

BCUHB Mortality Quarterly Report

December 2022

Version 1.1

Executive Summary

- Reviewing Mortality Data from CHKS based on population BCUHB is not an outlier compared to Welsh peers for any mortality indices.
- ONS data reveals that while we are not an outlier in terms of mortality, there is a significant disparity in life expectancy in areas of deprivation in Rhyl and Denbighshire.
- The ME service gives us learning on an individual case basis, has given a 'voice to the bereaved' and been rich in identifying themes and potential improvements that can reduce mortality.

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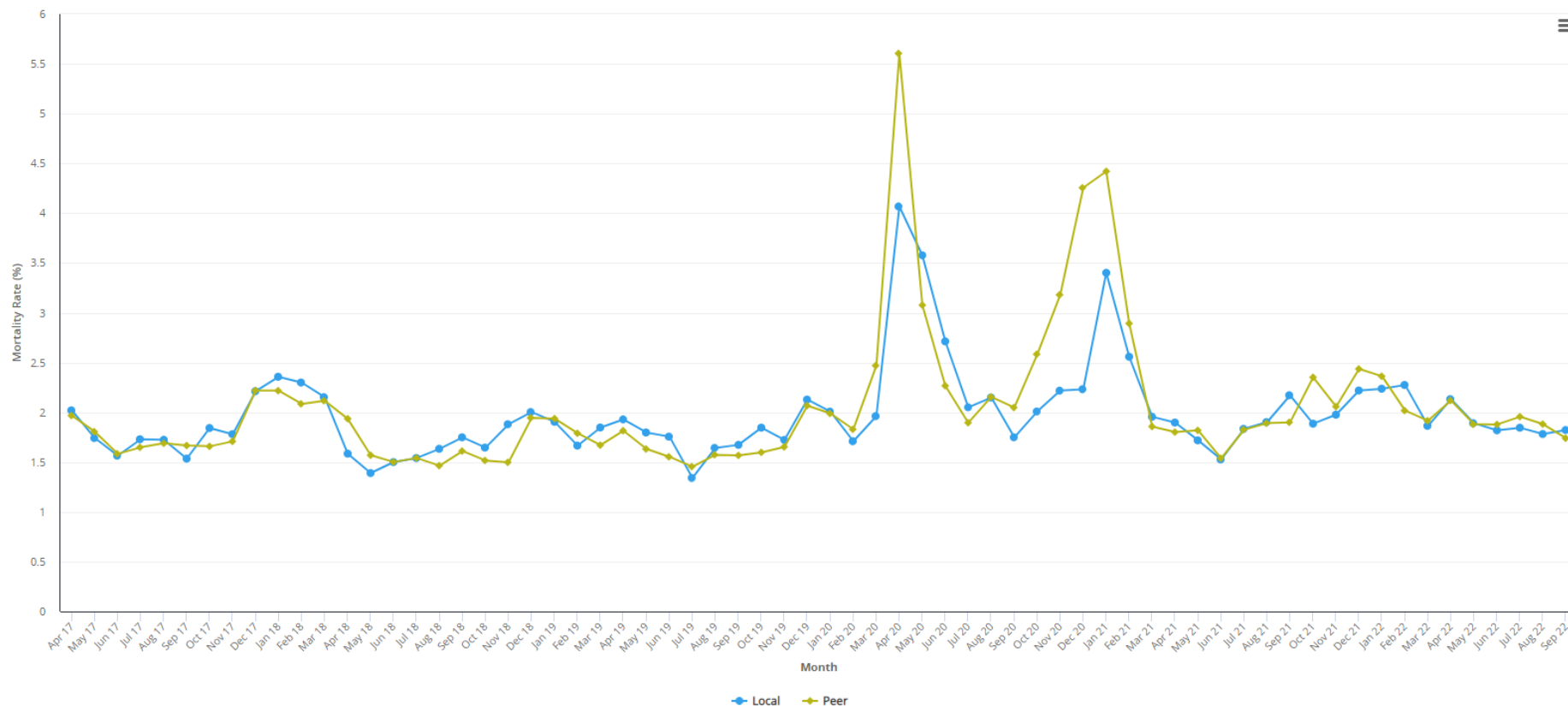
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Peer Group used throughout is 'All Other Welsh Health Boards excluding Powys'

