

ACMD

Advisory Council on the Misuse of Drugs

Chair: Dr Owen Bowden-Jones
Secretary: Zahi Sulaiman
4th Floor (NE), Peel Building
2 Marsham Street
London SW1P 4DF
Tel: 020 7035 1121
ACMD@homeoffice.gsi.gov.uk

Victoria Atkins MP
Parliamentary Under Secretary of State for Crime, Safeguarding and Vulnerability
2 Marsham Street
London
SW1P 4DF

04 December 2018

Dear Minister,

Re: What are the risk factors that make people susceptible to substance misuse problems and harms?

The 2017 Drugs Strategy set out the government commitment to understanding more about the factors that put vulnerable populations at greater risk of developing drug misuse problems.

The Advisory Council on the Misuse of Drugs (ACMD) has approached the subject initially in two parts: a short overarching report on risk and protective factors associated with greater vulnerability to drug use, and a second report on drug misuse and homelessness. I am pleased to enclose the first briefing on vulnerability and drug use.

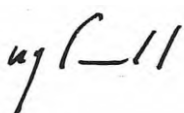
Yours sincerely



Dr Owen Bowden-Jones
Chair of ACMD



Annette Dale-Perera
ACMD Recovery Committee Chair



Professor Harry Sumnall
ACMD and Recovery Committee Member

What are the risk factors that make people susceptible to substance use problems and harm?

Table of Contents

1.	Introduction	3
2.	Substance use-related harms	4
3.	What is risk? What are risk and protective factors?.....	8
4.	Socioecological perspectives on health and wellbeing.....	12
5.	Application of socioecological perspectives to substance-related harm	16
6.	Adverse childhood experiences	19
7.	Trajectories of substance use	22
8.	Conclusions	25
9.	References.....	26

1. Introduction

The Home Secretary's commissioning letter for the 2017–2019 Advisory Council on the Misuse of Drugs (ACMD) work programme requested that the ACMD examine “*factors that make vulnerable people misuse drugs and what could be done to prevent misuse and protect these groups from associated harms*”.¹ This commission derived from the 2017 Drug Strategy, which outlined the need for a targeted approach for *high priority groups* most at risk of harm from using drugs, and to respond to new types of drug-related behaviour. High priority groups identified in the strategy were:

- vulnerable young people (including those not in education, employment or training [NEETs], those in care, young offenders);
- offenders;
- families (including those with parents dependent on substances, and those involved with the ‘troubled families’ programmes);
- perpetrators and victims of intimate partner violence and abuse;
- sex workers;
- people who are homeless;
- veterans; and
- older people.

This work was assigned to the ACMD Recovery Committee and this short report presents a general introduction to the Home Secretary's commission: “*What could be done to prevent misuse and protect these groups from associated harms?*” The report focuses on how *risk* and *vulnerability* are understood and used in relation to substance use, and presents a relevant framework that places risk within the broad determinants of health and wellbeing. This helps to understand how substance-related harms emerge, and how responses could be targeted. This report is therefore intended as a briefing paper and general underpinning of population-specific reports from the ACMD Recovery Committee that will be published over the course of the work programme.

Although many people experiment with substances during adolescence and early adulthood, the duration of use is often time-limited (Home Office, 2017). This report does not consider factors that make some people more likely to initiate short-term use, or maintain use where it is not associated with significant harm. However, it is still acknowledged that initiation of substance use, particularly at a young age, is an important predictor of adult substance-related harm. Any use of substances can be

¹ <https://www.gov.uk/government/publications/commissioning-letter-to-the-acmd-work-programme-2017-to-2019>

acutely harmful, highlighting the importance of preventive and early intervention (ACMD, 2015). Furthermore, this report does not provide a taxonomy or description of underpinning theory and the characteristics and predictive nature of different sets of risk (and protective) factors. There is already a large body of work that has examined this in detail, and it is beyond the scope of this report to provide a review (see Dillon *et al.*, 2007; Frisher *et al.* 2007; Kempf *et al.*, 2017; Stone *et al.*, 2012 for overviews).

2. Substance use-related harms

Substances may lead to harm because of interactions between the substance itself, characteristics and behaviours of the individual user, and the environment in which drug use occurs (ACMD, 2010). Harms may also inadvertently emerge from the policy and practice responses to substance use (Rhodes, 2009) and impact unevenly on vulnerable groups. The nature, range, and determinants of harms related to substance use have been extensively studied; Jones *et al.* (2011) provided an overview of health harms.

The use of psychoactive substances is a significant contributor to the global burden of disease. Estimates from the World Health Organization (WHO) suggest that substance use (illicit substances and alcohol²) accounts for 14% of the total health burden in people aged under 25³ (Degenhardt *et al.*, 2016; Gore *et al.*, 2011; Mokdad *et al.*, 2016). The burden (excluding alcohol and tobacco) is lower in older adults aged over 25 (0.9%), but still represents the 19th leading risk factor overall (Degenhardt *et al.*, 2013). This is because as people age they become more susceptible to chronic ill health, including long-term conditions related to substance use. For example, to put this into context, analysis of data from England showed that compared with gender and age appropriate expectations of mortality opioid users were more likely to experience death from a range of major causes including:

- infectious-, respiratory-, circulatory-, and liver diseases;
- cancer;
- suicide; and
- homicide. (Pierce *et al.*, 2016)

Research into acute or short-term harms typically focus on factors such as:

² Tobacco is usually omitted from these types of analysis as use tends to cause harms later in life.

³ Expressed as disability adjusted life years (DALYs): mental and substance use disorders (19% of DALYs); unintentional and intentional injuries (12% of DALYs); and HIV, tuberculosis and lower respiratory tract infections (8% of DALYs).

- toxicity;
- psychobiological interactions between substances (polysubstance use);
- variations in purity;
- dose of drug consumed;
- reduced tolerance after periods of abstinence or changes in levels of use; and/or
- consumption of unexpected substances found in addition to, or substituted for, purchased substances. (Jones *et al.*, 2011)

Acute harms may also result from pharmacogenetic differences between misusers, and are moderated by:

- factors such as sex, age, personality and cognition, co-occurring health conditions and socioeconomic factors; and
- substance-related behaviours such as setting of use, route of administration, and hygiene measures adopted.

Longer-term harms from substance use emerge through:

- direct mechanisms (morbidity [ill health] and mortality [death]);
- indirect mechanisms (e.g. loss of employment or housing; relationship breakdown; lack of appropriate services/exclusion from services); and
- policy and enforcement responses to substance misuse and the drugs trade (e.g. criminal conviction leading to loss of employment; adverse health effects of imprisonment).

Many substance-related harms are predictable and related to dose, drug history, and use behaviours, but others may be unexpected and/or unintended. The bearers of harm include:

- the individual who uses a substance or commits a related offence;
- others affected by the substance use, such as family and peers; and
- communities and social structures.

The societal costs of illicit drug-related harm (including health harms) are estimated to be £10.7 billion in England⁴, £3.5 billion in Scotland⁵, and £780 million for Class A drugs in Wales⁶. Public Health England (PHE) provides an online platform of relevant data on drug-related harms at local authority

⁴ <https://www.gov.uk/government/publications/alcohol-and-drug-prevention-treatment-and-recovery-why-invest/alcohol-and-drug-prevention-treatment-and-recovery-why-invest>

⁵ www.parliament.scot/ResearchBriefingsAndFactsheets/S5/SB_17-22_Drug_Misuse.pdf

⁶ www.wales.nhs.uk/sitesplus/888/pendoc/238881

level in England.⁷ The Scottish Government⁸; Public Health Wales⁹; and the Northern Ireland Department of Health¹⁰ publications provide access to similar resources. Data compiled by PHE¹¹ suggest that there were 21,598 hospital admissions related to illicit drug use in 2015/16, and 279,793 people were in contact with drug and alcohol services in 2016/17. In 2017 there were 2,503 drug misuse deaths registered in England and Wales (43.9 per million population)¹², 934 in Scotland (172.2 per million)¹³, and 126 in Northern Ireland (2016 registrations; 56.2 per million)¹⁴. Across the UK, it is estimated that around half of injecting drug users have ever been infected with Hepatitis C (Public Health England, 2016). Around 1 in 100 people who inject drugs are living with HIV and 1 in 500 with Hepatitis B.¹⁵ In 2016 there were 145 new HIV diagnoses associated with injecting drug use in the UK, including 30 in the NHS Greater Glasgow and Clyde area.

