Greater Manchester Child Death Overview Panels (CDOP)

2019/2020 Annual Report

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CONTENTS

1. EXECUTIVE SUMMARY

1.1 Introduction

This is the 8th annual report reviewing all infant and child deaths reported to the four Greater Manchester (GM) Child Death Overview Panels (CDOP). This report includes data from cases closed between 1st April 2019 and 31st March 2020 (2019/20).

All deaths of children between 0-17 years of age are reported to a CDOP. The CDOP analyses the social and medical circumstances surrounding these deaths, including risk factors which could potentially be avoided to prevent future child deaths. The aim of this report is to inform and guide local organisations on preventing further child deaths.

1.2 Key Findings

During 2019/20, there were 129 child death cases closed and 240 child death notifications. This is a significant reduction in the number of cases closed (204 in 2018/19), mainly a consequence of the significant changes to the child death review process. This reduction in closed cases means it is difficult to draw statistically significant conclusions in comparison to year's previous data. The number of child death notifications during 2019/20 (240) is similar to previous years.

The majority of child deaths occurred within the first year of life (n=83; 64%), with a large proportion occurring in the first month (47; 36%). This is similar to previous report findings. The older age groups: 1-4, 5-9, 10-14 and 15-17, accounted for 15%, 7%, 10% and 4% respectively.

Of all closed cases in 2019/20, 94 cases (72%) were due to medical causes. 'Medical causes' encompasses multiple official categories of causes of death including acute medical or surgical, chronic medical, chromosomal, perinatal/neonatal event, malignancy and infection. Small numbers were attributable to non-medical causes including trauma, deliberate harm/abuse/neglect, suicide/self-harm and sudden unexpected/unexplained death (see Appendix 1).

Of the cases closed, 61 were female (46%) and 68 males (54%). This gender balance is in line with previous regional and national results. This difference is marked in age categories, reflecting that certain causes of death are gender and age specific. For example, trauma is more common in the older children/adolescents and males. However, owing to small numbers in these categories, it is difficult to draw significant conclusions.

GM has a significantly higher Black, Asian, and minority ethnic (BAME) child population (28%) than the UK average (15%). 63% of cases closed were children of White British ethnicity, whilst 37% were children from BAME groups. This clearly shows a higher proportion of child deaths within the BAME communities. These numbers represent 1.75 per 10,000 White British child deaths, compared to 2.81 per 10,000 BAME child deaths. This difference represents a significant health inequality.

Poverty and deprivation correlates closely with the patterns of child deaths in GM. 34% of children in GM fall within the fifth most deprived areas in England and Wales. Of the 129 cases closed, 55% of children lived in the most deprived quintile, compared to 62% in the previous year. A further 20% of deaths occurred in the second most deprived quintile meaning three quarters of all children who died resided in areas of deprivation.

A death is deemed to have potentially modifiable factors, where factors are identified as having contributed to the death of the child and which might, by means of locally or nationally achievable

intervention, be modified to reduce the risk of future child deaths. Specific examples of modifiable factors considered across GM can include unsafe sleeping arrangements where sudden unexpected/unexplained death occurs, maternal obesity in pregnancy in perinatal/neonatal deaths, and consanguinity in chromosomal, genetic and congenital anomaly related deaths. Modifiable factors were identified in 40% of all closed cases. Nationally, 27% of cases are identified to have associated modifiable factors meaning GM is above the national average.

Smoking was identified as a modifiable factor in 10% of all cases closed. Smoking was also identified as a risk factor (relevance score of 2, see Section 3: Modifiable Factors and Relevant Risk Factors) that may have contributed to vulnerability, ill health or death of the child.

Maternal obesity in pregnancy (Body Mass Index (BMI) 30+) was identified as a potentially modifiable factor in 9% of cases closed and considered a risk factor that may have contributed to vulnerability, ill health or death of the child in 11% of all cases. This is broadly in line with previous year's reports.

Though numbers are relatively small, this emphasises smoking and maternal obesity as key contributing factors and modifiable factors to child death. Despite ongoing efforts to reduce both, their influence in the death of children remains steady. The links between smoking and maternal obesity strongly correlate with deprivation, meaning highlighting a significant health inequality.

1.3 The Child Death Review Process
This is the 8th GM CDOPs Annual Report. In line with the publication of Working Together to Safeguard Children (2006), CDOPs became a statutory function from 1st April 2008. Local Safeguarding Children Boards (LSCBs) were tasked with establishing a multi-disciplinary CDOP Subgroup to conduct a review into the death of all children 0-17 years of age, normally resident in their geographical area. Following government recommendations that CDOPs cover a population of at least 500,000, four CDOPs were established across the GM footprint in conjunction with local coronial jurisdictions:

- Bury, Rochdale & Oldham CDOP
- Bolton, Salford & Wigan CDOP
- Stockport, Trafford & Tameside CDOP
- Manchester CDOP

In October 2018, HM Government published the revised Child Death Review: Statutory and Operational Guidance (England) for Clinical Commissioning Groups (CCG) and Local Authorities as the Child Death Review Partners (CDR Partners)[1]. The guidance sets out the process that should be followed following the death of a child who is normally resident in England and adds detail to statutory requirements set out in Working Together to Safeguard Children (2018). The aim of the child death review process is to ensure that information is systematically captured for every death to enable learning and prevent future deaths.

2019/20 has been a period of change for CDOPs nationally following the publication of the revised guidance. The new arrangements build on the interface between the hospital/community led mortality reviews, also known as Child Death Review Meetings (CDRM), and the final CDOP review. It was anticipated that nationally CDOPs would see a decrease in the number of cases closed whilst new procedures were being imbedded.

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[1] Child death review: statutory and operational guidance (England) https://www.gov.uk/government/publications/child-death-review-statutory-and-operational-guidance-england

The National Child Mortality Database (NCMD) is a repository of data relating to all child deaths in England. The NCMD was commissioned by the Healthcare Quality Improvement Partnership (HQIP) on behalf of NHS England and is delivered by the University of Bristol, in collaboration with the University of Oxford, University College London (UCL) Partners and the software company QES. The NCMD enables more detailed analysis and interpretation of all data arising from the CDOP process, to ensure that lessons are learned following a child's death, that learning is widely shared and that actions are taken locally and nationally, to reduce child mortality.

As of the 1st April 2019, it became a legal requirement that CDOPs across England submit data via the NCMD, from all completed Department of Health and Social Care (DHSC) CDOP templates, forms associated with the child death review process and the analysis of information about the deaths reviewed. This includes, but is not limited to, providing all data and information as collated using the national DHSC CDOP templates such as the Notification Form (Form A), the Reporting Form (Form B), additional Supplementary Reporting Forms and the Analysis Form (Form C). Local CDOP data submitted to the NCMD will support national learning and reviews.

