

Drug Related Deaths in NHS Lothian in 2020

Glossary

Benzos	Benzodiazepines and more specifically those sold illicitly, “street benzos”
COD	Cause of death
DRD	Drug related death; a person who dies due to the misuse of drugs
DTTO	Drug testing and treatment order
GP-NES	General Practitioner National Enhanced Service.
HSCP	Health and Social Care Partnership
Locality	NHS Lothian is divided into 7 localities that also match HSCPs
MCCD	Medical Certificate of Cause of Death
ME4	A form completed by the pathologist in the case of suspected DRDs that indicates if drugs were implicated in death and if so, which drugs
NFOD	Non-fatal overdose
NRS	National Records of Scotland
OD	Overdose
Opiate	Naturally occurring opioid such as opium, heroin, morphine
Opioid	Any substance acting at opioid receptors, natural or synthetic.
PWUD	Person or people who use drugs (problematic use is implied)
PDP	Person or People with a Drug Problem.
SMS	Substance Misuse Services of NHS Lothian
SMS/SMD	Substance Misuse Services/Directorate. Tertiary tier substance misuse services provided by the NHS
WEDINOS	Welsh Emerging Drugs and Identification of Novels Substances Project

Recommendations

Enhancing services

1. The protective effect of being engaged with specialist drug misuse services is clear. Whilst not all people with a drug problem will engage, the specialist services should be resourced and able to accept all those that are willing to engage, to do so quickly and to retain them in treatment.
2. Specialist services need to be structured to offer the support and treatment required based on the ongoing current drug misuse situation, the current identified needs of the patients and the current structure of the PDP population. It should consider and try to meet the priorities of the patients when offering interventions.
3. Opioids remain the most implicated drug class in death. This emphasises the need to expand the provision of naloxone and to do this at all levels including as close to the user as possible. There is a move towards a wider range of opioids being implicated in drug related deaths more frequently and this may have an impact on the dose of naloxone used to achieve reversal; this should be examined.
4. The growing use of “street benzos” and their implication in DRDs is of great concern. The range of drugs being sold is growing and there has also been a noted variation in drug potency. There is a need to develop a response to reduce these harms through clinical and psychosocial intervention.
5. The prescription of diazepam has been proposed to reduce the harms caused by “street benzos” but is not without concerns of its own. It is recommended that the work on the opportunities, benefits and problems of prescribing diazepam is expedited and then implemented.
6. The differences in drug related deaths between and within health boards present opportunities to look for potential interventions. This emphasises the need for detailed local analysis.

Improving understanding

7. There are opportunities for intervention by those present at the time that are not being taken because the signs of a fatal overdose are mostly non-specific. There is a need to develop a test for risk of fatal overdose that is both sensitive and specific and practical in order to be useful. One possibility might be the use of small pulse oximeters.
8. It is very common to find a combined use of depressants and stimulants in drug related deaths (also seen in oral fluid tests). The impact of this combination on the CNS and cardio-respiratory systems is not understood. Further research into this should be explored.
9. Poly-drug use is still the norm and the increased combination of opioids, stimulants, benzodiazepines and gabapentinoids has mirrored the rise in DRDs. The reasons for this poly-drug use is not understood. To do so will require active engagement with current drug users to gain understanding from their living experience.
10. Work is required to understand the structure, circumstances, and drug use patterns of the overall population of people with a drug problem (PDP). Only by doing that will it be possible to properly identify risk factors for drug related deaths and assess the impact of interventions. This cannot be done by only looking at those who have died.

11. The recording of drug related deaths using strict ICD-10 rules by National Records of Scotland (NRS) should be reviewed to enable the capture in their data of all cases where controlled substances are included in the underlying cause of death i.e. the lowest line of Part I of the MCCD.

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Introduction

It is important to remember that behind this data and analysis lies the personal and individual nature of each of these deaths. However, while each death should and must be looked at as an individual tragic early death, it is hard to draw conclusions from individual cases. Data collection and analysis are essential to allow evidence-based responses to very complex situations.

Detailed local analysis is important to ensure that the relevant lessons can be drawn. Both the patterns of drug use and the structure of specialist services are significantly different in NHS Lothian compared to other health boards. Even within NHS Lothian, differences can be seen between different localities to some extent.

In this report the case definition of a drug related death (DRD) will be outlined and differences in our definition to those used by other agencies will be explored. This report will also cover the changes in numbers of DRDs compared to previous years and across local authorities. There will also be analysis of the demographics of those who suffered a DRD and analysis of the patterns of drugs involved. From these analyses available lessons will be outlined.

Definition of a DRD used in NHS Lothian

DRDs are reported here according to the cause of death (COD) as given by the pathologist in the detailed pathology and toxicology examination of deaths that are suspected to be drug related. These are classified in to four possible overall outcomes:

- Primary DRD A death in which controlled substances are included in lowest line of the primary COD. These are the causes that are directly related to death. It is possible that non-drug causes may also be included in that line such as COPD or ischaemic heart disease. All primary DRDs **WILL** be included in the NHS Lothian annual report. It is possible that some will **NOT** be included in the National Records Scotland (NRS) annual national report due to the ICD coding rules that they follow.
- Secondary DRD A death in which controlled substances are included in the secondary cause of death (if one is present) but not in the primary cause of death. This secondary cause may include specific drugs or evidence that chronic drug abuse has contributed to death, although not directly. These cases will normally **NOT** be included in the NRS annual national report. They will also not be further analysed here but are included in the overall table of DRD numbers.
- Unascertained In these cases, no cause of death can be determined by the pathologists with any degree of certainty and the primary and only cause of death is “1a Unascertained”. It is possible that drugs were detected in some, but this is not adequate to show how they or other causes might have been implicated. In any case, no definite or probable cause of death has been determined. In some, the role of drugs is explicitly excluded. In some, but not most, of these cases, there may be a definitive indication that drugs had recently been used. In others, the person may have been a known drug user. But it is important to remember that just because someone misuses drugs does not mean that they have died through drug misuse. Cases with an unascertained COD will **NOT** be included in the NHS Lothian DRD report unless other evidence suggests drugs were the proximate cause, but **MAY** be included in the NRS annual national report even when drugs are exclude as a cause by the pathologist.
- Not a DRD In these cases, whilst a police report of a suspect drug related death was received, a cause not involving controlled substances has been determined to be the cause(s) of death, primary and (where present) secondary. These cases are **NOT** included in the NHS Lothian annual or NRS annual national report.

Numbers of drug related deaths recorded in NHS Lothian in 2020

Key findings:

- There were 171 DRDs in NHS Lothian in 2020, which is consistent with the numbers seen in 2019 (172).
- Since 2014, DRDs in NHS Lothian have increased by 74%, increasing every year except 2020.
- Since 2014, DRDs have risen by 51% in City of Edinburgh and by 176% in the three other Local Authorities in NHS Lothian.
- Numbers of DRDs have been relatively level in City of Edinburgh and East Lothian over the past three years. Most of the increase seen has been in Midlothian and West Lothian.

Table 1 shows the numbers of suspect death reports received and the final outcome for each local authority within NHS Lothian in 2020. Deaths occurring in prisons are treated as a separate locality as they are not necessarily related to the area around them. Those who had no fixed abode (NFA) and were sleeping rough have been allocated to the locality in which reports show they were mainly based. It is accepted that this is not always accurate, even those with no fixed abode do have communities they live amongst. The accommodation status of all of those suffering a DRD is discussed later in this report.

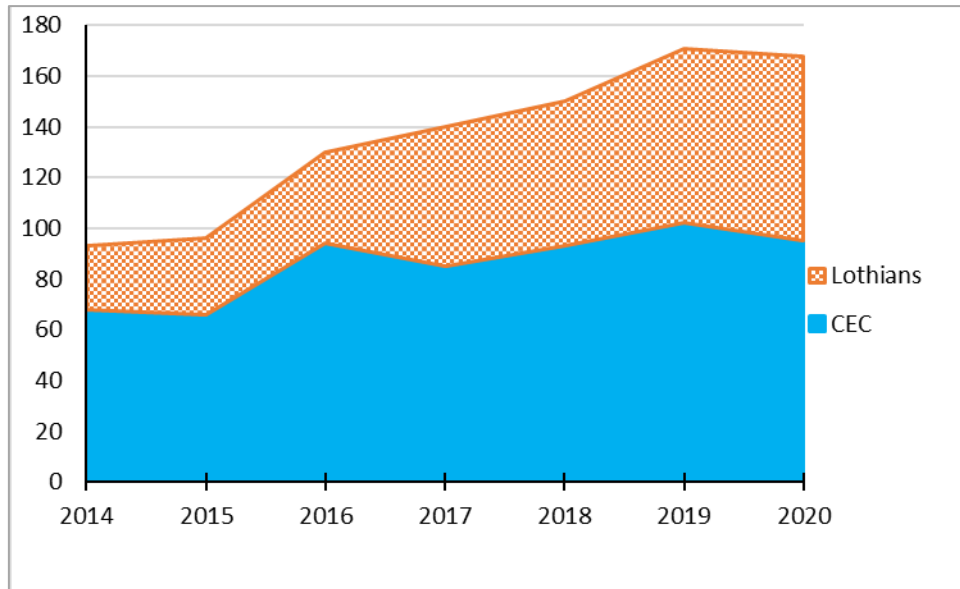
Table 1: Reports received and final outcome by locality 2020 with 2019 DRD comparison

Area	Reports received	Not DRD	No cause given	Drugs secondary	Primary DRD		2019 1° DRDs
Edinburgh NE	47	12	1	5	29		34
Edinburgh NW	30	4	2	1	23		18
Edinburgh SE	31	5	0	0	26		23
Edinburgh SW	32	11	1	1	19		28
Edinburgh NFA	3	2	0	1	0		
East Lothian	18	3	0	0	15		19
Midlothian	31	5	0	1	25		20
West Lothian	51	13	3	2	33		30
HMP Edi/Addi	2	1	0	0	1		0
NHS Lothian	245	56	7	11	171		172
City of Edinburgh	143	34	4	8	97		102
Lothians	100	21	3	3	73		69
Mid and East Lothian	49	8	0	1	40		39

*Note: HMP Addiewell and HMP Edinburgh are counted together as a separate locality i.e., effectively “outside” City of Edinburgh and the Lothians but within the responsibility of NHS Lothian

There has been a marginal decrease of 0.6% in DRDs in 2020 compared with 2019. The number of DRDs has increased since 2014 (and before) as shown in Figure 1 below from 2014 to 2020.

Figure 1: Primary DRDs in NHS Lothian, 2014 to 2020



The 2016 rise that is particularly evident for the City of Edinburgh (CEC) is probably an impact of the use of NPS (novel psychoactive substances) in that year, perhaps particularly stimulants. But this is superimposed on a general upward trend and the reduction in NPS implications did not lead to a decrease in DRDs overall.

Note that an apparent decrease in DRDs in NHS Lothian in 2018 compared to 2017 that was shown in the 2018 annual report was based on figures already published by NHS Lothian for 2017. The 2017 data were reviewed because of the significant difference compared to NRS figures for that year. This has resulted in the NHS Lothian figure for 2017 being revised downwards and it now agrees more closely with the NRS figure.

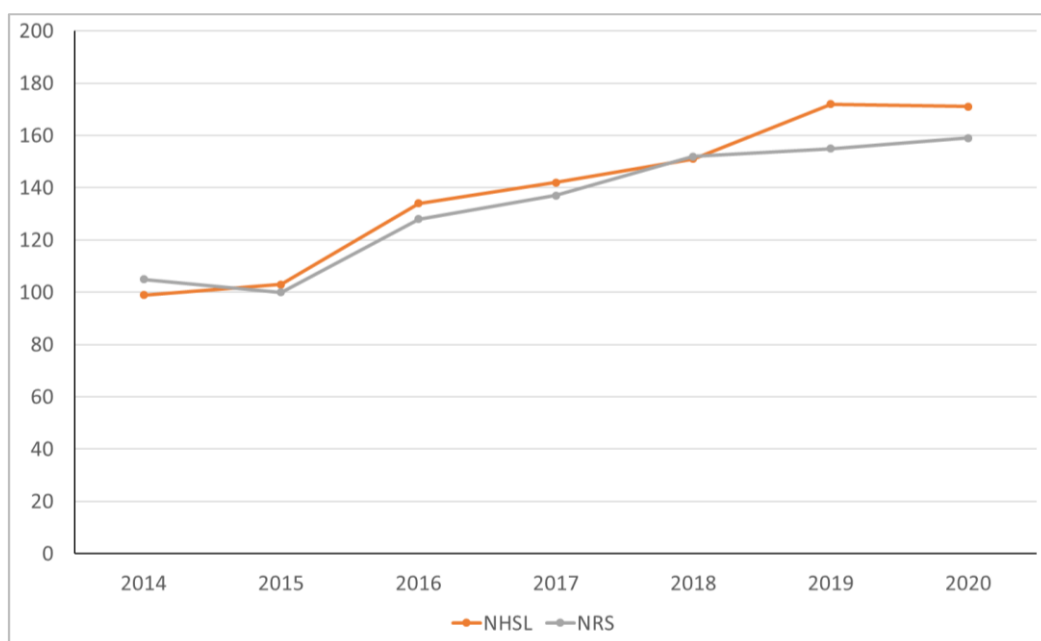
NHS Lothian and NRS reported numbers for drug related deaths in 2020

Key findings:

- Using the NHS Lothian definition of a DRD, there were 171 DRDs in NHS Lothian in 2020.
- The NRS has recorded 159 DRDs in NHS Lothian in 2020.
- The major difference is cases where the COD was given as a non-drug related cause AND a drug related cause, both in the 1a line of the COD with the controlled substance mentioned second. This was most commonly a cardiac condition AND a stimulant.

There have always been relatively small differences between the numbers of drug related deaths reported for the NHS Lothian area by National Records of Scotland (NRS) and by NHS Lothian Health Board. There are well understood reasons for these small differences such as NRS using the date of registration of death and NHS Lothian using date of death as the temporal marker of the event. This is the reason for most of the differences in most years. Efforts are always made to ensure that the NHS Lothian figure is as close as possible to the NRS figure. For example, in 2018 NRS reported 152 DRDs in NHS Lothian and NHS Lothian recorded 151. It is important to note that the 2018 figures were the result of using the same NHS Lothian and NRS definitions of a DRD as have been used in 2019 and 2020. Figure 2 shows the NRS and NHS Lothian recorded DRD numbers from 2014 to 2020.

Figure 2: Number of DRDs recorded by NRS and NHS Lothian for the NHS Lothian board area 2014 to 2020



In 2020, the number of DRDs in the NHS Lothian board area recorded by NRS is 159 and by NHS Lothian it is 171, with the NHS Lothian figure being 8% more than the NRS figure.

However, the detailed situation is more complex. Between the two sets of cases for 2020, there is a total of 180 patients. Of these, 150 people are in both sets of cases, 83% of the total. Nine cases are in the NRS alone and 21 are in the NHS Lothian alone.

Table 2: Reasons that cases were included in the NRS data and not in the NHS Lothian data

Reason for case for NRS inclusion	
Not an NHS Lothian resident	4
Date of death between 15 and 31 Dec 2019, death registered in 2020	3
Cause of death "1a Unascertained" by pathologist	2

Table 2 above provides a breakdown of the reasons for cases to be included by NRS but not NHS Lothian. Of the 4 cases not resident in Lothian, 2 were visiting from England and died in hotels during short visits, one lived and died in Falkirk, and one lived and died in Fife. The unascertained cases are cases where the pathologist did not ascribe any cause of death, but it was added by NRS; this has been normal practice by NRS even if the pathology report ruled out drugs (as it did in one of these two cases in 2020).

Lastly, NRS included 3 more cases than NHS Lothian, this is due to NRS using the date the death is registered and NHS Lothian use the date of death. This is somewhat balanced by the 5 cases mentioned below (Table 3) who died in the second half of December 2020 but whose death was presumably not registered until 2021.