Crude Mortality Rate - BCUHB vs Peer



Indicator definition

Numerator = Spells where the patient died

Denominator = Total spells excluding well babies

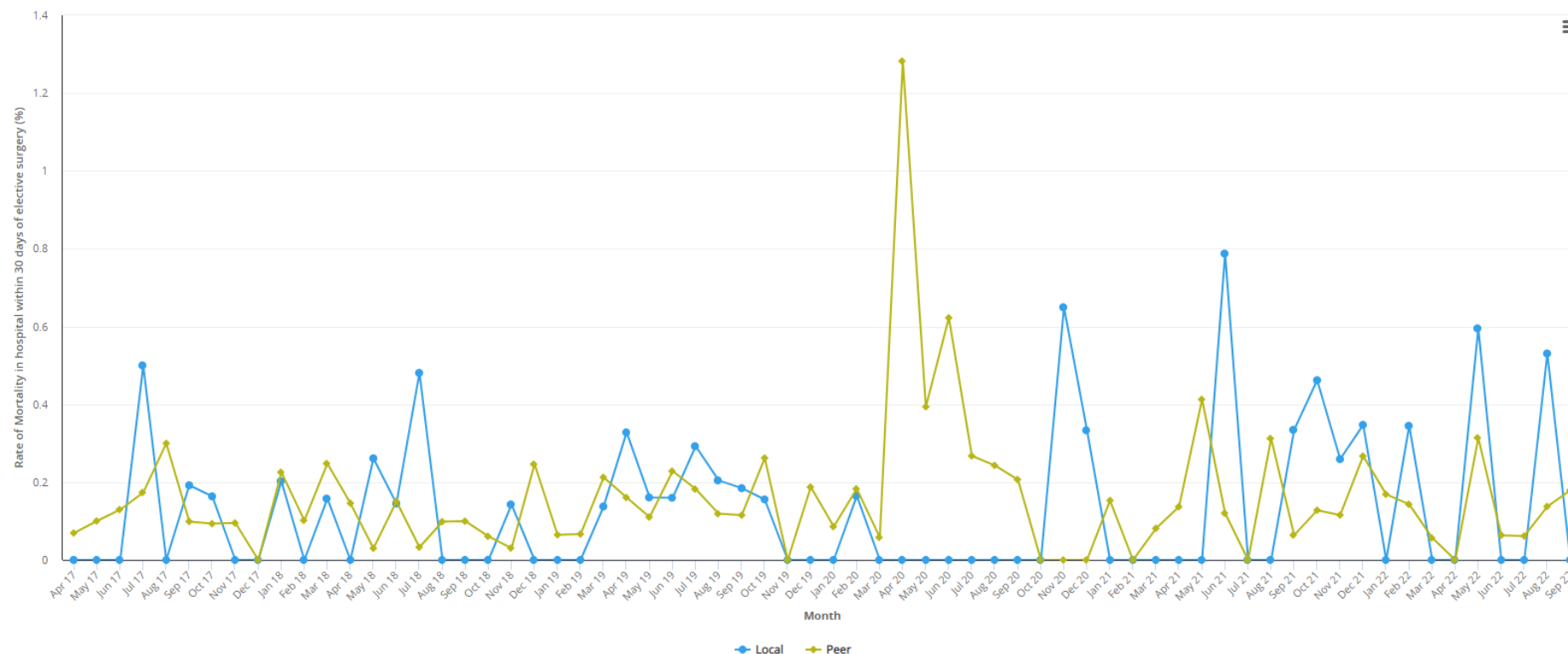
Exclusions = None

Type = Percentage

Orientation = Lower is better

Elective Post-Op Mortality

Rate of Mortality in hospital within 30 days of elective surgery - BCUHB vs Peer



Indicator definition

Numerator = Total elective surgical spells (i.e. the spell contains an operative procedure) where the patient died, with a post-operative length of stay less than 30 days

Denominator = Total elective surgical spells (i.e. the spell contains an operative procedure)

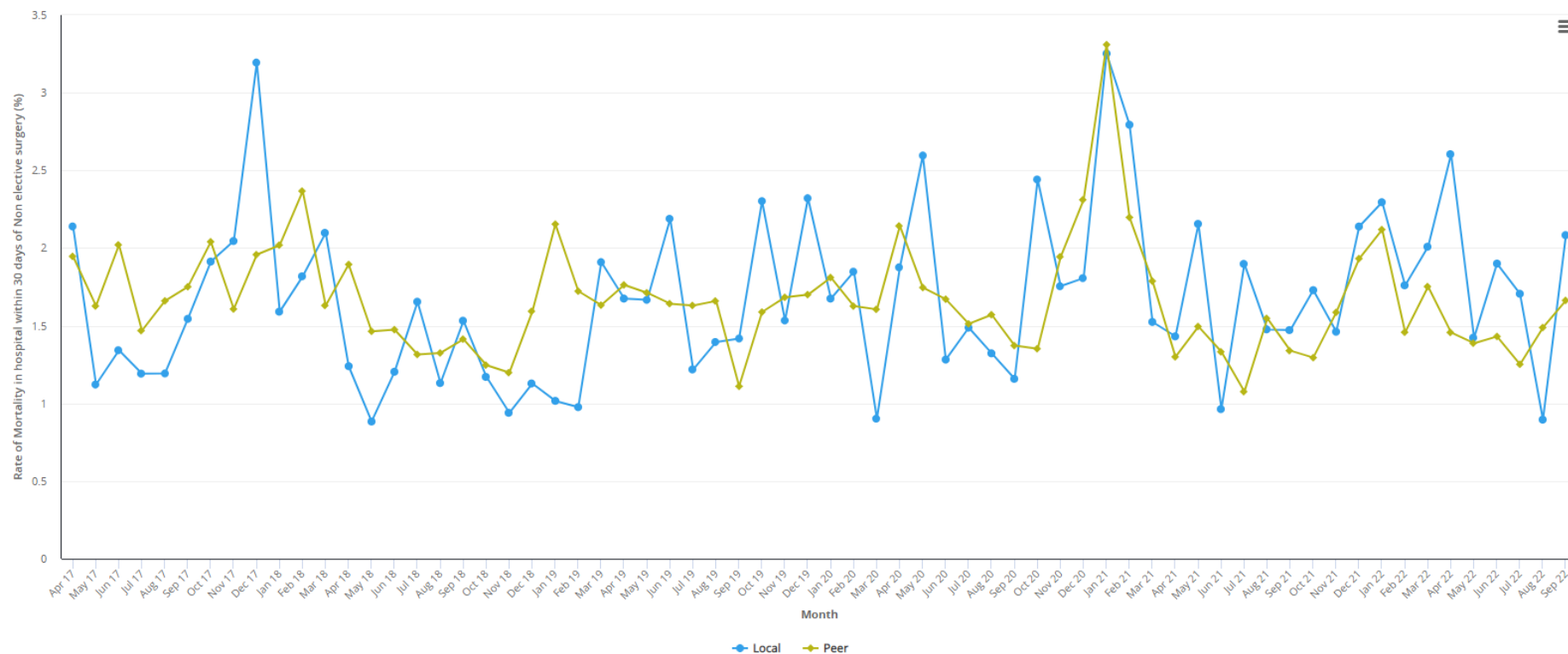
Exclusions = A cancer diagnosis in any position within the spell; Day cases

