



# Ministry of Health Consolidated Analytics Services

**Title** Hospitalizations of Select Cardiac Conditions in BC

*Jan. 01, 2018 - June 30, 2022 (inclusive)*

**Completion Date** 2023-01-17

**Client** FOI: Individual applicant (name not disclosed)

## Question being asked

The requester asked for:

The number of Heart attacks in BC per year from January 1, 2018 through to December 12, 2022. (Date Range for Record Search: From 1/1/2018 To 12/12/2022)

Modified (Jan 9, 2023) to ALL types of heart attacks with acknowledgement of date range cut-off of June 30, 2022

This report is for an individual from general public.

## Summary of Analysis

This report summarizes the annual number of hospitalizations in B.C. with the most responsible diagnoses related to heart attack, heart failure, or cardiac arrest for patients that were discharged between January 1, 2018 and June 30, 2022. Cases, wherein the patient had an heart attack but was not hospitalized, are not captured in the Discharge Abstract Dataset database. Other cases may be captured that have diagnoses for the relevant conditions but were excluded from this report as they represented co-morbidities instead of primary conditions for hospitalizations.

The term, *heart attack*, is often used interchangeably with heart failure and cardiac arrest by the general public, even though clinically it refers to a specific condition. Therefore, this report included all three conditions and categorized them as heart attack, heart failure, or cardiac arrest. Below describes the terms and the definitions for the three cardiac conditions.

*Heart attack (myocardial infarction)* : This condition occurs when there is partial or complete restriction of blood flow to areas of the heart. Without the oxygen and nutrients contained in blood, the heart muscle will die. Several conditions can contribute to heart attacks, including but not limited to: narrowing of coronary arteries and/or arterial spasms, building up of plaques, or clots coming from other regions of the body.

*Heart failure* : This condition occurs when the heart is unable to pump sufficient blood through the body. The heart muscle becomes weaker and heart failure may occur suddenly (acute) or gradually (chronic). Weakening of heart muscles and heart failure may result from many types of conditions, including but not limited to: heart attacks, arterial hardening, heart valve disease, infections or use of some substances.

*Cardiac arrest* : This condition occurs when the heart stops beating. The heart has electrical signals that regulate the rhythm of contractions of the upper (atrium) and lower (ventricle) heart chambers. Disruptions in the electric signals can cause irregular heartbeats (arrhythmias) and lead to fibrillation, which can trigger cardiac arrest. Several causes have been attributed to cardiac arrest, including but not limited to: genetics that control heart structure and/or rhythm, lack of oxygen, deficiency or excess of important nutrients (particularly potassium and/or magnesium), and/or existing cardiac conditions.



# Ministry of Health Consolidated Analytics Services

Overall, the combined total number of cases, for the three conditions, averaged approximately 21,200 cases per year between 2018 and 2021; ranging from 20,533 cases in 2020 to 21,847 cases in 2019 (Note: The number for 2022 was not taken into account for this calculation as the dataset for this year is incomplete).

Of those cases, the proportions of the three conditions remained steady over the years. Specifically, heart attack (myocardial infarction) was found to have the yearly average of 11,848 cases (56%, ranging 55% to 57%), heart failure was 8,993 cases (42%, ranging 42% to 43%), and cardiac arrest was 380 cases (2% across years).

While the annual proportional trend remained fairly steady, a year-over-year comparison of each diagnostic category showed some variation. For heart attacks, there was about 6% increase (662 cases) in 2019 from the previous year, followed by 5% decrease (626 cases) in 2020 and 3% increase (234 cases) in 2021 each from the previous years. For heart failure, there was about 2% increase in 2019 from 2018 (137 cases), followed by 8% decrease (696 cases) in 2020 and 7% increase (569 cases) in 2021 from the previous years. Cardiac arrest cases were the only reviewed cardiac conditions that increased in volume during 2020 but declined during the previous (2019) and subsequent years (2021). Since 2020 was a pandemic year, this circumstance might have affected the number of hospitalizations, therefore, caution must be taken in interpreting the data.

## Prepared by

Integrated Analytics: Primary Care, Acute Care, and Workforce | Hospital & Diagnostic Analytics

## SME Contact

Integrated Analytics: Primary Care, Acute Care, and Workforce | Hospital & Diagnostic Analytics

SME = Subject Matter Expert

<b>RMS #</b>	4807	<b>Filename</b>	Select Cardiac related Hospitalizations in BC 2018-2022.xlsx
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*The information contained in this/these spreadsheet(s) is of a summary nature and may be released in its entirety (Cover Sheet and relevant Tabs) for the purpose for which it was provided. However, as it was prepared to address a specific question, other use or manipulation of the data is not permitted.*

## Hospitalizations of Select Cardiac Conditions in BC

**Filename** Select Cardiac related Hospitalizations in BC 2018-2022.xlsx

**Data source** 1 Discharge Abstract Database (DAD)

**Extract date** 2023-01-16

### Notes

- 1 The term, *Heart attack*, is often used interchangeably with heart failure and cardiac arrest by the general public while this term medically refers to a specific condition. Below describes the terms and the definitions for the three cardiac conditions.

*Heart attack* (myocardial infarction): This condition occurs when there is partial or complete restriction of blood flow to areas of the heart. Without the oxygen and nutrients contained in blood, the heart muscle will die. Several conditions can contribute to heart attacks, including but not limited to: narrowing of coronary arteries and/or arterial spasms, building up of plaques, or clots coming from other regions of the body.

