

Image and Performance Enhancing Drugs (I PEDs)

Literature Review

Lifeline Project



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Lifeline
Project

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This report aims to summarise the currently available evidence and knowledge around IPED use, examine the challenges faced by drug service providers working with IPED users, and look at how we can better work with this group.

This information in this report is drawn from third party academic research, reports from other professional organisations in the field, primary data from government sources (where available), and the expertise and professional experience of our own staff. All third party information and sources have been referenced where used.

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Executive Summary

- IPEDs are substances used to **alter or enhance or alter a person's appearance or abilities**. The most prominent are **anabolic steroids, 'smart drugs', and skin-enhancement drugs (for example Botox)**.
- **Evidence is fairly thin on prevalence and impact of all three groups of substances**, though use appears to be growing.
- Most IPEDs are self-prescribed and administered by users without medical guidance. Substances themselves tend to be produced and sold without the legal regulation or safeguards that would usually surround most medicines.
- **IPED use has traditionally been seen as outside of drug services' remit** and most IPED users unlikely to view themselves drug users in the traditional sense.
- There are comparable numbers of injecting steroid users and injecting heroin users in England, with some reports indicating up to 300,000 injecting steroid users. Numbers injecting cosmetic drugs such as Botox are likely even higher.
- **The most significant risks to steroid and Botox users are around injecting**. Rate of HIV amongst steroid users are approximately the same as amongst heroin users. There is great need for safer injecting advice and needle exchange amongst these groups.
- Aside from risks related to injecting, illicit steroid use also risks liver damage, kidney damage, cardiovascular issues, dependency, depression, insomnia, and unwanted changes to sexual characteristics (eg breast growth, hair loss, or impotence).
- There is a strong community around steroid use within gyms and online, and similarly a strong online community around smart drugs. **Personal experience and word of mouth in these contexts is the usual source of dosing and usage guidance and information on health risks**.
- Steroid users themselves are likely to be more knowledgeable on how different gym-drugs work and interact than drugs workers or other professionals due to the vast range of substances often used. **Unless a worker is an experienced IPED user, they are unlikely to be able to give substance-specific guidance or advice**.
- Aside from the strongest substances (such as amphetamines or methylphenidate), **most smart drugs have little to no significant negative impact on users**.
- **Building on personal qualities such as self-acceptance, positive self-image, or stress-management may help those with dependent or problematic IPED use, though we should be careful not to stigmatise all IPED use** – the desire to improve oneself is not unusual and not all IPED use is necessarily harmful.

What are IPEDs?

Image and Performance Enhancing Drugs (also known as IPEDs, PIEDs, SEIDs, or human enhancement drugs) are **substances used with the intention of altering or improve a person's appearance or abilities**. This could include improving athletic performance, academic performance, sexual performance, altering skin tone, losing fat, reducing wrinkles, or increasing muscle mass. IPEDs tend to be self-administered by users without medical supervision or guidance, and the substances themselves produced and sold without proper regulation or safeguards (Evans-Brown et al 2012).

IPED use is often separated from use of other drugs, with IPED users typically not viewing themselves as drug users and being viewed as outside of the remit of traditional drug services. Despite this, **there is a significantly sized population regularly using IPEDs across England.** There are concerns around the long- and short-term health effects of these substances and the practices related to their use (such as injecting) that make them important for health and social care services to consider.

IPEDs are most commonly discussed in the context of anabolic steroid use, however there are a range of substances that may come under the heading of 'IPEDs'. For the purposes of this report these shall broadly be separated into three categories:

- **Steroids and gym-drugs¹**
- **Nootropics (AKA 'smart drugs' or 'study drugs')**
- **Botox, dermal fillers, and tanning drugs**

Various other substances such as diet/weight loss pills or drugs intended to improve sexual performance (including those used in chemsex) could also come under the heading of 'IPEDs', but shall not be discussed in this document. Similarly, there are many other practices not involving substance use that include similar motivations and health risks (for example home tattooing/body modification or extreme dieting), however these also will not be discussed here. Nevertheless, many issues and point raised in this document could carry across to these contexts.

Due to the cultural distinction between IPED users and psychoactive drug users, IPED users receive little focus from traditional drug services, little support or advice around use, and may be hard to engage with health services. Public discourse on anabolic steroids and nootropics in particular often focuses more heavily on whether IPED use is fair or ethically justifiable rather than any potential health implications. Despite this, **many of the substances used and practices around IPED use are essentially similar to traditional psychoactive drugs and hold comparable health risks.**

Steroids and gym-drugs in particular have become the subject of increased public debate in recent years due to a series of high profile sports doping scandals, including those around cyclist Lance Armstrong and Russia's Olympic team. Often these debates focus around the fairness of IPED use in athletic competition or academic achievements and little consideration is given to the health effects on users themselves.

¹ 'Gym-drugs' is not a recognised term in the wider literature, rather a short-hand term used here due to the vast range of different hormones, steroids, and other supplements used together in the gym context in addition to anabolic steroids.