Type = Percentage

Orientation = Lower is better

Non-Elective Post-Op Mortality

Rate of Mortality in hospital within 30 days of Non elective surgery - BCUHB vs Peer



Indicator definition

Numerator = Total non-elective surgical spells (i.e. the spell contains an operative procedure) where the patient died, with a post-operative length of stay less than 30 days

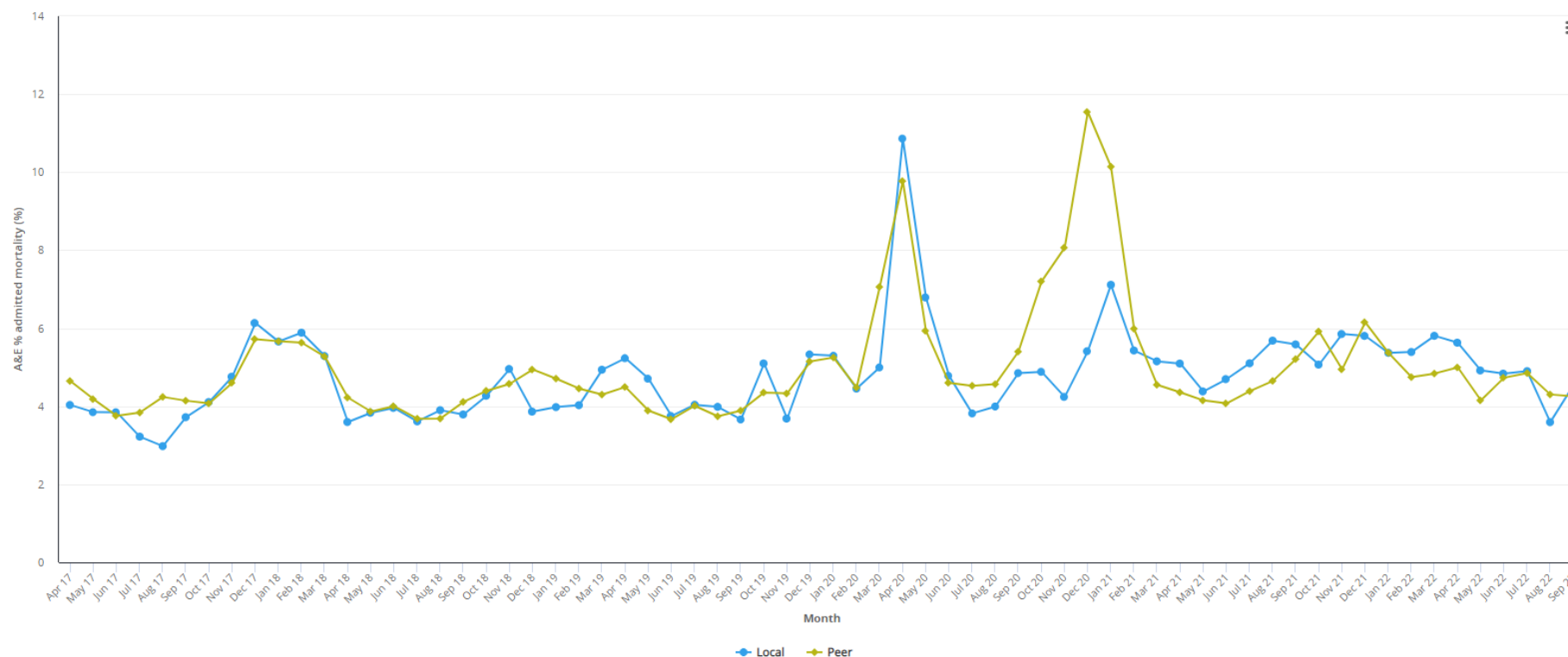
Denominator = Total non-elective surgical spells (i.e. the spell contains an operative procedure)

Exclusions = A cancer diagnosis in any position within the spell; Day cases

Type = Percentage

Orientation = Lower is better

A&E % Admitted Mortality - BCUHB vs Peer



Indicator definition

Numerator = A&E attendance resulting in an admission AND the attendance was successfully linked to an admitted patient care spell AND the patient died

Denominator = A&E attendance resulting in an admission AND the attendance was successfully linked to an admitted patient care spell