Whilst the GM CDOPs welcomed the introduction of the NCMD, to support and identify local and national learning, this impacted heavily upon CDOP business functions and the time taken to manually input all of the requested NCMD data requirements for cases closed whilst maintaining NCMD live records for every child death notification therefore resulting in fewer cases closed across GM. Following changes to the national CDOP templates the current local GM CDOP Database is no longer fit for purpose and there are hopes to purchase and implement the eCDOP system.

Each of the four GM CDOPs s meet regularly to discuss child deaths for their areas. This process can only occur once coronial investigations have concluded and the final cause of death has been ascertained. Likewise, any death associated with criminal activity can only be discussed once court proceedings or child safeguarding practice reviews and internal agency reviews have concluded.

The review process is based on information gathered about the child, their family environment, their home environment and their access to services. This allows the CDOP to reflect on the presence of risk factors and their contribution to the death of the child. GM CDOPs draw conclusions on what may be influencing child deaths and make recommendations to appropriate authorities and agencies to prevent further deaths. This data is submitted to the Department of Health and Social Care (DHSC) via the NCMD.

1.4 Child Health Profile

Infant, child and adolescent death rates have been decreasing steadily since the 1980s in England and Wales. The lowest ever recorded rate was in 2014 with 3.6 deaths per 1000 live births, rising to 3.9 in 2018. The most recent data from 2019 demonstrates a modest decrease to 3.8. These figures demonstrate that the steady decrease in child deaths has plateaued[2].

Though England often performs more poorly than other comparable European nations on child death statistics, the causes for this are complex[3]. Consequently, the solutions to this appear equally difficult. There are marked social inequalities in child death rates in multiple domains including poverty levels and ethnicity. The majority of deaths occur in the first year of life. After this, death by trauma, injury and suicide/self-harm remain key causes of death in childhood.

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[2] PHE Fingertips Tool – Child and maternal health profiles, 2019.
[3] Wolfe I, MacFarlane A, Donkin A, Marmot M, Viner R. Why children die: death in infants, children, and young people in the UK - Part A. London: RCPCH, NCB, BACAPH, May 2014.

2. GREATER MANCHESTER CHILD DEATH OVERVIEW PANELS CHILD DEATHS 2019/20

2.1 Child Death Notifications & Cases Closed

Between 1st April 2019 and 31st March 2020 (2019/20) there were 240 child death notifications and 129 cases closed. 30% of the deaths notified during 2019/20 were also closed in the same period. Cases notified data does not provide a full dataset but supports real time information about the frequency of child deaths and their area of residence.

Figure 1.1: Percentage of child death notifications by local authority
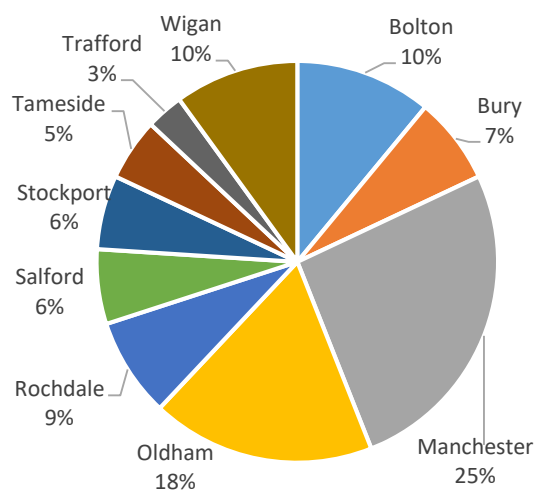
Figure 1.2: Percentage of cases closed by local authority
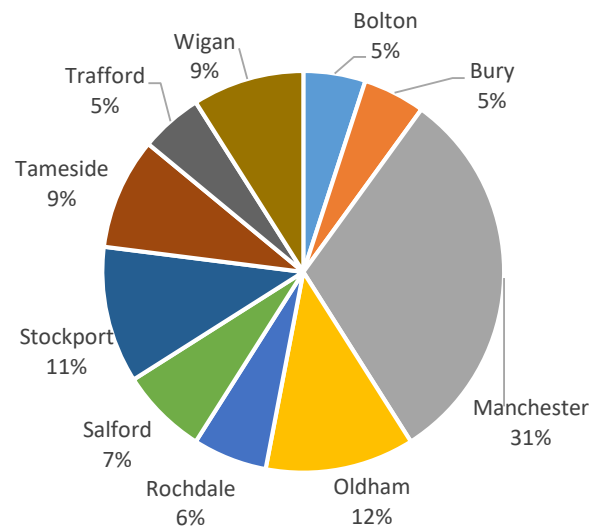
Owing to changes to the child death review process, there has been a decrease in the number of cases closed compared with previous years. The number of 2019/20 child death notifications has remained stable. Since records on child deaths began in the 1980s, there has been a steady reduction in the rate of child death. This reduction stalled in the last few years, leading to a 'levelling out' of the death rates, with some areas appearing to show a slight increase in the rates of death. The chart below uses rates of notified deaths per 10,000, rather than closed cases, as this provides a more accurate and contemporaneous overview of child death patterns across the four CDOP areas.

Figure 2: Rate of child death notifications per 10,000 by CDOP area 2015/20
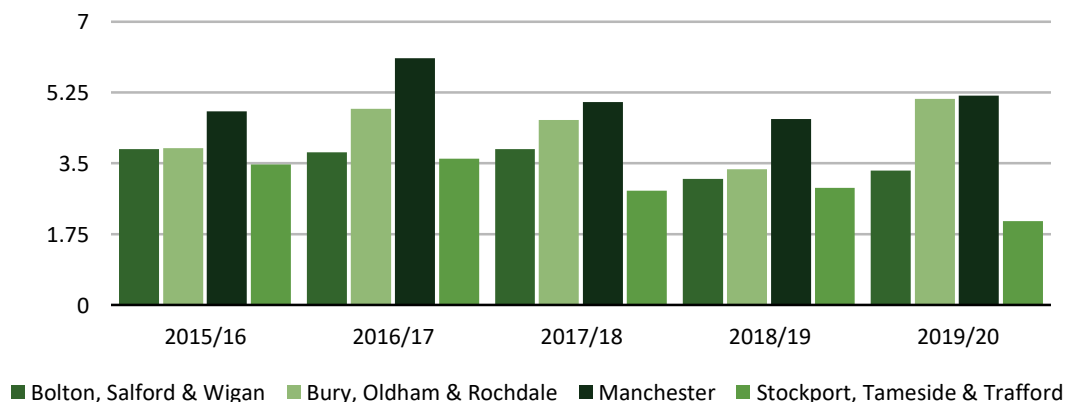
As demonstrated, all areas but Stockport, Tameside, Trafford demonstrated an increase in rate of child death notification compared to the previous year (see Appendix 2).