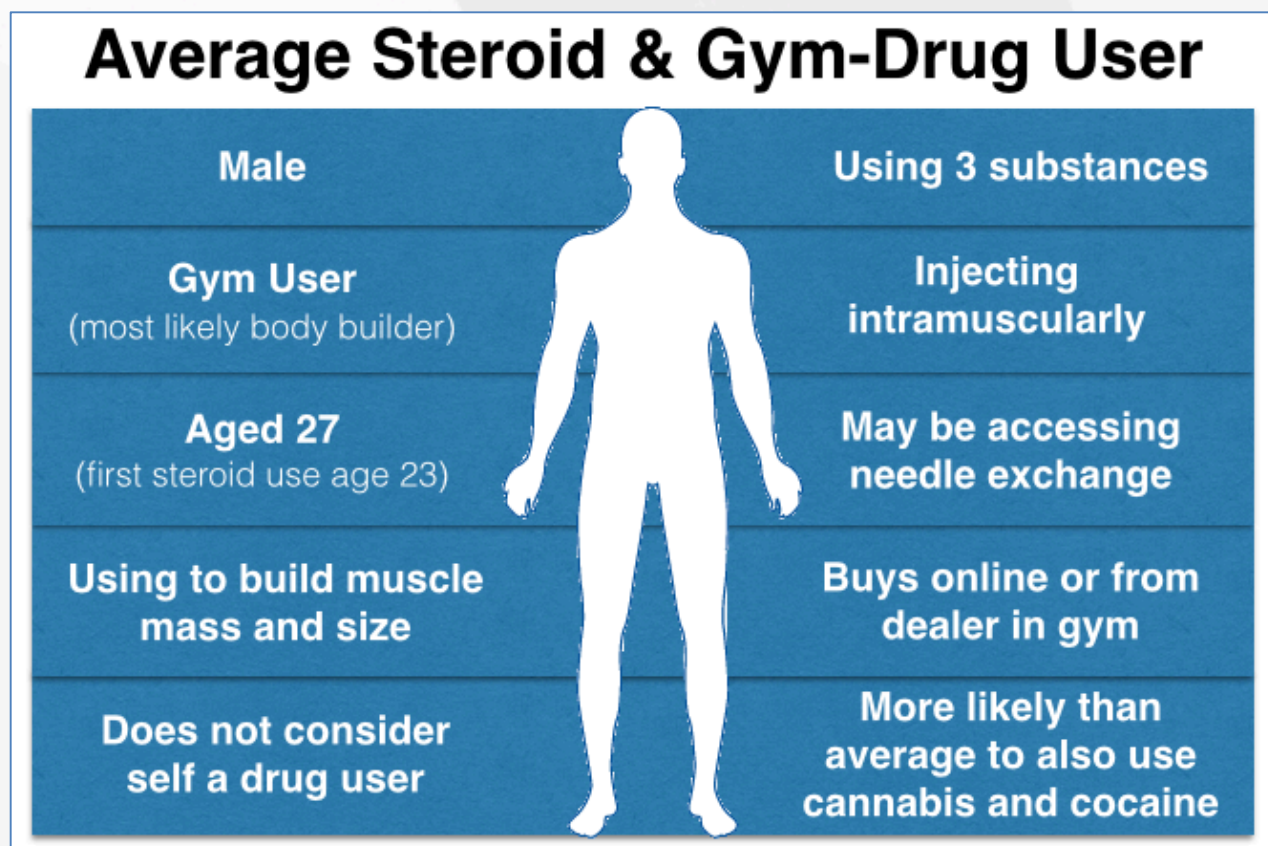
Steroids and Gym-Drugs

What are steroids and gym-drugs?

Steroids and gym-drugs include a wide range of steroids, peptides, hormones, and other supplements used by a certain subsection of – typically male – gym users and body builders. Anabolic-androgenic steroids are the most well-known and widest used of these substances, however all are common amongst this group and used with similar intentions for similar effects on the body. In common discourse these substances are more often simply referred to as ‘steroids’ or ‘IPEDs’, however the term ‘steroids and gym-drugs’ is used here to distinguish from other very different IPEDs such as nootropics and to include other non-steroid image-enhancement substances regularly used in the same context by the same group.

Regular IPED users of this type tend to follow complex regimens using a ‘stack’ of various differing substances, making it difficult to give an exhaustive breakdown of all types and effects here - the World Anti-Doping Agency’s list of banned substances alone names 70+ different anabolic steroids, 40+ peptides and related hormones, 20+ metabolic modulators, and 20+ diuretics and masking agents (WADA 2016). **Users usually stack an average of three different substances at a time and use in cycles of between 4-12 weeks ‘on-cycle’** (with 8 weeks cited as a common average) and short break ‘off-cycle’ (Brennan et al 2016). Users may employ different stacks at different points during each cycle to maximise desired effects or manage unwanted side effects.

Who uses steroids and gym-drugs?



Overall prevalence of IPED use amongst the general adult population is relatively low, at up to around 100,000 current users nationally by most estimates, with estimates of lifetime use ranging up to 300,000 thousand (Home Office 2016, McVeigh et al 2015). Nevertheless, this is still a significantly sized population and **much higher than estimated prevalence of injecting**

heroin use, for which the benefits of harm reductions are clear. **Across Merseyside and Cheshire just under 5,500 people who accessed needle exchange services in 2014/15 were IPED users (around 57% of those who disclosed their primary substance (Whitfield et al 2015) – though there is high year-by-year variability in this figure with 77% reporting IPED use in the previous year).**

Due to a lack of engagement with traditional drug services and gaps in other reporting systems, **precise prevalence and demographic information on these substances is very thin.** NDTMS does not record IPEDs as separate substances and needle exchanges have no mandatory national reporting system meaning there is no systematically collected national information even on steroid users that do engage with drug services. Most prevalence data available is based on isolated studies and opt-in reporting schemes – although there are nevertheless some scientifically rigorous studies (reviewed in Brennan et al 2016), and robust opt-in reporting schemes in some regions (for example the Integrated Monitoring System for Cheshire and Merseyside referenced above (Whitfield et al 2015)).

There is little research on differences in prevalence between ethnic communities or other cultural groups, although use has been identified across a range wide of ethnicities, nationalities, and within the LGBT community (Brennan et al 2016).

Gender and Motivation

Steroid and gym-drug users are typically male body builders who use these substances to increase muscle mass and definition, however female users are not unheard of and numbers are increasing with the growth of female body building as a sport. IPEDs of this type may also be used to increase sports performance, however whilst use in sports is far more publicised, this group is much smaller than those using steroids and gym-drugs to build muscle; performance enhancement is significantly less often cited as a motivation compared to improving appearance (Brennan et al 2016).

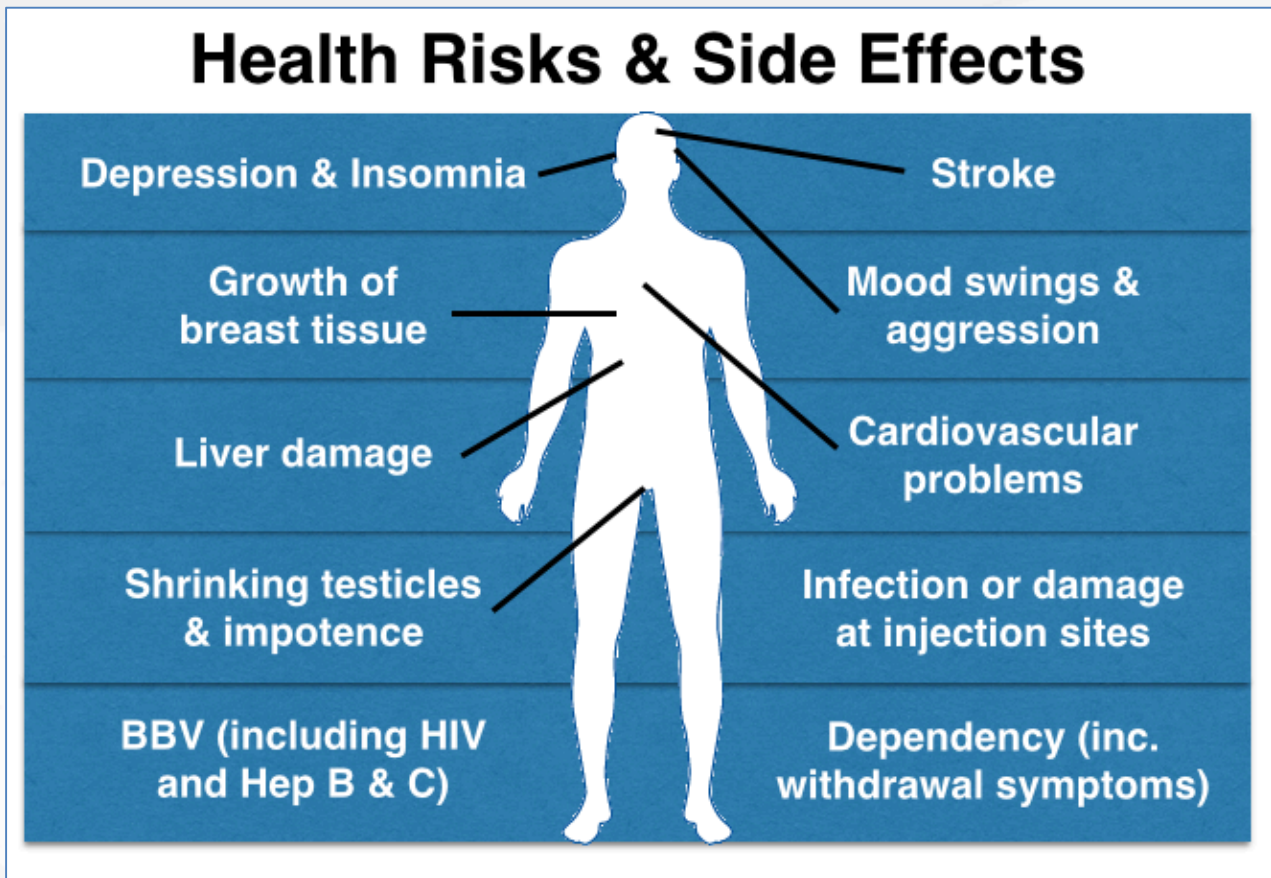
Some users may also aim to build muscle and strength for occupational reasons due to working in highly physical jobs where strength and size are required (ranging from security to illicit drug dealing), however this is also less often cited as a motivation and based more on anecdotal evidence than published research (Evans-Brown 2012).