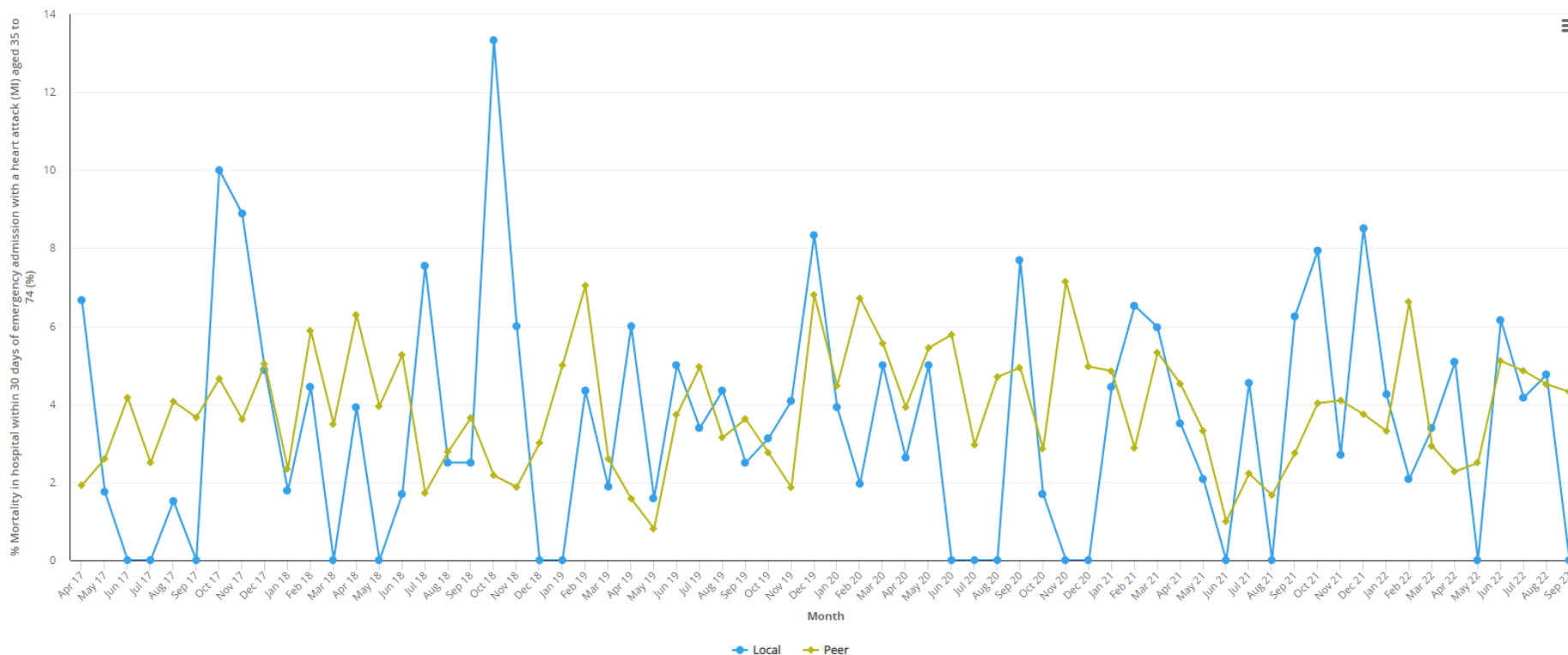
Exclusions = None

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Condition Specific Mortality Rates

% Mortality in hospital within 30 days of emergency admission with a heart attack (MI) aged 35 to 74 - BCUHB vs Peer



Indicator definition

Numerator = Emergency spells, where the patient died in hospital within 30 days of admission with a primary diagnosis of myocardial infarction AND age >34 and <75

Denominator = Emergency spells with a primary diagnosis of myocardial infarction AND age >34 and <75

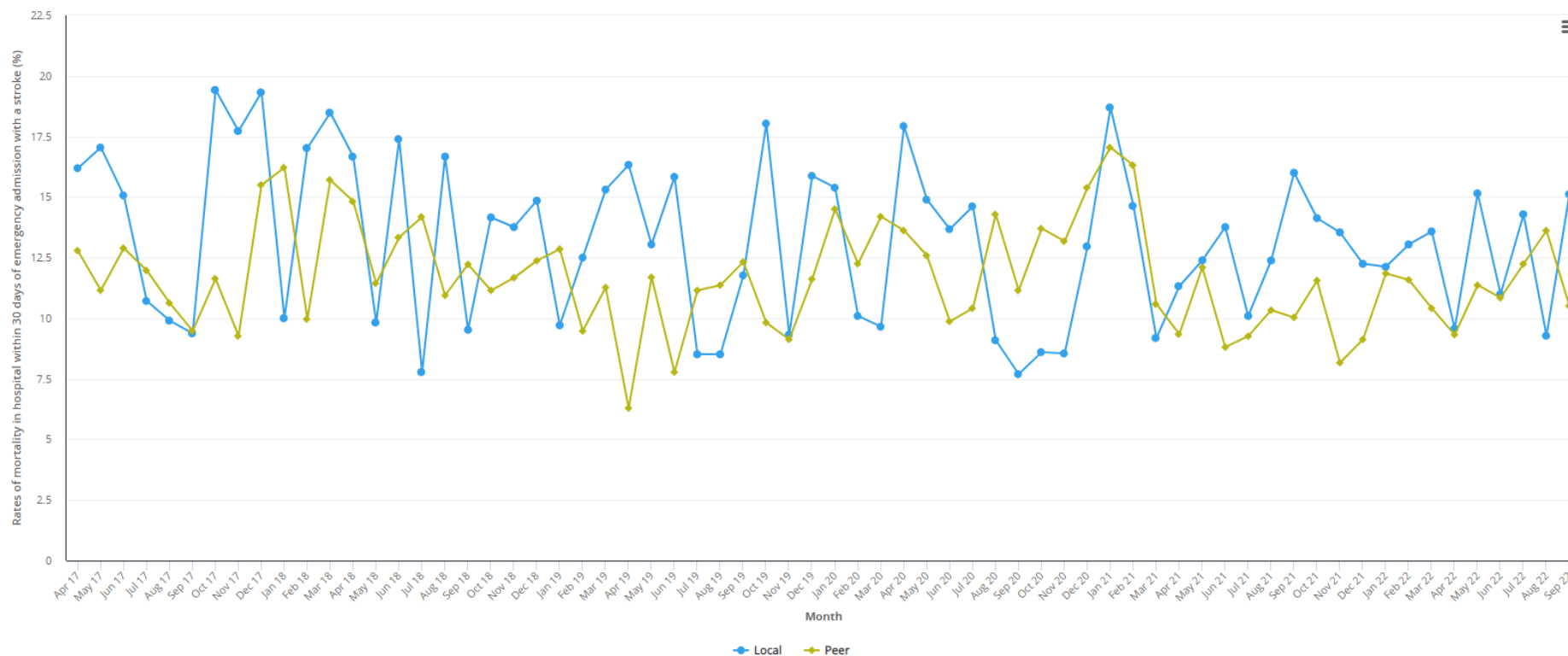
Exclusions = None

Type = Percentage

Orientation = Lower is better

Condition Specific Mortality Rates

Rates of mortality in hospital within 30 days of emergency admission with a stroke - BCUHB vs Peer



Indicator definition

Numerator = Emergency admission AND Primary Diagnosis of stroke OR Emergency admission AND Episode Length of stay of Finished Consultant Episode 1 in spell <2 AND Primary Diagnosis of stroke of Finished Consultant Episode 2 in spell AND Discharge Method = 4 AND Spell LOS <30