2.2 Duration of Reviews

The duration of a review refers to the time taken from notification of the death to closing the case at the CDOP. Certain categories of deaths can take longer to close, for example, if a post mortem examination is required or the death is subject to pending investigations. The average time taken to close a case was 391 days. 30% of the 2019/20 child death notifications were closed in the same period so there is limited real time data in the CDOP analysis. Conclusions are drawn over a number of years rather than a single report.
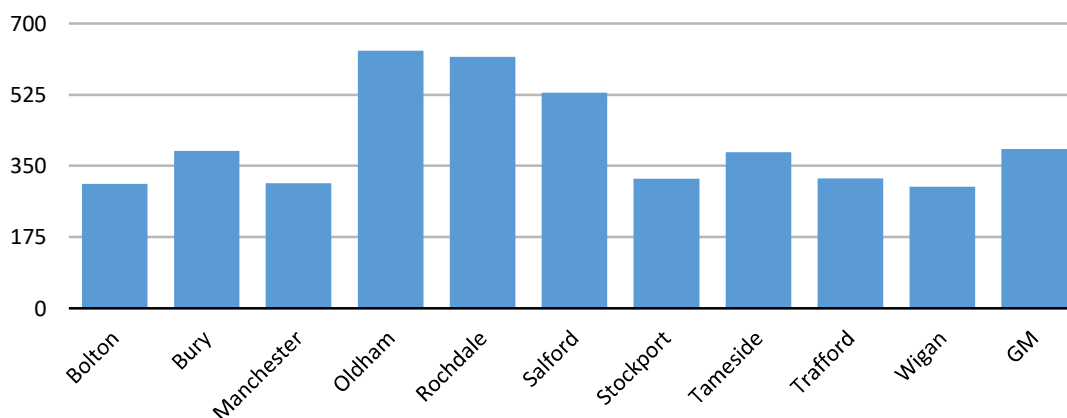
Figure 3: Average duration of reviews (from date of notification to date closed) by local authority

2.3 Categorisation of Death

There are 10 defined categories to which all deaths can be ascribed. It is hierarchical, so should a death fall into more than one category the cause highest on the list is chosen. These nationally defined categorises allow standardisation across the country. These categories are:

1. Deliberately inflicted injury, abuse or neglect
2. Suicide or deliberate self-harm
3. Trauma and other external factors
4. Malignancy
5. Acute medical or surgical condition
6. Chronic medical condition
7. Chromosomal, genetic and congenital abnormalities
8. Perinatal/neonatal event
9. Infection
10. Sudden unexpected, unexplained death

There has been a consistent pattern in the categories of death over a number of years. Perinatal/neonatal events remain the single largest category of death, with chromosomal, genetic and congenital causes second. These 2 categories account for over half of all closed cases.

Figure 4: Percentage of cases closed by category of death 2019/20
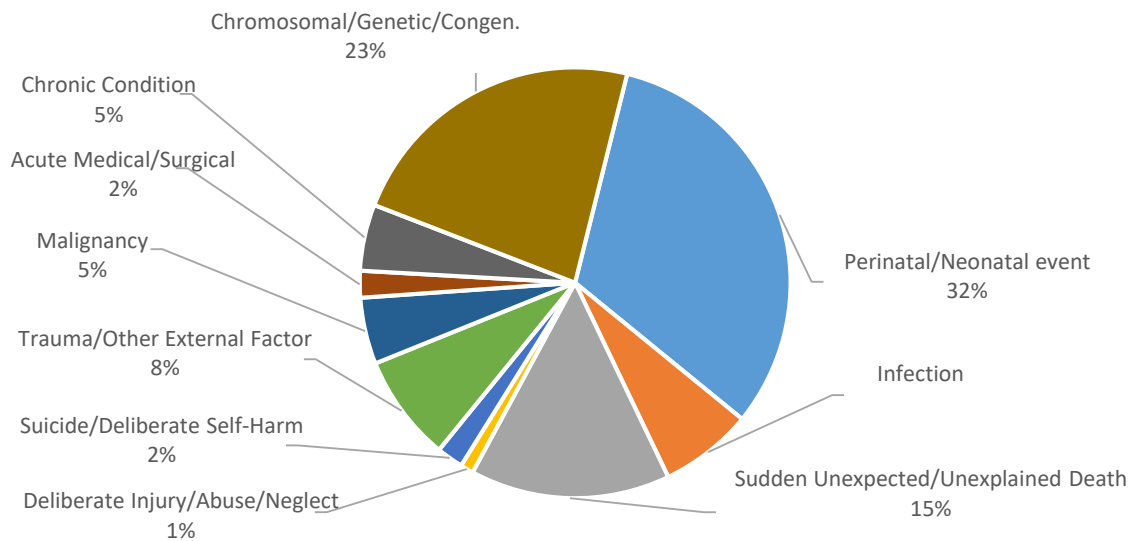
2.4 Age

The correlation between age and death is well established, with the first 28 days of life (neonate) being the most vulnerable period, accounting for 36% of the cases closed. The majority of these deaths were catergorised as a perinatal/neonatal events i.e. problems in the antenatal period, during labour, birth and the first 28 days of life. 64% of all deaths occurred in the first year of life[4].

For 2019/20, there is generally an inverse relationship between increasing age and proportion of deaths. This is different to previous years in which the 15-17 age group showed a spike in deaths due to risk taking behaviour including death by suicide. The numbers for these older groups are small and require caution in their interpretation.

Figure 5: Percentage of cases closed by category for each age group

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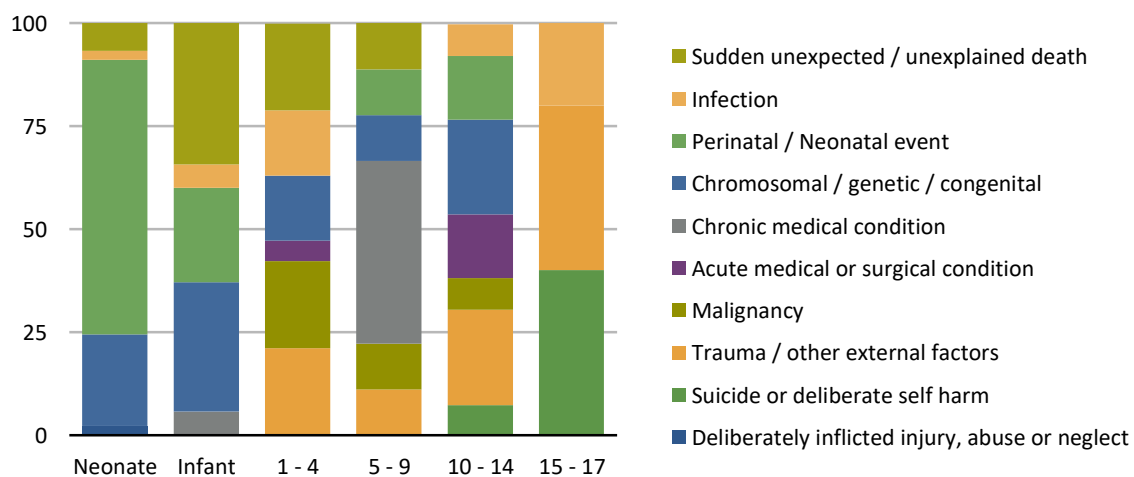
[4] Zhao, D. et al, 2016, Gender Differences in Infant Mortality and Neonatal Morbidity in Mixed-Gender Twins. Scientific Reports, 7, 8736: 1-6: http://www.nature.com/articles/s41598-017-08951-6