There is a strong association between socioeconomic position, social exclusion and substance-related harm, with greater harm recorded in people living in more deprived areas and with lower individual resources and socioeconomic capital. The highest levels of drug-related deaths in the UK occur in those areas of greatest neighbourhood deprivation (ACMD, 2016; Information Services Division, 2018; Northern Ireland Statistic Research Agency, 2017; Public Health Wales, 2016). In England, those local authorities containing deprived coastal and ex-industrial towns have some of the highest drug-related death rates (Office for National Statistics, 2018). Persistent and systematic multiple deprivation is more important than economic poverty or disadvantage experienced for short periods of time in determining health outcomes (Marmot, 2005; Public Health England, 2017).

Inequalities in health and social outcomes are higher in substance using groups compared to the general population. Social exclusion is one determinant of inequality that affects people who use substances. This is a broader concept than just poverty, and also includes the inability of individuals and communities to participate effectively in mainstream social, cultural, and political life (MacDonald and Marsh, 2002). Aldridge and colleagues (2018) undertook a systematic review of studies examining morbidity and mortality in populations considered socially excluded and who had a history of homelessness, imprisonment, sex work, or substance use disorders (excluding cannabis and alcohol

⁷ <https://fingertips.phe.org.uk/topic/drugs-and-alcohol>

⁸ <http://www.isdscotland.org/Health-Topics/Drugs-and-Alcohol-Misuse/Publications/>

⁹ <http://www.wales.nhs.uk/sitesplus/888/page/72997>

¹⁰ <https://www.health-ni.gov.uk/articles/drugs-statistics>

¹¹ <https://www.gov.uk/government/collections/alcohol-and-drug-misuse-and-treatment-statistics>

¹² <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsrelatedtodrugpoisoningine nglandandwales/2017registrations>

¹³ <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/deaths/drug-related-deaths-in-scotland>

¹⁴ <https://www.nisra.gov.uk/statistics/cause-death/alcohol-and-drug-deaths>

¹⁵

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729816/UAM_Survey_of_PWID_data_tables_2018.pdf

use). They estimated that the extent of health inequality seen in these populations compared to the general population greatly exceeded that found between populations classed as being either of high or low socioeconomic status. Data in their review were presented as standardized mortality ratios (SMRs), which is the ratio between the observed number of deaths in the study population and the number of mortality (deaths) that would be expected in a matched sample of the general population. An observed:expected ratio of 1 means there is no difference between the expected and observed mortality rates, whereas if the ratio is greater than 1.0, it means that there are 'excess deaths' observed in the study population. Overall, looking at all causes of mortality across the populations of interest, SMRs were almost 12 times higher in females; this was higher than in males (SMRs = 8). The excess deaths were greatest in relation to causes such as injury and poisoning, but were evident across almost all health conditions studied. In comparison, death rates in the most deprived areas of England and Wales were 2.1 times higher than those in the least deprived areas for females, and 2.8 times higher for males.

Summary of key points

- **Substance use, and responses to substance use, are associated with both health and social harms**
- **All people who use substances may experience harm, but substance related harms are also socially patterned – those who live in more deprived areas, or who have fewer personal resources are more likely to suffer harm**
- **Substance use is a source of health inequality, and some research suggest that this is greater than the impact of socioeconomic inequality**

3. What is risk? What are risk and protective factors?

In accordance with standard definitions of risk, *substance-related risk* can be understood as the *probability* that harm might occur in populations or individuals as a direct or indirect result of substance use (ISO, 2009). Risk can also be considered a function of the probability of an adverse outcome and the magnitude of the consequences (e.g. drug injection is a ‘high risk’ behaviour because it can lead to transmission of blood-borne viruses like Hepatitis C, which can have serious health consequences) (Spiegelhalter, 2017). In everyday use, ‘risk’ is often used as a synonym for harm itself (e.g. a ‘risk’ of substance use is overdose, a ‘risk’ of possessing a controlled drug is arrest) and substance use *per se* is also considered a ‘risk’.

Building on these commonly understood definitions, substance-related *risk factors* are *probabilistic* in nature. They are defined as measures of behaviour or psychosocial functioning, experiences and environmental factors that:

- precede the outcome of interest; and
- may predict or increase the likelihood of the misuse of substances or experiencing harm. (Glantz and Pickens, 1992; Hawkins *et al.*, 1992)

Risk factors are termed ‘probabilistic’ because the presence of a risk factor does not necessarily mean that the individual will use substances or experience harm, but that the likelihood of such an outcome is higher. *Protective factors* mediate (i.e. explain the relationship between the factor and the outcome) or moderate (i.e. the factors influence the strength or direction of the relationship between a risk factor and an outcome) the effects of exposure to risk factors; they determine differences in outcome among those exposed to the same risk factor (Hawkins *et al.*, 1992).

The concept of ‘vulnerability’ is also often used in discussions of risk to describe individuals and groups who – because of the presence of a particular profile of risk factors, socio-demographics, shared life experiences, or exposure to sources of harm – are considered to have greater levels of need (*ibid.*). This is how the 2017 Drug Strategy positions ‘at-risk’ groups. Vulnerable populations are often prioritised in policy in alignment with public health and social welfare principles of ‘proportionate universalism’. This means that universal actions are delivered to an entire population, but are delivered to particular individuals or groups with a scale and intensity that is proportionate to their level of need (Marmot, 2010). Vulnerable groups may also be legally entitled to support. For example, Part VII of the Housing Act 1996 and the Homelessness Act 2002 specify that “*a person who is vulnerable as a result of old age, mental illness or handicap or physical disability or other special*

reason, or with whom such a person resides or might reasonably be expected to reside” should have a priority need for accommodation.

With respect to substance use, people might be considered vulnerable if, because of the presence of individual, socioenvironmental or historical factors, they have a higher risk of:

- i) initiation and maintenance of substance use;
- ii) escalation of substance use, and development of substance use disorders and other problems;
- iii) health and social harms related to substance use and societal responses; or
- iv) poorer access to and outcomes from treatment and other forms of support.

There are important discussions about the benefits and shortcomings of viewing certain individuals and population groups such as those highlighted as high priority in the Drugs Strategy 2017 as ‘vulnerable’ (e.g. Flacks, 2018; Stevens, 2018). As discussed above, ‘labelling’ can be a useful means of:

- focusing attention and resources towards underserved or higher risk groups, improving the likelihood that they receive appropriate support; or
- ensuring that designated groups are not unlawfully disadvantaged or discriminated against.

On the other hand, people considered vulnerable often experience multiple disadvantages and can have different experiences of vulnerability at key points in their life (Aldridge *et al.*, 2018; Bramley *et al.*, 2015; Drinkwater *et al.*, 2015; Fitzpatrick *et al.*, 2013). For example, gender is important to consider, as women who misuse substances often have different experiences of homelessness than men (Reeve, 2018; Tuchman, 2010).

Although it is useful from a policy and practice perspective to retain labelling in order to aid group differentiation (i.e. designation into vulnerable groups), this should always be done without artificially ‘fixing’ or reifying groups, as this can lead to a primary focus on responding to behaviours and circumstances related to grouping characteristics. This may mask the differences and unique needs of the individuals who are members of that group. For example, a ‘veteran’ may be homeless and have mental ill health, and may require different forms of support than a ‘veteran’ involved in the criminal justice system. Furthermore, although members of vulnerable groups may share some characteristics with each other and have specific needs, this should not obscure the similarities they also share with members of wider society, including factors that might make them more resilient to harm.

Whilst vulnerability labelling can identify a priority group, labelling can also potentially lead to discrimination or stigma (Lloyd, 2013; Room, 2005) or even ‘competition’ for resources. For example, the increase in investment in UK drug treatment services in the late 1990s and early 2000s coincided

with a repositioning of drug policy and treatment priorities to serve crime reduction and public protection goals (Duke, 2013). This led to an expansion of services, and an increase in the number of people receiving treatment. However, negative stereotypes and (public and internalised) stigma experienced by people who needed support for their drug use may have been inadvertently reinforced through the explicit links that were drawn between drug use, drug treatment, and offending behaviour (Radcliffe and Stevens, 2008).

Similar discussions have taken place around the concept of 'resilience', whereby those individuals or groups who have sufficient protective factors are considered more resistant to adversity and adverse outcomes, despite being at risk of harm (Bonanno *et al.*, 2015; Masten *et al.*, 1990). Fergus and Zimmerman (2005) describe three general hypothetical models of resilience.