Table 3: Reason that cases were in NHS Lothian data but not in the NRS dataset

Reason for a case to be in NHS Lothian dataset	
Controlled substance in lowest line of the primary cause of death but not the first mentioned cause in that line	13
Date of death after mid-Dec 2020 and therefore registered in 2021	5
NHS Lothian resident not included as such by NRS	3

An ME4 form is completed by pathologists when a death is suspected to be drug related that indicates if drugs were implicated in death and if so, which drugs. The ME4 form is available for 12 of the 13 cases with a controlled substance in the cause of death but not mentioned as the first cause in the lowest line of the first part of the cause of death. In the 12 cases in which the ME4 indicates that a controlled substance was involved in or the result of the use of drugs/solvents (ME4 Q2) and in 11 the death was the result of drug/ solvent overdose/intoxication (ME4 Q3) with the question blank in the other. Of these 13 cases, six had a single drug implicated with another cause a stimulant, either cocaine or amphetamine. In these cases, the cause of death first mentioned is usually a cardiac pathology which in itself may have been induced by chronic use of stimulants.

The exclusion of these 13 cases from the NRS case list will lead to a particular undercounting of the impact of stimulant drugs (all of them controlled substances) on the numbers of DRDs.

Each of the 30 cases that appear in only 1 of the datasets has been checked against the final pathology/toxicology reports and ME4 forms for 2020 (as have the 150 that appear in both). The main cause of the difference is cases included by NHS Lothian that NRS does not. The commonest reason for this is that NRS follows the ICD-10 coding rule that the primary cause of death is always the first mentioned cause on the lowest line of part I of the cause of death sequence. This means that where the cause is written by the pathologists as, for example, "1a Amphetamine toxicity and ischaemic cardiac disease", this will be counted by NHS Lothian and NRS as a drug related death, where it is written as "1a Ischaemic cardiac disease and amphetamine toxicity", it will be included as a DRD by NHS Lothian *only*.

The largest reason is where stimulants (cocaine and amphetamine) are linked to death in combination with pre-existing ischaemic heart disease. It is noted in the pathology reports that the cardiac disease may itself be due to the chronic use of stimulants. These deaths will not be defined as DRDs using the ICD-10 coding rules that NRS must follow. The 'ME4' form, which is completed by the pathologist, informs NRS of: whether the deceased was a known or suspected habitual drug abuser; the drugs or solvents which were implicated in, or potentially contributed to, the cause of death; any other drugs or solvents which were present but not considered to have had any direct contribution to the cause of death; whether alcohol was present and, if so, implicated; and the pathologist's view of the cause of death. However, the ME4 form shows that in all cases, drugs were regarded by the reporting pathologist involved in the death and reported as such to NRS to whom the ME4 is sent.

The ME4 contains several questions with Q2 and Q3 determining if the pathologist regards drugs as implicated in the cause of death

Q2: Did the death involve or result from the use of drugs/solvents? Yes / No

Q3: Was the death the result of drug/solvent overdose/intoxication? Yes / No

If the answer is yes to Q2 and Q3, then NHS Lothian regard this as a drug related death. However, NRS does not follow this, rather using the order in which causes of death appear on the lowest line of Part I of the Medical Certificate of Cause of Death (MCCD). This is partly due to following UK national and international coding ICD-10 and ICD-11 coding rules but it does lead to the exclusion of substantial numbers of drug related deaths from the national figures.

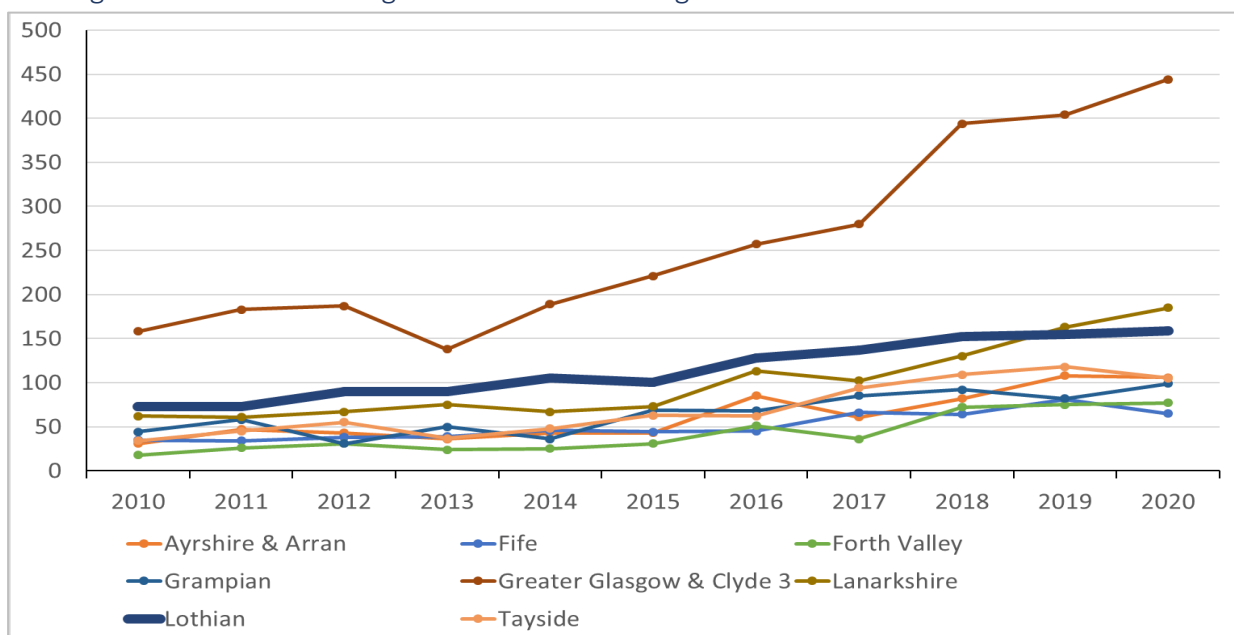
Comparison of numbers of drug related deaths and mortality rates in NHS Lothian with other areas

Key findings:

- NHS Lothian is the board with the third highest DRDs behind NHS Greater Glasgow and Clyde and NHS Lanarkshire which shows no change from 2019.
- When looking at the relative change in numbers of DRD NHS Lothian is below the national level.
- NHS Lothian has had relatively low rate of increase in the past two years.
- City of Edinburgh has the highest levels of DRDs of any of the local authorities within NHS Lothian.
- Cases have doubled in City of Edinburgh with the other local authorities in NHS Lothian increasing at roughly the same rate at the overall rate for Scotland.

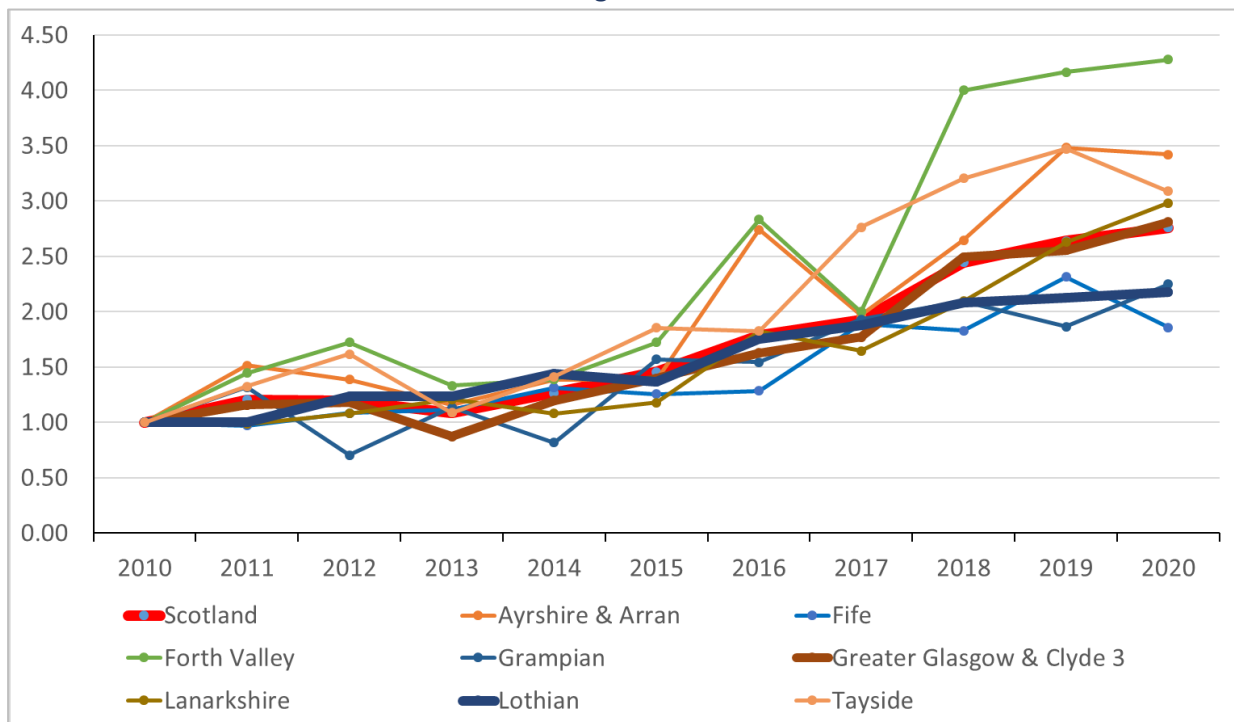
The following is based solely on NRS data taken from the 2021 report and supplementary data. In terms of numbers of drug related deaths, NHS Greater Glasgow and Clyde has many more DRDs than any other health board area and has done for the past 10 years. This is partly because it is the largest health board area by population and has a higher proportion of deprived areas. NHS Lothian has had the second highest number of DRDs until the past two years (2019 and 2020) when it has been overtaken by NHS Lanarkshire. The changes over time can be seen in Figure 3.

Figure 3 Numbers of drug related deaths for larger NHS Health boards 2010 to 2020



However, using an absolute number can be misleading in showing proportional trends i.e. the rate of change as opposed to the absolute change in numbers. This is shown in Figure 4 for the same NHS Scotland health boards and includes information on Scotland as a whole. Using this relative increase approach, for most health boards and at national level the rate of increase was similar up to 2017. In 2018, Greater Glasgow and Clyde, Ayrshire & Arran and Forth Valley health boards all show a sharp increase whereas others, including NHS Lothian, seem to maintain the previous rate of increase or even decrease slightly. The trend for Scotland follows closely that seen in Greater Glasgow and Clyde which is to be expected given its relative population size.

Figure 4: Relative change in numbers of DRDs for larger health boards, 2010 to 2020 using 2010 as the origin and NRS data



When viewed on a local authority level, Figure 5 shows the absolute numbers of DRDs by year from 2010 to 2020 for the larger cities in Scotland and the constituent local authorities in NHS Lothian (Midlothian and East Lothian are added together because they are in the same ADP area and to reduce the risk of disclosure).

Figure 5: Numbers of drug related deaths for selected council areas 2010 to 2020 using NRS data

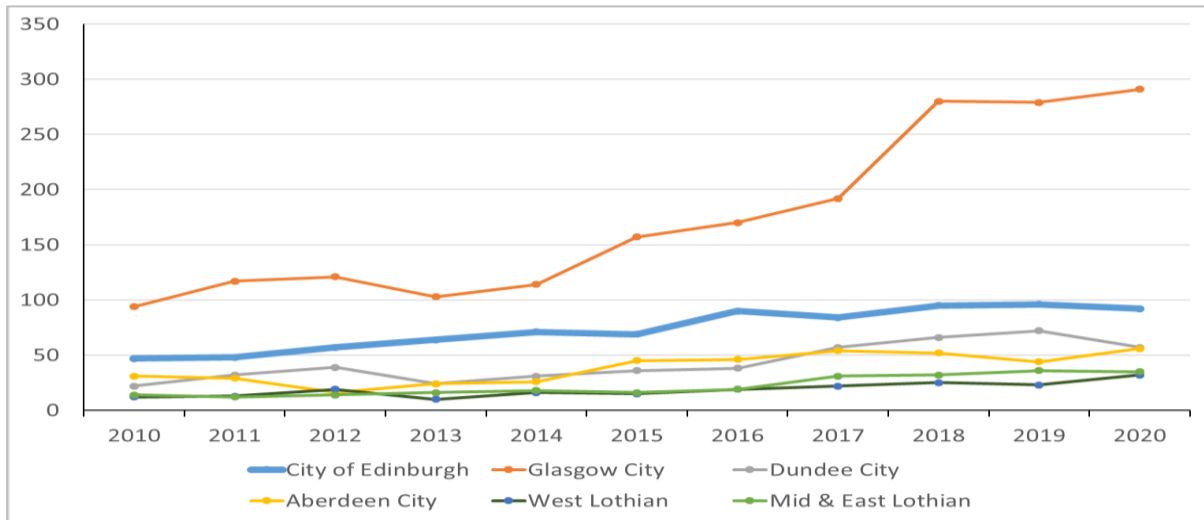
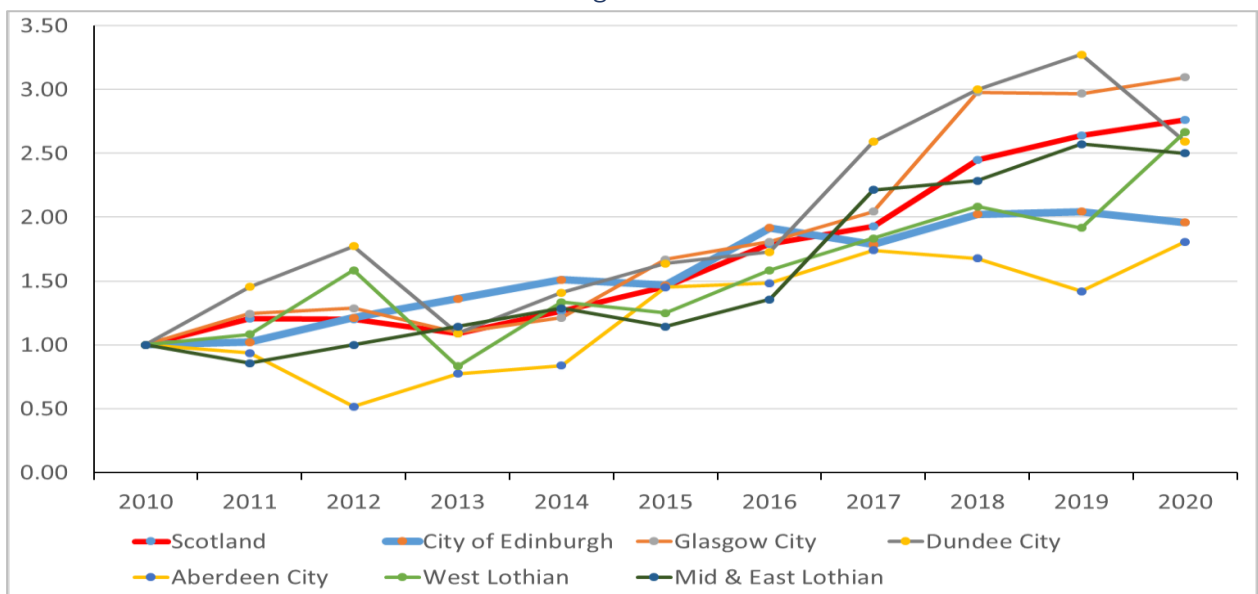


Figure 6 shows the same data but as a relative change year on year compared to 2010 and again the overall data for Scotland is included. This shows that whilst DRD number have trebled in Glasgow City over the past 10 years, they have roughly doubled in Edinburgh and seem to have been relatively level for past three years (as noted above). This indicates that something different has been happening in different areas. Again, the figures for Scotland follow those for Glasgow more closely. Aberdeen has shown a similar pattern to Edinburgh, while Dundee has shown a faster rate of increase than Glasgow until recently. Of local concern, both West Lothian and Midlothian/East Lothian have shown higher rates of increase than Edinburgh, albeit with lower absolute numbers (but also lower population levels) and are close to the Scottish rate of increase.