Melanotan is the main exception amongst substances of this type as it does not alter muscle definition or size. Melanotan is used to darken skin tone as an alternative to fake tan amongst body-builders as it does not streak or interact with anything else put on the skin. **This substance is grouped with steroids and other gym-drugs here despite its very different effects as it very common amongst the same demographic and is also injected.** Furthermore, surveys have found however that there may be some confusion around the effect of melanotan for steroid users, with a significant number of those that used melanotan not reporting its effect on skin colour as a motivation, despite this being its most significant effect (Bates & McVeigh 2016). This may be as it is used as part of complex combinations of IPEDs where other users anecdotally report a perceived benefit.

Age

The largest and most recent UK-wide survey of IPED users found that **first time gym-drug is almost always under the age of 30, usually in early 20s.** Whilst a small proportion of those surveyed cited first use under 18 (6.1%), first use under 16 was very rare (0.6%) (Bates & McVeigh 2016). **Average age of IPED users found in several studies to be approximately 27** (Brennan et al 2016). **Anabolic steroids are one of only a small handful of illicit drugs where prevalence is lower amongst young adults (0.1% amongst 16-24) compared to all adults (0.5% amongst 16-59)** (Home Office 2016). The only other substances where this is the case are heroin and crack cocaine.

What are the effects and risks?



Physical and Mental Health

Anabolic steroids can have a range of unwanted side effects including increased aggression and anger (“roid rage”), mood swings, and unwanted physical changes. Due to anabolic steroids’ similar action to testosterone, **most of these physical changes are around gender-specific features** – for example, shrinking testicles, growth or breast tissue, hair loss, and erectile dysfunction in men, and clitoral enlargement, shrinking breasts, and masculinisation of facial features in women.

Long-term use has also been associated with liver damage, kidney damage, and cardiovascular issues such as high blood pressure and in some cases cardiac arrest (Bates & McVeigh 2016). Melanotan has been associated with similar risks to the cardiovascular system as well as possible indications of skin cancer (Evans-Brown 2009).

Poly-pharming with other substances in a ‘stack’ is often used to manage negative side-effects of use, but potential interaction between substances can also increase risk and unpredictability (Brennan et al 2016).

Examining scientific studies on the risks of specific substances however can be sometimes misleading – the health risks of many IPEDs are due to those substances being mislabelled, sold as something else, or due to adulterants not listed (Evans-Brown et al 2012). Whilst there are few examples of widespread serious harm as a result of counterfeit products sold in the UK, there are examples of serious harm (including many deaths) globally (ibid.).

Injecting Risks

Whilst the above issues are a concern, **the main risks around IPEDs are those related to injecting²**. Although not all IPED users inject, this is the most common route of use for most (86% of IPED users inject, 76% cite oral use, and 65% use both methods (Bates & McVeigh 2016)). Generally speaking, IPED users are more likely to use oral substances in first-time use before progressing to injecting (Bates & McVeigh 2016).

As with any other injecting drug use, there are risks around:

- **BBV (including Hepatitis and HIV)**
- **Damage to veins and arteries**
- **Infection at injecting sites**

IPED users are most likely to inject intramuscularly, as opposed to subcutaneously or intravenously, and most frequently in the **gluteus, quadriceps, or deltoids** (Bates & McVeigh 2016).

Whilst unlikely to view themselves as drug users or engage with drug treatment services, evidence appears to indicate that it is not uncommon for steroid users to access needle exchange services. As mentioned earlier in this report, **around 57% of people accessing needle exchanges across Merseyside and Cheshire in 2014/15 were doing so for steroid use** (Whitfield et al 2015). According to the largest and most recent survey of UK IPED users, **65% reported having used a needle exchange in the last 12 months** – though due to sampling biases in this data, this number may be higher than actual rates (Bates & McVeigh 2016). **Only a small number report sharing needles** (1.5-9% depending on study), however around 10% reuse needles (Bates & McVeigh 2016, Hope et al 2013).

Some health risks associated with injecting will be of less concern than amongst other injecting drug users (primarily heroin users) due to differences in other social circumstances. Traditional injecting drug users are far more likely to face a range of other social and health issues such as homelessness and unemployment (Whitfield et al 2015), which puts them at greater risk of health problems more generally. Despite this, the most serious risks around injecting including spread of BBV are comparable. **Rates of HIV infection are roughly equivalent to injecting psychoactive drug users (1.5% of users), and Hepatitis B & C infection slightly lower than injecting psychoactive drug users though still significantly higher than national averages** (Bates & McVeigh 2016).

One significant difference between steroid users and other drugs users that makes injecting steroid use of particular concern however, is that whilst injecting is fairly unusual amongst casual psychoactive drug users, limited for the most part is limited to the harder core of heroin users, **injecting is the most common route of use for steroid users of all levels (although users generally begin by using orally)**. Whilst safer injecting advice would not be required for most psychoactive drug users, even fairly casual steroid users would likely require this advice.