2.5 Sex

Of the 129 closed cases, 68 were males (60%) and 61 females (40%) which is broadly in line with previous GM results. For example, the split in 2017/18 was 58 to 42, and in 2018/19 60 to 40 in males and females respectively. This is also in keeping with national data. Why this should be the case is not well understood[5]. Though there are 1053 males born to every 1000 females in the UK, this discrepancy does not account for differences seen in death rates.

2.6 Location at Time of Death

47% of cases closed were children that died in hospital (although the preceding event itself may have occurred in the community), 26% at home and 27% in 'other' settings. This represents a significant decrease in the number of deaths in an acute hospital setting from 2018/19 (71%) and an increase in the percentage of deaths occurring at home (20%). The deaths out of hospital/out of home represent a range of locations from abroad (multiple countries), public spaces, highways and some in a hospice setting.

2.7 Expected & Unexpected Deaths

A unexpected death is defined as 'the death of an infant or child which was not anticipated as a significant possibility for example, 24 hours before the death; or where there was an unexpected collapse or incident leading to or precipitating the events which lead to the death'[6].

Where recorded, 56% of deaths were deemed expected. This is broadly in line with the previous 5 years of annual reports, all of which were between 60-69%. Proportions of expected deaths per age category gives similar results year on year. Broadly, most neonatal/infant deaths are expected, with a large proportion of these associated with prematurity. In line with previous results, there is an increase in the proportion of expected deaths in the age group 5-9 years, relative to other age groups. Deaths in the eldest age category are mainly unexpected with causes of death including suicide and trauma related events accounting for the most.

Figure 6: Percentage of cases closed, expected deaths per age group

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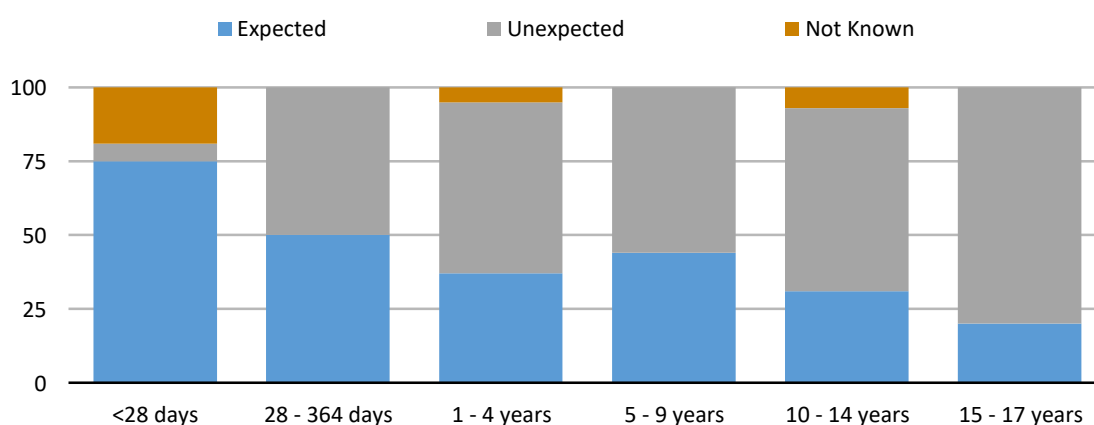
[5] Drevenstedt, G., et al., 2008, The rise and fall of excess male infant mortality, Proceedings of the National Academy of Sciences of the United States of America, 105 (13), 5016-5021.
[6] Working Together to Safeguard Children 2015

2.8 Neonatal & Infant Deaths (0-365 Days of Life)

Neonates are defined as babies under 28 days of life and infants as those aged between 28 days and 365 days of life. This group has represented the lion's share of child deaths throughout the history of CDOP reporting. For example, in 2018/19, 42% of all GM deaths occurred in the neonatal period and 61% in the first year of life. Results from 2019/20 demonstrate a similar pattern with 36% of cases closed occurring in the neonatal period and 64% in the first year.

The most common causes of death for this age category are perinatal/neonatal events, followed by chromosomal, genetic and congenital anomalies, and sudden unexpected/unexplained death, making up 32, 15 and 13 cases respectively. The numbers for the other causes of death in this age category are too small to draw any meaningful conclusions.

Chromosomal, genetic and congenital anomalies related deaths account for the second largest share of neonatal and infant deaths both regionally and nationally[7]. Where recorded, 63% of those children catergorised as having chromosomal, genetic and congenital anomalies, resided in the most deprived quintile.

2.9 Gestational Age

Prematurity is categorised as:
- Extreme prematurity (<26 weeks)
- Premature (26 to <37 weeks)
- Term (37+ weeks)

In 2019/20, 49% of all neonatal cases closed were infants born extremely premature and a further 23% premature. This is in line with the results of previous reports with 59% extremely premature and 21% premature in 2018/19.

2.10 Birth Weight

Low birth weight (LBW) is associated with an increased risk of infant and child mortality. It is associated with multiple factors including maternal smoking, maternal age/weight and multiple births. Whilst birth weight correlates with gestational age, babies born on the lowest centiles for their gestational age have the poorest prognosis. Low birth weight is also linked to maternal health which strongly correlates with deprivation and socioeconomic status. Low birth weight is categorised as:

- Low Birth Weight (LBW) <2500g
- Very Low Birth Weight (VLBW) <1500g
- Extremely Low Birth Weight (ELBW) <1000g

Owing to small numbers ELBW and VLBW have been grouped together in this report. Where recorded, 23% were deemed LBW and 33% VLBW. This is an improvement on 2018/19 where these values were 19% and 50% respectively.

