

NOTE ON REPORTING OF DEATHS INVOLVING COVID-19

Summary

1. The two published sources of deaths involving coronavirus (COVID-19) are death registrations, and reports from public health and healthcare. NHS England reports deaths in hospitals only. In Scotland, Wales and Northern Ireland the public health agencies publish reports of deaths in all settings not just healthcare.
 - (a) **Public health and healthcare reporting** gives daily updates. Only patients with confirmed COVID-19 are included. It is reported on the date the death was reported rather than date the death happened. Figures by date of death are compiled later.
 - (b) **Death registrations** provide a definitive count with both medical and demographic detail. All deaths known or suspected to involve COVID-19 are reported, whether tested or not, along with comorbidities. This is reported by the actual date of death and has details for each day.
2. Figures from the public health and healthcare reports are announced by DHSC daily, based largely on deaths reported up to 5pm the previous day. Data come from NHS England, Public Health Agency NI, Public Health Scotland, Public Health Wales. Timing varies slightly between the countries.
3. ONS started publishing weekly data on registered deaths involving COVID-19 on 31 March for England and Wales. Northern Ireland will publish on 3 April and Scotland will start on 8 April. ONS will publish UK totals, explaining some national differences in timing, from 14 April. The three agencies use the same definitions.
4. ONS have accelerated processing of the registration data, bringing forward availability from 11 days after the end of the week for use internally within Government on an ongoing basis. The table below shows the figures so far from the sources and the reporting timetable.
5. In addition unpublished data provided by PHE for England, based on multiple combined public health and healthcare sources, are shown for comparison. The method of combining the data is still being validated to ensure there is no over-counting.

Table 1: Comparison of cumulative death counts for England¹ on selected dates

Reference Date	Published healthcare data (by date reported)	Registrations by date of death ² (internally available)	NHS England by date of death ³	PHE by date of death (not published)
20 th March	167	356	388	446
27 th March	689	1,568	1,667	1,955
1 st April	2,137	10 th April	3,766	4,352
3 rd April	3,302	13 th April	4,542	5,361
8 th April	9 th April	20 th April	9 th April	n/a
10 th April	11 th April	23 rd April	11 th April	n/a

1. Figures limited to England only to allow direct comparison across all the data sources

2. Registered up to 1 April

3. Reported up to 6 April

Detail - Time lags and completeness

6. Current sources focus mainly on counting deaths reported, rather than counts by date of death. There are variable lag effects in different datasets, that are being resolved as more datasets are released by date of death. Figures are necessarily more complete for dates further back in time from the date of reporting.
7. Comparisons show that death registration figures by date of registration are lower than healthcare reporting for the same date. This is likely to be because healthcare reporting includes deaths that had not yet been registered on that date. However, when looking at registration figures by date of occurrence, these are higher than healthcare reporting. This is because healthcare reporting relates to date of reporting not date of death (there is generally a lag between date of death and reporting), excludes deaths outside hospital (England) or in hospital without a test result, or not picked up by the reporting system.
8. A key question for use of healthcare reporting to monitor trends effectively is whether a substantial part of the difference between healthcare and registration figures is due to deaths outside hospital. The evidence so far suggests that this is not the case. Known deaths outside hospital remain in small numbers and the difference seems to be mostly caused by the timing of reporting and possibly inclusion of suspected cases.

Healthcare reporting

9. The data are rapid but not immediate – the median time from death to reporting is 3 days (England). Northern Ireland, Scotland and Wales include deaths outside hospital. Initially daily reporting did not relate clearly to date of death, but this is being remedied. The figures depend on both the rate of testing in hospitals and clinical engagement, which are likely to change over time and geography. Therefore, the relationship to total deaths is not constant over time.

PHE reporting for England

10. PHE has established a system of tracing laboratory confirmed COVID cases against central returns from hospital systems to flag new death notifications daily and has surveillance data on community deaths (e.g. private residences, care homes, prisons). These data sources are triangulated against NHS England hospital reports. This combined data stream improves the timeliness of reporting and increases ascertainment of deaths compared to healthcare reporting on its own.

Death registration

11. The relative slowness of death registrations comes from different elements of the process. The time lag of 11 days (England) comprises 7-8 days for most registrations to be complete enough and only 3 days for processing and analysis. For deaths not referred to a coroner, median time to registration is 4 days with the large majority received within 7 days; for those referred to a coroner the median is 146 days.
12. Potential options to improve the timeliness of data from death registration are:
 - (a) Faster processing. ONS processing is largely automated and will release to SAGE and internally within Government figures for registrations of deaths that occurred in week ending 27th March on 6th April. From Friday 10th April, we will provide provisional counts of occurrences from the previous week.