Risk of Dependency

Whilst there is evidence of risk of developing addiction and withdrawal symptoms when stopping use of steroids and gym-drugs, this is not mentioned or examined in any detail in the literature. Most steroid and gym-drug users use these substances in cycles, alternating periods of regular use with periods of abstinence, possibly indicating that users are aware of the risk of physical dependency and generally speaking are able to break use voluntarily (at least

² *Although it should be noted that risk of liver damage is much higher with long-term oral use of steroids than injected steroids.*

temporarily). Despite this, **some studies have noted risk of depression and insomnia amongst steroid and gym-drug users, in particular during breaks between cycles** (Brennan et al 2016). That these symptoms (in particular insomnia) manifest during breaks in use may indicate that they are associated with withdrawal.

It is possible that little of the literature focuses on dependency or addiction due to the fact that steroids and gym-drugs have no immediate psychoactive effects caused directly by these substances (Brennan et al 2016). As a result **heavy users will not experience or exhibit signs of intoxication and even if heavily dependent could continue to maintain fairly normal day-to-day routines.**

Lack of psychoactive effect also means that **common screening tools used for other drug dependencies are not appropriate and would not identify steroid dependency** (Brennan et al 2016). Despite this, many behaviours of heavy users such as the amount of time and money committed to use, continued use at evident detriment to their own health, and judgment of self-worth on the results of use would seem to point towards some level of psychological dependence. As IPEDs are not recorded as a separate category of drug by NDTMS, it is not possible to estimate prevalence of steroid or gym-drug dependency amongst those seeking drug treatment or support.

Poly-use with psychoactive drugs

Significantly higher than average numbers of IPED users report having used other recreational drugs in the last year (32% compared to 8.4% national average (Bates & McVeigh 2016, Home Office 2016)). In line with national trends, cannabis was the most commonly used illicit recreational drug, however **reported use of powder cocaine was much higher (prevalence estimates ranging from 22-46% depending on the study compared to 2.2% amongst the general population** (Bates & McVeigh 2016, Home Office 2016). Reported ecstasy and amphetamine use was also higher than national averages, though considerably lower than rates of use than cocaine and cannabis. Similarly rates of ever having injecting psychoactive substances were significantly higher than national rates, however still only a very small minority (Hope et al 2013)

Combined use with cocaine and alcohol can put additional strain on the liver. Poly-use with stimulants may place additional strain on the heart and increase cardiovascular risks. Research on poly-use does not indicate whether gym-drugs and stimulants are used simultaneously to increase performance or whether this demographic are simply more likely to use stimulants recreationally independently of their IPED use. Cardiovascular risk is likely to be much higher if these stimulants are being used during exercise or to supplement their IPED use.

What is the law around steroids and gym drugs?

Those steroids and gym-drugs that are specifically classified under the Misuse of Drugs Act (primarily anabolic steroids) are generally Class C. Most of these are legal to possess for personal use, however importing/exporting and possession with intent to supply can carry up to 14 years in prison and an unlimited fine for supply.

Many steroids and gym-drugs (including anabolic steroids) also have medical applications, meaning they may in some cases be legally prescribed or obtained with a prescription. This may indicate the possibility of a black-market dealing in redirected prescribed medication, however there is little evidence that this is the case and most substances appear to be illicitly mass-produced and imported from abroad rather than legally obtained and redirected (Bates & McVeigh 2016). **Users primarily obtain these substances either online or from dealers in gyms. Dealers are usually IPED users heavily embedded in the gym culture themselves funding their own IPED use** (Van de Ven 2016).

NICE guidance recommends sharps bins or even needle exchange facilities in gyms (NICE 2014), however gyms can be cautious to avoid appearing to condone or accept steroid use due to the possibility of negative publicity and legal issues. Whilst gyms have a duty of care towards their customers, this duty of care could be interpreted either way between zero-tolerance towards steroid use or the need to provide harm reduction. It is unlikely gyms could argue that such obligations would extend to permitting dealing however.

Aside from increased aggression and mood swings associated with long-term use and the psychological aspects of dependency (for those that develop a dependency), steroids and other gym-drugs have no notable direct psychoactive effects. Consequently, **they should not be affected by the Psychoactive Substances Act 2016, and only carry legal risks if specifically proscribed under the Misuse of Drugs Acts 1971.** Despite this, there is some evidence that some online retailers use similar methods to NPS retailers to circumvent legal restrictions, advertising products as ‘not for human consumption’ or as ‘research chemicals’ (Evans-Brown et al 2012, Brennan et al 2016).

How should we work with steroid and gym-drug users?

There is a staggering range of different substances used by this group in addition to anabolic-androgenic steroids. Steroid and gym-drug users tend to have quite complex regimens based on the guidance of more experienced IPED users and employ a variety of different substances simultaneously either to boost effects or mitigate side-effects (also known as ‘stacking’ or using a ‘stack’). This makes it particularly difficult for the typical healthcare practitioner or needle exchange worker to give precise harm reduction advice around specific substances. Indeed, **attempting to give advice or information on substances to users with likely far greater knowledge is more likely to undermine trust and engagement than help.** **One study found that 40% of steroid users trusted their dealer’s advice better than any doctor’s** (Brennan et al 2016).

Despite this, **there are some broad pieces of advice on usage that can be given with little knowledge of the substances themselves:**

- **Aim at shorter cycles of use and longer breaks between cycles**
- **Beware of counterfeit or unknown substances** – don’t inject a substance if you have any doubt about what it is
- **Avoid poly-pharming as far as possible** – the higher number of substances you use concurrently the more unpredictable the effects
- **Start small and be aware of individual differences and built tolerances** – don’t adopt a more experienced user’s regimen until you have experience and awareness of your own limits and needs
- **If experiencing negative or unexpected side effects, seek medical advice**
- **Don’t neglect your other health needs, especially keeping up a healthy diet** (which may need to be much higher calorie than usual)

Needle exchange workers are in a much better position to give advice on safer injecting, equipment use, and wound care rather than advice on how to use the substances themselves. Whilst steroid and gym drug users will likely have significantly more knowledge on the substances themselves (or at least, believe themselves to have better knowledge), knowledge of safer and clean injecting is much less common.

Injecting advice given to steroid users should include all usual information around safer injecting that would be given to others accessing needle exchange, including:

- **Do not reuse or share equipment**
- **Keep injecting sites clean**
- **Keep equipment sterile**

And more specifically to steroids and gym-drugs rather than other drugs:

- **Avoid veins or arteries and inject intramuscularly** (into muscle). Do not inject intravenously.
- **Quads and glutes are best and least painful injecting sites** (injecting into specific muscles you want to grow doesn't work, substances need to be processed via the liver first)
- **Safe injecting is preferable to oral use** – whilst there are many risks to injecting, generally speaking injected steroids have lower risks of other harms in the long-term than oral steroids.

Uptake of Hep B vaccination and testing for Hep C or HIV is much lower amongst IPED users than those who inject psychoactive drugs (PHE 2016). Needle exchange also offers ideal setting for health checks and BBV screening.