Figure 6: Relative change in numbers of DRDs for selected council areas 2010 to 2020 using 2010 as the origin and NRS data



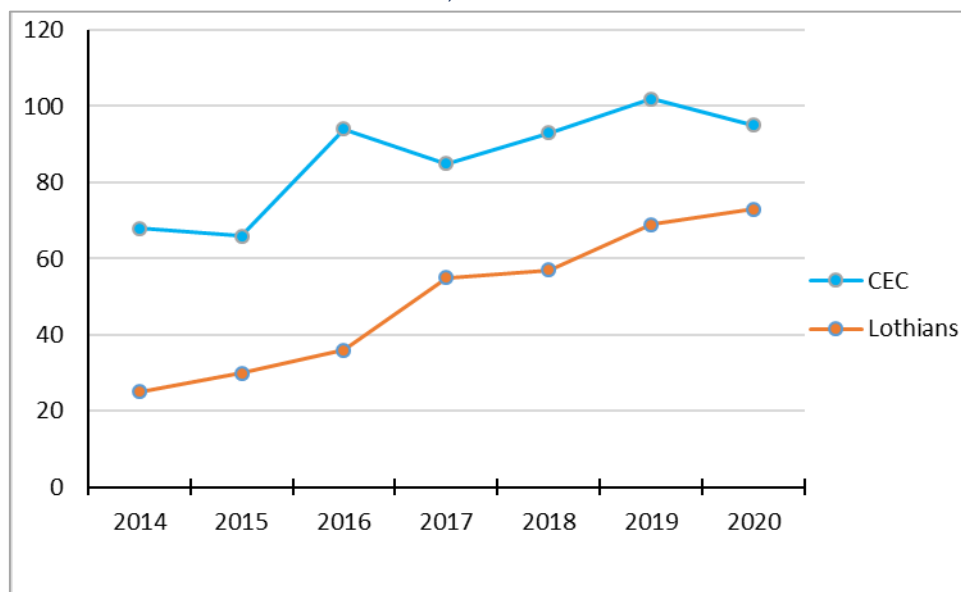
Where in NHS Lothian and when did people die from a drug related death?

Key Findings:

- In the past 3-4 years, numbers of recorded DRDs have been relatively stable in the City of Edinburgh and East Lothian. The numbers have risen steadily in both West Lothian and Midlothian.
- DRDs are spread widely across the NHS Lothian area but are concentrated in a few postcode areas.
- The number of DRDs per month was relatively constant across 2020.

Figure 7 shows that DRDs have increased in both the City of Edinburgh (CEC) and the other local authorities in NHS Lothian over the period but have grown more rapidly in the other local authorities relative to the City of Edinburgh, close to tripling (a 200% increase) in the other local authorities whilst City of Edinburgh has increased by 50%.

Figure 7 Drug related deaths in City of Edinburgh and the other local authorities in NHS Lothian, 2014 to 2020



Figures 8 and 9 show the numbers of primary drug related deaths by local authority over the period 2014 to 2019. West Lothian (WL), Midlothian (ML) and Edinburgh North-East (ED NE) show consistent increases since 2014 but the others show more variable patterns. However, no area shows a decrease. A previous detailed analysis for WL also showed that as well as numbers rising, the geographical spread has also changed, widening in a way that likely reflects a change in ways in which drugs are sold and distributed.

Figure 8: Primary drug related deaths by locality within City of Edinburgh, 2014 to 2020

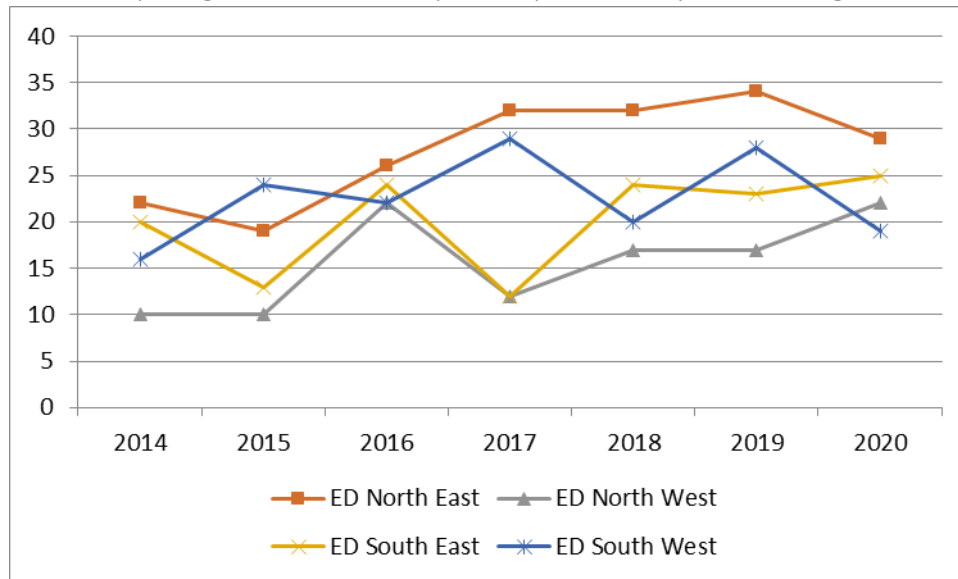
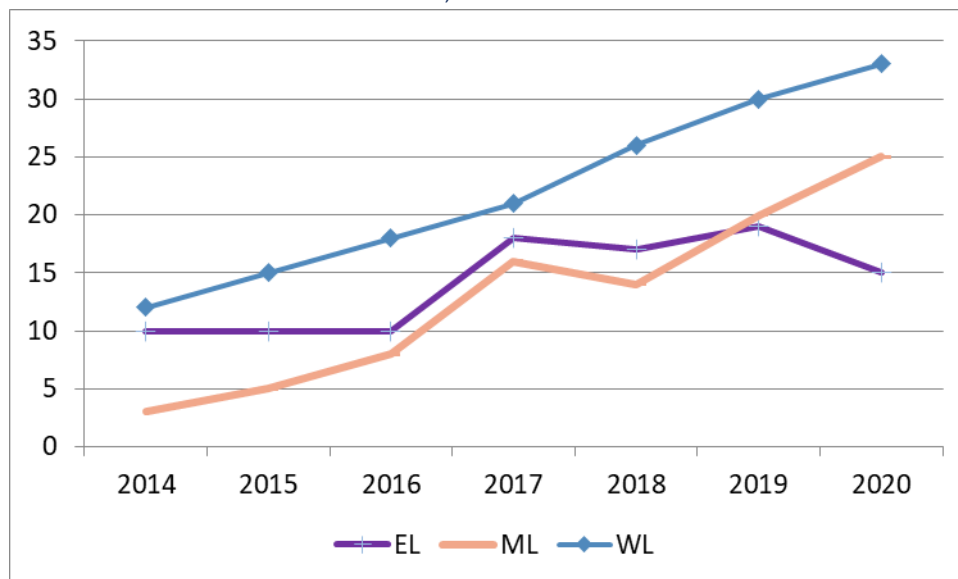


Figure 9: Primary drug related deaths for each of the other local authorities within NHS Lothian, 2014 to 2020



Overall, it is possible to say that for the past four years, numbers of DRD have been reasonably level in 5 of 7 localities, with the exception of West Lothian and Midlothian.

Postcode areas

NHS Lothian is comprised of 48 postcode areas (the first half of the full postcode). Drug related deaths are widespread across NHS Lothian recorded in 39 different postcode areas in 2020. However, this spread is by no means even. Twelve postcodes had 5 or more recorded deaths and five had 10 or more, with the highest number being 13, recorded in both EH7 and EH47. Hence, drug related deaths are both widely spread and concentrated in certain areas.

The 12 postcode areas with the highest numbers of recorded DRDs (5 or more) were the place of residence around 60% (101 of 171) of the recorded DRDs in 2020. These postcode areas are shown in Table 3 below.

Table 3 Drug related deaths by postcode area, NHS Lothian 2020

Locality	Post code area of residence	Recorded DRDs in 2020
ED NE	EH7	13
WL	EH47	13
ED NE	EH6	10
ED SW	EH11	10
ML	EH22	10
WL	EH54	8
ED NW	EH4	8
WL	EH48	7
ED SW	EH14	6
ED SE	EH1	6
EL	EH21	5
ML	EH19	5

Postcode areas EH6 and EH7 neighbour each other within City of Edinburgh (in ED NE) as do postcode areas EH11 and EH14 (in ED SW). These two postcode area groupings account for 49 of the 93 (approx. 53%) primary DRDs in City of Edinburgh in 2020, a phenomenon consistent with 2019.

Compared to 2019, more postcodes with the greatest number of DRDs are located outside of the City of Edinburgh and this is particularly true for West Lothian. The three West Lothian postcodes with higher numbers of recorded drug related deaths (EH47, EH48 and EH54) border each other and represent the areas with the highest populations and amongst the highest population densities (Livingston and Bathgate).

Reports received and outcomes by month of death

Figure 10 shows the wide variation in numbers of suspect drug related death reports received over the past three years illustrating the lack of clear pattern. It is also clear that the numbers of reports received per month is not closely related to the final classification of death. The months June to August in 2020 show that clearly.

Figure 10: Suspect DRD death reports and final outcome by month, NHS Lothian 2018 to 2020

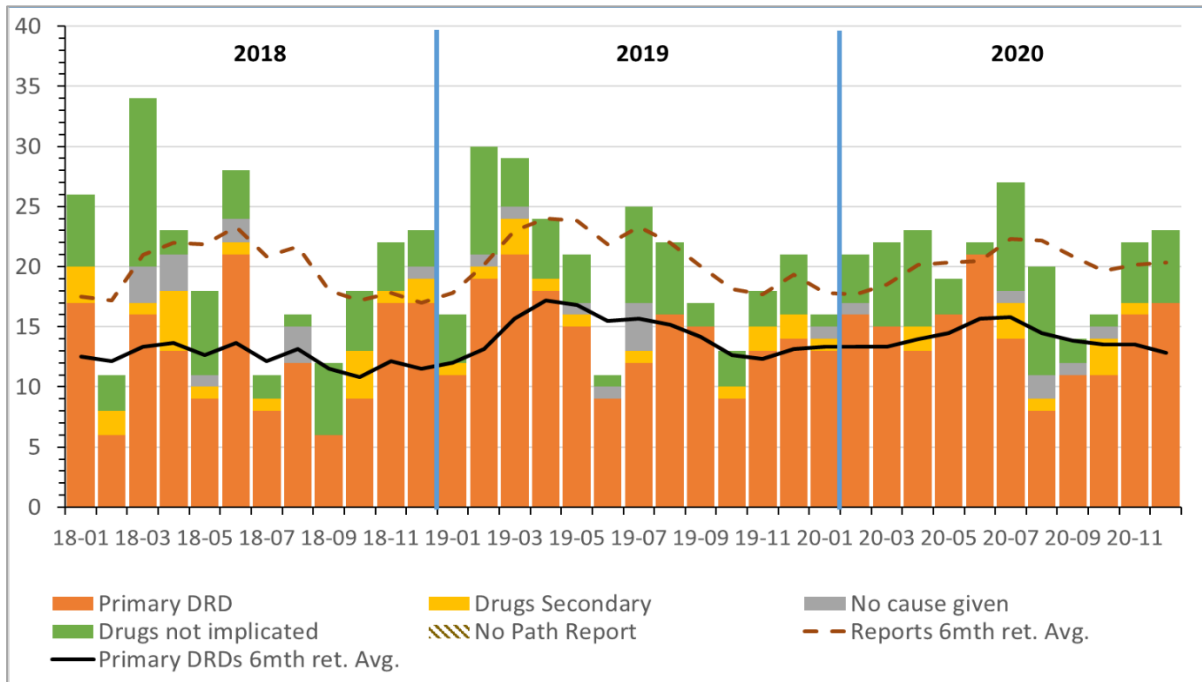
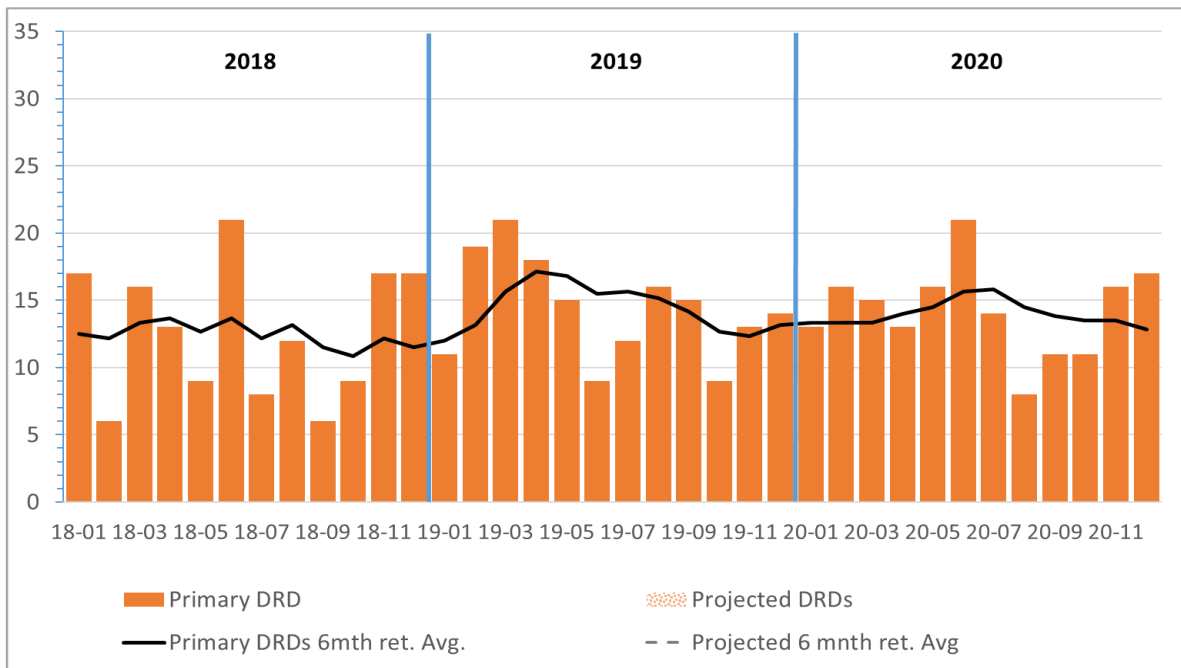


Figure 11 shows the same data but, for clarity, only the primary DRDs. There is a visual impression that in 2020 there was a more consistent number confirmed DRDs per month (less month to month variation) than in the previous two years.

Figure 10: Numbers of primary drug related deaths by month of death in NHS Lothian 2018 to 2020



Visually there does seem to be a slow upward drift of numbers of drug related deaths per month and hence per year.

Gender and age of primary DRDs in NHS Lothian in 2020

Key Findings:

- The median age and age distribution of those suffering a DRD has changed with a median of 45 in 2020 compared with 42 in 2019.
- The interquartile age range is 37 to 51 years old.
- The gender distribution of those suffering a DRD was 77% male and 23% female, a lower proportion of females than in 2019 and this follows the trend seen across the past 7 years.
- There was a record high number of DRDs in males in 2020 and a fall in the numbers of DRDs in females.
- There was an absence of female DRDs in the third decade of life (20-29). This at least partly explains the rise in median age of death.

Of the primary DRDs in NHS Lothian in 2020, 132 were male (77%) and 39 (23%) female.

Table 4: Age distribution for primary DRDs in NHS Lothian in 2020 by gender

Gender	Mean	SD	Min	IQ25%	Median	IQ75%	Max	n
Female	45.3	10.5	17	37.5	46	50	77	39
Male	43.0	12.5	14	36	44	51	94	132
All	43.5	12.1	14	37	45	51	94	171

The average and SD of age is perhaps more frequently used but can be skewed by single extreme cases so the preferred metric is the median and IQR. There is no overall pattern of difference of median age at death being higher or lower by gender over the past 6 years as shown in Figure 12.

