated the train of morbid events leading directly to death; or
- (b) the circumstances of the accident or violence which produced the fatal injury.

World Health Organisation

Cause of death is then coded using an international coding frame ([International Statistical Classification of Diseases and Related Health Problems 10th Revision: ICD 10](#)) at which stage an underlying cause of death code is allocated.

As explained in the NISRA report on [Covid-19 and Pre-existing Conditions](#), the underlying cause of death is the condition on the lowest line of Part 1. However, in practice, it is identified by applying detailed and complex rules. This second step is done to maintain consistency and thus allow comparability over time and place. In some cases, the last mention in Part 1 is not the underlying cause of death, which has instead been recorded under Part 2 (11% of registrations) or does not appear on the MCCD at all (2% of registrations).

The [weekly deaths bulletin](#) released by NISRA is based on uncoded information directly from the death certificate (i.e. mentioned on the death certificate), before the ICD 10 coding rules have been applied and a definitive underlying cause has been allocated. The purpose of this weekly release is to give a timely estimate of excess deaths and also the number of Covid-19 related deaths that have been registered (and also that have occurred) in the previous week. The [Quarterly data](#) released by NISRA, including death counts and data on cause of death, are based on coded information and therefore reflect underlying cause of death. Both of these outputs are provisional and subject to change, but the quarterly data will give a much more final picture of the causes of death.

Based on provisional information available for calendar year 2020, Covid-19 was the underlying cause of death in 88.7% of all deaths that mentioned Covid-19 on the death certificate.

Underlying Cause	Number of deaths where condition is mentioned	Number of deaths where condition is underlying cause	% of deaths where condition mentioned was underlying condition
Cancer	5,545	4,616	83.2%
Respiratory	6,975	1,714	24.6%
Ischaemic Heart Disease	3,683	1,636	44.4%
Covid-19	1,833	1,626	88.7%

Source: 2020 provisional totals based on quarterly data

The report on [Quality and Methodology Information \(QMI\) for Northern Ireland Death Statistics](#) gives more information on the processes involved and the quality of the data that is published.

Single Cause of Death

It is not unusual for a death to have more than one cause stated in section 1 of the death certificate. In fact, in the majority of cases the death certificate will contain more than one cause of death listed in part 1. The table below shows underlying cause of death by cause and number of cases where this was the only cause mentioned on the death certificate. It should be noted that in the case of Covid-19 deaths, NISRA statisticians include deaths that mentioned only Covid-19 with or without pneumonia in Part 1 of the death certificate. Pneumonia was included as discussions with the Department of Health at the start of the pandemic indicated that certifying doctors may have made no distinction between Covid-19 and Covid-19 pneumonia. Also excluded are deaths where Covid-19 led to another condition, which in turn led to death.

Underlying Cause	Total Number of deaths	Number of deaths where nothing else is listed on death certificate	% of deaths where nothing else is mentioned on the death certificate
Cancer	4,616	1,901	41.2%
Respiratory	1,714	305	17.8%
Ischaemic Heart Disease	1,636	177	10.8%
Covid-19	1,626	112	6.9%

Source: 2020 provisional totals based on quarterly data

As a result, the data provided on cases where only one cause of death was entered on the MCCD cannot be used to make assumptions about the total number of people who died of that particular condition. The presence of another condition on the death certificate (as described previously) does not rule out a particular condition as the underlying cause of death.

Covid-19

Understandably, there has been much interest in the deaths relating to Covid-19 specifically over the last year. As this is a new condition there has been much to learn about the nature of it by the medical community, other professionals, and by the public. In addition, new emergency codes had to be allocated under ICD10 to classify it as a cause of death and guidance issued to assist doctors in the completion of MCCDs.