- *Compensatory models* suggest that protective factors are not simply the 'opposite' of risk factors, but directly counteract or reduce the impact of adverse outcomes. For example, living in poverty (risk factor) is associated with a higher probability of substance use and harmful outcomes. This may be compensated by strong individual attachment to supportive social networks and institutions (protective factors), thus reducing the overall adverse impact of living in poverty on substance-related outcomes.
- The *protective factors* model of resilience suggests that protective factors do not directly influence outcomes in the same way as the compensatory model, but work by reducing the influence of a risk factor on an outcome. Using the same example, a protective factor, such as high-quality provision and coverage of local services, would moderate (i.e. reduce) the effects of poverty on harmful substance-related outcomes. A protective factor can:
 - work to neutralise the effects of the risk factor, so that the harmful outcome is not produced;
 - diminish, but not completely remove the relationship, so that harms are mitigated, but not entirely absent; or
 - interact with other protective factors to enhance the overall protective effect.
- The *challenge model* focuses on early experiences of risk, and its relationship with protective 'inoculating' effects. This approach suggests that exposure to either low or high levels of a risk factor are associated with negative outcomes, but moderate levels of the risk are related to less negative outcomes. This is because exposure (either directly or vicariously) to moderate levels of risk leads to the development of protective cognitions and behaviours that allow the affected individual to overcome adversity, and the modelling of future responses. However, when exposure is too great, overcoming it is difficult, and if too little, the necessary skills are not learned by the process of overcoming the risk. This approach is often integrated into

prevention and relapse prevention interventions, whereby participants are exposed to simulated risk (e.g. exposures to substances and substance use opportunities) in a structured and safe environment (e.g. the classroom or treatment setting).

This framing of resilience adds a dimension to the consideration of risk and vulnerability by looking at how people avoid harm despite being exposed to adversity. One scoping review of research into resilience and substance misuse found three main categories of adversity where resilience might be particularly important (Rudzinski *et al.*, 2017). These were termed:

- *traumatic events* (including physical, sexual and emotional abuse, childhood maltreatment/neglect, violence, and criminal victimisation);
- *disease processes* (including substance misuse disorders, mental ill health problems, Hepatitis C virus [HCV]/human immunodeficiency virus [HIV] progression); and
- *daily stressors* (including living in care or high-risk neighbourhoods, poverty, homelessness, discrimination).

These authors also discussed how people could demonstrate a profile of resilience in some areas of their life, despite experiencing an overall high level of adversity. They provide an example from research into the lives of regular crack cocaine users, who would be considered vulnerable, and at high risk of harm from their exposure to dangerous social environments and health-harming practices. Despite this, most of these users showed:

- positive self-identity practices (e.g. identifying and acting as a parent, being a supportive friend to others, or even as a drug dealer); and
- the development of the skills required for these identities and the avoidance or reduction of risks necessary for their day-to-day 'survival'.

However, as with the discussion of vulnerability, it is important to consider the implications of including resilience framing and language in policy and practice responses, and how it is used to describe people who use substances or are at risk of harm. All lives include adversity, and so developing individual-level and shared resources to deal with it is a useful skill, hence resilience training is an important component of many prevention interventions (ACMD, 2015). Furthermore, where identified risk factors cannot be easily or directly reduced by intervention (e.g. socioeconomic deprivation; childhood adversity), strategies to develop resilience can lessen the potential impact of adversity.

However, to be ‘resilient’ is not an integral characteristic of a person or a group, but a description of the profile of factors that affects their lives. In other words, resilience is not an individual trait, but a set of circumstances that includes:

- an interaction between the individual and their social and environmental influences; and
- the processes underlying resilience that differ between individuals and within groups.

This type of framing is important because it removes individual blame from people who ‘fail’ to overcome risk or adversity. By definition resilience requires the presence of risk or adversity, and these are often out of the control and influence of the affected individual or group (see Section 4). Successful responses rely on the different internal or external resources that the affected individual or group can draw upon (Kassis *et al.*, 2013).

Summary of key points

- ***Risk factors*** are factors that precede the outcome of interest, and that may predict or increase the likelihood of the use of substances or experiencing harm.
- ***Protective factors*** influence the effects of exposure to risk factors, and can lead to differences in outcomes among those exposed to the risk factors.
- People are considered ***vulnerable*** if they have a higher risk of substance use and related harms, and ***resilient*** if they are considered more resistant to adversity and adverse outcomes despite being at risk of harm. However, neither are integral characteristics of people, and where underlying factors are out of the control and influence of the affected individual or group, successful responses rely on the different internal or external resources they can draw upon.

4. Socioecological perspectives on health and wellbeing

Socioecological models are one popular and commonly utilised means of understanding the way in which diverse factors (including risk and protective factors) might determine and influence health behaviours, and provide a focus for health and social interventions (Bronfenbrenner, 1979; Dahlgren and Whitehead, 1991; Galvani, 2017; Golden and Earp, 2012). This approach is also useful in understanding how and why some people experience substance-related harms.

The general model is an ‘upstream’ systems-based framework that describes the multiple levels of influence on health and health-related behaviours. Individuals are considered to be integrated within a larger social system (their environment, including the social, built, institutional, and political

environments). The model describes the interaction between the characteristics of individuals and environments that underlie outcomes of interest. These environments are multi-layered, since components such as institutions and communities are also embedded within larger social and economic structures. For example, a drug treatment service delivers support in relation to local and national strategies and funding priorities.

According to the socioecological model, differences in individual health outcomes are explained through the way in which environmental factors influence individuals differently, depending on their beliefs and practices, and the internal and external resources that they can draw upon. The model does not diminish the importance of choice, agency, and self-development (i.e. individuals are not considered passive actors so still have choices and responsibilities). However, it suggests that the range of behavioural choices and outcomes may be limited and biased for some, because of these factors.

Different representations of the socioecological model have been articulated, often using discipline-specific language. However, in general all specify five important interacting levels of influence, see below and Figure 1 (McLeroy *et al.*, 1988; Sallis *et al.*, 2008):

- intrapersonal factors;
- interpersonal processes;
- institutional factors;
- community factors; and
- public policy.

Intrapersonal factors are characteristics of an individual that influence behaviour. These include: biological, developmental and personal history; knowledge; attitudes; behaviour; self-efficacy; sex, sexuality and gender; age; racial/ethnic identity; economic status; financial resources; values; goals; expectations; education; and internalised stigma.

Interpersonal processes encompass the relationships between the individual and other people, and with their immediate surroundings. They include those relationships that are closest to the individual and often exert the strongest influences on individual behaviour. These include formal (and informal) social networks and social support systems, including family, friends, peers, co-workers and cultural traditions.

Community factors include the settings in which interpersonal relationships occur, and the relationships between individuals, organisations, institutions, and social networks. These include important factors such as:

- educational, economic, employment, and housing opportunities;
- community environments (e.g. deprivation and renewal);
- services (e.g. access to high quality health and social care); and
- the availability of resources.

Institutional factors are rules, regulations, and informal structures that determine how and how well services are provided to an individual or group. Institutional factors also include:

- barriers and enablers of healthy behaviours; and
- the relationships between individuals within institutions (e.g. service providers) and the individuals and communities they serve.

Public policy and the **enabling environment** includes local, national and global laws and policies, including: policies regarding the allocation of resources, and access to services; restrictive, coercive, or conditional policies; and the lack of policy.

Although not often explicitly included in health-orientated versions of the model, some versions include specific consideration of the *macrosystem* and *chronosystem*. The *macrosystem* includes factors such as societal norms, political and economic systems, and religious and cultural values. These may not directly affect the individual, but exert negative and positive interactive influences on the individual through community, institutions, and interpersonal factors. There may also be a reciprocal relationship between these factors and the content and objectives of public policy. The *chronosystem* refers to internal and external elements of time and historical context, including how the changes in all the factors described above affect individual development. This includes:

- the long-term impact of individual adversity (e.g. see Section 6 on adverse childhood experiences);
- economic cycles; and
- changes in the relationships between individuals and communities, with societal institutions and structures (e.g. long-term experiences of deprivation, health inequality and social exclusion; long-term effects of austerity measures, deprivation, and structural unemployment).