Many needle exchange users will want to enter and exit as quickly as possible, however needle exchange is also a useful opportunity for interaction to encourage safer practices, provide other health assessments, broach other issues, or engage users in other services. Such efforts should be approached with a light touch however, and as always **harm reduction is first priority** – **if someone engaging with needle exchange has no interest or desire to engage with or discuss other issues this should not be a barrier to their accessing clean injecting equipment.**

Motivations for Use

We should be aware that **not all steroid and gym-drug users will be using dependently or due to psychological issues such as body dysmorphia** (although body builders in particular may (Brennan et al 2016)) – aiming to improve appearance or physical ability is not necessarily unusual or dysfunctional, and being strong and large as a masculine ideal is a fairly widespread cultural phenomenon. Enhancing one's physical appearance or abilities is neither a new nor unusual goal (Evans-Brown 2012).

Although use of image-enhancing substances is clearly closely tied to issues of self-perception, cultural physical ideals, and social pressures, we should not patronise or

insult IPED users by focusing on these issues, assuming that they have poor self-worth, or that they only use due to social pressures.

Whilst considering motivations and patterns of behaviour is useful in tackling problematic use, it is better to first look at the impact of user's consumption on their life rather than speculating at their motivations or imposing your own norms of healthy behaviour onto users. Nevertheless, if someone is spending disproportionately large amounts of time and money using these substances, using to the serious detriment of their social life or health, or feels compelled to continue using despite feeling that their use is having a negative impact on their life, it would be important to then work with the user on their reasons for use, including their self-worth and self-image.

Nootropics (Smart Drugs)

What are nootropics?

Nootropics (AKA smart drugs, study drugs, cognitive enhancers, or neuroenhancement drugs) are a range of substances used most commonly by students to boost mental performance, concentration, or alertness³. Type and effect can vary, with substances ranging from mineral supplements aimed to boost brain functioning to stronger stimulants such as amphetamines and phenethylamines. Milder stimulants such as energy drinks or caffeine pills could also be included under this heading if used for similar reasons.

The most popular UK brands (aside from milder supplements) are:

- **Provigil (Modafinil)**
- **Ritalin (Methylphenidate)**
- **Adderall (Amphetamine)**

There is very little research on use of smart drugs, so a significant amount of information available is based on speculation, folk knowledge, and anecdotal evidence rather than scientific research.

Who uses nootropics?

Nootropics may be used to increase cognitive functioning and focus in any field of work, but as their other common names (*study drugs* or *smart drugs*) imply, it is **academic study that is popularly seen as the primary motivation with use most widespread amongst university students.**

Despite occasional alarmist reporting from mainstream news sources, **smart drug use does not appear to be widespread even within the student population. Limited studies available estimate that between 3-10% of students have used nootropics (excluding caffeine), but only a very small proportion of these used regularly, with most using only around exams and coming up to deadlines** (Deline et al 2014, Singh et al 2014). The substantial majority of UK students reported being both unaware and uninterested in nootropics (Singh et al 2014). Despite this, a large proportion (approx. 30% of students) reported having used caffeine for cognitive enhancement (ibid.).

Use by students may be motivated simply by a personal desire to perform better academically, but this is often reported to be due to high pressure and expectations from family, peers, or society at large. Increase in financial pressures on students in recent years due to changing university fees and bursaries may also lead students to feel greater pressure to perform well and achieve higher level qualifications (to get 'value for money').

Nootropics are usually bought in bulk directly from legal online retailers rather than via street dealers or other users, often following the guidance or recommendation of more experienced users in the online nootropic community

³ Many of these substances also have medical applications and the same term (nootropics) may also be used in the other contexts to refer to drugs used to treat Alzheimer's, strokes, ADHD, or schizophrenia.

Outside of the academic setting nootropics may also be used by those in high-pressure jobs or those that require long periods of concentration or alertness – for example there are cultural stereotypes of heavy cocaine use amongst those working in the finance sector where aggression and working long working hours are desirable, or use of stimulants by long-haul drivers to keep awake. Unfortunately, there is little to no evidence or research around these types of use and this remains speculation and stereotype.

If we include use of caffeine to improve concentration and alertness more widely (whether in hot drinks, energy drinks, or pills), prevalence rates will undoubtedly be very high amongst the general population and across most demographics. There are both advantages and disadvantages to this approach to the topic of nootropics:

- Understanding how widespread and common it is to use drugs to improve mental performance can de-stigmatise and de-mystify the topic, helping us understand empathise with users' experiences and motivation
- However by focusing on caffeine we may lose sight of higher risk patterns of use and very specific demographics and subcultures most involved in nootropic use

Consequently, whilst caffeine use will be considered in this report, it will be only in the context of use by groups more likely to also use other nootropics (for example students). Nevertheless **we should bear in mind that substance use to improve focus, alertness, and concentration is not unusual or necessarily dysfunctional.**

What are the effects and risks?

As there are a wide range of substances may come under the heading of 'nootropics', we must not assume that there are the same degree of risks with all. **Whilst some substances used in this way are stimulants with comparable effects and risks to recreational street drugs (for example Adderall – although this particular brand is less popular in the UK), others are far more similar to food supplements and have little to no significant negative impacts.**

When speaking of risks it is therefore useful to separate nootropics into three broad categories:

1. **Supplements & non-psychoactive substances** – for example vitamin supplements, magnesium pills, or racetams

Generally speaking these substances have little notable psychoactive effect and are intended to work rather by stimulating healthy nerve growth and neurological functioning. As with most substances, taken in significant enough volumes these substances can have adverse side effects including acute toxicity, however **there is widespread anecdotal evidence of regular moderate use without any adverse effects or risk of dependency** and most are freely sold as food supplements or mild medicines. Piracetam (the most common nootropic racetam) can have mild side effects such as insomnia or anxiety, but such effects are generally rare, minor, and short-lived (Koskiniemi 1998).

It should be noted however that due to less stringent regulation of herbal supplements compared to registered pharmaceuticals, the fact that a substance is being sold as a herbal supplement does not necessarily guarantee that it has lower risks than other substances, especially if bought online from less regulated markets abroad (Evans-Brown 2012).

2. **Mildly psychoactive substances** – for example modafinil or caffeine

Most of these substances would be more accurately described as having adverse side effects than carrying serious health risks. As they function similarly to stimulants, **most side effects of heavy use mirror stronger stimulants – for example irritability, disturbed sleep patterns, anxiety, raised heart rate, jaw-clenching, or difficulty concentrating after use. As with any stimulants, boosts to functioning are only temporary and users will eventually crash. Nevertheless, side effects are still reportedly fairly mild and there is little evidence of long-term risk.** There is limited evidence that heavy modafinil use may be linked to some skin conditions and psychiatric health issues, but evidence on this is still thin (Evans-Brown 2012).