Figure 12: Median age by year and gender for primary DRDs in NHS Lothian 2014 to 2020

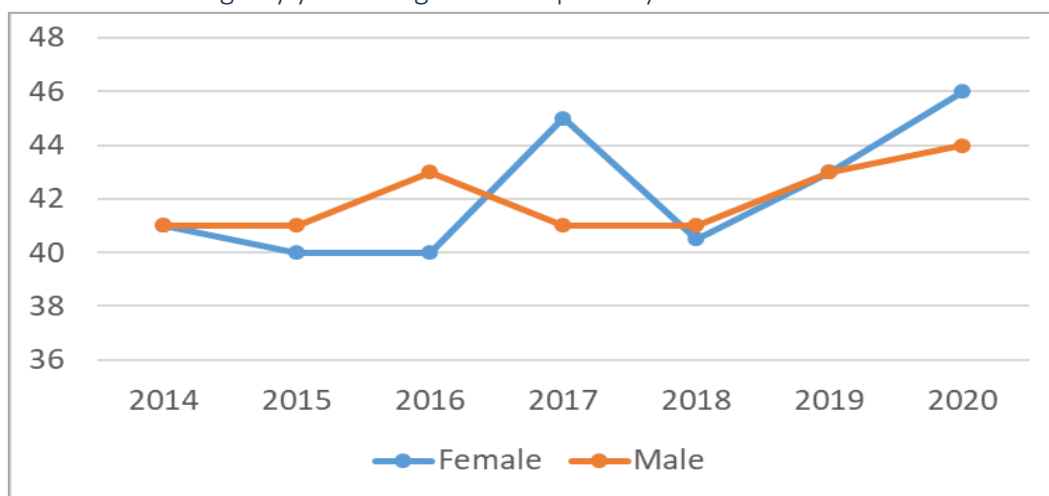
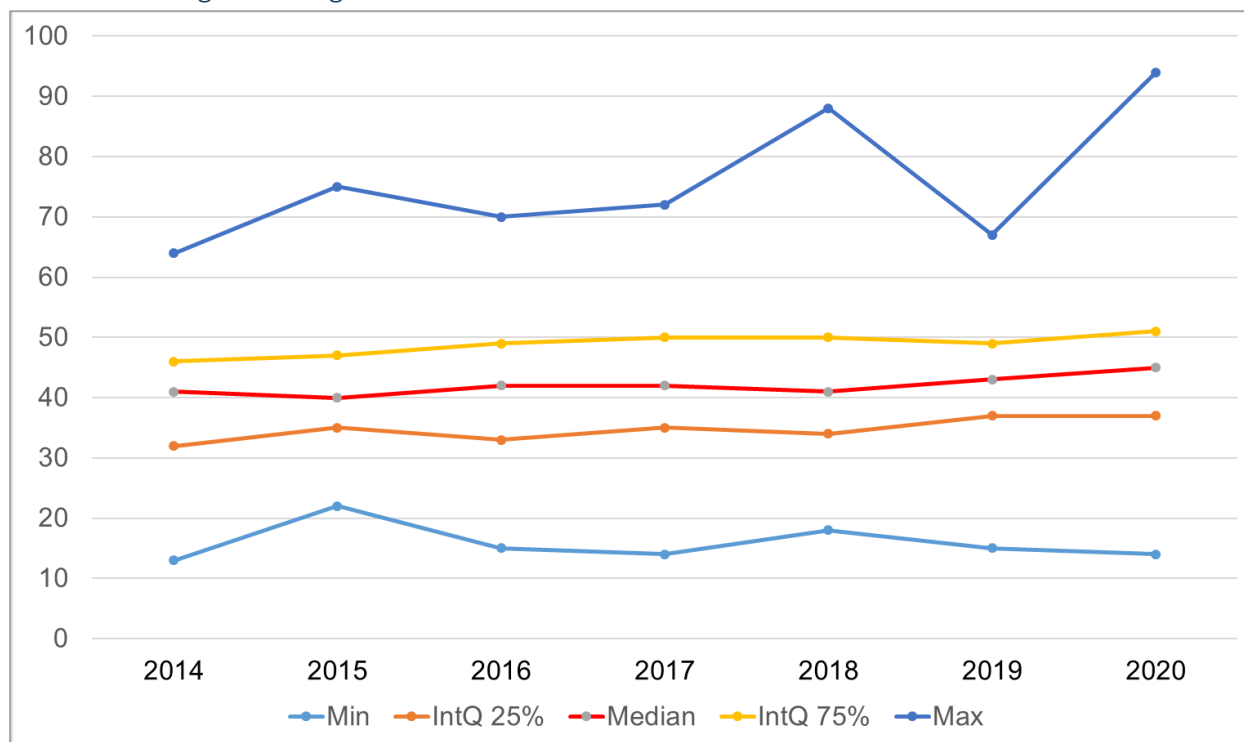


Figure 11: Age distribution for DRDs in NHS Lothian in 2014 to 2020



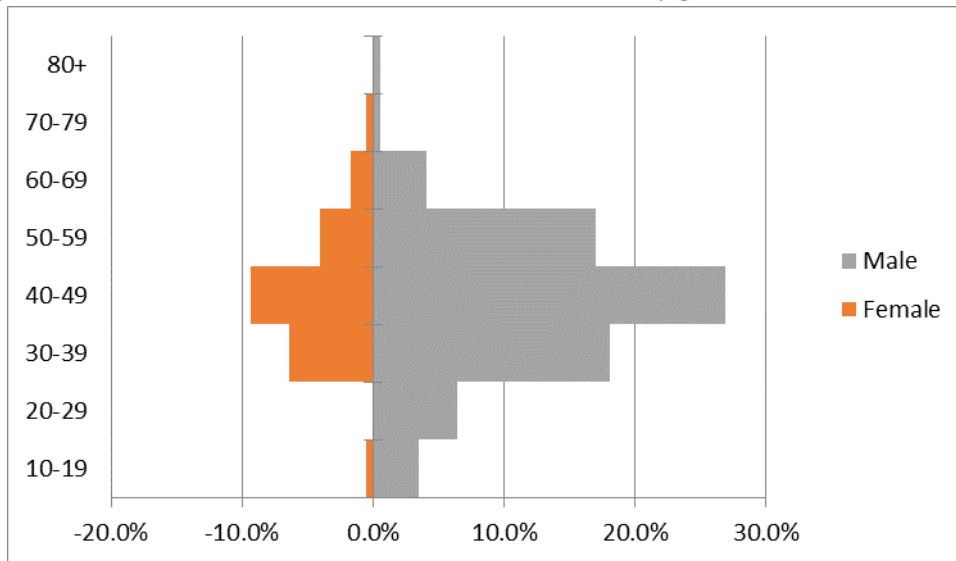
The median age at death had been stable from 2014 to 2018. However, the median age has risen from 41 in 2018 to 43 in 2019 and 45 in 2020.

Half of the deaths are in a relatively narrow age band from 37 to 49 and this has been relatively stable over the past 4 years with some indication of a slow rise in the lower boundary of this range.

Applying the same age range boundaries as NRS, 119 of 171 (69.6%) of DRDs were in the 20-year age band from 35 to 54. Within NHS Lothian, that age range is 27.0% of the general population, however, it is unclear what proportion of the drug using population it represents. In NHS Lothian in 2020, 34 DRDs were in people aged <35 years old, 20% of all DRDs. Note that this was in the absence of DRDs in an entire age decade for women (see below) which will have lowered that percentage. Many of those who die at older ages are at risk from a younger age and their deaths may be due to the impacts of chronic drug use over the previous decade(s).

In terms of gender and age, the overall age range and distribution is the somewhat different in males and females in 2020 as shown in Figure 15.

Figure 14: Numbers of DRDs in NHS Lothian in 2020 by gender and decade of life



The decade 40-49 is the decade with the most DRDs for both genders and overall (64). However, there are almost as many DRDs below 40 (60) and fewer aged 50 or over (49).

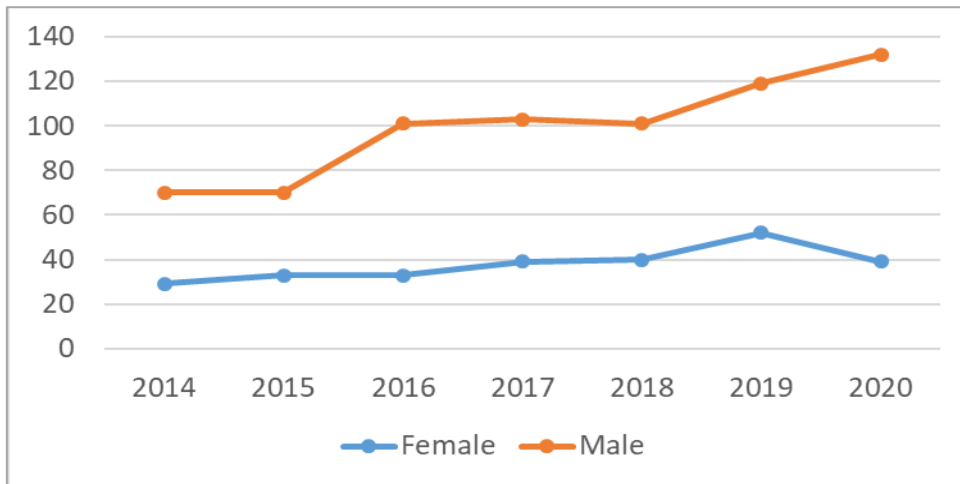
Table 5: Drug related deaths by decades of life and gender 2019 and 2020

	<30	30-39	40-49	50-59	>=60	Total
Male						
2019	12	33	38	32	5	120
2020	17	31	46	29	9	132
Female						
2019	8	11	20	9	3	51
2020	1	11	16	7	4	39
All						
2019	20	44	59	41	8	172
2020	18	42	64	36	13	171

(Note that 1 death in 2019 was in a transgender person who’s legal and transition status was unknown and so is not placed in either gender group but is included in the overall number)

Remarkably there is a lack of female DRDs under the age of 30 in 2020. This is the main reason that the number of females suffering a DRD has fallen in 2020 whereas the number of males suffering a DRD is at a record high as shown in Figure 15. These two changes have “cancelled out” to give roughly the same number of DRDs in 2020 as in 2019. But this is due to a fall in a specific group of people and a rise in another rather than an overall stable set of data.

Figure 125: Number of male and female DRDs in NHS Lothian 2014 to 2020



It is also probable that at the rise in median age at death overall is due to the absence of females under 30 suffering a DRD in 2020.

The largest increase in males in 2020 compared to 2019 is in the 40-49 age group (where the number of female deaths was slightly lower) but there is also an increase in the <30 age group. This needs to be followed closely to determine if this is a trend or annual variation.

Mortality rate by decade of life as a percentage of the 2014 value

Using NRS mid-year estimates of the population of NHS Lothian, the mortality rate by decade of life is shown in the Figure 16 from 2014 to 2020.

Death rates are highest in the 40-49 decade and have risen significantly in the past two years in NHS Lothian. The other life decade with a clear upward trend is the 50s. The remaining decades seem relatively stable.

Figure 136: Mortality rate due to primary DRD by decade of life, NHS Lothian 2014 to 2020

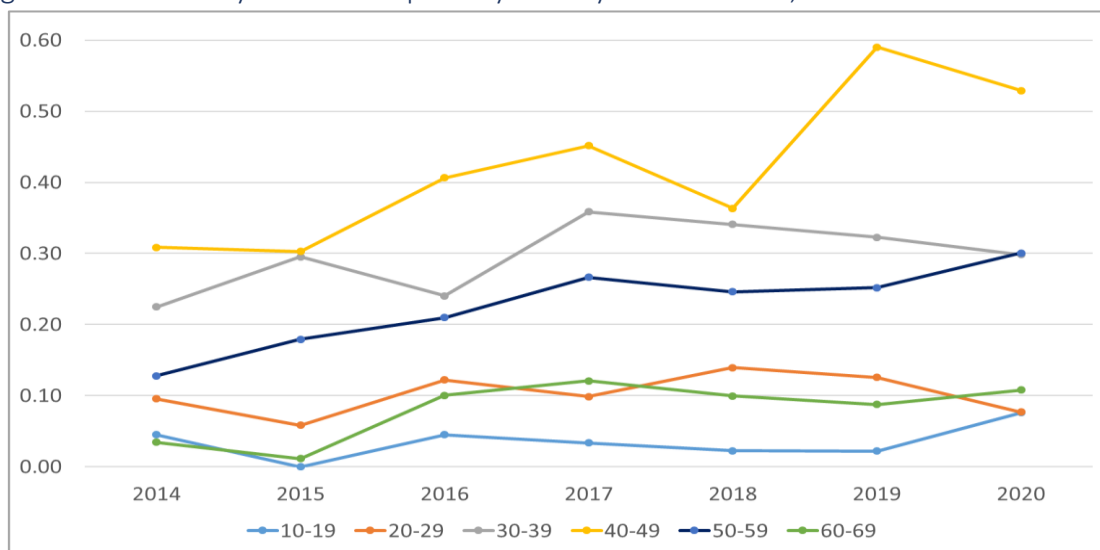
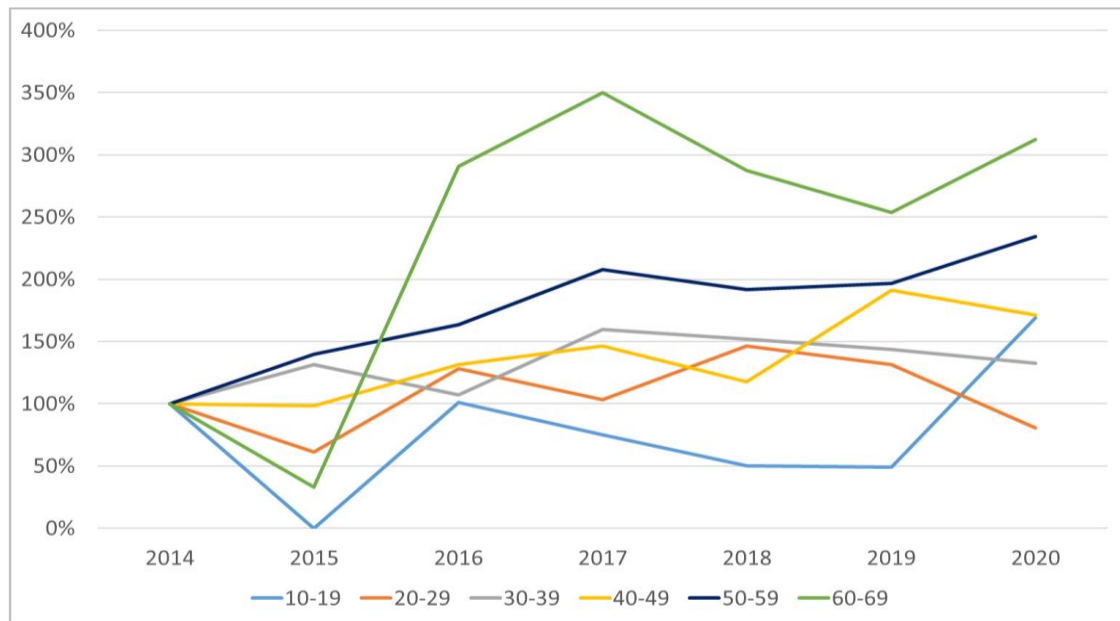


Figure 147: Mortality rate due to primary DRD by decade of life as a percentage of the 2014 rate, NHS Lothian 2014 to 2020



The rate of DRD per decade of age have risen proportionately the greatest in the 60s, 50s and 40s in descending order. The rate is more stable in the 20s and 30s (note that the figure for the 20s in 2020 is impacted by the absence of female DRDs in that age). It is hoped that the rise in the 10-19 age group is temporary and due to the overall low number of DRDs in that age group, however, this should be monitored.

Drugs implicated in drug related deaths in 2020

Key Findings:

- There were 42 different drugs implicated at least once in a DRD in 2020 compared with 21 in 2018 and 50 in 2019.
- The median number of drugs implicated in death was 4 and the commonest number involved was 5. Significant poly-drug use is the norm.
- Depressants were implicated in 90% of all DRDs.
- Opioids were the most implicated class of drug followed by benzodiazepines.
- Stimulants were implicated in 50% of all DRDs, with 40% of DRDs showing a mixture of stimulants and depressants.
- Alcohol was implicated in 15% of deaths although it was present in a far higher proportion. Alcohol levels were frequently at levels that were likely post-mortem production and noted as such by the pathologist.

The drugs implicated in death are those shown as such on the ME4 form issued by the pathologist. The level of implication in death has been determined from the pathology report using the opinion of the pathologists. It is recorded as shown below and to save space, levels of implication will be shown by numeric code throughout this report. The level of implication is significant in understanding how different drugs are used and contribute to the fatality.

- 10** The drug was probably the cause of death on its own
- 20** The drug could have caused death on its own but other drugs will or may have contributed
- 30** The drug was one of a number of drugs that, acting in combination, were responsible for the death
- 40** The drug was implicated in death alone or in combination with other drugs AND with another non-drug related factor e.g. COPD, ischaemic heart disease

Classes of drugs implicated

There are 13 different classes of drugs and 42 different drugs implicated in at least one drug related death in NHS Lothian in 2020 (Table 6). Note that this does not include metabolites of drugs, only the drug taken. This total compares to 21 drugs implicated in 2018 and 50 in 2019. The expansion in the range of drugs implicated has been maintained in 2020 compared with 2018 even if less so than in 2019.