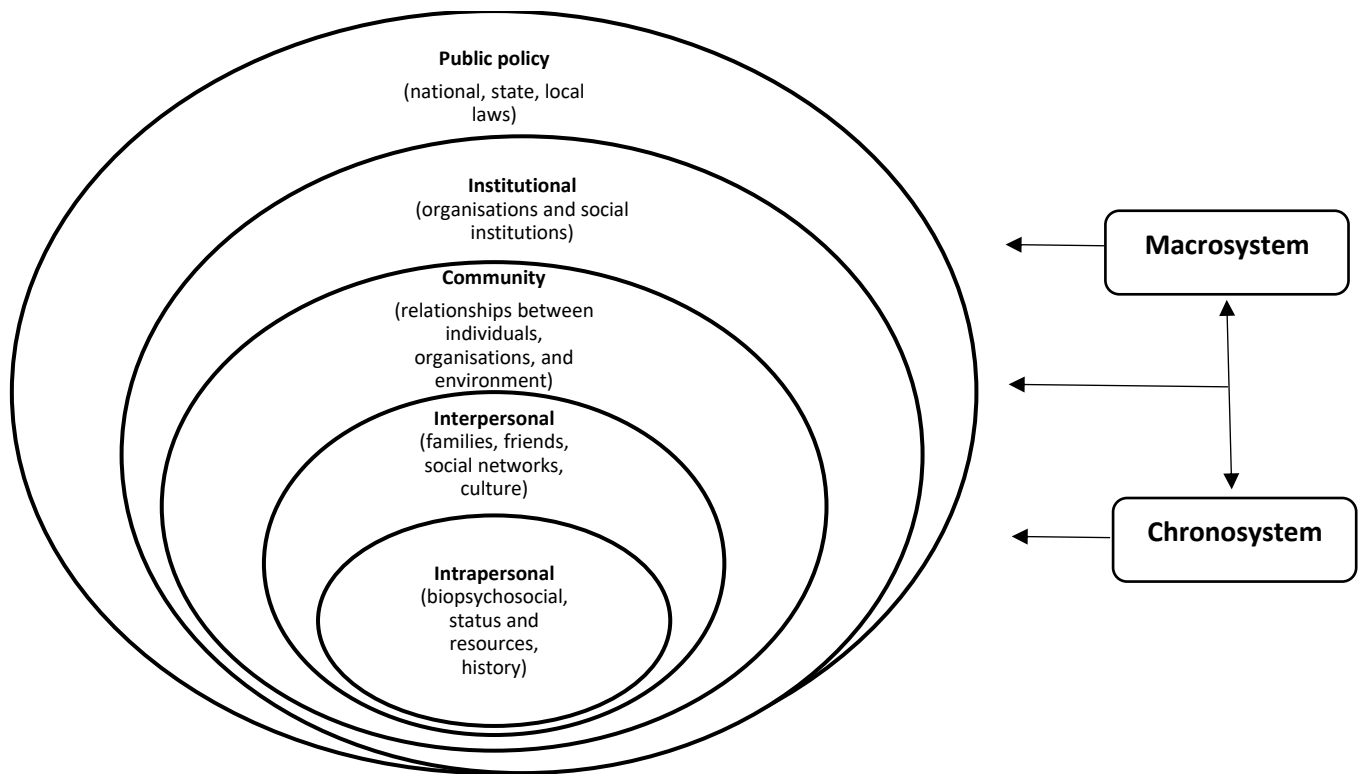


Figure 1 Example of a socioecological perspective of health and health outcomes

Health is therefore affected by the interaction between the characteristics of the individual, the community, and the environment that includes the physical, social, and political components. The model assumes that interactions between individuals and their environment are reciprocally reinforcing; an individual is influenced by their environment as much as the environment is influenced by the actions of the individual.

Socioecological and other perspectives on health only provide a conceptual framework, and so do not replace understandings of lived experiences. They also do not point to easily identifiable solutions to health concerns (although that may also be considered a strength). For example, although many studies have clearly identified that low socioeconomic status is an important determinant of substance use, and that experiences of poverty have differential effects on health outcomes, it is difficult to recommend how to resolve this.

However, this overall perspective is important as it provides a useful reminder that individual behaviours, and the risk of harm associated with those behaviours, are not just determined by individual choices. They are also shaped by the opportunities, constraints and influences of a wider system. This serves to shift the focus for behaviour change from individuals alone to the environments

and structures in which people live their lives (Rhodes, 2009). This framing also highlights that to have a sustained and positive impact:

- intervention and policy responses are required across multiple levels at the same time; and
- responsibility for reduction of harm must include the social and political institutions that played a role in producing that harm.

Summary of key points

- **Socioecological models describe how individual behaviours and the outcomes of behaviour are a result of the interactions between individuals, the choices they make, and the social, cultural, and political contexts in which those choices are made and in which people live their lives.**
- **This way of thinking about behaviour is relevant to substance use, as it suggests that the risk and manifestation of harm is determined by not only the choices that people make, but also how those choices are influenced by the resources that people can draw upon, and the opportunities and constraints placed upon them.**
- **Socioecological models are also important, because whilst they do not diminish individual agency, choice, and responsibility, they suggest that responses to reduce substance-related harm must consider the social, political, and cultural factors that also contributed to that harm.**

5. Application of socioecological perspectives to substance-related harm

Risk and protective factors for substance use and related harm exist within, and across, all levels of the socioecological model (Table 1). Some of these factors are considered to be *fixed*, meaning that they cannot be easily modified by intervention or policy actions (e.g. sex/gender, age, genes, ethnicity, family history of substance use, neighbourhood factors). Other factors are considered *modifiable*. These include many interpersonal and contextual factors that are relatively more amenable to change (e.g. history of neglect, stressful events, drug use practices, employment and housing status, access to and engagement with treatment and harm reduction services) (Griffin, 2010; Kraemer *et al.*, 2001; Stone *et al.*, 2012).

Risk factors can also be *proximal* or *distal* to substance use. Proximal factors present an immediate vulnerability, such as:

- stressful life events;

- availability and opportunities to use substances; or
- social influences such as substance use in an important peer group.

Many responses to substance misuse focus directly on these types of determinant, but may only have short-term effects.

Distal determinants tend to be more stable and exert influence over longer periods relative to proximal determinants. Responses to health and social inequalities, where there are avoidable differences in outcomes or in the distribution of determinants between individuals and different population groups, often focus on interventions and policies that have an impact on important modifiable distal determinants (Bambra *et al.*, 2010; Bambra *et al.*, 2015; Whitehead, 2007). They are relatively more difficult determinants to modify, but have longer-lasting effects, and influence substance behaviours by shaping and interacting with proximal determinants. Examples of important distal determinants include:

- low material and social resource;
- prolonged experiences of homelessness or poverty;
- family structure and societal norms supporting substance use;
- adverse childhood experiences (ACEs) (see Section 6) and/or socioeconomic conditions; and
- mental ill health or behavioural disorders.

As suggested by the socioecological model, the effects of a single risk or protective factor cannot be understood without taking into account others. Simply ‘counting’ risk factors, or looking at them in isolation, does not explain *why* some people are more susceptible to harm than others. For example, living in areas of greater neighbourhood deprivation may not necessarily lead to an increase in harmful outcomes, but might when combined with prolonged experiences of stress, and lack of timely access to high quality services.

Table 1 Illustrative examples of the relationship between levels of the socioecological model and factors associated with substance use

Socioecological model level	Example of factors related to substance use	Examples of intervention/policy activities at this level
Intrapersonal	Genetics; psychobiology; health and mental health status; personality traits; (stage of) neurological development; ACEs, chronic stress, and stress reactivity; self-efficacy; personal employment, educational, and housing status; income and resources; substance related behavioural practices (e.g. injection, street-based use)	Evidence-based prevention, harm reduction, and treatment actions; education and training; provision of healthcare and housing; welfare, benefits and access to employment; living wage

Interpersonal	Prosocial relationships; engagement with protective structures; peer influences and norms; social capital; inequality and exclusion; family structure; ACEs	Modification of home and family environment; family and parenting skills training; targeted social support; peer-based interventions
Community	Physical environment; availability of, and ease of access to substances; media; provision of economic and housing opportunities; provision of low threshold and community-led services; local policing activities; social isolation and marginalisation; social cohesion; informal economies (including drug markets)	Community and social integration activities; community participation/volunteer opportunities; housebuilding programmes; neighbourhood regeneration/renewal; investment in services/physical infrastructure; local delivery of national policy; crime prevention; multiagency partnerships; outreach work
Institution	Climate, processes, and policies within institutions; availability and quality of provision of prevention, harm reduction, treatment, and recovery services; provision of general health and social support services; coordination and partnerships between services and care; exclusion and discrimination	Modification to institutional environments, systems, policies, and services; training and skills enhancement of institution members beyond target population, including institutional leaders; continuity of care between different services
Policy	Housing, employment (including 'living wage'), education, health social policy; drug laws and enabling drug policy actions; cost of living; allocation of resources and prioritisation of services, including general and drug-specific services	Creation or modification of public policies; education, training, skills enhancement of decision makers, opinion former, influencers, and policy makers; legal change
Macro system	Population mobility; social inequality (including inequalities based on gender, religion, and ethnicity); economic transition; policy orientation (e.g. public health or criminal justice); political systems and governing party priorities; adherence and practice of human rights principles	Broad societal policy; support of international conventions and treaties

Again, as discussed in Section 3, factors associated with particular behaviours and outcomes should not be considered deterministic; the identification of a particular risk factor or sets of factors does not mean that affected individuals, groups, or communities will experience harm. Furthermore, the presence of a risk factor does not mean that those affected should necessarily be allocated responsibility for reducing risk, or attributed with blame for any resulting harm. This is not to ignore the importance of individual responsibility or to diminish individual autonomy, but factors external to the individual may place constraints that serve to limit the behavioural choices and opportunities available.