Whilst cases of modafinil dependency have been reported, they are very rare (USFDA 2015). Caffeine dependency is of course also possible, but aside from irritability and jitters it is unusual for this to have significant impact on users' lives.

3. **Stronger stimulants** – for example Adderall (amphetamine), Ritalin (methylphenidate), and cocaine

Methylphenidate (Ritalin) carries some risk of dependency, though this is reported as fairly rare unless being used heavily (Evans-Brown 2012, Morton & Stockton 2000). **Risk of developing dependency from recreational cocaine and amphetamine use is well established, but it is not clear whether this is likely to occur based on the levels of use amongst smart drug users** (as most use only occasionally, mostly around exams and deadlines (Singh et al 2014)). Nevertheless, amphetamines and cocaine use carries well-established and notable health risks – all side effects mentioned above will likely be stronger and there are longer-term risks around strain on the liver, kidneys, and cardiovascular systems. The more intense psychoactive effects of these stimulants also place users at much higher risk of behaving dangerously or irresponsibly compared to milder nootropics.

From the above list we can see that whilst there are health risks to nootropic use, **unless using heavily, regularly, or using stronger stimulants users are unlikely to encounter any significant health issues or develop any kind of dependency.** Nevertheless, there are a few points users should bear in mind:

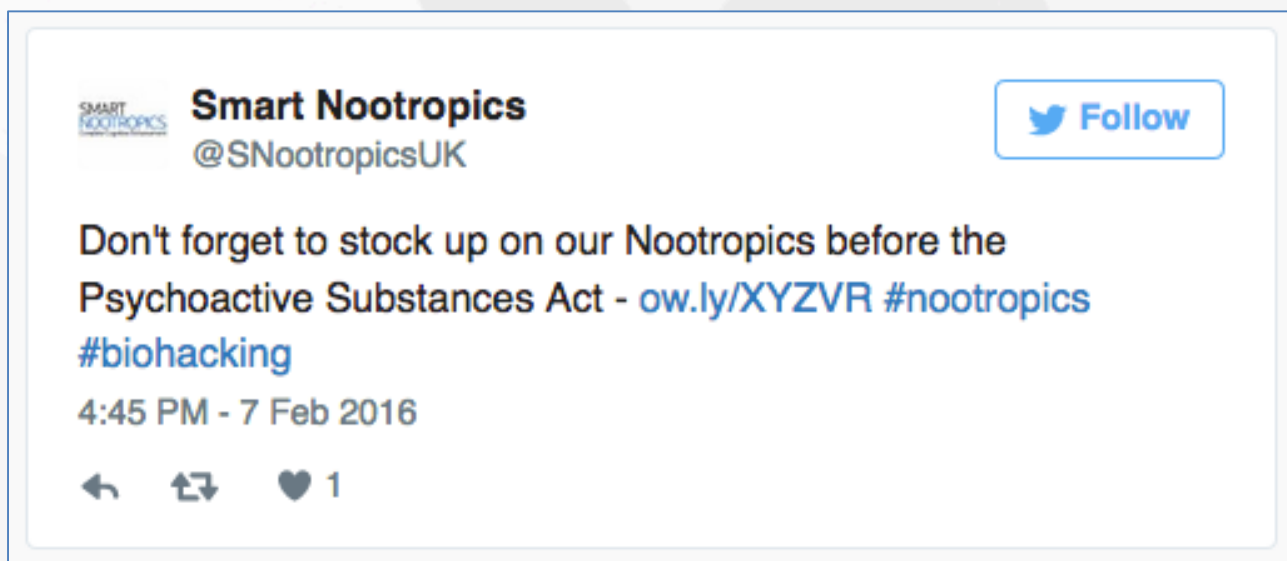
- **Use of any medicines or drugs not under medical direction will always carry some degree of risk, especially widely untested and unregulated substances like many nootropics.** Whilst this risk is low at the milder end of the scale (such as food supplements), if using extensively users should make sure to consult their doctor and monitor on any adverse side-effects.
- **These substances rarely make users able to better or clearer, rather simply able to temporarily work longer.** As with caffeine or sugar, boosts cannot be maintained indefinitely and users will usually eventually crash and experience more difficulty thinking or sleeping afterwards.
- **When buying substances online, counterfeit or mislabelled substances can be a risk if using disreputable sources.** The strong online community around nootropics to some extent counteracts this by sharing recommendations and warnings, though not all users will be a part of this community.

What is the law around nootropics?

Legal status of nootropics vary by substance. Some popular brands such as Ritalin (methylphenidate) and Adderall (amphetamine) are both Class B drugs under the Misuse of Drugs Act 1971, however most are not specifically classified. This is in part as many are not sold as regulated medicines (Evans-Brown 2012). Those that are classified substances are less likely to be sold openly online, although possibly may be sold on the dark web – though due to the covert nature of the dark web this is hard to verify.

Despite this, any nootropics not previously criminalised under the Misuse of Drugs Act 1971 may also now have legal restrictions under the Psychoactive Substances Act 2016. Users should bear in mind that even if not previously specifically classified substances, if study drugs have any psychoactive effect (as they should do if they work as intended) then selling on or even giving away these substances can result in up to 7 years in prison (although personal possession would not be illegal). There are complications to this law however as many smart drugs are licensed as medicines or food supplements which would exempt them from the Psychoactive Substances Act in some contexts.

There is evidence that the introduction of the Psychoactive Substances Act has already had an impact on the nootropics trade, with at least one prominent nootropics website having had to significantly cut their business.



Source: <https://twitter.com/SNootropicsUK>

In light of these recent legal issues, users should take caution when buying these substances online. Even if buying only for personal use, **if buying from anywhere where the substances are shipped to the UK from abroad, the buyer could be charged with importing a psychoactive substance (a charge also carrying up to 7 years in prison).**⁴

⁴ Despite these legal issues and the voluntary closure of some retailers, to the author's knowledge there have been no prosecutions to date for sale of nootropics under the Psychoactive Substances Act. There is significant debate around the enforceability of the act, including the definition and possibility of demonstrating 'psychoactivity', although further exploration of how this may impact the nootropic market is beyond the scope of this document.

Initial Statement

From April 5th 2016 we will no longer be supplying the following products:

- Adrafinil
- Coluracetam
- Centrophoxine
- Noopept
- Phenibut
- Phenylpiracetam
- Pramiracetam
- Sunifiram
- Oxiracetam
- Selank & Semax

We are withdrawing these products from sale as a result of the "Psychoactive Substances Act" that will come into force on April 6th.

The Psychoactive Substances Act was intended to target "Legal Highs" and we believe that the Act was in no way intended to target nootropics. However, in an effort to halt the consumption of legal highs, the Act casts a blanket ban over all substances deemed "psychoactive". A small number of substances are exempt including caffeine, nicotine, alcohol and food.