2.11 Ethnicity

Ethnicity was recorded in all closed cases in 2019/20. As per the 2011 census data, 14.6% of the UK population is classified as belonging to BAME ethnic groups[8]. Since 2017, subcategories of BAME

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[7] National Perinatal Epidemiology Unit. The contribution of congenital anomalies to infant mortality. Oxford: University of Oxford, 2010. Inequalities in Infant Mortality Project Briefing Paper 4.

[8] Source: ONS Census data, 2011 applied to 2019 mid-year population estimates

groups have been established. GM has a significant ethnically diverse population in comparison to the national average, with 28% classified as BAME. Indeed, this is the case for all local authorities aside from Wigan which is lower than the national average (see Appendix 3). 63% of the cases closed were children of White British ethnicity and 37% from BAME groups. This is in line with national data. Closed cases demonstrate 1.75 per 10,000 White British child deaths, compared to 2.81 per 10,000 BAME child deaths in GM.
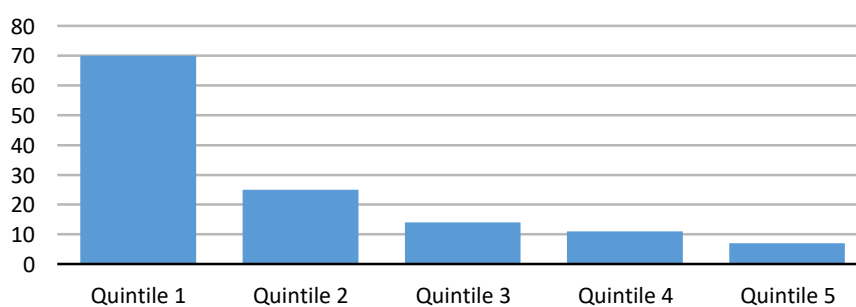
Significant differences exist in rates of death between White and ethnic minority groups across GM. This is especially marked in certain local authorities with Manchester and Oldham being the most prominent. Across GM, this represents a 61% increased risk of death in BAME children compared to children who are White British.

National research has identified certain ethnic groups at an increased risk of death by specific causes, notably in the first year of life. Pakistani children run the highest risk of death by chromosomal, genetic, congenital causes. Black children run the highest risk of death by sudden unexplained/unexpected death. The reasons behind this are complex and thought to represent a combination of deprivation, behavioural and cultural factors[9] [10]. It has been suggested that pregnant women from BAME groups may face barriers in accessing appropriate healthcare, representing another potential health inequality[11].

2.12 Deprivation

Factors for many causes of child death correlate with deprivation or socioeconomic inequality[12]. The Index of Multiple Deprivation is a composite score based on multiple factors including income, employment, education, health, and quality of home and community[13]. These scores allow populations to be categorised into quintiles with a score of 1 representing the most deprived and 5 the least deprived quintile. In GM, 6 out of 10 local authorities have higher scores than the North West average and all but Trafford perform worse than the UK average. By this measure, Manchester is the most deprived area in GM with 41% of its population living in the most deprived quintile. Trafford is the least deprived with 3% living in the most deprived group.

Figure 7: Number of cases closed by deprivation quintile

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[9] ONS, Pregnancy and ethnic factors influencing births and infant mortality: 2013.
https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/pregnancyan
dethnicfactorsinfluencingbirthsandinfantmortality/2015-10-14#ethnicity
[10] DfE, Ethnicity, deprivation and educational achievement at age 16 in England: trends over time. June 2015.
[11] Hollowell. J, Oakley. L, Vigurs. C, Barnett-Page. E, Kavanagh. J & Oliver S. (2012) Increasing the early initiation of antenatal care by Black and Minority Ethnic women in the UK. Oxford: *National Perinatal Epidemiology Unit.*
[12] Wolfe I, MacFarlane A, Donkin A, Marmot M, Viner R. Why children die: death in infants, children, and young people in the UK - Part A. London : RCPCH, NCB, BACAPH, May 2014. Marmot, M, Goldblatt, P., Allen, J., 2010, Fair Society Healthy Lives. See: http://www.instituteofhealthequity.org/
[13] CDOPs calculate an IMD score of a child's lower-super-output-area using the national postcode lookup tool (http://imd-by-postcode.opendatacommunities.org/).

Figure 7 demonstrates the link between deprivation and risk of child death, with the risk steadily decreasing as deprivation decreases. Over half of all cases closed in 2019/20 were in the most deprived quintile, and a further 20% in the second most deprived; these two quintiles accounting for three quarters of all deaths. There is significant correlation between local authority levels of deprivation and child deaths.

Figure 8: Percentage of cases closed by deprivation quintile per local authority
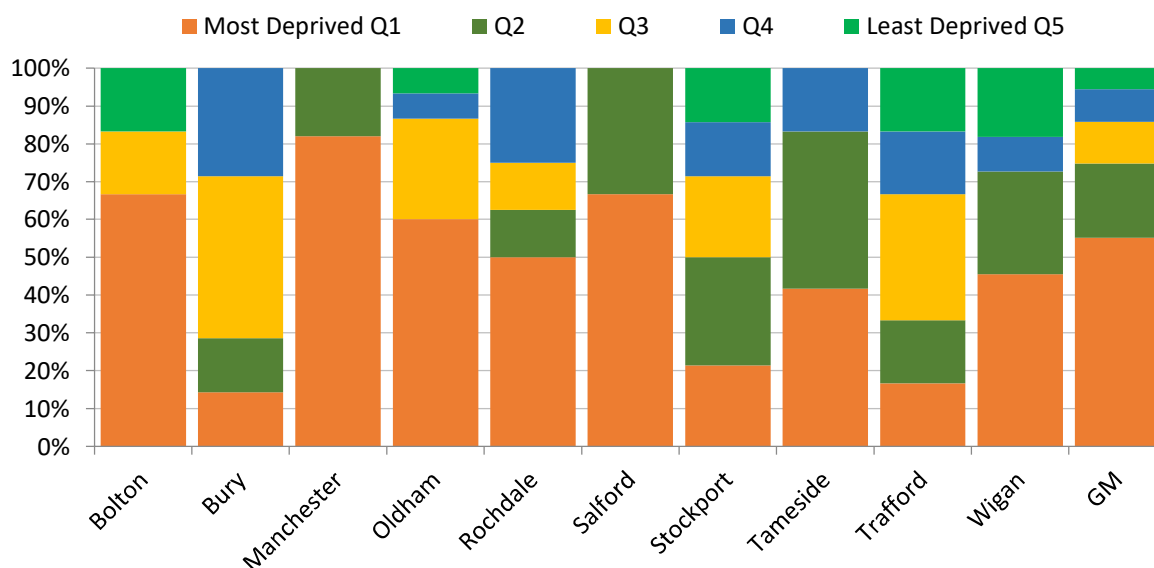
3. MODIFIABLE FACTORS & RELEVANT RISK FACTORS

When undertaking a child death review, the CDOP is responsible for identifying potentially modifiable factors. Categorising a death as having modifiable factors does not necessarily mean the CDOP regards the death in question as preventable, but that there may be emerging trends which could reduce the risk of future child deaths:

Modifiable factors identified: The panel has identified one or more factors across any domain which may have contributed to the death of a child and which might, by means of locally or nationally achievable intervention, be modified to reduce the risk of future child deaths.