Table 6: Classes of drugs implicated in primary DRDs in NHS Lothian in 2020

Drug class	No. of different drugs	No. of DRD implicated in	Total times implicated	Level of implication in death			
				10	20	30	40
Opioid	9	143	195	5	12	163	15
Benzodiazepine	9	119	170	0	0	162	8
Stimulants	4	82	95	5	2	75	13
Gabapentinoid	2	79	86	0	1	81	4
Anti-depressants	7	29	34	0	1	28	5
Alcohol	1	26	26	0	0	24	2
Non-benzo GABAergic	1	4	4	0	0	4	0
Atypical antipsychotic	1	2	2	0	1	1	0
Anti-histamine	2	2	2	0	0	2	0
Beta blocker	1	2	2	0	1	1	0
NSAID	1	2	2	0	1	1	0
NMDA receptor antagonist	1	1	1	0	0	1	0
Anti-epileptic	1	1	1	0	0	1	0
Totals	42	171	620	10	19	544	47

The majority of drug classes implicated were as part of mixed drug toxicities (the “30” code). It was uncommon for a single drug of any type to cause death alone (10 of 171 deaths) although in a further 19 deaths, one drug could perhaps have caused death alone, but one or more other drugs were present that also contributed to death. In 47 cases, death was attributed to a combination of the drug(s) present and another pre-existing condition. In 13 of those cases, only one drug was found to be implicated in the death and in the remaining 34, more than one drug was present.

Opioids remain the most implicated drug in drug related deaths. Opioids were implicated in 143 of the 171 DRDs in 2020. This class of drugs is also the one most implicated as the sole or potentially sole cause of death. Of note is the relatively large numbers of different opioids implicated in death as high as that for benzodiazepines at 9.

Benzodiazepines are the second most frequently implicated class of drug, implicated in 119 deaths. However, benzodiazepines were not found to have caused death alone in 2020 and rarely in previous years. Benzodiazepines act to potentiate the lethal effects of other drugs, in particular opioids. This has been highlighted by a warning of the risks of co-prescription of opioids and benzodiazepines issued by the Medicines and Healthcare products Regulatory Authority (MHRA) on the 18th of March 2020 with reference to respiratory depression

Stimulants are the third most implicated class of drugs. They were implicated in 82 DRDs in 2020 which compares with 90 in 2019. They were implicated alone more than any other class of drugs except for opioids and as a higher proportion of deaths in which they were implicated.

Gabapentinoids were implicated in a similar number of DRDs in 2020 as in 2019 (79 vs 81). These are important drugs in DRDs and the reclassification in April 2019 to make them controlled substances appears to have had little impact on this so far.

A more detailed breakdown can be found in the appendix.

Differentiating between heroin and morphine in toxicology reports

National reports combine heroin and morphine in to one drug (heroin/morphine). This loses a useful level of information. The use of Heroin in the 12–24-hour period prior to death should be detectable by the presence of 6-monacetylmorphine (6-MAM) in the urine using the type of assay used by the toxicology laboratory. 6-MAM is a specific metabolite of heroin and will only be found when heroin has been used, unlike morphine which can be present after the use of morphine alone, heroin or codeine. The use of heroin is also often indicated by the presence of a low level of codeine because acetylcodeine is a frequent contaminant found in heroin and is metabolised to codeine. Additionally, it is clear from cases where morphine has been detected on toxicology, but 6-MAM has not, that in a significant number, morphine has been found to be present at the scene or known to have been prescribed or consumed. For these reasons, in this report, the presence of 6-MAM is taken as indicating heroin use in the period relating to the death. Morphine in the presence of significantly lower levels of codeine is also taken as indicating the probable use of heroin even in the absence of 6-MAM. Morphine in the absence of 6-MAM and codeine or higher levels of codeine is taken here as indicating the use of morphine in the period relating to death, often supported by background information. It is possible that this somewhat underestimates the implication of heroin but only combining the two will obscure the role of morphine (often oramorph) in drug related deaths, an apparently increasing trend. Morphine is occasionally present at low levels in the presence of significantly higher levels of codeine, and in this case the morphine is likely present as a metabolite of codeine, so is regarded as a metabolite rather than a native drug.

The ten most implicated drugs in 2020 compared with 2019.

Table 2: The most implicated drugs in primary DRDs in NHS Lothian in 2020 and 2019

Drug class	Drug name	2019 DRDs	2020 DRDs	2019 rank	2020 rank
Opioid	Methadone	80	84	1	1
Benzodiazepine	Etizolam	79	71	2	2
Benzodiazepine	Diazepam	57	70	5	=3
Stimulant	Cocaine*	74	70	3	=3
Gabapentinoid	Pregabalin	66	59	4	5
Opioid	Heroin derived morphine	38	29	6	6
Gabapentinoid	Gabapentin	25	27	=8	7
Alcohol	Alcohol	25	26	=8	8
Opioid	Dihydrocodeine	24	21	10	9
Opioid	Morphine**	27	17	7	10

* Note that cocaine and amphetamine are usually implicated in any death where they are found to be present and may be part of the mechanism of death as they can cause fatality in a non-dose dependant manner.

** Morphine detected in the absence of 6-MAM and higher levels of codeine.

The same drugs comprise the most implicated drugs in 2020 as in 2019. Most drugs are at roughly the same point in the rankings as 2019 but there are some changes.

As previously mentioned, methadone is the most commonly implicated drug but is relatively commonly prescribed to known drug addicts and so is likely to be present in many drug related deaths. However, it is rarely the cause of death on its own, with other non-prescription drugs frequently implicated. Nor is it the case that where methadone is implicated, the prescribed dose is commonly below the 60ml advised minimum dose. This is addressed in more detail below.

Of note is an apparent fall in numbers of DRDs in which heroin is implicated and this is also the case for morphine.

Etizolam has shown an increased implication in death compared to 2018 and is the second most commonly implicated drug. Whilst etizolam is still the most frequently implicated benzodiazepine as in 2019, diazepam DRD implications have increased markedly compared to 2019 to be almost the same number.

Drug related deaths are not simple, and changes are rarely explained by single causes. Focusing attention on a single drug or drug class does not reflect the actual situation on the ground where poly-pharmacy is the norm and the range of drugs available and implicated in death has grown in more than one drug class.

Opioids

Table 8 shows the opioid drugs implicated in primary DRDs in NHS Lothian in 2019 broken down into major drugs and opioid groupings.

Table 3: Breakdown of opioid drugs implicated in primary DRDs in NHS Lothian 2020

Drug class	Drugs	10	20	30	40	Total
OST drugs	2	0	3	88	8	99
Heroin derived morphine	1	0	1	26	2	29
Morphine*	1	0	0	16	1	17
Dihydrocodeine	1	3	3	12	3	21
Other opioids	4	2	5	21	0	28

* Morphine implicated in the absence of 6-MAM and higher levels of codeine.

The number of DRDs in which OST drugs and/or heroin were implicated is similar to 2019 (143 vs 136). Of note is that there are more drug related deaths in which morphine, dihydrocodeine or other non-OST opioids are implicated than is the case for heroin. Heroin implications fell in 2020 compared to 2019 but so did those due to non-OST, non-heroin opioids.

There have been significant changes in the numbers of opioids implicated in DRDs in 2019 compared to 2018 and their relative importance. Table 9 shows the individual opioid drugs implicated and their level of implication.

Table 4: Opioid drugs implicated in DRDs, NHS Lothian 2020

	10	20	30	40	Total
Methadone	0	3	74	7	84
Heroin	1	0	26	2	29
Dihydrocodeine	3	3	12	3	21
Morphine	0	0	16	1	17
Buprenorphine	0	0	14	1	15
Tramadol	2	1	10	1	14
Oxycodone	0	2	5	0	7
Codeine	0	0	5	0	5
Fentanyl	0	2	1	0	3

Methadone is the most commonly implicated drug, but it is not often the likely single cause, nor (as discussed below) is it always prescribed to the person taking it. Being on opioid substitution therapy (OST) such as methadone is known to be protective and most of the 4000+ patients on OST at any one time will be prescribed some level of methadone. Methadone's position within a landscape of poly-drug use is a reflection of its frequency of use rather any intrinsic level of risk (although, like all opioids, it is capable of causing fatalities alone).

Heroin remains a clear risk but showed a decrease in 2020 implicated in 29 deaths compared to 38 in 2019. Dihydrocodeine, sometimes used as an OST drug, showed a slight fall in implications to 21 from 24.

What remains concerning is the other opioids particularly oxycodone and tramadol. The latter has changed from not being implicated in 2018 to a regular finding in 2019 and 2020, implicated in 9 and 14 DRDs in 2019 and 2020 respectively. While a low number in the overall context, it seems to be more frequently fatal. Fentanyl remains a concern but where implicated in 2020 it appears to have been prescribed to the person using it.

Benzodiazepines

Table 10 shows the individual benzodiazepines implicated in death. For completeness, the table also shows two other drugs which are also GABA-ergic i.e. they act on the same receptor system as benzodiazepines, the so-called Z-drugs. Zolpidem is a new drug in 2019 compared with 2018 but overall, this group of drugs shows no change in implication in death.

Table 5: Benzodiazepine and other GABA-ergic drugs implicated in DRDs, NHS Lothian 2020

Drug class	Drug	10	20	30	40	Total
Benzodiazepine	Etizolam	0	1	68	3	71
	Diazepam	0	0	67	3	70
	Phenazepam	0	0	9	1	10
	Flualprazolam	0	0	6	1	7
	Flubromazolam	0	0	5	1	6
	Alprazolam	0	0	4	0	4

	Chlordiazepoxide	0	0	1	0	1
	Clonazepam	0	0	1	0	1
	Lorazepam	0	0	1	0	1
Other GABA-ergic	Zopiclone	0	0	4	0	4

There were 9 different benzodiazepines implicated in 2020 compared with 13 in 2019 and 3 in 2018. Only one, diazepam, is widely prescribed.

Etizolam was the most commonly implicated benzodiazepine but the number of times it was implicated has fallen slightly to 68 from 79 in 2019 but is still well above the 2018 figure of 43. Diazepam was implicated nearly as often as etizolam, 70 times which is a rise from 57 in 2019 and a change from 2019 where etizolam was clearly implicated more often than diazepam. This most likely reflects a changing availability of supply. It was noted that diazepam from Spain and Eastern Europe was quite frequently present at the scenes of death.

The remaining 7 benzodiazepines are not commonly implicated but implicated in 30 deaths. They are part of the “street benzos” issue and discussed as such below.

In all but one case, benzodiazepines were not the probable or possible single cause of death and even in that case, it was not the sole drug implicated. Benzodiazepines play an important role in DRDs but are facilitators, potentiating other classes of drugs and in particular opioids to produce fatal respiratory depression.

Stimulants

Table 11 shows the implication of stimulants in drug related deaths in NHS Lothian in 2020.

Table 6: Stimulant drugs implicated in DRDs, NHS Lothian 2020

Drug	10	20	30	40	Total
Cocaine	0	0	61	9	70
MDMA (ecstasy)	5	2	5	0	12
Amphetamine	0	0	7	4	11
Methamphetamine	0	0	2	0	2

Whilst also important contributors to multi-drug mortality, stimulant drugs kill on their own or with another pathology, often ischaemic heart disease. Long term use of cocaine and amphetamine is known to cause heart disease so arguably they may also have been part of creating this other pathology. Cocaine was implicated in around the same number of deaths as in 2019 but amphetamine implications fell towards more usual levels when compared to 2019. However, of note in 2020 were the increase in deaths where MDMA was the sole drug present or would have been possibly killed alone although other drugs were present. Also of note are the two deaths where methamphetamine (“crystal meth”) was implicated, something not seen in 2018 or 2019.

Gabapentinoids

Table 12 shows the implication of gabapentinoids in drug related deaths in NHS Lothian in 2020.

Table 7: Gabapentinoid drugs implicated in DRDs, NHS Lothian 2020

Drug	10	20	30	40	Total
Pregabalin	0	0	57	2	59
Gabapentin	0	1	24	2	27

Note that despite their name, these drugs do not act at GABA receptors but as calcium channel blockers. Their implication in deaths has not changed greatly between 2019 and 2020 and they remain an important contributor to the multi-drug nature of many DRDs. Gabapentinoids were reclassified as controlled substances in April 2019, however, this appears to have had no impact on their use or availability.

Alcohol

Table 13 shows the numbers of times alcohol was implicated in drug related deaths in NHS Lothian in 2020.

Table 8: Alcohol implicated in DRDs, NHS Lothian 2020

Drug name	Level of implication				Total
	10	20	30	40	
Alcohol	0	0	24	2	26

Minimum unit pricing for alcohol was introduced in Scotland on the 1st of May 2018. There was some concern that this might make some drugs such as benzodiazepines relatively cheaper compared to alcohol causing a shift towards possibly more harmful drugs. Alcohol was implicated in 23 of 151 drug related deaths in NHS Lothian in 2018, in 25 of 172 in 2019 and in 26 of 171 in 2020. There is not currently any clear evidence for a switch away from alcohol use in people with a drug problem nor that there is any link between a change in alcohol use and the numbers of DRDs.

Of note is that the NRS report for 2020 shows alcohol as implicated in 65 drug related deaths in NHS Lothian. This is markedly different from NHS Lothian's figure of 26. The ME4 form for each suspected DRD indicates clearly if alcohol was present in the toxicology and whether it was implicated in death. In total, there are 63 DRDs in the NHS Lothian dataset for 2020 where alcohol was present at any level, a number similar to that of NRS. It is frequently noted in the pathology report by the pathologists that the level of alcohol found could be post-mortem production or have been from drinking alcohol when levels are relatively low and in 22 of the 63 cases, blood levels were $\leq 20\text{mg}/100\text{ml}$. The discrepancy in NHS Lothian's figures when compared to NRS could be accounted for by NRS counting presence or not of alcohol rather than significance in death.

This is not to suggest that alcohol is not an important drug issue, but the overlap in the NHS Lothian area between other drugs and alcohol in terms of implication in death need to be interpreted with caution.

Prescription drugs implicated in death: Proportion prescribed to the person in whom the drug was implicated in death

Table 9: Prescription drugs implicated in DRDs in NHS Lothian 2020 and whether they were prescribed to the person who died

Drug name	Number of DRD implications	Prescribed	Unknown	Not prescribed	Percentage Prescribed
Methadone	85	55	2	28	65%
Diazepam	70	19	6	45	27%
Pregabalin	59	7	3	49	12%
Dihydrocodeine	31	8	0	23	26%
Buprenorphine	27	9	2	16	33%
Gabapentin	27	7	3	17	26%
Morphine	26	7	0	19	27%
Mirtazapine	15	7	1	7	47%
Tramadol	14	6	0	8	43%
Amitriptyline	10	6	0	4	60%
Oxycodone	7	5	0	2	71%
Sertraline	4	2	0	2	50%
Zopiclone	4	2	0	2	50%
Fentanyl	3	0	0	3	0%
Citalopram	2	1	0	1	50%
Phenazepam	2	0	0	2	0%
Propranolol	2	1	0	1	50%
Chlordiazepoxide	1	1	0	0	100%
Chlorpheniramine	1	1	0	0	100%
Codeine	1	1	0	0	100%
Fluoxetine	1	0	0	1	0%
Ketamine	1	0	0	1	0%
Lamotrigine	1	1	0	0	100%
Lorazepam	1	0	0	1	0%
Olanzapine	1	1	0	0	100%
Paroxetine	1	1	0	0	100%
Promethazine	1	0	0	1	0%
Quetiapine	1	1	0	0	100%
Trazadone	1	1	0	0	100%

Methadone is the most common prescription drug implicated in death. That is not surprising as it is commonly prescribed to known drug users. The proportion prescribed is relatively similar to 2019 and 2018.

The range of other prescription opioids that are in this list and the finding that in general they are less commonly prescribed to the person whose death they were implicated in is concerning. This is a new occurrence compared to 2018 with several of these drugs being

implicated in 2019 but not in 2018. These are potent drugs, and the increased non-prescribed availability needs to be monitored to determine if it is local diversion of prescribed drugs or more organised illicit supply.

The proportion of pregabalin and gabapentin that is prescribed to the person who died has fallen from 2019 when they were 27% and 40% respectively, to 12% and 26% in 2020. This may represent a response to their becoming controlled substances and so less often prescribed. Other drugs also show a clear fall from 2019 to 2020 including diazepam, dihydrocodeine although other opioids, tramadol and morphine show an increased proportion prescribed.