Summary of key points

- **A lot is already known about the different types of factors that can influence substance use and related harm.**
- **Many of these factors, particularly those at an individual level, are the targets of intervention. However, others are more difficult to change, and so the greatest long-term impact may be seen when there is action at all the levels described in the socioecological model – from individual level to the political context**

6. Adverse childhood experiences

Greater awareness of the impact of adverse childhood experiences (ACEs) on health and wellbeing has led to increased priority in national and local strategies, and the development of ‘ACE-informed’ service and intervention responses. However, there has been relatively little discussion of the relevance of ACEs to understanding substance use and substance-related harms. A focus on ACEs in this section of the report provides an example of how socioecological models can lead to a more nuanced consideration of the determinants of substance-related harm.

ACEs are co-occurring intra-familial events or conditions causing chronic stress responses in the child’s immediate environment (Corcoran and McNulty, 2018; Kelly-Irving *et al.*, 2013). With respect to socioecological understandings ACEs are important intra- and interpersonal determinants of health and social outcomes (Anda *et al.*, 2006; Felitti *et al.*, 1998; Metzler *et al.*, 2017). ACEs have received increased attention across the UK in recent years, and responses to ACEs have been embedded into local public health and social care strategies, routine service enquiries about adversity in childhood, and the development of trauma informed adult services.¹⁶ However, there has been relatively less consideration of ACEs in understanding substance use and vulnerability to substance-related harm.

Recent stressful negative life events such as bereavement, breakdown in relationships, physical and emotional violence and abuse, and social isolation are important and well-described proximal risk factors for substance use (Sinha, 2008). However, individuals with ACEs are more susceptible to poorer health and social outcomes in adulthood, and greater premature mortality. This is hypothesised to be a result of differences in development due to:

- the physiological and psychological response to chronic stress;

¹⁶ For example, see: <https://www.gov.scot/Topics/People/Young-People/gettingitright>; <https://www.gov.uk/government/publications/routine-enquiry-about-adverse-childhood-experiences-implementation-pack-evaluation>; <http://www.wales.nhs.uk/sitesplus/888/page/88504>; <https://www.gov.uk/government/publications/better-mental-health-jsna-toolkit/5-children-and-young-people> ; <https://www.gov.uk/government/publications/police-and-public-health-collaboration-across-england> ;

- the adoption of harmful adult coping behaviours such as substance misuse; and
- (parents') reduced ability to access goods and services that would otherwise facilitate healthy (child) development. (Blair *et al.*, 2013; Cooper and Stewart, 2013; Pechtel and Pizzagalli, 2011; Stringhini *et al.*, 2010)

There is no consistent definition of ACEs as these have tended to be specific to the research studies undertaken. However, in a recent systematic review (Hughes *et al.*, 2017), 16 broad categories of ACEs were identified, which included:

- childhood physical abuse;
- household substance use;
- childhood sexual abuse;
- emotional neglect;
- parental imprisonment; and
- household mental illness.

Hughes *et al.* also examined the associations between experiencing multiple ACEs and health outcomes in general population samples. Across studies, over half of participants (57%) experienced at least 1 ACE, and 13% more than 4, which suggests that these experiences might be more common than expected. Exposure to at least four ACEs, irrespective of the combination, was associated with:

- increased odds of poor mental, physical, and sexual health;
- problematic substance use;
- violence (perpetration and victimisation); and
- physical inactivity.

The odds of experiencing adult (>18 years of age) problematic substance use (defined as injecting drug use, or heroin or crack cocaine use) was 10 times higher in study participants who reported more than 4 ACEs (odds ratio 10.22, range 7.62–13.71). Although smaller, the odds of adult problematic alcohol use (including 'binge' drinking and heavy and hazardous drinking) were still 6 times higher (odds ratio 5.84, range 3.99–8.56) in study participants reporting multiple ACEs. However, the review only included general population studies, and the authors suggested that the relationship might be even stronger in vulnerable populations.

These findings suggest that early years' experiences can have profound effects on the development of substance-related harms, and that there may be common pathways defined by cumulative exposure to diverse sources of adversity, rather than specific effects of exposure to individual stressors. With respect to practice and policy, there may be gains from collaborative working across:

- trauma informed services;
- routine screening for ACEs in primary and secondary care;
- the development of resilience programmes; and
- adult treatment responses. (Bellis *et al.*, 2014; McGee *et al.*, 2015)

These findings also suggest a self-perpetuating cycle of adversity, whereby experiences of ACEs leads to poor health and wellbeing in children, which subsequently develop into negative adult outcomes. These in turn lead to a new generation of children affected by ACEs. Understanding substance use and related harms in relation to this aspect of ACEs suggests the importance of early intervention, and the long-lasting consequences of failing to intervene and support affected individuals. Consideration of intergenerational transmission of ACEs may be particularly important to take into account for those who come into contact with services in relation to their adult substance use.

Despite emerging knowledge of the important association between ACEs and negative outcomes, and ‘ACE-informed’ policy and services, there are still gaps in understanding ACEs. For example, research studies have incorporated a very broad range of indicators of both acute and chronic adversity that:

- i) are experienced differently at different developmental points;
- ii) might be mitigated by other protective factors;
- iii) may have differential impact on individuals; and
- iv) require different types of response for which there may not be appropriate evidence-based interventions or sufficient resource. (For example, Finkelhor, 2017; Maynard *et al.*, 2017; Mersky *et al.*, 2017; Murray *et al.*, 2012; Sethi *et al.*, 2013)

Similarly, harmful outcomes also cluster in areas of deprivation and it is uncertain whether these are independent associations, or represent an interaction between ACEs and deprivation (Duncan *et al.*, 2010; Evans and Kim, 2013). The impact of ACEs may therefore differ between individuals within socioeconomic strata. ACEs may cluster in areas of greater socioeconomic deprivation, or (some) ACEs may be indicators of broader structural and socioeconomic conditions (Taylor-Robinson *et al.*, 2018). This is important to clarify with respect to substance use, as a policy and practice focus on individual-level resilience to ACEs may fail to account for the impact of (modifiable) socioeconomic inequalities, such as growing up in poverty, which require a different and upstream response.

Summary of key points

- **Adverse childhood experiences (ACEs) describe events or conditions that produce chronic stress responses in the child’s immediate environment, leading to long-term harm in affected children.**

- **Experiencing multiple ACEs greatly increase the risk that a child will experience a range of adverse health and social outcomes in adulthood, including harmful substance use. ACEs are self-perpetuating, and can lead to adversity in the children of adults affected by ACEs. This has important implications for policy responses to substance use.**
- **Greater awareness of the impact of ACEs has led to increased priority in national and local strategies, and the development of service and intervention responses. However, in general there are few examples of ACE-led interventions in adult drug treatment services. There are also important gaps in knowledge, such as actions that are balanced between responding specifically to ACEs and those that target wider determinants of health such as socioeconomic deprivation.**

7. Trajectories of substance use

Although most people who use substances do not suffer serious long-term harm, some may experience a spectrum of problems related to use that significantly impairs their health, social function, and wellbeing. These are discussed at length in other reports published by the Advisory Council on the Misuse of Drugs (e.g. ACMD, 2013a; 2013b; 2016). Whilst all people who misuse substances face the risk of acute substance-related harms, factors affecting the probability and length of time of transitioning to the development of longer-term problems such as substance use disorders are complex. These include:

- sociodemographic factors;
- age of initiation;
- the substance used, experiences of use, and polysubstance use;
- exposure to preventive interventions and environments; and
- the influence of the risk and protective factors discussed throughout this report. (Behrendt *et al.*, 2009; Flórez-Salamanca *et al.*, 2013; Hser *et al.*, 2007; Ridenour *et al.*, 2005)

Precise relationships are difficult to elucidate because substance users are not a homogeneous group, and there are multiple pathways linking use with harm. For example, for some people, there can be a narrowing of social and ‘recreational’ interests around substance use (Muller and Schumann, 2011; Piazza and Deroche-Gamonet, 2013). Piazza and Deroche-Gamonet (2013) describe how the transition to substance misuse disorders can proceed through three consecutive but independent phases. Entering one phase is necessary but not sufficient to progress towards the next phase, because specific

individual risk factors are needed. This general pathway is applicable to other ways of thinking about the progression of substance use.

- Recreational and/or sporadic use, in which substance use intake is moderate and sporadic, and still one among many recreational activities of the individual.
- Intensified, sustained, escalated use, in which substance use intensifies, becomes more sustained and frequent, and there is a narrowing of social identity and interests towards substance use. Although some decrement in social and personal functioning starts to appear, behaviour is still largely organised, and the individual can fulfil most of their roles and responsibilities.
- Development of a substance use disorder means that substance-related activities are now the principal focus of the individual.