No modifiable factors identified: The panel have not identified any potentially modifiable factors in relation to the death.

Inadequate information upon which to make a judgement: the panel was not provided with sufficient information.

The identification of modifiable factors depends heavily upon the circumstances leading to death and the cause of death ascertained. Modifiable factors may include substance/alcohol misuse by the parent/carer, child abuse/neglect, consanguineous relationships and difficulties with access/uptake of healthcare services.

The CDOP is responsible for analysing information to determine relevant risk factors that may have contributed to vulnerability, ill health or death of the child. These factors fall into four domains:

- Factors intrinsic to the child
- Factors in social environment including family and parenting capacity
- Factors in the physical environment
- Factors in service provision

For each of the four domains, the CDOP determines the level of relevance (0-2) for each factor, in relation to the registered cause of death and to inform learning of lessons at a local level. The categories are:

0 - No information available
1 - No factors identified, or factors were identified but are unlikely to have contributed to the death
2 - Factors identified that may have contributed to vulnerability, ill health or death

(There was previously a category 3 in which 'factors identified provided a complete and sufficient explanation of death', though this has been removed by the DHSC)

Modifiable factors were identified in 40% of 2019/20 cases closed, 58% with no modifiable factors and 2% having insufficient information to make a judgment. The most recent national data from 2017 demonstrates modifiable factors were present in 27% of cases, indicating a significantly higher proportion of local cases where modifiable factors may have contributed to the death of the child. Across GM factors such as smoking, maternal substance use and unsafe sleeping arrangements are all identified as modifiable factors, although this is not the case across the whole of England.

The GM CDOPs continue to conduct reviews in line with the agreed GM set standard of modifiable factors, as developed by the GM CDOP Network. The standard ensures consistency across the four GM CDOPs when undertaking review and identifying modifiable factors.

A greater proportion of the 2019/20 cases closed were either neonatal deaths where maternal factors in pregnancy are identified, or sudden unexpected deaths, where risk factors in the sleeping environments are identified. Fewer hospital deaths were closed during 2019/2020, and these cases often have fewer modifiable factors identified.

Figure 9: Number and percentage of cases closed with modifiable factors by CDOP area (2012/20)

CDOP Area	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Bolton, Salford & Wigan	39% (34)	28% (13)	26% (17)	38% (21)	34% (23)	35% (29)	44% (28)	26% (7)
Bury, Oldham & Rochdale	21% (15)	30% (17)	25% (20)	22% (16)	41% (21)	46% (33)	40% (21)	31% (9)
Manchester	29% (16)	20% (10)	18% (15)	29% (16)	27% (17)	34% (21)	32% (15)	38% (16)
Stockport, Tameside & Trafford	18% (10)	27% (17)	31% (25)	42% (21)	29% (14)	47% (27)	38% (15)	65% (20)

3.1 Smoking

Smoking in pregnancy is associated with multiple poor health outcomes[14]. These include reduced fetal growth, higher risk of miscarriage and still birth, low birth weight and increased risk of sudden unexpected death in infancy. It is estimated that maternal smoking can increase the risk of child mortality by 40%, as well as increasing risk of disease in later life[15].

Public Health England (PHE) uses smoking at time of delivery (SATOD) to measure how many women continue to smoke during pregnancy. The most recent figures show this to be 10.8% nationally and 12.6% in GM[16]. Of the 10 GM local authorities, 7 were deemed to have SATOD rates above the national average, all of which scored above average in the Index of Multiple Deprivation rankings. Indeed, over half of the cases in 2019/20 where smoking was deemed likely to have contributed to the death of a child were in families in the lowest deprivation quintile. For 2019/20, 15% of deaths involved maternal smoking which was considered a modifiable factor. This is an increase from the 11% of cases in which smoking was a modifiable factor in 2018/19.

3.2 Maternal Obesity in Pregnancy

As with smoking, maternal raised body mass index (BMI) scores are associated with worse outcomes for infants including miscarriage and still birth as well as complications with delivery[17] [18]. As a consequence, across GM, a maternal BMI of 30 and over or a BMI less than 18.5 has been considered a potentially modifiable factor in perinatal/neonatal deaths due factors including prematurity delivery and difficulties in labour. The link between obesity and deprivation is well established. BMI can be stratified as follows:

- <18.5:   Underweight
- 18.5-24.9:   Healthy
- 25-29.9:   Overweight
- 30-39.9:   Obese
- >40:   Morbidly Obese

Maternal obesity was recorded as a modifiable factor in 11% (14) of cases closed. This is an increase from the 8% of cases closed in 2018/19, though broadly in line with the national trend which demonstrates a steady year-on-year increase in levels of maternal obesity as a modifiable factor.

3.3 Genetic Disorders & Consanguinity

Consanguinity is defined as a relationship between two people who share an ancestor, or share blood. There is an increased risk of congenital birth defects and genetic conditions in consanguineous relationships. Unrelated parents have a 2% risk of having a child with a severe abnormality, whilst parents who are first cousins have a 5% risk and second cousins have a 3% risk. However, couples that are more closely related, such as a family with a history of cousin marriages going back generations, will have a higher risk of having a child with autosomal recessive disorders.

As a couple may not be aware that they carry a gene anomaly in their first pregnancy, this is not recorded as a modifiable factor by GM CDOPs. However, if a condition is recognised in a first

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[14] J R Coll Physicians Lond. 1992 Oct;26(4):352-6. Smoking and the young
[15] NICE Guidance PH26 (2010) Smoking: stopping in pregnancy and after childbirth.
https://www.nice.org.uk/guidance/ph26/chapter/2-public-health-need-and-practice
[16] http://fingertips.phe.org.uk/search/smoking
[17] Parliamentary Office of Science and Technology, 2016, Infant Mortality and Stillbirth in the UK. Available at:
http://researchbriefings.files.parliament.uk/documents/POST-PN-0527/POST-PN-0527.pdf
[18] Maternal obesity in the UK: findings from a national project (2010) UK. Centre for Maternal and Child Enquiries

pregnancy/child and then a second child is born with the same condition, this is deemed potentially modifiable.

