







# NATIONAL AUDIT OF HOSPITAL MORTALITY SUMMARY REPORT 2021









The National Audit of Hospital Mortality (NAHM) gives assurance to the public and the Irish healthcare system that patterns of death (mortality), in patients admitted to hospital for treatment, are being monitored in 44 participating acute hospitals nationally.

NQAIS NAHM is one of a range of web-based tools developed and managed by The National Health Intelligence Unit (NHIU) Strategic Planning and Transformation, Health Service Executive (HSE).

	The audit focuses on patients admitted to hospital for treatment.		Inpatient medical records are coded to provide vital clinical and administrative information to the HSE for development of services and also data for clinical audit and NQAIS NAHM.
	Data collection is managed by the Healthcare Pricing Office and coded by trained coders in each hospital, then sent to the Health Intelligence Unit in the HSE to be applied to the web-based tool called NQAIS NAHM.		In each of the participating hospitals, there are staff who use NQAIS NAHM tool throughout the year to monitor deaths in all diagnoses that a patient might be admitted for, not just the six focused on in the annual report.
	Each hospital's outcomes are compared to the national average for a condition or diagnosis so the hospital can see if they are within expected limits and will carry out a review of their data if they are outside of those limit ranges.		Reports are produced in each of the hospitals, showing their outcomes for specific conditions/diagnoses, and these reports are shared with the hospital management.

## WHAT IS AN SMR?

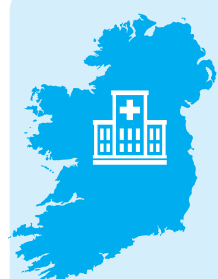
The standardised mortality ratio (SMR) is the ratio of patients who die after being admitted to hospital, versus the number expected to die. The expected number of deaths is a calculation based on the patient's **principal diagnosis** (*what was the main reason the patient was admitted to hospital for treatment*), however the principal diagnosis is not always the cause of death. The following factors are also taken into account as they are known to impact on in-hospital mortality:

	<b>AGE</b>		<b>SEX</b>
	<b>CO-MORBIDITIES</b> (other existing medical conditions)		<b>TYPE OF ADMISSION</b> (emergency or elective)
	<b>SOURCE OF ADMISSION</b> (from home, nursing home etc.)		<b>NO. OF EMERGENCY ADMISSIONS TO THE SAME HOSPITAL IN LAST 12 MONTHS</b>
	<b>PROXY LEVEL OF DEPRIVATION</b> (medical card)		<b>PALLIATIVE CARE</b> (receiving care and treatment for life threatening illness)

SMR's are an indicator of quality in hospitals. This method acts as an alert system – if the SMR is unexpectedly high or low, it alerts the hospital to the fact that further review is necessary.



COVID-19 is a virus which affects people in different ways. In Ireland COVID-19 virus is identified in hospital data as a secondary diagnosis and is not included in the risk calculations for the SMR or expected deaths in NQAIS NAHM. A "COVID-19 flag" was added to NAHM to show users in hospitals which cases had tested positive for COVID-19, or were being treated for COVID-19, during that admission to hospital. This extra information helps hospitals to analyse the data.



**44**

44 acute hospitals from the seven hospital groups contribute data to the NAHM audit and all are included in the crude mortality graphs.

**31**

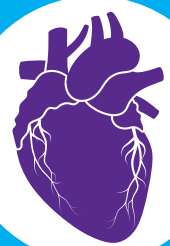
31 hospitals have met the inclusion criteria to have their data included in the hospital based SMR funnel plots in the public report.

**13**

13 hospitals data did not have high enough numbers of patients in any of the six diagnoses to have their data included in the SMR funnel plots, however, all hospitals' data is included in the NAHM web-based tool and monitored in the same way, and no hospitals were statistical outliers

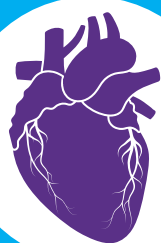
# DIAGNOSES INCLUDED IN THE NAHM ANNUAL REPORT 2021

There are six key diagnoses: acute myocardial infarction (AMI), heart failure, ischaemic stroke, haemorrhagic stroke, chronic obstructive pulmonary disease (COPD) and pneumonia included in the 2021 report. These diagnoses were chosen because they have the highest burden on the health service, and its patients, and have the largest numbers of cases admitted to hospital nationally.



## ACUTE MYOCARDIAL INFARCTION

Crude in-hospital mortality for AMI has declined steadily from 69 deaths per 1,000 admissions in 2012, to 48 deaths per 1,000 admissions in 2021.



## HEART FAILURE

Crude mortality for heart failure increased significantly by 15% between 2020 and 2021, from 63 deaths per 1,000 admissions in 2020, to 73 deaths per 1,000 admissions in 2021.

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If this increase continues, it will be investigated to see what is driving the change.



## ISCHAEMIC STROKE

There was a significant reduction (42%) in crude in-hospital mortality for ischaemic stroke from 116 deaths per 1,000 admissions in 2012, to 68 deaths per 1,000 admissions in 2021.



All hospitals had an SMR within the control limits in 2021 for the six key diagnoses in this report, and also for all diagnoses included in the web-based tool, which means they were within expected ranges despite the high numbers of COVID-19 cases.



## HAEMORRHAGIC STROKE

For Haemorrhagic stroke there was a 21% reduction in crude in-hospital mortality from 309 deaths per 1,000 admissions in 2012, to 253 deaths per 1,000 admissions in 2021.



## CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

In-hospital crude mortality for COPD shows a slight increase from 38 deaths per 1,000 admissions in 2020, to 41 deaths per 1,000 admissions in 2021.

.....  
38% decrease in the number of cases admitted to hospital with COPD since 2019.

.....  
13% of COPD in-hospital deaths during 2021 had COVID-19 recorded.



## PNEUMONIA

Pneumonia crude mortality has seen a statistically significant increase from 103 deaths per 1,000 admissions reported in 2019, to 140 deaths per 1,000 admissions reported in 2021.

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The number of patients admitted to hospital with pneumonia increased from 12,603 in 2020, to 17,720 in 2021, reflecting the high levels of COVID-19 virus circulating.

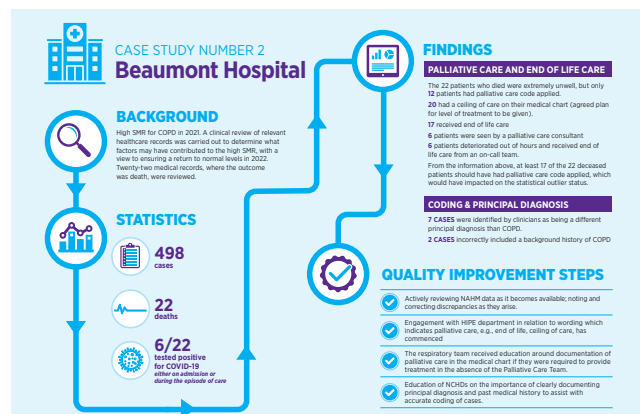
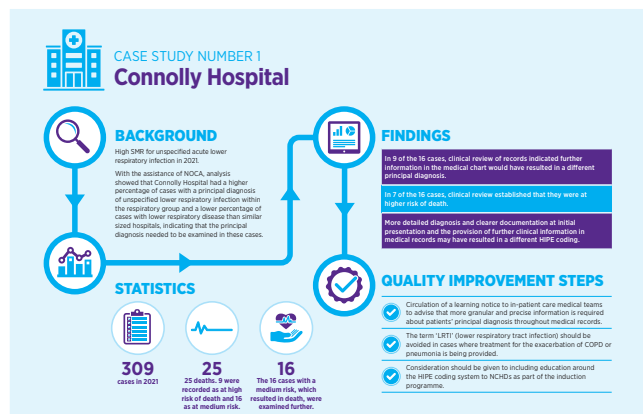
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The number of patients with viral pneumonia as their principal diagnosis has increased exponentially in the last two years due to COVID-19, rising from 26 cases in 2019, to 9,118 cases in 2021. In 2021 data, 52.1% of patients admitted to hospital for pneumonia treatment had COVID-19.

## POINTS FOR CONSIDERATION/LEARNING

- > Heart Failure crude mortality rate shows a significant increase of 15% from 2020 to 2021, however there is not sufficient data yet to pinpoint the cause of this increase. The data will be monitored and if the upward trend continues appropriate analysis will be carried out.
- > All NAHM users / hospitals should identify an area for review using NAHM data and conduct quality improvement case study similar to those included in this report.
- > Clinicians should work with local HIPE coders and carry out a review on a sample of cases to examine if the principal diagnosis assigned to those cases are correct.
- > Consideration should be given by all hospitals to include education on medical chart documentation and HIPE coding as part of the non consultant hospital doctor (NCHD)'s induction programme.

# CASE STUDIES

Two hospitals share their work in quality improvement using NAHM data. They provided background information, statistics, findings, and their quality improvement actions. The case studies highlight that improvement is still needed in accuracy of documentation in the medical records to allow accurate principal diagnosis to be coded. Also, that the words “palliative care” are not always used in the medical records, there might be other words or phrases which are not currently being recognised as being palliative care treatment under the rules of medical record coding. This is continually being worked on by NOCA to ensure that there is correct information available so that the risks can be calculated in NQAIS NAHM to provide an accurate expected outcome for patients who are at end of life and receiving palliative care treatment. (Please note that not all patients on palliative care treatment are at end of life).



## ONGOING WORK

NOCA requested an independent review of NAHM to be carried out to ensure that the audit and the web-based tool are effective to achieve its aims and to provide useful and relevant information to hospitals and the public. The review was conducted and a report was published in August 2022 (available to download from NOCA.ie). The report details how other countries report on mortality. It included recommendations on the risk calculations, how the web-based tool is used, and public reporting. NOCA is working on those recommendations and information on the outcomes will be included in future reports



## OUTLIERS

There are no outliers in the 2021 data. At the year end all hospitals had results within expected ranges for the six diagnoses included in the report, and also for all other diagnoses for which patients were admitted to the 44 participating hospitals.



## PUBLIC AND PATIENT INTEREST

As a member of the public it is reassuring to see that NAHM have continued in their efforts to improve the quality of our healthcare systems through their work, and demonstrate their commitment to public accountability with their annual report, findings, and the independent review of NAHM. It is important that the process of monitoring and measuring effectiveness is fully supported, to maintain the cycle of continuous improvement for the healthcare services, which will at some point, have an impact on all our lives.

*Claire Murtagh. Patient and Public Interest Representative, NAHM Governance Committee*



**NOCA** National Office of Clinical Audit

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IF YOU HAVE ANY QUERIES OR COMMENTS  
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