Because nootropics are not clearly listed as exempt, we are cautiously withdrawing the above products from sale on April 5th.

After the Act comes into force, **possession will remain legal**. Customers wishing to stock up before April 5th 2016 are advised to **contact us as soon as possible as stock will be limited**.

Source: <http://www.smartnootropics.co.uk/the-psychoactive-substances-act-2016/>

[Whilst this website is still live as of Septmeber 2016, social media posts indicate Psychoactive Substances Act may have has a significant impact on its future]

Many nootropics also have medical applications for conditions such as in treating ADHD and are in some cases prescribed, however possession of any such substances without a prescription would be considered the same as possession of any other illicit drug. **It is likely there is a black market trade in re-directed prescription medication, but little firm evidence on the scale or reach of this market (Evans-Brown 2012).**

How can we work with nootropic users?

In light of the limited evidence around prevalence of nootropic use in the UK, it is important to bear in mind that **high-risk or dependent use of these substances appears to be fairly rare, and thus attempting to engage users with traditional drug treatment services or taking a position of hard abstinence may not be appropriate. Most users will not be suitable for engagement with drug treatment services and require only nudges toward safe use and harm reduction education.**

There is currently a gap in good quality advice and health information on nootropics for younger people. Despite younger people and students appearing to be the primary market for nootropics, it is interesting to note that at the time of writing **Talk to Frank**, the government's official drugs information site primarily geared at adolescents and young adults, has no information on study drugs at all (Ritalin is mentioned in passing, but not in the context of smart drugs). There are strong active online communities centred around nootropic use which are a major source of information for heavier/more involved users; signposting to such sources may be a useful resource for harm reduction advice for casual users in the absence of any other resources from health authorities.

If students are feeling the need to use smart drugs due to high levels of stress or pressure, mental health and general wellbeing would be an important target for interventions. For example it may be useful to provide support with coping skills, dealing with stress, time management, or self-confidence.

Exam season in particular may be a useful time to target students due to higher levels of stress and pressure at this time. Health services covering areas with large educational establishments such as universities or colleges may be advised to identify what time of year deadlines or exams are due and provide harm reduction or stress management advice in the preceding weeks.

For other users than students (for example those in high pressure employment or with excessively long working hours), **it may be useful to offer advice on employment rights, educate employers on the health and financial benefits of properly supporting and not overworking their staff, or offering users employment skills to retrain for jobs with less pressure or shorter working hours.** Given the very thin evidence on users of this group however, it would be difficult to know where to target these approaches or even who to target.

Another possible approach if wishing to discourage use is simply to emphasise that the available evidence is very inconclusive on whether smart drugs actually offer any significant effect at all on cognitive functioning or academic performance, especially in the longer term. As discussed earlier, most mild substances have very little effect, and those that do generally only offer short-term boosts, often at the expense of mental functioning later (Evans-Brown 2012). Rather than preaching the health concerns of nootropic use, it may be a more convincing approach to target users' pragmatic side and question whether nootropic use would actually have any impact. It could be argued however that this approach would be self-undermining – if people should not use these substances as they have little effect, why are we concerned with advising people not to use them? The evidence is thin both on whether they have any significant effect on mental functioning and whether they have any significant health impact.

Botox and Tanning Drugs

What are these substances and who uses them?

- **Botox & dermal fillers** – Botulinum toxin (Botox) is the most well-known cosmetic injectable and is often used as a short-hand term for all dermal fillers and line-smoothing agents used to make the face appear younger and reduce the appearance of wrinkles (although 'Botox' technically refers to only that specific substance, botulinum toxin). There are also a wide range of other unregulated dermal fillers and injectables used for the same aim that work by filling the area under the skin rather than paralysing the muscles (Collagen being the most prominent example) (DoH 2013).
These substances are **used primarily by women for aesthetic reasons**.
- **Melanotan** – this is injected to darken skin tone with the aim of developing a tan or 'healthy glow'. Unlike Botox or Collagen, this doesn't need to be injected into the specific area where the effect is desired, darkening occurs across the body.
Melanotan is used most commonly by body-builders along with steroids and other gym-drugs (see earlier section), however there are reports of these substances also being used by women as an alternative to tanning beds (Evans-Brown 2009).

There are unfortunately no statistics on the prevalence of cosmetic injectables, however increasing numbers are seeking cosmetic treatment, with around 51,000 people in the UK currently having cosmetic surgery each year, around 90% of whom are female (BAAPS 2015). Number of people who use cosmetic injections such as Botox is likely significantly higher than this number due to surgical procedures being significantly more expensive and invasive than injectables. The UK department of health estimates that around 90% of cosmetic procedures are non-surgical (DoH 2013). Some news reports estimate that millions of people inject these substances each year (significantly higher than rates of psychoactive drug injecting), but such reports are generally based on speculation rather than any firm evidence of prevalence.

Skin-Bleaching Creams

Aside from the injectables listed above, there are also reports of a growing market in **skin-lightening or skin-bleaching creams, used primarily by women of Black African, Afro-Caribbean and or Asian ethnic backgrounds to give whiter or lighter skin** (Evans-Brown 2012, The Parliamentary Office of Science and Technology 2013).

Setting aside the clearly problematic social and racial undercurrents that underpin the desire for dark-skinned women to appear whiter, such creams can also pose certain health risks. Historically the dangers of such creams has come from their frequently high mercury content which **can cause kidney damage in the long-term, as well as irritation and scarring to the applied areas** (WHO 2011). Whilst mercury content is still a risk in these products (and there have been cases of mercury poisoning from these products in the UK in the recent past (Evans-Brown 2012)), there are also health concerns around unlicensed sale of the substance *hydroquinone*. Hydroquinone is an untested and unregulated product not licensed for use in cosmetic products which **can cause irritation and damage to the skin** (Evans-Brown 2012). Whilst there are medically certified skin-bleaching creams prescribed for certain conditions, these are not legally freely available and not licensed for cosmetic use.

Evidence on use of this group of substances is still thin but is predicted by some sources to likely become an increasing public health concern amongst certain demographics.

What are the risks?

If administered safely by a trained medical professional there is in fact very little risk to Botox injections or most other common licensed injectables (Cohen et al 2009). Unfortunately, currently in England **no certification or qualification is required to administer these substances⁵, there are many untested substitute substances sold with unknown risks, and there is an increasing reports of cosmetic injections being administered at home** (Evans-Brown 2009).

Consequently, the main risks to users from cosmetic injectables are around unsafe injecting, for example:

- **Damage at injecting sites** (facial injecting being of particular concern due to risk of accidentally hitting nerves, which can result damage such as drooping facial features)
- **Blood-Borne Viruses**
- **Toxicity from counterfeit or mis-dosed substances**
- **Infection or inflammation at injecting sites** (in particular if using counterfeit or unknown substances which the body may react strongly to)

Cosmetic use of Botox and dermal fillers has only reasonably recently become widespread, so long-term effects are not currently fully known. There is good evidence however that Melanotan use carries some risk of cardiovascular disease and skin cancer (Evans-Brown 2009).