Over the past several CDOP reports, the numbers of deaths in which consanguinity was deemed a risk factor has decreased, falling to fewer than 3% of cases (<5 cases in total in 2018/19). For 2019/20 cases closed, there were 11 deaths where consanguinity was considered a contributing factor to a death of the child which represents 9% of all child deaths. Despite this, it was considered a modifiable factor in only 3 cases, owing to the above definition that it is only considered modifiable in the event of a second affected pregnancy/child.

All 11 cases where consanguinity was identified as a factor were children from Asian/Asian British communities, 9 children being of Pakistani heritage. 1.1 per 10,000 BAME children in GM will die of a congenital problem, compared to 0.15 per 10,000 White British children, representing a near 7 fold increased risk in BAME groups[19] [20]. This emphasises that education of congenital disorders will require complex and sensitive societal interventions. The Manchester Foundation Trust Genetics Service is developing strategies to support both practitioners and families to raise awareness of genetic disorders and the support available.

3.4 Alcohol & Substance Use

In 2019/20, 8% of cases closed were identified as having substance or alcohol use as a factor which may have contributed to the death of the child. Over the past 2 reports, this number has been 5%. Though numbers are small, substance and alcohol is recognised in cases categorised as a perinatal/neonatal event or sudden and unexpected death in infancy.

3.5 Unsafe Sleeping Arrangements

Whilst unsafe sleeping practices may not be proven causal in sudden and unexpected deaths of infants, it's recognised as a strong correlation between unsafe sleeping and child deaths. Across GM, when one risk factor is present such as maternal smoking it is usually associated with other risk factors. Educational campaigns to raise awareness of safer sleeping arrangements have shown to be effective and have reduced the number of deaths due to sudden infant death syndrome (SIDS). 5% of the 2019/20 cases closed, compared to the 4% in the previous two GM CDOPs reports, identified co-sleeping as a potentially modifiable factor. Maternal smoking in pregnancy and household smoking is recorded as a contributing factor but these factors overlap significantly.

3.6 Domestic Abuse & Violence

There were 9 cases closed where domestic abuse/violence was present and thought to be a relevant contributing factor which represents 7% of all cases closed. It must be emphasised that these numbers are small and may not represent a statistically significant change.

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[19] Gil, M., Giunta, G., Macalli, E., Poon, L. & Nicolaides, K. (2015) UK NHS pilot study on cell-free DNA testing in screening for fetal trisomies: factors affecting uptake. Ultrasound in Obstetrics and Gynecology. 45(1) pp. 67-73. DOI: 10.1002/uog.14683

[20] National Perinatal Epidemiology Unit. The contribution of congenital anomalies to infant mortality. Oxford: University of Oxford, 2010. Inequalities in Infant Mortality Project Briefing Paper 4.

3.7 Access & Uptake of Healthcare Services

Accessing and uptake of appropriate healthcare was noted as a modifiable factor in 7 cases, the majority of which were categorised as a perinatal/neonatal event. There appears to be a link between accessing and uptake of healthcare services in areas of deprivation, with all cases in the two most deprived quintiles. It is also possible that there is a discrepancy in access to health care between ethnicities, though numbers are insufficiently large in this report to draw a meaningful conclusion[21]. Homelessness was referenced in several of these cases. This may draw attention to a possible lack of support and service uptake for mothers and families with no fixed abode.

3.8 Social Environment, Family & Parenting Capacity

Poor parenting was identified as a risk factor in 15 deaths, whilst child abuse/neglect was identified as a risk factor in 10 deaths. There is considerable overlap between these two categories. The factors stated above give an indication of the increased need for multi-agency support for the family.

4. CONCLUSION

Though there has been a reduction in the number of closed cases for the period 2019/20 (129), the number of child death notifications remains steady (240). This means that rates of child death in the GM population have not decreased in the last year. The number of closed cases, is significantly fewer this year than in previous years. This reflects national changes in the operational aspects of the child death review process. Unfortunately, this makes statistical analysis difficult owing to the very small numbers of children in certain categories, and the skew towards the relative increase in the proportion of other categorises.

The majority of deaths continue to occur in the first year of life, with the first 28 days being the most vulnerable. The figures for these age groups remain roughly the same as in previous years. Perinatal/neonatal events account for the majority of these deaths, closely followed by chromosomal, genetic and congenital anomalies. These proportions are in line with previous reports and also correlate with factors such as deprivation levels, consanguinity and maternal health. Improvements to neonatal care have contributed to preventing and in some cases delaying death, especially in the premature infants. certain Modifiable factors such as maternal smoking and maternal obesity in pregnancy continue to be key factors in deaths categorised as a perinatal/neonatal event. Further efforts to reduce the impact of these factors should be a public health priority for all agencies.

The older age groups, 1-4, 5-9, 10-14 and 15-17 years of age, account for 15%, 7%, 10% and 4% of deaths respectively. Though they largely follow the trend from previous years the absolute numbers in the eldest groups are very small, meaning that it is difficult to draw meaningful conclusions in isolation and must be viewed as a trend over several years. The vast majority (72%) of these deaths are due to medical causes (perinatal/neonatal, acute medical, chromosomal, chronic medical, malignancy, infection). This demonstrates that good antenatal, postnatal and ongoing medical care remain integral to reducing both infant and child mortality.

The two eldest age groups (10-14 and 15-17 years of age) remain particularly vulnerable to the non-medical causes of death, including suicide and trauma related death. This is in line with national results and statistics from previous reports, though, it is not possible to state their statistical significance as they represent only a handful of cases closed rather than real-time notification data. Anecdotally, there continues to be an increase in the apparent suicide of adolescents over the last few years. These cases are yet to be closed, and owing to their complexity may not be closed for some time. These

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[21] Hollowell. J, Oakley. L, Vigurs. C, Barnett-Page. E, Kavanagh. J & Oliver S. (2012) Increasing the early initiation of antenatal care by Black and Minority Ethnic women in the UK. Oxford: National Perinatal Epidemiology Unit.

delays may obscure trauma and apparent suicide related deaths as an ongoing or growing problem. This may be further exacerbated in the coming year(s) due to the effect of the COVID-19 pandemic on social and medical services. Indeed, there are indications that the 'lockdown' period has seen a further increase in apparent suicides. As one child suicide is one too many, this report emphasises the need for GM to continue in its suicide prevention strategy and streamline its reporting process.

There continues to be a link between the rate of child deaths and deprivation, with the majority of closed cases involving children, and their family, residing in the most deprived quintile. Whilst tackling deprivation lies outside the scope of this report, it stands to show that the underlying causes of infant and child mortality rates are complex and long term solutions are required such as tackling the access and uptake of healthcare services in areas of deprivation and BAME communities.