Numbers of drugs implicated in a DRD

Figure 18 shows the numbers and Figure 19 the proportion of DRDs by the number of drugs implicated in each for 2018, 2019 and 2020. As in 2018 and 2019, the median number of drugs implicated in death was 4 in 2020.

The IQR of numbers of drugs implicated for 2020 is 2 to 5 with a range of 1 to 9. That compares to an IQR of 2 to 5 and a range of 1 to 11 in 2019. The largest single group of numbers of drugs implicated was 5. However, as figure 19 shows, this is because of a relative decrease in those with more than 5 drugs implicated in 2020. There is also an increase in the numbers of DRDs with 2 drugs implicated compared to 2018 and 2019. This slight reduction in poly-drug use is to be welcomed but the number of drug related deaths has not decreased overall.

Figure 18: Numbers of drugs implicated in primary DRDs in NHS Lothian, 2018 to 2020

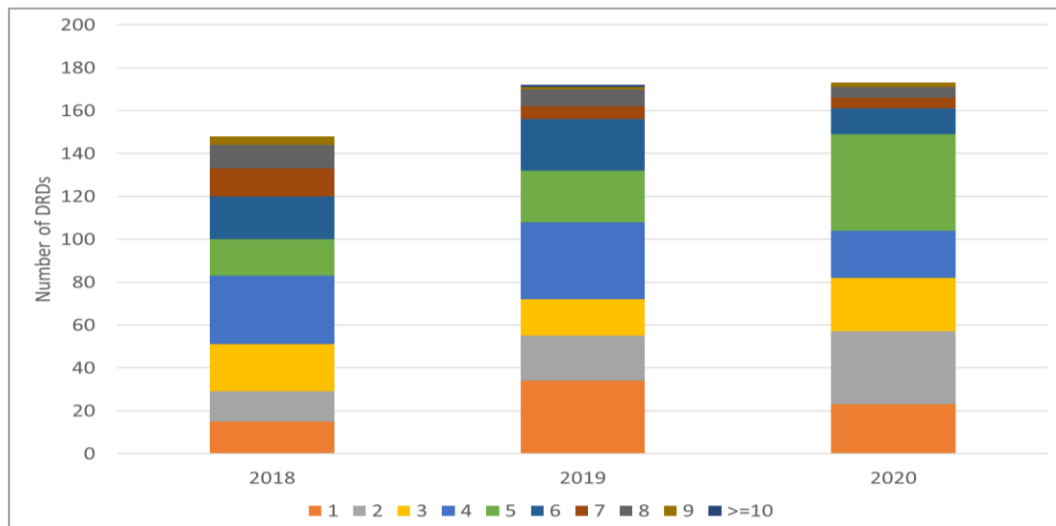
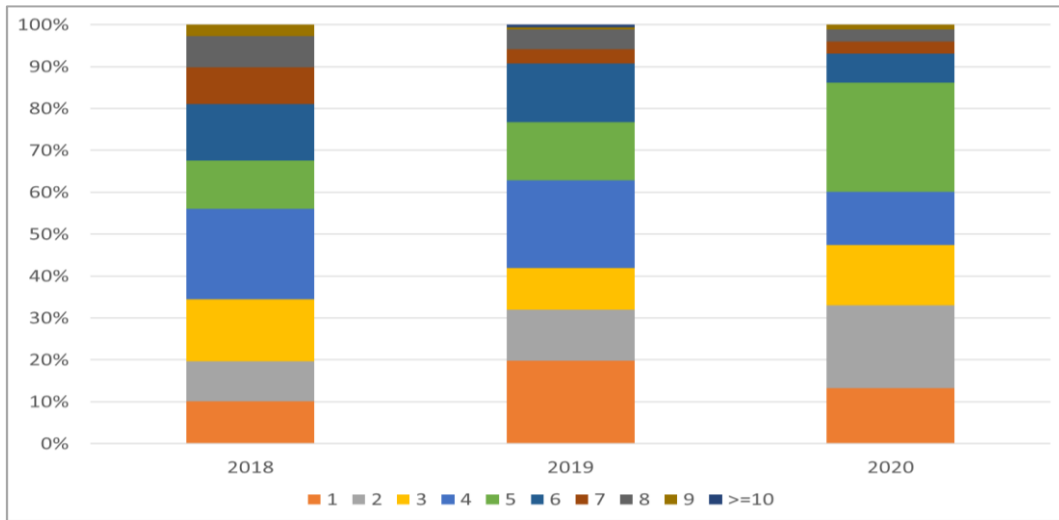
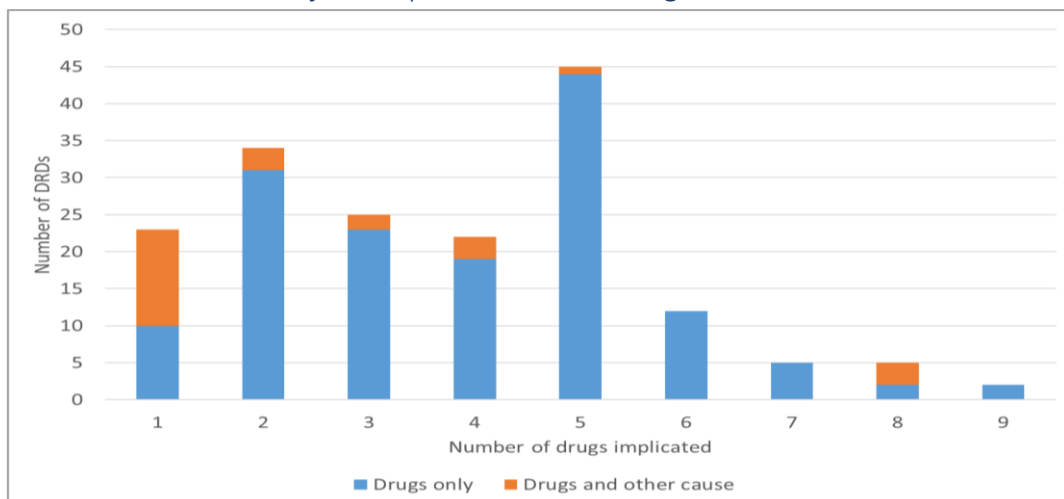


Figure 19: Numbers of drugs implicated in primary DRDs in NHS Lothian in 2018 to 2020, proportions



As Figure 20 shows, many of the cases where a single drug was implicated had another cause in the cause of death and this was frequently (but not exclusively) related to the use of stimulants such as cocaine or amphetamine and the presence of a pre-existing cardiac condition. It was also often noted by the pathologists that the pre-existing implicated pathology may also be due to chronic substance misuse.

Figure 150: Number of drugs implicated in primary DRDs in NHS Lothian in 2020, showing joint implication of non-drug causes



Depressant, stimulant and mixed DRDs in 2020

The rise of cocaine use has led to the toxicology of many drug related deaths showing a mix of depressant (opioid, benzodiazepines etc.) and stimulant (cocaine, amphetamine etc.) drugs as present at the time of death. Stimulants can lead to death at any concentration in the body, often through cardiac effects such as arrhythmias. Their presence cannot be seen as reversing those of depressant drugs. Indeed, the latter may make cardiac effects more likely through the hypoxia they cause due to respiratory depression.

Table 10: Depressant, stimulant and mixed DRDs, 2020

	Number of DRDs	% of DRDs
Depressants only	89	52%
Depressants and stimulants	67	39%
Stimulants only	15	9%
Total	171	

Almost 40% show a mixture of depressants and stimulants at the time of death. Around 1 in 10 deaths are due to stimulants only. This indicates that stimulants are implicated in around half of all drug related deaths in NHS Lothian in 2020.

“Street benzos”

Key Findings:

- “Street benzos” are unpredictable by their nature: the drug(s) contained, the dose contained and the rate of release are unknown and variable.
- Whilst there is a variable number of benzodiazepines implicated in DRDs, there are a smaller number that are implicated in the majority of DRDs where this class of drugs are implicated. The two major drugs are etizolam and diazepam.
- The unpredictability matters as much or more than the actual active substance.

This is the group of benzodiazepines being sold on the street, often as Valium and sometimes as Xanax but contain a wider range of different substances. That makes the effects difficult to predict for users who have been mainly used to taking diazepam. It is a widely diverse group of drugs with differing rates of onset, potency and duration of effects. This “back street” element introduces other and potentially important issues:

- The person taking them does not know the drug(s) or dose level(s) that are in the tablet.
- The person making the tablets may have miscalculated the concentration they expect to be present in each tablet. Such miscalculations are common in non-specialists.
- The mixing of the substance in the bulking agent(s) may not have been done fully. This mixing is not easy to do and needs specialist machines. Meaning the content may vary greatly between tablets.
- The pressure used in manufacturing the tablets may not be correct or constant leading to variable and unknown rates of release.
- Sold in bulk, these tablets are often very cheap (around 10p a tablet) and are often taken in relatively large quantities, increasing the risks.

Evolution of the implication of benzodiazepines in drug related deaths over time

The Table 16 shows the benzodiazepines implicated to some extent in death in drug related deaths in NHS Lothian from 2018 onwards in 6-month periods for which the data is complete.

Table 11: Implications of benzodiazepines in drug related deaths January 2018 to December 2020

Drug	Jan-18 to Dec-20	2018 Jan-Jun	2018 Jul-Dec	2019 Jan-Jun	2019 Jul-Dec	2020 Jan-Jun	2020 Jul-Dec
Diazepam	192	34	28	37	22	42	29
Etizolam	192	23	20	36	42	32	39

Alprazolam	45	19	8	12	2	2	2
Phenazepam	21	2	3	0	6	9	1
Flualprazolam	11	0	0	0	5	2	4
Delorazepam	7	4	2	0	1	0	0
Diclazepam	6	3	0	3	0	0	0
Flubromazolam	6	0	0	0	0	2	4
Lorazepam	5	1	0	2	1	1	0
Temazepam	4	0	2	2	0	0	0
Chlordiazepoxide	3	2	0	0	0	0	1
Bromazepam	2	0	1	1	0	0	0
Flubromazepam	1	0	0	0	1	0	0
Lormetazepam	1	0	0	0	1	0	0
Clonazepam	1	0	0	0	0	1	0
No of benzos implicated	15	8	7	7	9	8	7
Total implications of benzos	497	88	64	93	81	91	80
DRD with benzo implicated	335	53	48	61	54	62	57
All DRDs in that period	495	82	69	93	79	94	77
%DRD with benzo implicated	67.7%	64.6%	69.6%	65.6%	68.4%	67.4%	71.3%

There is a clear division in total implications between the 2 commonest benzodiazepines implicated and the rest, both in terms of number and, mostly, consistency of implications.

Diazepam and etizolam have been relatively constant and whilst etizolam was more commonly implicated than diazepam in the second half of 2019, that reverted in the first half of 2020 (a similar change was seen in the OFT results in early 2020 before COVID interrupted the service). The reversal may be related to frequent reports of diazepam imported illegally from other countries in Europe e.g. Bensedin. But in the second half of 2020, etizolam was again more frequently implicated than diazepam.

The less commonly implicated benzodiazepines seem to fluctuate quickly thus far, although that may change. Only diazepam and etizolam seem mostly consistent. Both phenazepam and alprazolam may now be becoming less common with flualprazolam perhaps becoming more consistently implicated.

However, overall, the percentage of DRDs in which benzos are implicated has been high in every 6-month period from January 2018. Although it varies somewhat and there may be a slight trend upwards, that proportion has been high for at least the past 3 years.

Contact with specialist services: OST

Key Findings:

- Being under treatment by specialist services and receiving OST has a clear protective effect.
- Based on estimates of the PDP population, 55% are currently engaged with specialist services and 45% are not.
- Around 36% of DRDs are in people currently engaged with specialist services.
- Around 53% of DRDs in 2020 are in people with no record of contact with specialist services.
- There is no evidence of linkage between methadone dose and risk of a DRD.

For each case, records were searched to try and establish the history of contact with specialist drug misuse services through the history of OST prescribing. The services included are

- the Substance Misuse Service (SMS) and Drug Treatment and Testing Orders (DTTO), combined as Specialist Services
- the General Practitioner National Enhanced Service (GP-NES).

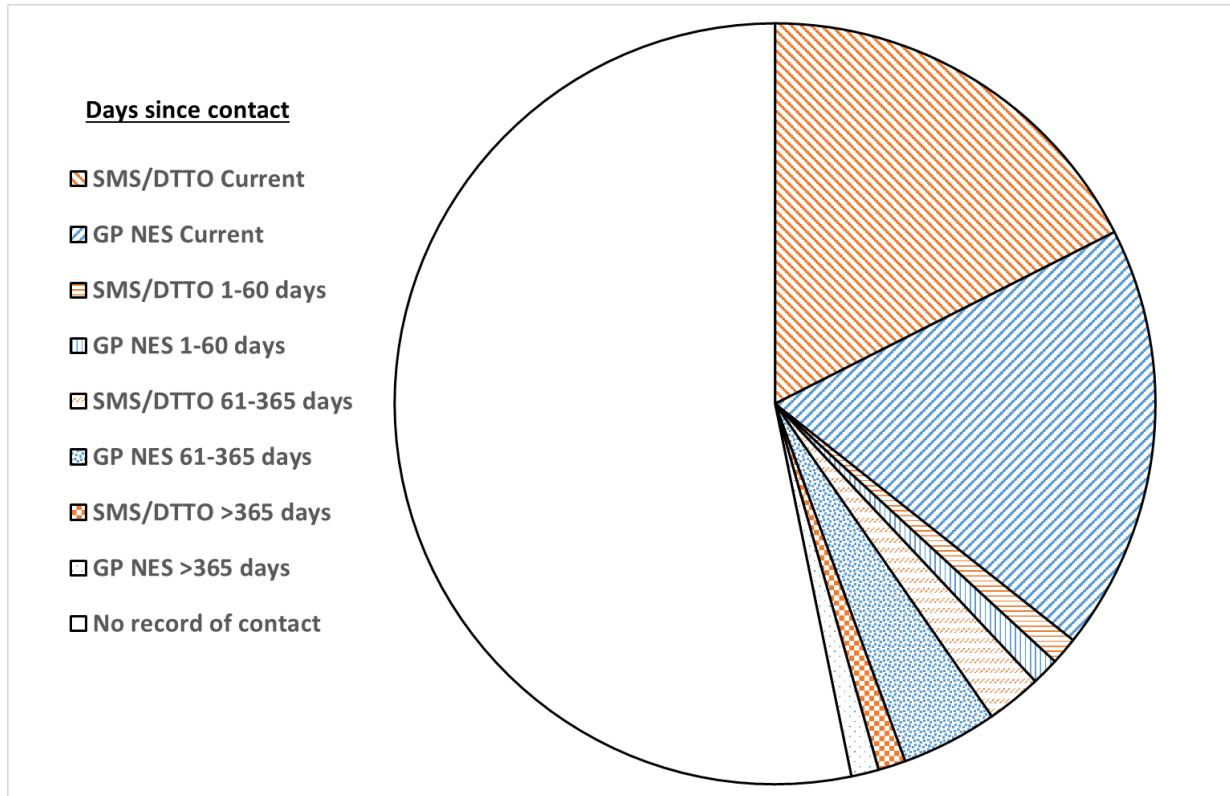
COVID-19 meant that some routine appointments, perhaps particularly for GPs, were not possible. For that reason, the date used to assess contact with services was the latest prescription date. This is perhaps not ideal, however, examination of the data showed this was preferable to using appointment dates as the latter were often significantly longer ago.

Engagement status was taken as current if there was a prescription dated within 60 days of the date of death i.e. a person was regarded as having left the service if there was no appointment or prescription record within 60 days of death. The days since contact shown below are therefore calculated from 60 days after the last recorded prescription date. Table 17 and Figure 21 show the engagement status at the date of death.