- (b) Faster arrival of registrations certified by doctors. Local registrars have contingency measures to (e.g.) accept registrations by phone. They wait for the informant (next of kin, etc) to call then match up a medical death certificate to complete the registration. Given extra resources at local level, it might be possible for them to proactively contact the informant to achieve registration sooner.
- (c) Faster data from coroners to ONS (similar in NI but not Scotland). Registrations by coroners are a minority but include cases important for policy such as deaths of health professionals, deaths in prison, suicides, domestic violence, traffic accidents. Registration is not possible until an inquest has been held, but a system for rapid 'without prejudice' notification by coroners might be implemented relatively easily.

Conclusions

- 13. The current sources of data are essential and bring different public value.
- 14. Work is in progress to increase the coverage and accuracy of rapid reporting from all sources. Daily death counts based on healthcare reporting are currently inconsistent. For England, the PHE combined reporting provides numbers more akin to the ONS numbers more rapidly, and may be the most useful method, subject to ongoing validation.
- 15. Measures to increase the speed of complete death registration process could be explored to improve the completeness and timeliness of death reporting.

Table 2: Summary of main differences between data sources

	Healthcare reporting (as published on GOV.UK)	Death registration by date registered (ONS, NISRA, NRS)	Death registration by date of death (ONS, NISRA, NRS)	PHE combined dataset
Coverage	UK; separate figures available for four countries.	England & Wales, Northern Ireland, Scotland separately; UK totals forthcoming.	England & Wales, Northern Ireland, Scotland separately; UK totals forthcoming.	England
	Deaths reported by that date	Deaths registered by that date	Deaths registered as occurring by that date	Deaths reported from mixed sources
Definition	England: only deaths in hospitals. Other countries all settings if reported.	Includes any place of death, including care homes.	Includes any place of death, including care homes.	Includes any place of death, including care homes.
	Only includes deaths where patient has been tested for COVID-19.	Contains deaths where COVID-19 is on the death certificate, including as suspected.	Contains deaths where COVID-19 is on the death certificate, including as suspected.	Only includes deaths where patient has a positive test for COVID-19.

BACKGROUND NOTE – DEATH REGISTRATION AND DEATHS RECORDED IN HOSPITALS

A Death registration

A1 General description of data source

Figures produced by ONS, NRS and NISRA are based the routine death registration. Each death is medically certified, registered with a local registration office, and transferred digitally to the relevant statistics agency for processing including coding of cause of death. Registration is mandatory and needed to release the body, so is assumed to be complete.

Local registration offices are facilitating death registration (using emergency legislation) during the pandemic by special measures such as taking registrations by phone instead of in person, exchanging scanned paper documents by email, and postponing registering births to manage workloads.

A2 Definitions

Standard guidance for medical certification and death registration have been updated. WHO have released new codes in the International Classification of Diseases (ICD-10) for reporting COVID-19. The agreed practice for certification is:

- The certifying doctor uses their medical judgment on whether COVID-19 was involved in the death or not, based on symptoms and clinical findings not just test results.
- All health conditions that contributed to the death are included on the certificate.

A death is classed as 'involving COVID-19' if either code appears anywhere on the certificate, either as the main cause or as a contributory factor.

A3 Timeliness of registration and processing

England and Wales

Overall, 74% of deaths are registered within a week. The median time from death to registration is less than 5 days for deaths certified by a doctor, but 146 days for deaths following coroner's inquest.

There may be referral to a coroner if the certification was unclear, the deceased was a health professional (i.e. occupational cause), there is suggestion of neglect, or the person died in prison. This is an important data gap as there is currently no way to collect such information from coroners until the completion of the inquest, which is likely to be further delayed by 'lockdown' conditions.

Registrations are keyed into an online system by the local registrar and transferred daily to ONS for processing, including coding the cause of death. Validation and coding processes, including transfers between sub-systems, take approximately two days. At least 80% of deaths are coded automatically, but those that the software cannot handle require manual resolution by trained coders.

Northern Ireland

Overall, 72% of deaths are registered within a week. The median time from date of death to registration is 3 days for deaths certified by a doctor and 14 days in cases where the coroner is involved.

Because of resource limitations, NISRA does not code deaths in NI for cause of death, but sends them to ONS for this service. This usually happens quarterly, but NISRA and ONS are currently working to increase the frequency to weekly as soon as possible. However, NISRA have started basic cause of death processing allowing COVID-19 and selected respiratory diseases to be counted separately.

Scotland

Deaths must be registered within 8 days in Scotland, but in practice, the average time between death and registration is around 3 days. The Coroner system does not exist in Scotland. Deaths can be reported to the Procurator Fiscal but this does not delay registration of death. The death is registered and then referred to the Procurator Fiscal who may provide further information at a later date which leads to a change in the cause of death. It is not expected that this will unduly affect the recording of COVID-19 deaths.