Difference Between Deaths with No Pre-Existing Conditions and Deaths with a Sole Cause :
The number of Covid-19 deaths with no pre-existing conditions is different to Covid-19 as a sole cause of death as it is possible for a person to have a number of conditions listed on their death certificate where they resulted from Covid-19, and therefore did NOT pre-exist the virus – this would be considered a Covid-19 death with no pre-existing conditions. However based on the information in the death certificate this would not be considered a death where Covid-19 was the sole cause, as other conditions have been listed with it. Sole cause is where only Covid-19 and no other conditions have been listed on the death certificate.

There has been much reported on how people with pre-existing conditions are often more severely impacted by Covid-19 (see NISRA paper on [Covid-19 and pre-existing conditions](#) recorded on death certificates for quantification on this where death was the outcome). There has also been information circulated on how Covid-19 might lead to other conditions (such as thrombosis, respiratory failure, septic shock etc. see for example, the article in [The Lancet](#)). These conditions would be listed on part 1 of a death certificate as contributing to death; but as they were caused by Covid-19 and would not have occurred otherwise, Covid-19 is therefore listed as the underlying cause of death and these conditions would not be considered as pre-existing. A pre-existing condition is as any mention on the death certificate of a condition that pre-dated or was independent of Covid-19.

There is also considerable interest in 'Covid-19 only' deaths (or Covid-19 as the 'sole cause of death') for example [as can be seen in the DoF disclosure log of Freedom of Information requests such as [FOI DoF/2021-0131 – Deaths in 2020 were recorded with Covid-19 \(only\), by age bracket](#) and [FOI DoF/2021-0115 – Death stats of only Covid-19 in NI, for 2020-2021](#)]. Due to the time period requested in such queries, the information provided may rely on the non-coded data (i.e. deaths where Covid-19 is mentioned anywhere on the death certificate rather than cases where Covid-19

was the underlying cause). NISRA has routinely defined 'sole' or 'only' cause as the number of cases where ONLY Covid-19¹ was mentioned on the death certificate and nothing else. That means that conditions arising as a result of Covid-19 are also excluded in this type of analysis. As illustrated in the previous section, the number of deaths where only one condition is stated does not give the full picture of the impact of that particular condition. In nearly 90% of cases, deaths where Covid-19 is mentioned on the death certificate, in fact ultimately have Covid-19 as the underlying cause of death.

The most recent analysis shows that by 31st December 2020, 1,833 deaths had been registered where Covid-19 was mentioned anywhere on the death certificate and, once coded, 1,626 (88.7%) of those deaths had Covid-19 as the underlying cause. In contrast, only 112 deaths during the same period had ONLY Covid-19 listed on the death certificate. The age profile of these Covid-19 only deaths is given below. It shows that the majority of Covid-19 only deaths were among those aged 75+ (83.9%). This is an older age profile than deaths where Covid-19 was the underlying cause of death, where 64.5% of deaths were among those aged 75+.

Age Band	Number of Covid-19 only deaths, 2020	% of Covid-19 only deaths, 2020	Number of deaths where Covid-19 was underlying cause	% of deaths where Covid-19 was underlying cause
Under 15	0	0.0	0	0.0
15-34	0	0.0	2	0.1
35-44	1	0.9	8	0.5
45-54	2	1.8	28	1.7
55-64	6	5.4	88	5.4
65-74	9	8.0	229	14.1
75-79	15	13.4	223	13.7
80-84	20	17.9	324	19.9
85-89	29	25.9	348	21.4
90+	30	26.8	376	23.1
Total	112	100	1,626	100

There was also slightly different gender profile when Covid-19 only deaths were compared with deaths where Covid-19 was the underlying cause. A higher proportion of Covid-19 only deaths were female (54.5%) when compared with deaths where Covid-19 was the underlying cause (51.0%).

Fact Check NI have also produced a [statement](#) relating to the use of Covid-19 only deaths detailing how this approach is misleading.

¹ NISRA included deaths which mentioned only Covid-19 with or without pneumonia in Part 1 of the death certificate. Pneumonia was included as discussions with the Department of Health at the start of the pandemic indicated that certifying doctors may have made. No distinction between Covid-19 and Covid-19 pneumonia.