The diagnosis code includes: i21, i22

*Heart failure*: This condition occurs when the heart is unable to pump sufficient blood through the body. The heart muscle becomes weaker and heart failure may occur suddenly (acute) or gradually (chronic). Weakening of heart muscles and heart failure may result from many types of conditions, including, as examples: heart attacks, arterial hardening, heart valve disease, infections or use of some substances.

The diagnosis code includes: i50

*Cardiac arrest*: This condition occurs when the heart stops beating. The heart has electrical signals that regulate the rhythm of contractions of the upper (atrium) and lower (ventricle) heart chambers. Disruptions in the electric signals can cause irregular heartbeats (arrhythmias) and lead to fibrillation, which can trigger cardiac arrest. Several causes have been attributed to cardiac arrest, for instance: genetics that control heart structure and/or rhythm, lack of oxygen, deficiency or excess of important nutrients (particularly potassium and/or magnesium), and/or existing cardiac conditions.

The diagnosis code includes: i46

- 2 DAD dataset for the open fiscal year (FY2022/23) is incomplete due to the latency of the data processing system. Accordingly, the most complete hospital data available is up to June 30, 2022. Therefore, the date range for this extract is from January 1, 2018 to June 30, 2022. Cases of patients currently hospitalized but admitted between January 1 - June 2022 are not included. Open year data is also subject to change due to corrections.
- 3 The database includes only the cases that resulted in hospitalizations with heart attack, heart failure, and cardiac arrest diagnosis. Therefore, if a patient had an heart attack that did not result in a hospitalization, the database does not capture the case.

## Hospitalizations of Select Cardiac Conditions in BC

**Filename** Select Cardiac related Hospitalizations in BC 2018-2022.xlsx

**Data source** 1 Discharge Abstract Database (DAD)

**Extract date** 2023-01-16

### Notes

- 4 Cases that have the most responsible diagnosis of either i21, i22, i46, or i50 diagnosis code were included (diagx1 like 'i21%' or diagx1 like 'i22%', diagx1 like 'i50%', diagx1 like 'i46%'). Accordingly, if a case had multiple heart disease diagnoses, the primary condition was used for counts of cardiac groupings. Cases with comorbidities of heart disease, without a most responsible diagnosis of heart attack, heart failure, or cardiac arrest, were not included.
- 5 All care levels are included (care\_level in ('A','S','R','P')).
- 6 Still birth and cadaveric donor cases were excluded (admit not in ('R','S'))
- 7 Abortion cases were excluded (abortion is null).
- 8 Cases occurred at hospitals that are out of province were excluded (hops ^= 997 and hospprov = '9')
- 9 Cases were summarized by the years when patients were formally discharged (separate between January 1, 2018 and June 30, 2022).



## Hospitalizations of Select Cardiac Conditions in BC

January 1, 2018 to June 30, 2022

RMS 4807

### Heart Attack, Heart Failure, and Cardiac Arrest Hospitalizations in BC by Calendar Year

	2018	2019	2020	2021	2022 (to June 30)*
Heart Attack	11,579	12,241	11,615	11,955	5,831
Heart Failure	9,096	9,233	8,537	9,106	4,553
Cardiac Arrest	389	373	381	378	198
<b>Total</b>	<b>21,064</b>	<b>21,847</b>	<b>20,533</b>	<b>21,439</b>	<b>10,582</b>

N.B. Caution should be exercised when interpreting data; please refer to the Notes tab for important information.

N.B. Cite sources when using these data.

\* The information in calendar year 2022 is still classified as being open and therefore is subject to change. The information may be incomplete, meaning the best available data includes up to June 30, 2022. Information may change due to the addition of new records or correction of existing records. Only cases for discharged patients are included.

The database includes only the cases that resulted in hospitalizations with heart attack, heart failure, and cardiac arrest diagnosis. Therefore, if a patient had an heart attack that did not result in a hospitalization, the database does not capture the case.

Only cases that have diagnoses in one of the three reported cardiac groupings, as the main diagnosis (Most Responsible Diagnosis), were included.

**Heart attack (myocardial infarction):** This condition occurs when there is partial or complete restriction of blood flow to areas of the heart. Without the oxygen and nutrients contained in blood, the heart muscle will die. Several conditions can contribute to heart attacks, including: narrowing of coronary arteries and/or arterial spasms, building up of plaques, or clots coming from other regions of the body.

**Heart failure:** This condition occurs when the heart is unable to pump sufficient blood through the body. The heart muscle becomes weaker and heart failure may occur suddenly (acute) or gradually (chronic). Weakening of heart muscles and heart failure may result from many types of conditions, including: heart attacks, arterial hardening, heart valve disease, infections or use of some substances.

**Cardiac arrest:** This condition occurs when the heart stops beating. The heart has electrical signals that regulate the rhythm of contractions of the upper (atrium) and lower (ventricle) heart chambers. Disruptions in the electric signals can cause irregular heartbeats (arrhythmias) and lead to fibrillation, which can trigger cardiac arrest. Several causes have been attributed to cardiac arrest, including: genetics that control heart structure and/or rhythm, lack of oxygen, deficiency or excess of important nutrients (particularly potassium and/or magnesium), and/or existing cardiac conditions.