Denominator = Emergency admission AND Primary Diagnosis of stroke OR Emergency admission AND Episode Length of stay of Finished Consultant Episode 1 in spell <2 AND Primary Diagnosis of stroke of Finished Consultant Episode 2 in spell

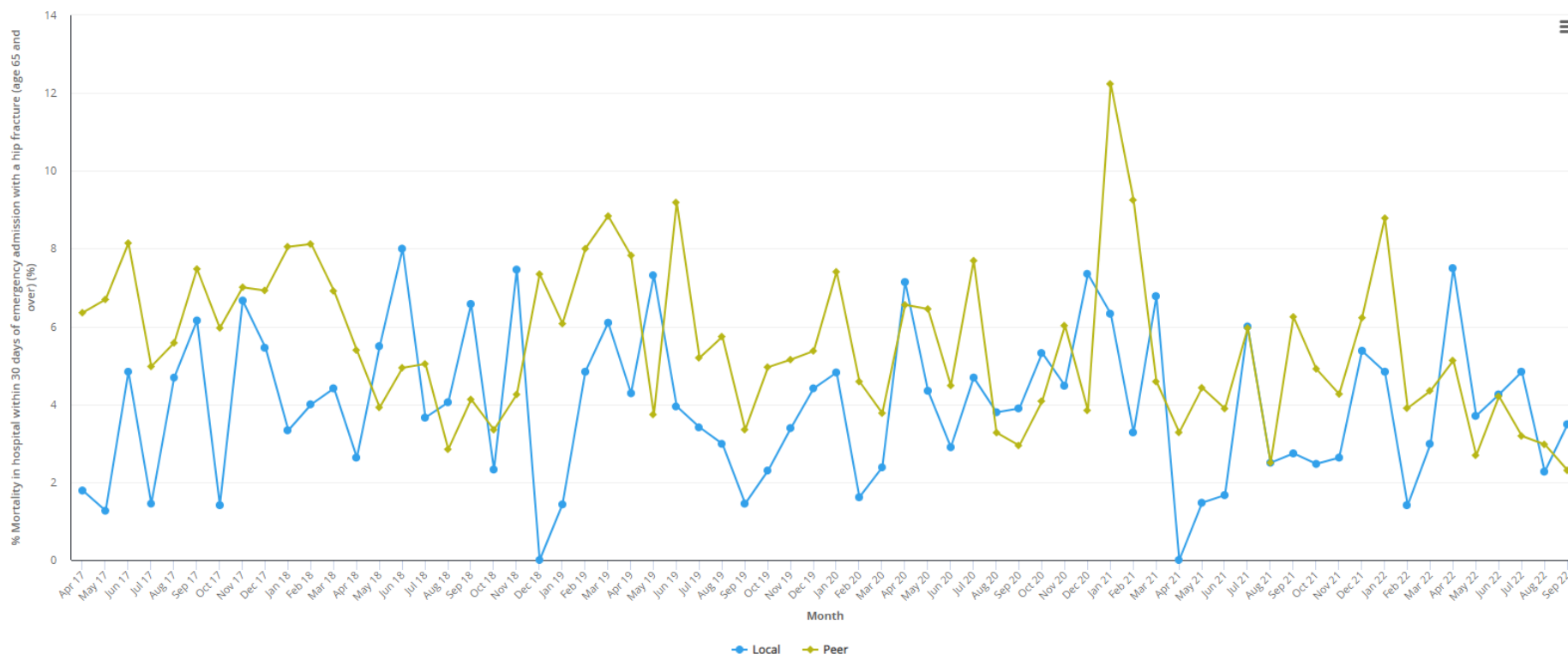
Exclusions = None

Type = Percentage

Orientation = Lower is better

Condition Specific Mortality Rates

% Mortality in hospital within 30 days of emergency admission with a hip fracture (age 65 and over) - BCUHB vs Peer



Indicator definition

Numerator = Total emergency spells AND patient died AND los <30 AND primary diagnosis of fractured neck of femur AND age >64

Denominator = Total emergency spells AND primary diagnosis of fractured neck of femur AND age >64

Exclusions = Source of admission was "NHS other hospital provider - ward for general patients or the younger physically disabled or A & E department"

Type = Percentage

Orientation = Lower is better

Life Expectancy at Birth

Life expectancy is a measure of the average expected years of life for a newborn based on recently observed mortality rates and is an estimate for the general population.

Overall life expectancy for males in Wales has remained fairly stable since 2011-13 to 78.3 years in 2018-20. In BCUHB in 2018-20, life expectancy for males was 78.8 years. Male life expectancy is more than 7-years lower in the most deprived areas compared to least deprived, with healthy life expectancy more than 12-years lower.

In Wales, females can expect to live around four years longer than males. Life expectancy for females in Wales has also remained stable since 2011-13 to 82.1 years in 2018-20. In BCUHB, life expectancy in 2018-20 was 82.3 years. Female life expectancy is more than 6-years lower in the most deprived areas compared to least deprived in Wales during 2018-2020, with healthy life expectancy almost 17-years lower.

Source: [Public Health Wales Observatory, PHOF Tool](#).

Age-Standardised Mortality Rates (ASMRs) Based on Deaths Registered in 2019

Age-standardisation allows for comparison of mortality rates across different populations while taking account of different age structures of those populations. Failure to take account of different age structures can be misleading when comparing rates in different populations. For example, in an area with a high proportion of older people, one would expect more people to die than in an area with a low proportion of older people. Without age standardisation, it would be difficult to compare the death rates in two such areas.

Across BCUHB, age-standardised mortality rates in Gwynedd, Conwy and Flintshire are statistically significantly lower than Wales. Rates in Denbighshire and Wrexham are statistically significantly higher than the Wales rate.