For other people, initial reasons for substance use might not be recreational. They may be:

- self-medicating an under- or untreated psychiatric or physical disorder (Khantzian, 2003);
- using substances not in accordance with a doctor's prescription (Fingleton *et al.*, 2016); or
- using substances as a coping or adaptive mechanism to adverse life events (Alexander, 1987) and insecure environments (Fletcher *et al.*, 2009a; Fletcher *et al.*, 2009b).

It can also be helpful to consider different pathways, or *trajectories* of substance use, from a life-course perspective (Hser *et al.*, 2007). This allows focus on long-term stability or change in substance use behaviours and how trajectories can be affected by individual responses to significant periods of transition. Whilst no single pathway is applicable to all substance users, consideration of trajectories allows the extension of the Piazza and Deroche-Gamonet (2013) perspective to think about *how* and *why* substance use might progress from key stages such as onset, to infrequent and experimental use, to more regular and disordered use (requiring treatment support), cessation, and relapse. From a life-course perspective, moving between the different stages of use depends upon interactions of substance use with significant life transitions (risk factors) related to:

- changes in individual roles and responsibilities;
- social change; and
- social structure, as described by the socioecological model.

Examples of transitions include:

- periods of unemployment;
- gaining parental independence and leaving home;
- becoming a parent;

- relationship formation and breakdown;
- mental health crisis; and
- loss of housing.

Although these transitions can be short-lasting, they can have a long-lasting effect on substance use trajectories. In some, but not all people who use substances, transitions can lead to turning points (Sampson and Laub, 2005) and new and potentially more harmful behaviours or patterns of use are adopted. Individual differences in risk and protective factors determine how people respond to these transitions and if substance use behaviour changes as a result.

Figure 2 presents a schematic representation of hypothetical substance use trajectories. The vertical axis represents risk and severity of harm, which might be acute or long-term. It is assumed that on an individual level, the risk and severity of harm is non-zero after the onset of substance use and is associated with:

- length of substance use, and progression into higher use categories such as high frequency use;
- polysubstance use;
- substance use disorders; and
- the adoption of risky practices such as injection.

Factors relate to those determinants of behaviour outlined in Section 4 in accordance with socioecological understandings of health, and include the life-course transitions described above and the provision and access to services. Early years factors (including adverse childhood experiences [ACEs], see Section 6) precede the first use of substances but may not directly produce or be associated with harm. However, these factors can interact with more proximal determinants that precede the first opportunities to use substances, and influence the decision to initiate use. Individuals may subsequently decide to continue substance use or (temporarily) cease use. Progression from onset, occasional, and infrequent use to regular and more harmful use categories (turning points) is again influenced by an interaction between early years, life-course transitions, and proximal factors, although these might not necessarily be the same sets and combinations of factors. With age, an individual's use might fluctuate between use categories, or they use might cease altogether. Although it is primarily a medical term, 'remission' is used here to signify that after periods of (prolonged) cessation, an individual may commence substance use again. This is particularly relevant to consideration of the chronic relapsing nature of substance use, and the need of some people for multiple treatment episodes.

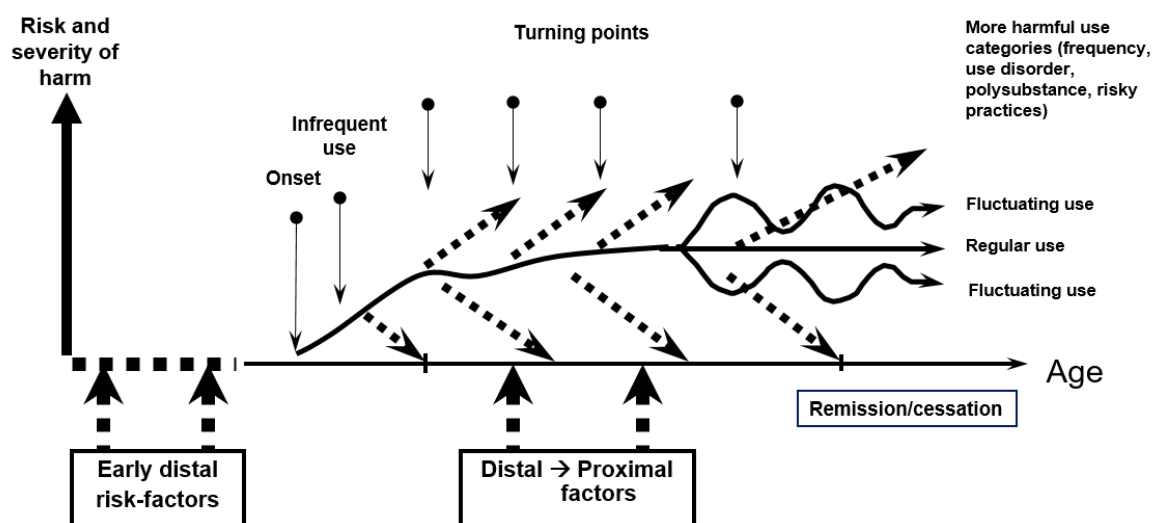


Figure 2 Schematic representation of substance use trajectories

Summary of key points

- All individual substance use 'pathways' are different. Most people only use substances for relatively short periods of time, and without experiencing serious harm.
- However, substance use may take place over longer (interrupted) periods of time, and for some people, there may be a narrowing of social identity and interests around substance use. Substance use may also be used as a coping response to illness, adversity, or living in stressful social environments. This can lead to an increased risk of harm.
- One way of understanding the key 'transition' points at which people might change their substance use behaviour, or might be more likely to experience harm is to consider significant life transitions related to changes in individual roles and responsibilities, social change, and social structure. These transition points can provide an opportunity for intervention and support, but if left unresolved may make it more likely that there is a long-term change in substance use behaviours towards harmful outcomes.

8. Conclusions

This briefing has introduced the concept of risk and protective factors and how these relate to substance use and related harms. A socioecological perspective on substance use has been introduced, which places individual choice and behaviour at the centre of a complex system of influences, and as a result means that some people may be more likely to use substances or experience harm than others. Many of the determinants of substance use are outside of the control of the individual and responses to substance should reflect this. Reducing harm in 'vulnerable' groups therefore requires action across multiple levels of society and should always combine individually targeted actions with actions further 'upstream'.

9. References

ACMD (2010) *Consideration of the use of Multi-Criteria Decision Analysis in Drug Harm Decision Making*. London: Home Office, Advisory Council on the Misuse of Drugs.

ACMD (2013a) *Recovery from drug and alcohol dependence: an overview of the evidence*. London: Home Office, Advisory Council on the Misuse of Drugs.

ACMD (2013b) *What recovery outcomes does the evidence tell us we can expect?* London: Home Office, Advisory Council on the Misuse of Drugs.

ACMD (2015) *Prevention of drug and alcohol dependence*. London: Home Office, Advisory Council on the Misuse of Drugs.

ACMD (2016) *Reducing Opioid-Related Deaths in the UK*. London: Home Office, Advisory Council on the Misuse of Drugs.

Aldridge, R. W., Story, A., Hwang, S. W., Nordentoft, M., Luchenski, S. A., Hartwell, G., Tweed, E. J., Lewer, D., Vittal Katikireddi, S. and Hayward, A. C. (2018) 'Morbidity and mortality in homeless individuals, prisoners, sex workers, and individuals with substance use disorders in high-income countries: a systematic review and meta-analysis', *The Lancet*, 391 (10117), pp 241–250.

Alexander, B. K. (1987) 'The Disease and Adaptive Models of Addiction: A Framework Evaluation', *Journal of Drug Issues*, 17 (1), pp 47–66.

Anda, R. F., Felitti, V. J., Bremner, J. D., Walker, J. D., Whitfield, C., Perry, B. D., Dube, S. R. and Giles, W. H. (2006) 'The enduring effects of abuse and related adverse experiences in childhood. A convergence of evidence from neurobiology and epidemiology', *Eur. Arch. Psychiatry Clin. Neurosci.*, 256 (3), pp 174–186.

Bambra, C., Gibson, M., Sowden, A., Wright, K., Whitehead, M. and Petticrew, M. (2010) 'Tackling the wider social determinants of health and health inequalities: evidence from systematic reviews', *Journal of Epidemiology and Community Health*, 64 (4), pp 284–291.

Bambra, C. L., Hillier, F. C., Cairns, J., Kasim, A., Moore, H. J. and Summerbell, C. D. (2015) 'How effective are interventions at reducing socioeconomic inequalities in obesity among children and adults? Two systematic reviews', *Public Health Research*, 3 (1).

Behrendt, S., Wittchen, H. U., Hofler, M., Lieb, R. and Beesdo, K. (2009) 'Transitions from first substance use to substance use disorders in adolescence: is early onset associated with a rapid escalation?' *Drug Alcohol Depend.*, 99 (1–3), pp 68–78.