Table 12: Numbers of DRDs by engagement status in NHS Lothian 2019

Service	Number	Percentage
SMS Current	30	18%
GPNES Current	31	18%
SMS 01 to 60 days	2	1%
GPNES 01 to 60 days	2	1%
SMS 61 to 365 days	4	2%
GPNES 61 to 365 days	7	4%
SMS >365 days	2	1%
GPNES >365 days	2	1%
No record of contact	91	53%

Figure 161: Engagement with specialist services for primary DRDs in NHS Lothian, 2020



Just over a third (36%) of those who suffered a DRD were in current contact with SMS/DTTO or GP-NES, split evenly between them. A further 10% had a history of contact with specialist services. Compared with 2019, there are fewer deaths in the first 60 days after leaving service. This may reflect a lower number leaving specialist services; during COVID-19. An emphasis has been put on retaining people in service, however, there is no evidence for this and may be a year-on-year fluctuation i.e., noise rather than signal.

In comparison to 2018 and 2019, there is a significant difference in deaths of those in GP-NES. In the previous two years, there were less death for those in service and more deaths in the period shortly after apparent discharge or leaving the service. It is probable that this is an artefact of data recording. It was identified after the 2018 report was published in August 2019 that GPs had perhaps not maintained records of appointments in a timely fashion, and they were asked to review and change this where needed. It is likely this has occurred in 2020 and that the data provided here is more representative of the real situation. This is supported by the similarity this year in the relationship between engagement status and number of deaths for SMS/DTTO and GP-NES.

In terms of the protective effect of specialist services, Table 18 shows the overall estimate of PDP in NHS Lothian provided by ISD (now PHS) for 2015-16 and the numbers of people in specialist services at any one time in 2020.

Table 13: Estimated crude mortality rate in people with a drug problem, NHS Lothian 2020

	PDP population	DRD in 2020	Crude mortality %
Estimated not in service	4,000	110	2.8%
In specialist services	5,000	61	1.2%
In SMS/DTTO services	1,850	30	1.6%
In GP-NES	3,300	31	0.9%
Estimated PDP population	9,000	171	1.9%

Within the limits of the accuracy of the estimate of the overall population of PDP in NHS Lothian, there appears to be a significant protective effect of being within specialist treatment services and that this is particularly so for those in GP-NES services. That is not surprising given that those in GP-NES have mostly (but not always) been stabilised in the SMS service before transfer to services provided by GPs. However, it is important not to treat these as statistically reliable results because of the estimated nature of the PDP population and that this estimate may be an underestimate.

Methadone dose and DRD risk

The “Orange Book” sets a recommended dose range of between 60 and 120mg daily and indicates that doses below 60mg daily should be regarded as inadequate to achieve suppression of heroin use and protection against drug related deaths. Looking at the overall prescribing history of patients in NHS Lothian specialist services who are receiving methadone as OST and are on a stable dose, around two thirds are receiving a dose within the recommended range, one third less than 60mg and few receiving more than 120mg.

To assess the possible link between dose of methadone and the risk of drug related death, the dose received by recorded DRDs in 2020 who were prescribed methadone was sought. Where it was possible to obtain this with confidence (54 cases), around 70% were receiving a dose within the recommended range, around 20% were receiving less than 60mg and around 10% receiving more than 120mg. This is a small set of results and is not definitive or statistically reliable. However, it does not show an immediate link between the risk of drug related death and a lower prescribed dose of methadone.

Situation and circumstances at death

Key Findings:

- 73% of those who suffered a DRD lived in permanent accommodation, owned or rented.
- 75% of those who suffered a DRD were found dead.
- 66% of those who died were not alone in the property at the time of death.
- 41% of those who died were not alone in the room at the time of death.
- 61% of those found dead were not alone in the property at the time of death.
- There would seem to be opportunities for intervention by other present in the property or even room at the time of death.
- Whilst this data is important, care is needed in using it as we have little reliable data on non-fatal circumstances.
- More and better data is needed about the population people with a drug problem and the circumstances of drug use to properly highlight potential interventions.

Knowing the drugs implicated in death and engagement in services is clearly important. However, almost all overdoses are potentially reversible if recognised and treated in time. However, this requires somebody else to be present before death, so the circumstances of death are a critical determining factor in possible outcomes.

Where someone is found dead having been alone in the premises at the time of death, the situation is relatively clear. In other situations, it is not possible to be certain of all circumstances at death. These are often chaotic situations and the reports given are not always clear. Some of the numbers below may not seem to add up exactly because of this. The analysis does not pretend to be precise, but the overall picture is an accurate reflection of the actual situation in 2020.

The other factor that might have been expected to have an impact on the circumstances of death is that much of 2020 was affected by limits on social interactions due to COVID-19 control measures. There is little difference between 2019 and 2020 data and analysis, suggesting this was not an important issue, perhaps surprisingly.

Immediate circumstances at the time of death

Table 14: Immediate circumstances surrounding death for primary DRDs in NHS Lothian, 2020

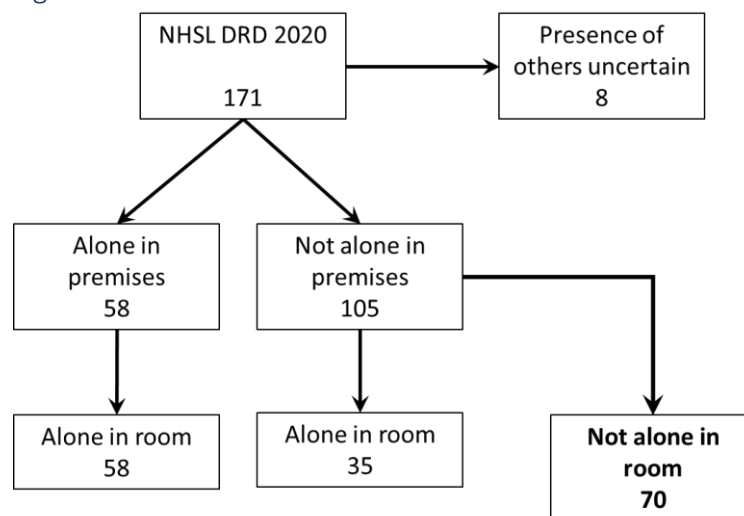
	Yes	Unknown	No	Other	Total	% Yes
Found dead	128	16	22	5	171	75%
Lived alone	70	3	96	2	171	41%
Alone in premises at fatal event	58	5	105	3	171	34%
Alone in room at fatal event	93	8	60	10	171	54%

75% of those suffering a DRD in NHS Lothian in 2020 were clearly found dead and for roughly another 10%, the situation is unclear from the reports received. Only around 1 in eight (13%, 22 of 171) were clearly found alive.

Living alone means that the person normally resided in a single person household but not that they were alone at the time of death. Living alone may indicate social isolation and is frequently cited as a common factor in drug related deaths. Less than half (41%) of the people who suffered a DRD in NHS Lothian during 2020 are recorded as having lived alone. This is lower than the commonly assumed situation and lower than in 2019 for NHS Lothian. Around one third of households in Scotland are single person households although this represents around 20% of the total population and is said to be mostly related to an ageing population. Therefore, it is probable that within the age group of most of those who suffer a drug related death, there is a higher proportion living alone. This may be a result of drug abuse but may also reinforce drug misuse to mitigate isolation. However, to know the true significance or risk of living alone, it would be necessary to know what proportion of the overall PDP population live alone.

Around a third (34%) of those suffering a DRD in NHS Lothian in 2020 were alone in the premises at the time of the fatal event, so around two thirds were not. Figure 22 shows that of the 105 (61%) not alone in the premises at the time of overdose, 70 were not alone in the room.

Figure 17: Presence of others at the time of fatal overdose



(N.B. the issue of deaths in hospital have been excluded here; this is the actual number not alone in the room when they were undergoing the fatal OD, not when they died if that was in hospital).

This analysis means that around 40% of all those suffering a drug related death were not alone in the room and yet still died. This indicates that there could have been opportunities for those who were present to intervene in many cases. Including all of those not alone in the property at the time of death, the opportunity to save lives is even greater, around 60%. We need better data to be able to identify why these opportunities are not recognised or

used to save lives. Not more detailed data around the person who has died but more about others who were present at the death and any missed opportunities to intervene.

Table 20 shows the combination of whether the person suffering a DRD is found alive or dead and was alone in the property or not at the time where both are clearly recorded.

Table 15: Found alive or dead against being alone in a property at the time of death

		Found alive		
		Yes	No	
Alone in property	Yes	5	49	54
	No	15	76	91
	Total	20	125	145

Of the 125 found dead included in this analysis, more than 60% (76) were not alone in the premises during the OD event that led to death and many of those were not alone in the room where they died. Those present in the premises and in the room may not have been aware of the OD event or may not themselves have been capable of recognising it due to their own condition during the event. However, there are situations where intervention may have been possible, but the opportunity was missed. Accessing these opportunities would potentially have a clear positive impact.

Despite around two thirds of people who suffered drug related death not being alone at the time of death, signs of an overdose were described as present by witnesses in 40 DRDs (23%) in 2020 but these were only recognised as such in 17 (10%). The signs of overdose recorded were snoring or sleeping deeply, however, these were often reported to be not unusual for the person so were not recognised as likely to indicate a fatal overdose. Trying to rouse someone is the only way of checking if they are rousable and this may be difficult to do that every time any sign of a potential OD is present.

Those around people suffering a dangerous overdose need a way to distinguish between a non-life threatening episode and a likely fatal overdose that is reliable (sensitive and specific). Snoring is commonly present during fatal episodes but also commonly present in non-life threatening episodes. Respiratory depression is a feature of many of the drugs used by persons with a drug problem (PDPs) and thus will almost always be present to some extent, which could make the difference between recoverable and non-recoverable respiratory depression. It is possible that the use of small pulse oximeters may help, this has been trialled elsewhere (NHS Grampian) and it will be important to see the results of this.

However, it is important to remember that the data here is only about those where any intervention, if made, was unsuccessful (or not made at all). It cannot speak to the possibly many more times where an overdose was recognised, and where intervened . We have some idea of that from the non-fatal overdose (NFOD) data but even that is incomplete as not all NFODs involve intervention by other services.

Fifteen of 171 deaths occurred in hospital. This indicates that most people who suffer a DRD do not reach this level of care. However, this does not tell us how many did receive hospital

care and survive. The same is true of naloxone; it is essential to focus on when it works rather than on its use in drug related deaths.

Accommodation status at death

Table 16 Accommodation status of people suffering a DRD in NHS Lothian 2020

Accommodation type	Number	Percentage
Non-temporary	125	73%
Temporary other	19	11%
Hostel	5	3%
No fixed abode (NFA)	5	3%
Supported accommodation	5	3%
Prison	1	0.5%
Uncertain	11	6%

The definitions used are:

- Non-temporary means owned, privately rented, housing association or council owned. Note that someone living long term in parents' or other family accommodation is included here.
- Temporary other includes bed and breakfast accommodation not specifically for homeless people and "sofa surfing" or staying short-term with friends.
- Hostel is an established hostel for people with no other form of accommodation
- NFA means the person was clearly sleeping outdoors with no form of accommodation.
- Supported accommodation means accommodation for those with extra needs with support staff present but not a hostel.

It is possible that some of those recorded as not being in non-temporary accommodation in fact lived in temporary accommodation as the list of addresses this applies to changes frequently and are not always clear. However, it does appear that the majority ($\geq 70\%$) are not in temporary accommodation at the time of death. This is perhaps contrary to the commonly perceived vision of drug related deaths taking place in those who are homeless or in temporary accommodation. This is not to contradict the higher risk of DRD in the population who are homeless or in temporary accommodation. However, the "typical" DRD is not suffered by a homeless person.

Where found and by whom in 2020

Table 17: Where found primary DRDs found

Location	Number	Percentage
Own home	121	71%
Other's house	24	14%
In own room in temp accommodation/hostel	6	4%
Outdoors	11	6%
Other	9	5%

Over 70% were found in their own home. This chimes with the figure above on housing status. Most primary DRDs in NHS Lothian in 2020 occurred in people who had permanent accommodation (owned or tenancy) and that is where they died. This was the same finding as in 2019.

Table 18: Who found primary DRDs

Who found case of DRD	Number	Percentage
Family member (excluding husband/wife)	41	24%
Partner (including husband/wife)	36	21%
Friend	50	29%
Police (including welfare checks)	20	12%
Other	24	14%

Around three quarters were found by family or friends, with the remainder fairly evenly split between the police and other people.

Children and young adults linked to drug related deaths in 2020

Whilst any death can be traumatic to any person of any age closely linked to that death, it seems probable that the impacts are greater for sudden deaths such as DRDs and for younger people. The numbers of children and young people involved is recorded where possible for each drug related death. These are shown in Table 24.

Table 19: Children and young adults linked to a DRD, NHS Lothian 2020

	No. DRDs with biological offspring	No. biological offspring	No. biological offspring living with	No. biological offspring present at death
Children 0-15	41	70	22	15
Young People 16-25	34	42	8	8

Forty one of 171 DRDs (24%) had one of more children less than 16 years old. There were 70 biological offspring aged 15 or less but not all children linked are of this group, they may also be from other relationships. Twenty-two children younger than 16 years old were living with the person who died and fifteen were present at the time of death. Thirty-four DRDs had people of this age linked to them (20%) involving 42 young adults with 8 present at the time of death. In total, there are more than 110 young people directly linked to drug related deaths in 2020 in NHS Lothian. Over 20 young people were present at the death and were sometimes the person who found the body, an undoubtedly traumatic life event. Support is needed for these young people and their families.

Non-fatal overdose history and drug related deaths

Key Findings:

- Most people who suffered a DRD in NHS Lothian in 2020 did not have a recent recorded NFOD (within 6 months of the date of death).
- Most people who had a recorded NFOD in 2020 did not go on to suffer a DRD so far.
- It is not possible from the data currently available to determine how many drug related deaths may have been prevented by rapid targeted assertive follow up of NFODs.

NHS Lothian had a system to identify and follow up people with a recorded serious non-fatal overdose (NFOD) for several years. After a review in 2019 of the follow up of reported non-fatal overdoses using SAS data only, a new system of detecting, reporting and follow-up of NFODs was put in place and records have been kept of NFODs detected and reported this way (evaluating follow-up was anticipated but was not possible to implement at that time). The criteria used for inclusion in the follow-up process was

- 1) Any person with an OD incident attended by the SAS during which naloxone was administered
- 2) An attendance at A&E that was given an ICD code indicating opioid or benzodiazepine overdose
- 3) A&E Drug Patient Frequent Attenders - patients who attended at least 10 times in the last year, or 5 times in the last 3 months, for a drug related reason

NFODs are also recorded for people suffering a DRD. Two sources of NFOD data are used in this case.

- Any mention of a recent NFOD within 6 months of death in the police and pathology reports
- Individuals recorded in the NHS Lothian dataset of detected NFODs that meet the criteria to initiate follow-up (criteria given below)

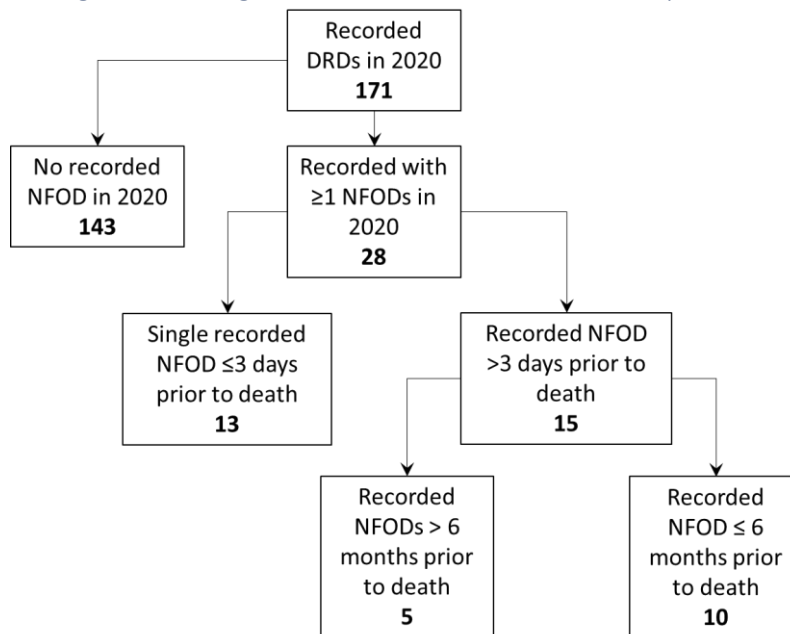
Of the 171 drug related deaths in 2020, 23 have some mention in the police and pathology reports of a non-fatal overdose (NFOD) in the 6 months prior to death, approximately 13.5%.