A4 Publication of statistics

England and Wales

ONS publishes a weekly bulletin on Tuesday, including deaths registered up to the Friday 11 days before. There are breakdowns by sex, broad age group and English region. From 31 March, deaths involving COVID-19 are counted separately. The bulletin on 31 March covered deaths registered up to and including 20 March, but for completeness also gave headline numbers of deaths that occurred up to 20 March, but were registered up to 25 March (the latest available data). Subsequent weekly bulletins will follow this approach.

Further ONS analysis of deaths in March, with more detailed breakdowns including by pre-existing conditions, will be published around 16 April (provisional date).

Northern Ireland

Starting on 3 April, NISRA publishes a weekly bulletin each Fridays with separate figures for deaths involving COVID-19. These are based on any mention of COVID-19 or coronavirus on the death certificate. There are breakdowns by sex and broad age group and this will be developed over time to include sub-regional disaggregation. The figures include deaths registered up to and including 27th March but for completeness also gave headline numbers of deaths that occurred up to 27th March, but were registered up to 1st April (the latest available data at time of production).

Scotland

Starting on 8 April, NRS will publish a weekly bulletin on Wednesdays with separate figures for deaths involving COVID-19. The figures include deaths registered up to up to 5th April. There are no immediate plans to include figures on death occurrences in the weekly publication but this may be reviewed.

UK

Following the publication of weekly numbers of deaths involving COVID-19 by NISRA and NRS, ONS will add a section to their weekly bulletin containing UK totals, including some breakdowns. Publications by NISRA and NRS will be signposted and differences in methods and timing explained.

B Deaths recorded in healthcare settings

B1 General description of data source

Ad hoc reporting systems have been set up urgently and are still evolving over time. The quality and transparency of the methods is improving, as is the level of detail being published. This description reflects the latest position.

England

Data are sent daily from hospital Trusts to NHS England, and from NHS England to DHSC by 2pm, reflecting deaths known up to 5pm the previous day.

Northern Ireland

The Public Health Agency has a Sharepoint site where information on deaths from coronavirus should be reported within a short time frame of occurrence. This information is accessed at 9:15am each day reflecting deaths reported up to this point in time.

Scotland

Public Health Scotland has worked with NRS to implement a new efficient procedure from 2 April, which involves cross-checking records between HPS and NRS to identify individuals who have died and have a laboratory confirmed report of COVID-19. This reconciles the available data and has allowed more accurate numbers to be produced, with revision of earlier totals.

Wales

Currently, deaths in confirmed cases are notified to Public Health Wales by a combination of clinician phone calls, correspondence and calls between medical directors, and email reports. The information provided is variable and does not allow for complete deduplication, however de-duplication by key demographics is completed, dependent on data quality. Public Health Wales notifies Welsh Government and DHSC by no later than 8pm, reflecting deaths known up to 5pm for the preceding 24 hours.

B2 Definitions

In *England*, the figures are restricted to patients who died in hospital, and who had a positive test result for COVID-19 including a post-mortem result. Patients who may have had COVID-19 but were not tested are not included.

In *Northern Ireland*, the Public Health Agency records deaths of cases that tested positive which are reported to it, including non-hospital cases (up to 29th March only hospital cases were reported to PHA.)

In *Scotland* and *Wales*, all non-hospital deaths of individuals with a positive test, if reported to the public health services, are included.

B3 Timeliness of registration and processing

In *England*, time from death to reporting is variable but on average is 3.6 days from date of death to date of report. NHS England undertakes follow-up via their regional contacts to improve data completeness. There is minimal processing or data validation. The ad hoc systems have been developed over time and vary between countries.

B4 Publication of statistics

UK figures are published by DHSC on the GOV.UK website at 2pm daily, and represent the best known position as of 5pm the previous day.

England

NHS England publish daily figures at 2pm, reflecting deaths known up to 5pm the previous day, aligned to the figures disseminated by DHSC for the UK. The figures include breakdowns of date of death by NHS Region, age group and NHS Trust for both newly announced deaths and the total number of deaths. The devolved administrations' statistics are similar but not completely comparable as regards timing and breakdowns.

Northern Ireland

The Public Health Agency's COVID-19 Surveillance Bulletin describes COVID-19 activity in Northern Ireland and is published daily at 9.30am and represent the best known position at this time.

Scotland

Numbers of COVID-related deaths in Scotland are reported at 2pm daily on the Scottish Government website, aligned with the UK figures.

Wales

Daily figures are published at health board level by 11am on the PHW website, representing data as of 7am that morning. The number of deaths is reported as of 5pm the previous day are published by PHW at 3pm.