Bellis, M. A., Lowey, H., Leckenby, N., Hughes, K. and Harrison, D. (2014) 'Adverse childhood experiences: retrospective study to determine their impact on adult health behaviours and health outcomes in a UK population', *Journal of Public Health*, 36 (1), pp 81–91.

Blair, C., Berry, D., Mills-Koonce, R. and Granger, D. (2013) 'Cumulative effects of early poverty on cortisol in young children: Moderation by autonomic nervous system activity', *Psychoneuroendocrinology*, 38 (11), pp 2666–2675.

Bonanno, G. A., Romero, S. A. and Klein, S. I. (2015) 'The temporal elements of psychological resilience: an integrative framework from the study of individuals, families, and communities', *Psychol Inq.*, 26.

Bramley, G., Fitzpatrick, S., Edwards, J., Ford, D., Johnsen, S., Sosenko, F. and Watkins, D. (2015) *Hard Edges: Mapping Severe and Multiple Disadvantage in England*. London: Lankelly Chase.

Bronfenbrenner, U. (1979) *The ecology of human development: experiments by nature and design*. Cambridge, MA: Harvard University Press.

Cooper, K. and Stewart, K. (2013) *Does money affect children's outcomes?* York, UK: Joseph Rowntree Foundation.

Corcoran, M., & McNulty, M. (2018). Examining the role of attachment in the relationship between childhood adversity, psychological distress and subjective well-being. *Child abuse & neglect*, 76, pp 297-309.

Dahlgren, G. and Whitehead, M. (1991) *Policies and strategies to promote social equity in health*. Stockholm: Institute for Futures Studies.

Degenhardt, L., Stockings, E., Patton, G., Hall, W. D. and Lynskey, M. (2016) 'The increasing global health priority of substance use in young people', *The Lancet, Psychiatry*, 3 (3), pp 251–264.

Degenhardt, L., Whiteford, H. A., Ferrari, A. J., Baxter, A. J., Charlson, F. J., Hall, W. D., Freedman, G., Burstein, R., Johns, N., Engell, R. E., Flaxman, A. D., Murray, C. J. L. and Vos, T. (2013) 'Global burden of disease attributable to illicit drug use and dependence: findings from the Global Burden of Disease Study 2010', *The Lancet*, 382 (9904), pp 1564–1574.

Dillon, L., Chivite-Matthews, N., Grewal, I., Brown, R., Webster, S., Weddell, E., Brown, G. and Smith, N. (2007) *Risk, protective factors and resilience to drug use: identifying resilient young people and learning from their experiences*. London: Home Office.

Drinkwater, N., Graham, J., Kempster, A. and Thomas, S. (2015) *Evidence from the frontline: How policy changes are affecting people experiencing multiple needs. Making Every Adult Matter*. London.

Duke, K. (2013) 'From Crime to Recovery: The Reframing of British Drugs Policy?' *Journal of Drug Issues*, 43 (1), pp 39–55.

Duncan, G. J., Ziol-Guest, K. M., & Kalil, A. (2010). Early-childhood poverty and adult attainment, behavior, and health. *Child development*, 81(1), pp 306-325.

Evans, G. W., and Kim, P. (2013). Childhood poverty, chronic stress, self-regulation, and coping. *Child development perspectives*, 7(1), 43-48.

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P. and Marks, J. S. (1998) 'Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study', *American Journal of Preventive Medicine*, 14 (4), pp 245–258.

Fergus, S., and Zimmerman, M. A. (2005). Adolescent resilience: A framework for understanding healthy development in the face of risk. *Annu. Rev. Public Health*, 26, 399-419.

Fingleton, N. A., Watson, M. C., Duncan, E. M. and Matheson, C. (2016) 'Non-prescription medicine misuse, abuse and dependence: a cross-sectional survey of the UK general population', *Journal of Public Health*, 38 (4), pp 722–730.

Finkelhor, D. (2017) 'Screening for adverse childhood experiences (ACEs): Cautions and suggestions', *Child Abuse Negl.*

Fitzpatrick, S., Bramley, G. and Johnsen, S. (2013) 'Pathways into Multiple Exclusion Homelessness in Seven UK Cities', *Urban Studies*, 50 (1), pp 148–168.

Flacks, S. (2018) 'Dangerous drugs, dangerous mothers: Gender, responsibility and the problematisation of parental substance use', *Critical Social Policy*, pp 1–21.

Fletcher, A., Bonell, C. and Rhodes, T. (2009a) 'New counter-school cultures: female students and drug use at a high-achieving secondary school', *British Journal of Sociology of Education*, 30, pp 549–562.

Fletcher, A., Bonell, C., Sorhaindo, A. and Rhodes, T. (2009b) 'Cannabis use and 'safe' identities in an inner-city school risk environment', *Int J Drug Policy*, 20, pp 244–250.

Flórez-Salamanca, L., Secades-Villa, R., Hasin, D. S., Cottler, L., Wang, S., Grant, B. F. and Blanco, C. (2013) 'Probability and Predictors of Transition from Abuse to Dependence on Alcohol, Cannabis, and Cocaine: Results from the National Epidemiologic Survey on Alcohol and Related Conditions', *The American Journal of Drug and Alcohol Abuse*, 39 (3), pp 168–179.

Frisher, M., Crome, I., Macleod, J., Bloor, R. and Hickman, M. (2007) *Predictive factors for illicit drug use among young people: a literature review*. London: Home Office.

Galvani, S. (2017) 'Social work and substance use: Ecological perspectives on workforce development', *Drugs: Education, Prevention and Policy*, 24 (6), pp 469–476.

Glantz, M. D. and Pickens, R. W. (1992) 'Vulnerability to Drug Abuse'. American Psychological Association, pp 1–14.

Golden, S. D. and Earp, J. A. (2012) 'Social ecological approaches to individuals and their contexts: twenty years of health education and behavior health promotion interventions', *Health Educ. Behav.* 39 (3), pp 364–372.

Gore, F. M., Bloem, P. J. N., Patton, G. C., Ferguson, J., Joseph, V., Coffey, C., Sawyer, S. M. and Mathers, C. D. (2011) 'Global burden of disease in young people aged 10–24 years: a systematic analysis', *The Lancet*, 377 (9783), pp 2093–2102.

Griffin, K. W. (2010) 'The epidemiology of substance use among adolescents and young adults: A developmental perspective', *Handbook of drug use etiology: Theory, methods, and empirical findings*. Washington DC: American Psychological Association, pp 73–92.

Hawkins, J. D., Catalano, R. F. and Miller, J. Y. (1992) 'Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention', *Psychological Bulletin*, 112 (1), pp 64–105.

Home Office (2017) *Drug Misuse: Findings from the 2016/17 Crime Survey for England and Wales Statistical Bulletin*. London: Home Office.

Hser, Y. I., Longshore, D. and Anglin, M. D. (2007) 'The life course perspective on drug use: a conceptual framework for understanding drug use trajectories', *Evaluation review*, 31 (6), pp 515–547.

Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., Jones, L. and Dunne, M. P. (2017) 'The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis', *The Lancet, Public Health*, 2 (8), pp e356–e366.

Information Services Division (2018) *The National Drug-Related Deaths Database (Scotland) Report: Analysis of Deaths occurring in 2015 and 2016*. Edinburgh: NHS Scotland, Information Services Division.

ISO (2009) *ISO 3100 – Risk Management*. Geneva: International Standards Organization.

Jones, L., Bates, G., Bellis, M. A., Beynon, C., Duffy, P., Evans-Brown, M., Mackridge, A., McCoy, E., Sumnall, H. and McVeigh, J. (2011) *A summary of the health harms of drugs*. London: Public Health England.

Kassis, W., Artz, S. and Moldenhauer, S. (2013) 'Laying down the family burden: a cross-cultural analysis of resilience in the midst of family violence', *Child Youth Serv.* 34.

Kelly-Irving, M., Lepage, B., Dedieu, D., Bartley, M., Blane, D., Grosclaude, P., Lang, T., and Delpierre, C. (2013) Adverse childhood experiences and premature all-cause mortality. *European journal of epidemiology*, 28(9), pp.721-734.

Kempf, C., Llorca, P.-M., Pizon, F., Brousse, G. and Flaudias, V. (2017) 'What's New in Addiction Prevention in Young People: A Literature Review of the Last Years of Research', *Frontiers in Psychology*, 8, p 1131.

Khantzian, E. J. (2003) 'The self-medication hypothesis revisited: The dually diagnosed patient', *Primary Psychiatry*, 10 (9), pp 47–48, 53–54.

Kraemer, H. C., Stice, E., Kazdin, A., Offord, D. and Kupfer, D. (2001) 'How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors', *The American Journal of Psychiatry*, 158 (6), pp 848–856.