Modifiable factors were present in 40% of cases closed. Much like deprivation, and often inextricably linked, factors such as smoking, substance use and maternal obesity in pregnancy may be deemed contributing factors to death. With regards to the latter, the growing problem of obesity represents a real future challenge for local authorities. Smoking rates remains higher in areas of deprivation than the national and regional rates. Consanguinity associated with congenital abnormalities remains a significant contributing factor in deaths across GM. This report has identified Manchester's Pakistani population at particularly high risk for congenital abnormalities, strongly correlating with consanguineous relationships. As with many cultural/social practices, this is a complex issue requiring sensitive and community inclusive solutions.

5. RECOMMENDATIONS

The following should be considered by the 10 GM Local Safeguarding Partnerships and Health and Wellbeing Boards including distribution to relevant agencies:

1. Health inequalities lie at the heart of child deaths across GM. BAME communities are disproportionately represented with in child deaths, with a strong link to deprivation. This report must be used, in conjunction with other relevant data, to show how reducing inequalities will improve the life chances for children with particular attention and support provided for BAME communities.

2. Smoking remains a key modifiable factor contributing to child deaths. GM has made progress in reducing smoking with mothers who smoke during pregnancy being identified as a priority group. This work must continue to drive down smoking rates in the GM population.

3. Obesity is also a major public health issue and maternal obesity in pregnancy remains a key modifiable factor. GM local authorities need to reduce levels of obesity throughout the population with a focus on maternal obesity to improve the health and wellbeing of the mother and the unborn child, in order to contribute to the reduction in childhood mortality.

4. In light of the small numbers of cases closed in each report, it is often difficult to detect significant patterns in annual trends. By pooling the data gathered over a longer period of time, it may be possible to draw reliable statistical conclusions. The GM CDOPs are to explore any potential capacity and resources available to carry out an additional review such as a 5 year snapshot of cases closed.

5. Though based on anecdotal evidence from child death notifications reported to the GM CDOPs, there appears to have been an increase in the rate of apparent suicide in adolescents. Naturally, these cases will require lengthy reviews due to pending investigations. Owing to the urgency of these deaths and the potential to identify real time emerging themes, this report recommends a streamlining of reporting to CDOPs where suicide is deemed likely cause of death, to provide live data to support appropriate suicide prevention agencies. An appropriate electronic system will need to be implemented to support such requests for live data to highlight real time trends.

6. Following the introduction of the NCMD (1st April 2019), CDOPs have a statutory requirement to submit data relating to all child deaths in England. The CDOP data is used to support the NCMD influence national strategy and improve the child death review process. The NCMD programme team requests real time data to support changes to NHS systems and promote public health messages. Due to the level of data collated and national demand for information, 52 of the 54 CDOPs (outside of GM) have purchased the eCDOP system which automatically populations the NCMD and supports local CDOPs identity live emerging trends. The GM CDOPs have been in discussions with QES, as the eCDOP provider, regarding the functionality of the system and how this will support clinicians, multi-agency representatives, local CDOPs and fulfil national statutory requirements. GM CDOP Chairs are to liaise with local authority budget holders in their area(s) to request and agree funding arrangements to purchase and implement eCDOP.

6. APPENDICES

Appendix 1: Number of 2019/20 GM CDOPs cases closed, duration of reviews (average, minimum and maximum days) by category of death

Category	No. Cases Closed	Average	Min Days	Max Days
1. Deliberately inflicted injury, abuse or neglect	*	963	963	963
2. Suicide or deliberate self-harm	*	406	331	500
3. Trauma and other external factors	10	439	101	1072
4. Malignancy	6	465	171	801
5. Acute medical or surgical condition	*	601	339	1079
6. Chronic medical condition	6	396	104	786
7. Chromosomal, genetic and congenital abnormalities	29	239	100	641
8. Perinatal/ neonatal event	41	392	91	1918
9. Infection	9	400	93	1596
10. Sudden unexpected, unexplained death	20	445	211	1079

Appendix 2: Number of 2019/20 GM CDOPs child death notifications and cases closed by rate per 10,000 population

Local Authority	No. Deaths Notification	Rate of deaths notifications (per 10,000 population)	No. Cases Closed	Rate of Cases closed (per 10,000 population)
Bolton	25	3.69	8	1.02
Bury	16	3.7	7	1.62
Manchester	61	5	41	3.25
Oldham	43	7.23	14	2.52
Rochdale	22	4.18	8	1.5
Salford	15	2.65	9	1.57
Stockport	15	2.37	14	2.2
Tameside	12	2.39	11	2.37
Trafford	8	1.42	6	1.06
Wigan	23	3.36	11	1.6
Greater Manchester CDOPs	240	3.77	129	2
Bolton, Salford & Wigan	63	3.32	28	1.4
Bury, Oldham & Rochdale	81	5.09	29	1.93
Manchester	61	5.17	41	3.28
Stockport, Tameside & Trafford	35	2.07	31	1.89

Appendix 3: Number and percentage of 2019/20 GM CDOPs cases closed by ethnicity per local authority

Local Authority	White		BAME	
	Number	%	Number	%
Bolton	46,502	68	21,883	32
Bury	34,631	80	8,658	20
Manchester	55,311	45	67,603	55
Oldham	35,755	60	23,837	40
Rochdale	36,243	68	17,056	32
Salford	43,664	76	13,788	24
Stockport	52,720	83	10,798	17
Tameside	41,544	82	9,120	18
Trafford	40,123	71	16,388	29
Wigan	64,781	94	4,135	6
Greater Manchester	451,275	72	178,003	28

Appendix 4: Number and percentage of 2012/20 GM CDOPs cases closed by category of death

Category of death	2012/13		2013/14		2014/15		2015/16		2016/17		2017/18		2018/19		2019/20	
Deliberately inflicted injury, abuse of neglect	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Suicide or deliberate self-harm	11	4%	*	*	*	*	7	3%	6	3%	*	*	*	*	3	2%
Trauma and other external factors	*	*	10	5%	14	5%	15	6%	8	7%	15	5%	13	6%	10	8%
Malignancy	12	4%	20	9%	18	7%	15	6%	18	6%	20	7%	16	8%	6	5%
Acute medical or surgical condition	16	6%	20	9%	*	*	12	5%	11	5%	11	4%	14	67%	3	2%
Chronic medical condition	11	4%	12	6%	10	4%	11	5%	7	5%	16	6%	8	4%	6	5%
Chromosomal, genetic and congenital abnormalities	70	26%	50	235	68	26%	56	24%	60	24%	67	24%	41	20%	29	23%
Perinatal or neonatal event	97	37%	81	38%	97	37%	78	33%	93	33%	102	37%	66	32%	41	32%
Infection	18	7%	*	*	12	5%	18	8%	7	8%	12	4%	17	8%	9	8%
Sudden unexpected or unexplained death	20	7%	10	5%	19	7%	24	10%	16	10%	19	7%	20	9%	20	16%