Age-standardised mortality rates (ASMRs) by sex and area of usual residence, registered 2021

	Persons			Males			Females		
	ASMR	LCL	UCL	ASMR	LCL	UCL	ASMR	LCL	UCL
Wales	1,062	1,051	1,073	1,235	1,216	1,253	917	903	930
Betsi Cadwaladr UHB	1,029	1,007	1,051	1,157	1,121	1,192	913	886	941
Isle of Anglesey	1,017	950	1,084	1,240	1,124	1,356	846	765	926
Gwynedd	929	879	978	1,031	951	1,111	836	773	898
Conwy	931	885	978	1,082	1,006	1,159	809	752	866
Denbighshire	1,197	1,132	1,262	1,266	1,166	1,365	1,126	1,041	1,211
Flintshire	1,001	952	1,050	1,131	1,053	1,209	879	818	940
Wrexham	1,177	1,120	1,234	1,268	1,180	1,355	1,078	1,004	1,153

Source: Office for National Statistics

Source: [Office for National Statistics, Age-standardised Mortality Rates](#)

Avoidable Mortality

The basic concept of avoidable mortality is that deaths caused by certain conditions, for which effective medical and public health interventions are available, should be rare and ideally should not occur. It is widely accepted that the contribution of healthcare to improvements in population health ought to be quantified. Avoidable deaths are all those defined as preventable, amenable (treatable) or both.

The all persons avoidable mortality rate in BCUHB has fluctuated between 2017 and 2019 and increased in 2020, but it has remained below the Wales rate. In 2020, BCUHB had the fourth highest health board avoidable mortality rate in Wales (270.3 per 100,000) and was lower than the Wales average (286.9 per 100,000) although not statistically significantly lower.

Avoidable mortality rates are higher in males than females. In 2020, the rates were 327.6 per 100,000 males compared to 215.1 per 100,000 females. There were 1,918 avoidable deaths in BCUHB in 2020; 59% were in males.

Wales has the highest avoidable mortality rate in the UK for deaths due to coronavirus (36.1 per 100,000 population); Scotland had the lowest rate (28.5 per 100,000 population).

Source: [Office for National Statistics, Avoidable Mortality](#)

Excess Winter Deaths

Excess Winter Deaths (EWD) are defined as the number of deaths in the winter period (December to March) which occur over and above the expected number for that period. The Excess Winter Mortality (EWM) Index is produced so that comparisons can be made between sexes, age groups and regions. It is calculated as the number of excess winter deaths divided by the average non-winter deaths, expressed as a percentage. For example, an EWM index of 20 shows that there were 20% more deaths in winter compared with the non-winter period.

Provisional data show there were around 63,000 excess winter deaths in England and Wales in winter 2020 to 2021, which is 6.1 times higher than winter 2019 to 2020 (final data). The increase is due mainly to the large number of Covid-19 deaths in the non-winter months of 2020 and the winter months of 2021. Covid-19 was the leading cause of excess winter mortality in 2020 to 2021 accounting for 84% of all excess winter deaths in England and 82.9% in Wales.

In 2019/20, Denbighshire had the highest EWM (excluding Covid-19) across BCUHB and was higher than Wales, but not statistically significantly higher. For EWM including Covid-19, Denbighshire was also the highest across BCUHB and statistically significantly higher than Wales. EWM (including Covid) on the Isle of Anglesey and in Conwy were statistically significantly lower than Wales.

Source: [Office for National Statistics, Excess Winter Mortality](#)

Excess Winter Mortality, Wales & North Wales unitary authorities, 2019/20 (final data)

	EWM including Covid-19			EWM excluding Covid-19		
	EWM Index	LCL	UCL	EWM Index	LCL	UCL
Wales	10.0	9.4	10.5	20.8	20.0	21.7
Isle of Anglesey	6.9	3.8	9.9	13.8	9.3	18.4
Gwynedd	10.5	7.6	13.5	17.7	13.7	21.7
Conwy	4.4	2.6	6.1	15.4	11.9	19.0
Denbighshire	11.4	8.2	14.6	26.2	21.0	31.3
Flintshire	7.4	5.1	9.7	21.6	17.5	25.8
Wrexham	6.3	4.1	8.5	17.5	13.6	21.4

Source: Office for National Statistics

Perinatal Mortality, 2020

Perinatal deaths can be defined as stillbirths plus deaths in the first week of life (i.e. deaths under 7 days.) Perinatal mortality rates in Wales have remained largely unchanged since 2006.

In 2020, there were 187 perinatal deaths registered in Wales. The perinatal mortality rate for Wales was 6.5 deaths per 1,000 live births and stillbirths in 2020. The rates for North Wales unitary authorities are based on small numbers and should therefore be treated with caution.

Number of perinatal deaths and perinatal mortality rate per 1,000 live births and still births, Wales and North Wales unitary authorities, 2020

	Number	Mortality rate
Wales	187	6.5
Isle of Anglesey	5	8.5*
Gwynedd	<5	**
Conwy	6	6.2*
Denbighshire	<5	4.4*
Flintshire	12	8.5*
Wrexham	12	9.1*

Source: Office for National Statistics

* low reliability

**not available

Source: [Office for National Statistics, Perinatal Deaths](#)

Percentage of Deaths in NHS Hospitals by Place of Occurrence, 2020

In 2021, there were 36,135 deaths in Wales, of which 18,016 occurred in NHS hospitals (acute or community, not psychiatric), representing 49.9% of total deaths by place of occurrence in Wales.

Within BCUHB, there were 8,519 deaths in UHB residents, of which 4,067 (47.7%) deaths took place in NHS hospitals.