Lloyd, C. (2013) 'The stigmatization of problem drug users: A narrative literature review', *Drugs: Education, Prevention and Policy*, 20 (2), pp 85–95.

MacDonald, R. and Marsh, J. (2002) 'Crossing the Rubicon: youth transitions, poverty, drugs and social exclusion', *International Journal of Drug Policy*, 13 (1), pp 27–38.

Marmot, M. (2005) 'Social determinants of health inequalities', *The Lancet*, 365 (9464), pp 1099–1104.

Marmot, M. (2010) *Fair society, healthy lives: the Marmot review*. London: University College London.

Masten, A. S., Best, K. M. and Garmezy, N. (1990) 'Resilience and development: Contributions from the study of children who overcome adversity', *Development and psychopathology*, 2 (4), pp 425–444.

Maynard, B. R., Farina, A. and Dell, N. A. (2017) 'Effects of trauma-informed approaches in schools', *Cambell Systematic Reviews*.

McGee, C., Hughes, K., Quigg, Z., Bellis, M., Larkin, W. and Lowey, H. (2015) *A Scoping Study of the Implementation of Routine Enquiry about Childhood Adversity (REACH)*. Liverpool, UK: Centre for Public Health.

McLeroy, K. R., Bibeau, D., Steckler, A. and Glanz, K. (1988) 'An ecological perspective on health promotion programs', *Health Educ. Q.*, 15 (4), pp 351–377.

Mersky, J. P., Janczewski, C. E. and Topitzes, J. (2017) 'Rethinking the Measurement of Adversity: Moving Toward Second-Generation Research on Adverse Childhood Experiences', *Child Maltreat.*, 22 (1), pp 58–68.

Metzler, M., Merrick, M. T., Klevens, J., Ports, K. A. and Ford, D. C. (2017) 'Adverse childhood experiences and life opportunities: Shifting the narrative', *Children and Youth Services Review*, 72, pp 141–149.

Mokdad, A. H., Forouzanfar, M. H., Daoud, F., Mokdad, A. A., El Bcheraoui, C., Moradi-Lakeh, M., Kyu, H. H., Barber, R. M., Wagner, J., Cercy, K., Kravitz, H., Coggeshall, M., Chew, A., O'Rourke, K. F., Steiner, C., Tuffaha, M., Charara, R., Al-Ghamdi, E. A., Adi, Y., Afifi, R. A., Alahmadi, H., AlBuhairan, F., Allen, N., AlMazroa, M., Al-Nehmi, A. A., AlRayess, Z., Arora, M., Azzopardi, P., Barroso, C., Basulaiman, M., Bhutta, Z. A., Bonell, C., Breinbauer, C., Degenhardt, L., Denno, D., Fang, J., Fatusi, A., Feigl, A. B., Kakuma, R., Karam, N., Kennedy, E., Khoja, T. A., Maalouf, F., Obermeyer, C. M., Mattoo, A., McGovern, T., Memish, Z. A., Mensah, G. A., Patel, V., Petroni, S., Reavley, N., Zertuche, D. R., Saeedi, M., Santelli, J., Sawyer, S. M., Ssewamala, F., Taiwo, K., Tantawy, M., Viner, R. M., Waldfoegel, J., Zuniga, M. P., Naghavi, M., Wang, H., Vos, T., Lopez, A. D., Al Rabeeah, A. A., Patton,

G. C. and Murray, C. J. (2016) 'Global burden of diseases, injuries, and risk factors for young people's health during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013', *The Lancet*, 387 (10036), pp 2383–2401.

Muller, C. P. and Schumann, G. (2011) 'Drugs as instruments: a new framework for non-addictive psychoactive drug use', *The Behavioral and Brain Sciences*, 34 (6), pp 293–310.

Murray, J., Farrington, D. P. and Sekol, I. (2012) 'Children's antisocial behavior, mental health, drug use, and educational performance after parental incarceration: A systematic review and meta-analysis', *Psychological Bulletin*, 138 (2), pp 175–210.

Northern Ireland Statistic Research Agency (2017) *Drug Related and Drug Misuse Deaths 2006–2016*. Belfast: Northern Ireland Statistic Research Agency.

Office for National Statistics (2018) *More than half of heroin/morphine misuse death hotspots in England and Wales are seaside locations*. London: Office for National Statistics.

Pechtel, P. and Pizzagalli, D. A. (2011) 'Effects of early life stress on cognitive and affective function: an integrated review of human literature', *Psychopharmacology*, 214 (1), pp 55–70.

Piazza, P. V. and Deroche-Gamonet, V. (2013) 'A multistep general theory of transition to addiction', *Psychopharmacology*, 229 (3), pp 387–413.

Pierce, M., Bird, S. M., Hickman, M., Marsden, J., Dunn, G., Jones, A. and Millar, T. (2016) 'Impact of treatment for opioid dependence on fatal drug-related poisoning: a national cohort study in England', *Addiction*, 111 (2), pp 298–308.

Public Health England (2016) *Shooting Up: infections among people who inject drugs in the UK*. London: Public Health England.

Public Health England (2017) *Health matters: preventing drug misuse deaths*. London: Public Health England.

Public Health Wales (2016) *Drug deaths in Wales 2016*. Cardiff: Public Health Wales.

Radcliffe, P. and Stevens, A. (2008) 'Are drug treatment services only for 'thieving junkie scumbags'? Drug users and the management of stigmatised identities', *Soc. Sci. Med.*, 67 (7), pp 1065–1073.

Reeve, K. (2018) 'Women and homelessness: putting gender back on the agenda', *People, Place and Policy Online*, 113, pp 164–174.

Rhodes, T. (2009) 'Risk environments and drug harms: A social science for harm reduction approach', *International Journal of Drug Policy*, 20 (3), pp 193–201.

Ridenour, T. A., Maldonado-Molina, M., Compton, W. M., Spitznagel, E. L. and Cottler, L. B. (2005) 'Factors associated with the transition from abuse to dependence among substance abusers: implications for a measure of addictive liability', *Drug Alcohol Depend.*, 80 (1), pp 1–14.

Room, R. (2005) 'Stigma, social inequality and alcohol and drug use', *Drug Alcohol Rev.*, 24 (2), pp 143–155.

Rudzinski, K., McDonough, P., Gartner, R. and Strike, C. (2017) 'Is there room for resilience? A scoping review and critique of substance use literature and its utilization of the concept of resilience', *Subst. Abuse Treat Prev. Policy*, 12 (1), p 41.

Sallis, J. F., Owen, N. and Fisher, E. B. (2008) 'Ecological models of health behavior'. In: *Health Behavior and Health Education*, Glanz, K., Rimer, B. K. and Viswanath, K. (eds). San Fransisco: John Wiley, pp 465–485.

Sampson, R. J. and Laub, J. H. (2005) 'A Life-Course View of the Development of Crime', *The Annals of the American Academy of Political and Social Science*, 602, pp 12–45.

Sethi, D., Bellis, M., Hughes, K., Gilbert, R., Mitis, F. and Galea, G. (2013) *European report on preventing child maltreatment*. Copenhagen, Denmark: World Health Organization, Regional Office for Europe.

Sinha, R. (2008). Chronic stress, drug use, and vulnerability to addiction. *Annals of the new York Academy of Sciences*, 1141(1), 105-130.

Spiegelhalter, D. (2017) 'Risk and Uncertainty Communication', *Annual Review of Statistics and Its Application*, 4 (1), pp 31–60.

Stevens, A. (2018) '‘Being human’ and the ‘moral sidestep’ in drug policy: Explaining government inaction on opioid-related deaths in the UK', *Addictive Behaviours*.

Stone, A. L., Becker, L. G., Huber, A. M. and Catalano, R. F. (2012) 'Review of risk and protective factors of substance use and problem use in emerging adulthood', *Addict. Behav.*, 37 (7), pp 747–775.

Stringhini, S., Sabia, S., Shipley, M., Brunner, E., Nabi, H., Kivimaki, M. and Singh-Manoux, A. (2010) 'Association of socioeconomic position with health behaviors and mortality', *Jama*, 303 (12), pp 1159–1166.

Taylor-Robinson, D. C., Straatmann, V. S., and Whitehead, M. (2018). Adverse childhood experiences or adverse childhood socioeconomic conditions?. *The Lancet Public Health*, 3(6), 262-263.

Tuchman, E. (2010) 'Women and Addiction: The Importance of Gender Issues in Substance Abuse Research', *Journal of Addictive Diseases*, 29 (2), pp 127–138.

Whitehead, M. (2007) 'A typology of actions to tackle social inequalities in health', *J. Epidemiol. Community Health*, 61 (6), pp 473-478.