In 2020, there were 850 individuals recorded as having an NFOD that was detected by NHS Lothian using the above criteria with a total of around 1250 incidents recorded. Of these individuals, 28 were also recorded as suffering a DRD. However, of these, 13 died within 3 days of the first time they were recorded as having an NFOD in the NHS Lothian system. Whilst every effort is made to exclude fatal ODs, death records are often not updated for a few days after the actual date of death, so it is not unexpected that some suffering an overdose will be found to have died as a result of that event. That means that 15 did survive

more than 3 days from the first recorded NFOD and of these, 10 had that first NFOD within 6 months of their eventual death from an overdose and for 5 the most recently recorded NFOD was more than 6 months prior to their death.

Figure 27 shows the recorded NFOD history of the 171 people who suffered a DRD in 2020. Over 90% of people suffering a DRD did not have a detected NFOD that would be flagged in the NFOD follow up system. However, it may well be that the number of people suffering a DRD would have been higher without the follow up of the others who were recorded as suffering a DRD.

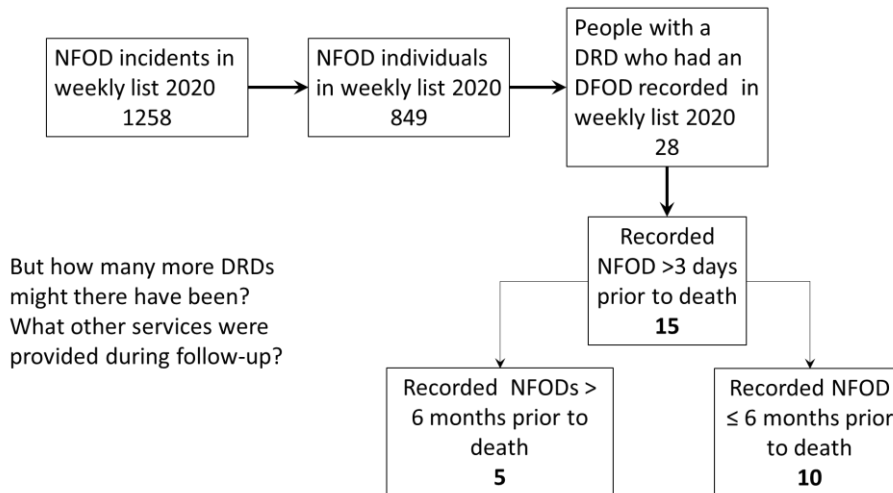
Figure 23: Drug related deaths and NFOD history, 2020



Looked at in the other order (how many were recorded as having an NFOD who went on to suffer a DRD in 2020), of those 850 people with recorded NFOD in 2020, 15 individuals were detected at least once as having an NFOD in a usable time prior to subsequent death from drug toxicity around 2% of the total individuals detected and submitted for follow-up. However, this cannot tell us how many of those who were followed up would otherwise have suffered a DRD, not the other interventions that were offered to these vulnerable people. This limitation of the data and dangers of interpretation of this analysis are discussed in more detail in Annex D.

None of the above is meant to suggest in any way that the NFOD follow-up system should or should not continue as it is. Its true impact cannot be measured without knowing what the impact of the interventions may have been.

Figure 184: NFOD history and DRD



It is important to put some things in context. It is possible that some of the 850 individuals would have been assessed as not requiring follow up, reducing the 1250 incidents for follow up to a lower number. There is no data to assess this stage of the process and it would be important to have that. The other important factor that cannot be assessed is that of those visited who did not go on to suffer a DRD in the near future, the follow-up may have acted to prevent that happening. This is similar to the situation with naloxone. Without proper data across the whole population at risk, it is impossible to properly evaluate the impact of preventive measures although it is only too easy to count the situations where they seem to have “failed”.

Overlap between different data sources of NFODs

In 2020, 23 confirmed cases of DRD had a mention of a recent NFOD in the police suspect death reports of which 7 were not in the NHS Lothian dataset. Not all NFODs result in attendance by the SAS or transport to an A&E department so this is perhaps not unexpected.

Of the 28 individuals who suffered a DRD who had one or more records in the NFOD dataset, 10 were not mentioned as having done so in the police and pathology reports. Some of these may be those who died within 3 days of the first recorded NFOD in that dataset.

When drug related death reports are first received and the final determination of cause

Key findings:

- 30% of all suspect death reports received were found to not be drug related deaths.
- 79% (194) of suspect death reports were received within 30 days of death and 21% (51) were received ≥ 60 days after death.
- Of those received within 30 days, 68% were found to be drug related deaths (132).
- Of those received ≥ 60 days after death, 39 (84%) were found to be drug related deaths.
- The use of a rapid review process for suspect drug related deaths before the final pathology/toxicology report is received will lead to the review of a significant number of non-drug related deaths and exclude a significant proportion of actual drug related deaths.

There has been a recent move by some localities or HSCP/IJBs towards a “rapid review” of drug related deaths, essentially reviewing them as soon as possible after the death without having the final pathology and toxicology report. This is in part because of the long delays between the date of death and the receipt of the final pathology/toxicology report that have been experienced in 2019 and 2020. This early review means that it is based on the production of a death report by the police which identifies the death as a suspect drug related death. It may also include deaths in known drug users from some other apparent cause such as death by physical means, although mostly these cases are not flagged as suspect drug related deaths by the police.

A rapid review process must rely on reports flagged as possible drug related deaths by the police close to the time of death and it is clear that this will exclude around a quarter of all drug related deaths and will include deaths which are subsequently found not to be drug related and so needs to be substantiated or not. This analysis has been possible because for every report in 2020, the date of death and the date on which the police report is received has been recorded (as has been the date on which the pathology report was received). This allows a differentiation between deaths reported as suspect drug related deaths close to the time of death and those not suspected at the time of death but found to be drug related deaths after full pathology/toxicology is received. The analysis is presented below for NHS Lothian overall. A separate analysis was also carried out for the City of Edinburgh but is not shown here for brevity as the result was very similar.

Police death reports are received for all cases for which a pathology/toxicology report is received irrespective of the time from the date of death to the latter being received. For 2020, a total of 245 police death reports were received. Of these, 194 were received with 30 days of death and 51 were received 60 or more days after death (with a maximum of 509

days after death). There are no cases received in the 31-to-59-day range. Those received within 30 days of death were suspected at the time of death of being drug deaths or were of known drug users and were identified as such from the initial police death report, those received 60 days or more after death were not.

Table 20: Time between death and receipt of police and final determination

		Died from an OD (DRD)		
		Yes	No	
Police report within 30d	Yes	132	62	194
	No	39	12	51
	Total	171	74	245

The pathology/toxicology report can be seen as the “gold standard” test for determining if a death is drug related or not. That means it is appropriate to analyse the table as a comparison of a new test compared with a gold standard. The standard statistics for that are sensitivity, specificity, predictive value of a positive new test result and predictive value of a negative new test result. They are shown in the following table for this data

Table 26: Outcome statistics of new test

Statistic	Percentage
Sensitivity	77%
Specificity	16%
Predictive value of a positive	68%
Predictive value of a negative	16%

To summarise, this means that around three quarters (77%) of drug related deaths were reported as possibly so within 30 days of death and around one quarter were not. Of those reported as suspect DRDs within 30 days of death, around one third (32%) were found on full examination not to be drug related deaths. Both the sensitivity and the predictive value of a suspect DRD reported within 30 days of death is low.

30% (74 of 245) of all reports received were found not to be drug related deaths, with 56 of 74 having a non-drug related cause, 7 with an unascertained cause of death and 11 with drugs as a secondary cause of death. This must be a concern given the recent decisions to undertake rapid reviews of drug related deaths. This must rely on reports flagged as possible drug related deaths by the police and it is clear that this will exclude around a quarter of all drug related deaths and will include deaths which are subsequently found not to be drug related. Of note, 21 of 171 drug related deaths in 2020 were first notified substantially after the end of 2020, 1 in 8.

For each police report received, a judgement is made by the DRD co-ordinator as to whether it is likely to be a drug related death based on the contents of the report. This is clearly not a definitive method but for instance, reports of suicide by hanging in known drug users are very unlikely to be classified as a drug related death, no matter what drugs are detected on

toxicology examination. Most reports received at least 60 days after the date of death will be cases of drug related death (although some are not, perhaps surprisingly). Therefore, the following table looks at the reports received within 30 days of death.

Figure 25: Subjective judgement of likelihood of drug related death compared to final outcome for those received within 30 days

		Died from an OD (DRD)		
		Yes	No	
Likely DRD from police report	Yes	114	9	123
	Unknown	15	27	42
	No	3	26	29
	Total	132	62	194

The predictive value is around 93% if only those cases that seem likely to the DRD review coordinator to be a DRD are considered and 78% if those that might be a DRD are also considered. This would improve the utility of the “rapid review” system but cannot remove the high proportion of DRDs that will never be seen in that process.

In summary, whilst there is a valid reason for considering a “rapid review” of DRDs without waiting for the final pathology/toxicology report, it cannot replace the review once that report is available and may not produce an accurate picture. Previous experience suggests that it is unlikely that anyone will be willing to have two DRD review systems running so it is likely the review of actual DRDs will not take place. The lessons drawn will not relate to actual drug related deaths.

Annex A: List of individual drugs implicated and level of implication in DRDs, NHS Lothian
2020

Drug class	Drug name	10	20	30	40	Total	Ranking	Class total
Opioid	Methadone		3	74	7	84	1	195
Opioid	Heroin		1	26	2	29	6	
Opioid	Dihydrocodeine	3	3	12	3	21	9	
Opioid	Morphine			16	1	17	10	
Opioid	Buprenorphine			14	1	15	=11	
Opioid	Tramadol	2	1	10	1	14	13	
Opioid	Oxycodone		2	5		7		
Opioid	Codeine			5		5		
Opioid	Fentanyl		2	1		3		
Benzodiazepine	Etizolam			68	3	71	2	170
Benzodiazepine	Diazepam			67	3	70	=3	
Benzodiazepine	Phenazepam			9	1	10	=16	
Benzodiazepine	Flualprazolam			6		6		
Benzodiazepine	Flubromazolam			5	1	6		
Benzodiazepine	Alprazolam			4		4		
Benzodiazepine	Chlordiazepoxide			1		1		
Benzodiazepine	Clonazepam			1		1		
Benzodiazepine	Lorazepam			1		1		
Stimulant	Cocaine			61	9	70	=3	95
Stimulant	MDMA (ecstasy)	5	2	5		12	14	
Stimulant	Amphetamine			7	4	11	15	
Stimulant	Methamphetamin			2		2		
Gabapentinoid	Pregabalin			57	2	59	5	86
Gabapentinoid	Gabapentin		1	24	2	27	7	
Alcohol	Alcohol			24	2	26	8	26
Tetracyclic anti-depressant	Mirtazapine			14	1	15	=11	25
Tricyclic anti-depressant	Amitriptyline		1	7	2	10	=16	
SSRI	Sertraline			4		4		8
SSRI	Citalopram			1	1	2		
SSRI	Fluoxetine			1		1		
SSRI	Paroxetine			1		1		
Non-benzo GABAergic	Zopiclone			4		4		4
NMDA receptor antagonist	Ketamine			1		1		11
Anti-depressant, other	Trazadone				1	1		
Anti-epileptic	Lamotrigine			1		1		
Anti-histamine	Chlorpheniramine			1		1		
Anti-histamine	Promethazine			1		1		
Atypical antipsychotic	Olanzapine			1		1		
Atypical antipsychotic	Quetiapine		1			1		
Beta blocker	Propranolol		1	1		2		
NSAID	Paracetamol		1	1		2		

Annex B: NRS Definition of Drug Related Deaths

Below is a summary of the definition of drug-related deaths as agreed by a working party set up by the Advisory Council on the Misuse of Drugs and used by the General Register Office for Scotland. The relevant codes from the International Classification of Diseases, Tenth Revision (ICD10), are given in brackets.

(a) deaths where the underlying cause of death has been coded to the following sub-categories of 'mental and behavioural disorders due to psychoactive substance use':

- (i) opioids (F11);
- (ii) cannabinoids (F12);
- (iii) sedatives or hypnotics (F13);
- (iv) cocaine (F14);
- (v) other stimulants, including caffeine (F15);
- (vi) hallucinogens (F16); and
- (vii) multiple drug use and use of other psychoactive substances (F19).

b) deaths coded to the following categories and where a drug listed under the Misuse of Drugs Act (1971) was known to be present in the body at the time of death:

- (i) accidental poisoning (X40 – X44);
- (ii) intentional self-poisoning by drugs, medicaments and biological substances (X60 – X64);
- (iii) assault by drugs, medicaments and biological substances (X85); and
- (iv) event of undetermined intent, poisoning (Y10 – Y14).

3. Categories of death excluded:

- a) deaths coded to mental and behavioural disorders due to the use of alcohol (F10), tobacco (F17) and volatile substances (F18);
- b) deaths coded to drug abuse which were caused by secondary infections and related complications (for example the 20 or so deaths in 2000 caused by Clostridium novyi infection);
- c) deaths from AIDS where the risk factor was believed to be the sharing of needles;
- d) deaths from road traffic and other accidents which occurred under the influence of drugs; and
- e) deaths where a drug listed under the Misuse of Drugs Act was present because it was part of a compound analgesic or cold remedy: specific examples are:
Co-proxamol: paracetamol & dextropropoxyphene
Co-dydramol: paracetamol & dihydrocodeine
Co-codamol: paracetamol & codeine sulphate
All three of these compound analgesics, but particularly co-proxamol, have been commonly used in suicidal overdoses.

There is a more extensive (several pages) explanation of the definition used by NRS in the annual NRS publication on drug related deaths in Scotland which should be referred to in case of doubt.

Annex C: Difference between NRS and NHS Lothian definition of a drug related death

To summarise and simplify the difference

NHS Lothian DRD Definition

- 1) Controlled substances are included in the lowest line of the Part I cause of death i.e. they are directly implicated in the cause of death, alone or with other causes.

NRS DRD Definition:

- 1) Controlled substances are the first mentioned item in the lowest line of Part I of the cause of death
- 2) Controlled substances are not included in Part 1 of the cause of death but the cause is given as 1a Unascertained.

The NRS figures include cases where the cause of death is recorded as “1a Unascertained”. NRS includes these cases **even when** the path/tox report states explicitly that drugs were not involved. NRS report that adding in the “1a Unascertained” cases is a way of compensating for DRDs that might have been missed from the statistics.

It is not clear where in the ICD10 rules it is permitted to add a cause of death that is not on the medical death certificate unless it is a noted sequelae of something already on the death certificate. To do this when the pathology report specifically excludes drugs as a cause seems difficult to understand. The ICD10 rules are silent on unascertained cause of death and there is an ICD10 code (R99) that indicates where no cause of death has been ascertained.

In the NHS Lothian data, “1a Unascertained” cases are left as that. Cases are recorded as a DRD in NHS Lothian if a controlled substance or substances are included by the pathologists in the primary cause of death in a way that indicates they are part of the underlying cause of death.

NRS, as described in section A5 of their 2019 DRD report (and previous reports), uses only a single cause of death to define deaths, including DRDs and that is the “main” cause of death. They give clear examples in that section of the report but, to simplify, a case with the primary cause of death of “1a Cocaine toxicity and ischaemic heart disease” would be counted as a DRD by NRS. If the cause of death is given as “1a Ischaemic heart disease and cocaine toxicity”, this would NOT be recorded as a DRD by NRS. There are methodological reasons for this described in the NRS report and it is ascribed to the following “Under the ICD10 rules, if a death was reported as being due to the joint effects of two (or more) conditions, the first-mentioned condition should be selected as the underlying cause of the death for the purpose of mortality statistics.”

After consultation, medical opinion is that when two (or more) causes are placed in the 1a line of the cause of death with nothing in the 1b or 1c lines, both are part of the primary cause of death and both have contributed to that death. Any cause of death where more than one process/pathology is included in 'Part 1a' of the MCCD by the registering doctor

(including the pathologist) means that all of those processes are considered to have directly contributed to the death.

An example of a situation where NRS has been more flexible comes from the 2019-20 COVID-19 pandemic. During this NRS has routinely produced statistics of deaths in which COVID-19 is mentioned in the death certificate but may not be the first mentioned cause. This suggests that they can produce statistics that show deaths where more than one cause is included.