Source: [Office for National Statistics, deaths registered in England and Wales](#)

Deprivation: Percentage of Lower-layer Super Output Areas (LSOAs) by Deprivation Fifths

The Welsh Index of Deprivation (WIMD) 2019 is the official measure of deprivation in small areas in Wales. It is a relative measure of concentrations of deprivation at small area level. WIMD is constructed from eight different types of deprivation. These are: income, housing, employment, access to services, education, health, community safety and the physical environment. The small area levels are known as Lower-layer Super Output Areas (LSOAs) and are based on defined geographical areas based on Census output areas with an average of 1,600 persons per LSOA. Based on Census 2011, there are 1,909 LSOAs in Wales. The number of LSOAs varies widely between health boards.

BCUHB has some of the most deprived areas in Wales, particularly along the North Wales coastline. Rhyl West 2 and Rhyl West 1 are the first and second most deprived LSOAs in Wales.

Denbighshire has the highest percentage of LSOAs in the most deprived 10% LSOAs in Wales.

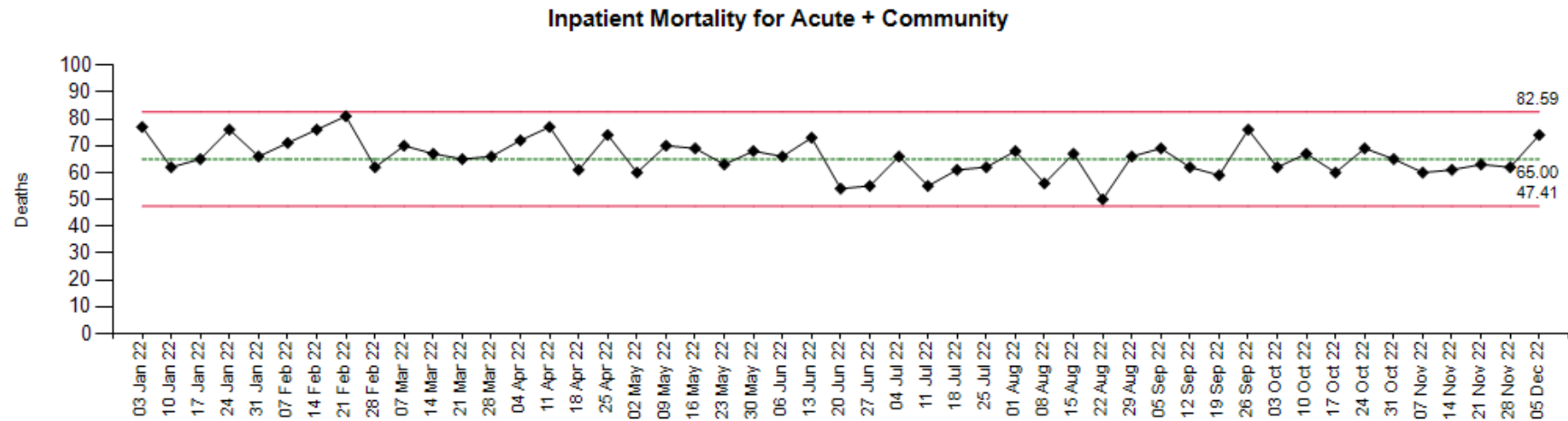
Percentage of LSOAs by deprivation fifth, Betsi Cadwaladr UHB and unitary authorities, 2019

	Most deprived 10% LSOAs in Wales (ranks 1 - 191) (2)	Most deprived 20% LSOAs in Wales (ranks 1 - 382) (3)	Most deprived 30% LSOAs in Wales (ranks 1 - 573) (4)	Most deprived 50% LSOAs in Wales (ranks 1 - 955) (5)
Betsi Cadwaladr UHB	5	11	20	38
Isle of Anglesey	2	14	18	39
Gwynedd	3	5	8	34
Conwy	6	13	20	41
Denbighshire	12	16	22	47
Flintshire	3	11	20	32
Wrexham	7	12	28	41

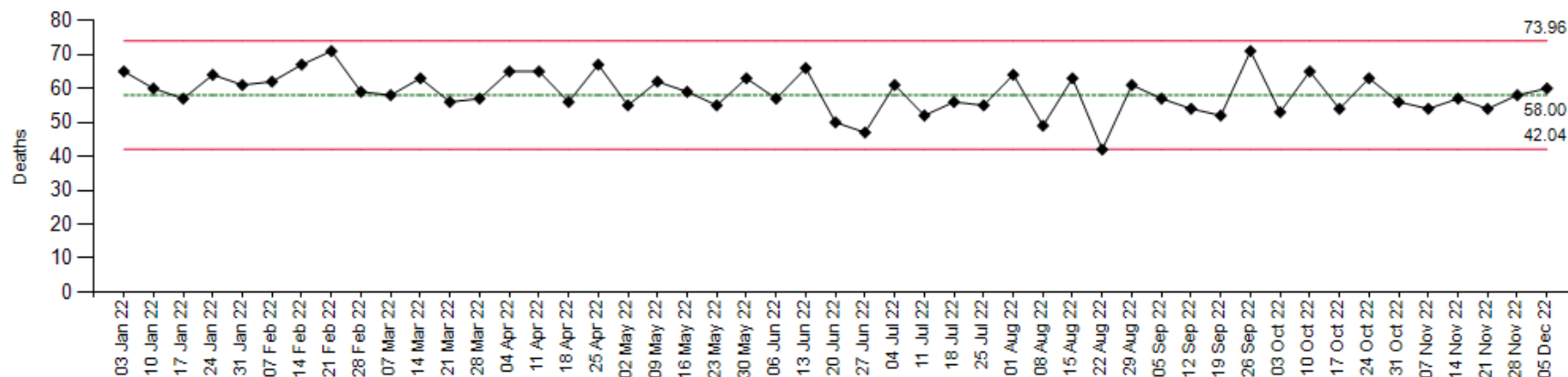
Source: Welsh Government, WIMD 2019

Source: [Welsh Government, Welsh Index of Multiple Deprivation](#)

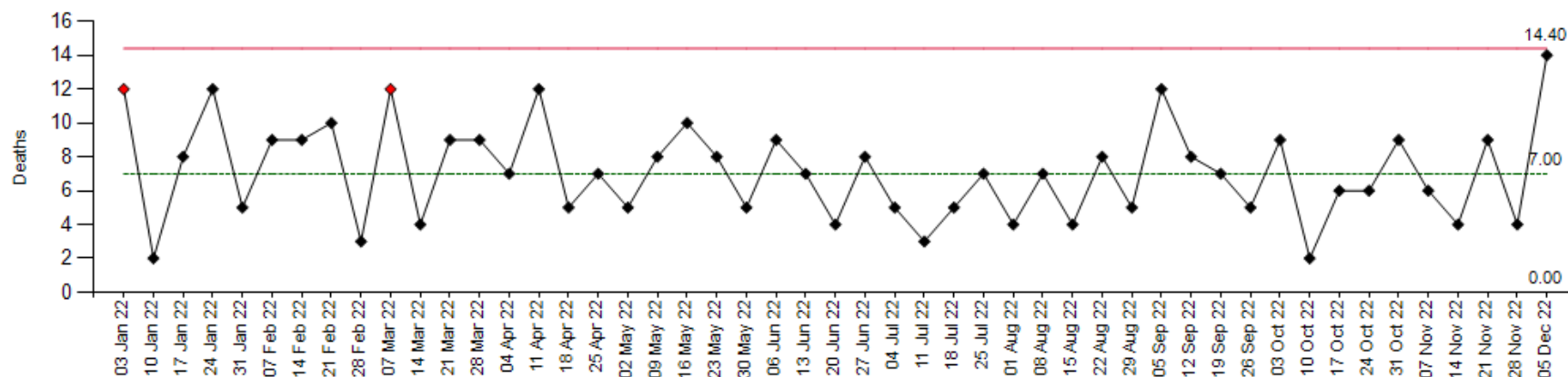
Inpatient & Emergency Department SPC Charts for Hospitals within BCU



Inpatient Mortality for Acute only



Inpatient Mortality for Community Hospitals



BCU Deaths by Location January 2022-September 2022

Hospital Site	2022									Grand Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Ablett Unit										0
Bryn Beryl Hospital	1	3	2	1	5	2	2	1	3	20
Bryn-Y-Neuadd Hospital										0
Cefni Hospital										0
Chirk Community Hospital	1	2	2	2	7	1		4	2	21
Colwyn Bay Community Hospital	3	1	1	5	2	5		3	2	22
Deeside Community Hospital	3	3	2	3	1	1		1	3	17
Deeside Leisure Centre										0
Denbigh Community Hospital			2		1	2	2			7
Dolgellau & Barmouth Day Hospital	2	3	1	3	1		1		3	14
Dolgellau & Barmouth District Hospital Site										0
Emi Unit (Bryn Hesketh)				1					2	3
Eryri Hospital	2	1	2	2	2				2	11
Hergest Acute Mental Illness Unit										0
Holywell Community Hospital	7	2	9	4	3	3	7	2		37
Llandudno General Hospital Site	5	7	5	9	1	2	3	5	5	42
Mold Community Hospital	2	3	1	1	3	1	2	3	4	20
North Wales Cancer Treatment Centre	8	7	5	3	7	2	4	7	3	46
Penley Hospital			1		2	1	3			7
Ruthin Community Hospital	2	2	1		2	2	1	3	3	16
Tywyn & District War Memorial Hospital Site	1	1					2	1	1	6
Wrexham Maelor Hospital	86	90	92	85	98	64	101	85	75	776
Ysbyty Alltwen	2	2	2	2	3	2	2	1		16
Ysbyty Glan Clwyd	105	100	83	103	81	91	79	67	80	789
Ysbyty Gwynedd	76	82	77	73	82	84	68	87	85	714
Ysbyty Penrhos Stanley	4	3	1	3		4	2	1	3	21
Grand Total	310	312	289	300	301	267	279	271	276	2605

Medical Examiner Mortality Summary

The number of cases referred into BCUHB by the Medical Examiner Service remains one of the highest in Wales; currently receiving approximately 30 cases a week. During January 2022 – Sept 2022 a total of 989 ME reviewed reports have been sent to BCU from the MES for review. These cases are processed and managed at a corporate level within the Clinical Effectiveness Team. Cases of serious significance, where there have been serious concerns raised by the ME service are flagged directly, and the ME service will highlight and communicate any themes or local cluster of cases they are concerned about directly to the Mortality team. We are currently working with Datix at health board and national level to improve the data and develop the dashboards, in order to support the IHC's in their learning from mortality and improve process.

The BCUHB Learning from Mortality Panel (LFMP), and Reducing Avoidable Mortality Steering Group (RAMSG) have identified the following themes:

End of Life Care - collaborating with leads and supporting their work at HB level.

Flow - issue identified in many ME reports – from delays in ambulance retrieval, to delays in overload and every aspect of care from the 'front door' to the 'back door'. These collective cases are being sent to and highlighted to the working committee around this.

Covid - cases where the only issue is nosocomial Covid infection, are referred directly to the Covid HCA Scrutiny Panel, where they are thoroughly reviewed. We have asked that reviewed cases are cross referenced with the Datix mortality data, and that learning is disseminated through the LFMP, particularly from an IPC stand point.

Transplantation referral - work is ongoing to learn and develop a pathway for safe referrals to tertiary centres for transplantation of solid organs, following a case presented at LFMP.

DNACPR – working with the lead to support and feed into the wider All Wales Mortality Group, which has flagged this up as a theme.

Sepsis.

It is envisaged that these themes and areas of concern will be brought to the notice of the CEG and QSE through other routes, and it is hoped that by highlighting that these themes are impacting mortality, will add further weight to improvements and resources around the identified themes.