How can we work with cosmetic drug users?

There are several pieces of simple harm-reduction advice we can give to this group:

- **As far possible use reputable and medically trained professionals** – if unable to access someone medically trained (for example a cosmetic doctor or plastic surgeon), make sure to seek out reliable reviews and testimonials on the service you are accessing, check if they have any training or qualifications, and ensure that their practice is clean and safe. Self-administering Botox or other cosmetic injections at home should be avoided as far as possible.
- All standard safer-injecting advice given to other drug users would apply here, including **always using clean needles, not sharing needles, avoiding blood vessels and nerves when injecting, using proper wound-care, and regularly screening for BBVs.**
- **Be careful of counterfeit or mislabelled substances** – this again can be avoided by only accessing services from medically trained professionals, but if self-administering be certain of what you are injecting and seek information and guidance on use beforehand.
- **If in doubt consult a medical professional, or if experiencing unexpected side effects seek medical attention**

⁵ Botox (botulinum toxin) itself is a prescription-only medicine and can only be obtained via a doctor or non-medical prescriber, but can be administered by anyone regardless of medical training. Despite this, more importantly there is a very wide range of other commonly used dermal fillers which are entirely unregulated.

Cosmetic drug users are unlikely to access traditional drug treatment or needle exchange services so drug services will need to be more proactive to engage users. **Providing information at cosmetic surgeries and beautician services where users may seek cosmetic injections may be effective, however increasing use of these substances at home with substances ordered online makes some users particularly hard to engage.**

Due to the lack of firm research on habits of this group it is hard to speculate what other avenues of engagement may be most effective, however placing information at locations this group may be likely to visit may be the best approach in the absence of any better evidence – for example pharmacies, shops selling other beauty products, establishments providing other beauty treatments, or GPs clinics.

Looking Forwards: Gender and social norms and IPEDs

This document has been primarily concerned with looking at IPEDs from the perspective of drugs services and other health services, concerned primarily with the health implications of use and how we can lessen these harms, with little discussion of the underlying motivations for use. The psychological and social reasons behind use should not be ignored in any form of problematic substance use, but for IPED dependency in particular it forms part of the core issue. Body Dysmorphic Disorder (in which individuals have an unrealistic perception of their musculature) resulting in dependent steroid use may be the more extreme end of such issues, however if we wish to address IPED use we need to also face these issues more widely and why individuals feel the need to pursue certain norms by these means.

Fundamentally reasons for using Image and Performance Enhancing Drugs are grounded in how users perceive themselves, how they want others to perceive them, and social norms regarding how they are told they should look or achieve. Consequently, the issue of IPED use is inseparable from the wider cultural context and questions around social structures, social standing, self-worth, and mental health. Gender norms in particular appear significant in IPED use – it is no coincidence that steroid users are overwhelmingly male when steroids' effects mirror masculine ideals of strength and size, nor that Botox users are overwhelmingly female when Botox effects mirror feminine ideals of smooth-skinned youth.

Nevertheless, we should avoid patronisation or stigmatisation when talking about motivations for IPED use. Altering your appearance, being conscious of how you're perceived, wishing to perform better, and subscribing to social norms are not unusual or necessarily dysfunctional behaviours, and nor are IPED users responsible for the existence of social norms and gender constructs. Pursuit of self-improvement is neither new nor unusual, by pharmaceutical means or otherwise. We can imagine that our reaction would likely be quite resistant if we were told that doing our hair in a certain way, wearing makeup, dressing in certain styles, going to the gym, getting piercings and tattoos, or pursuing certain diets were all a result of poor self-image and harmful social pressures.

How we might challenge certain social norms (or indeed if we should) is far beyond the scope of this document, however if we wish to address the growing use of IPEDs in the UK, we cannot do so without at least beginning to question why people feel they need to change and culturally what are telling people they need to be.

Bibliography

- Bates, G. & McVeigh, J. (2016). *Image and Performance Enhancing Drugs 2015 Survey Results*. Centre for Public Health.
http://www.cph.org.uk/wp-content/uploads/2016/07/IPEDs-2015-survey_final1.pdf
- Brennan, R., Wells, J.S.G., Van Hout, M.C. (2016). *The injecting use of image and performance-enhancing drugs (IPED) in the general population: a systematic review*. Health and Social Care in the Community.
<https://www.ncbi.nlm.nih.gov/pubmed/26806443>
- British Association of Aesthetic Plastic Surgeons (BAAPS). (2015). *How 2015 was “the” year for Cosmetic Surgery in the UK*.
<http://www.theprivateclinic.co.uk/blog/2016/02/08/how-2015-was-the-year-for-cosmetic-plastic-surgery-in-the-uk>
- Cohen, J.L., Schlessinger, J., Cox, S.E., & Lin, X. (2009). *An analysis of the long-term safety data of repeat administrations of botulinum neurotoxin type A-ABO for the treatment of glabellar lines*. *Aesthet Surg J*. 2009 Nov;29(6 Suppl):S43-9.
<https://www.ncbi.nlm.nih.gov/pubmed/19945004>
- Department of Health. (2013). *Review of the Regulation of Cosmetic Interventions Final Report. April 2013*.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/192028/Review_of_the_Regulation_of_Cosmetic_Interventions.pdf
- Deline, S. et al. (2014). *Use of Neuroenhancement Drugs: Prevalence, Frequency and Use Expectations in Switzerland*. *Int J Environ Res Public Health*. Mar; 11(3): 3032–3045.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3987019/>
- Evans-Brown, M. (2009). *Editorial: Use of melanotan I and II in the general population*. *BMJ* 2009; 338
<http://www.bmj.com/content/338/bmj.b566>
- Evans-Brown, M., McVeigh, J., Perkins, C., & Bellis, M.A. (2012). *Human Enhancement Drugs: The Emerging Challenges to Public Health*. Centre for Public Health Liverpool John Moores University.
<http://www.cph.org.uk/wp-content/uploads/2012/08/human-enhancement-drugs---the-emerging-challenges-to-public-health---4.pdf>
- Home Office (2016). *Drug Misuse: Findings from the 2015/16 Crime Survey for England and Wales*.
<https://www.gov.uk/government/statistics/drug-misuse-findings-from-the-2015-to-2016-csew>
- Hope VD, McVeigh J, Marongiu A, et al (2013). *Prevalence of, and risk factors for, HIV, hepatitis B and C infections among men who inject image and performance enhancing drugs: a cross-sectional study*. *BMJ Open*. (12 Sept)
<http://bmjopen.bmj.com/content/3/9/e003207.full>
- Koskiniemi, M., Van Vleymen, B., Hakamies, L., Lamusuo, S. & Taalas, J. (1998). *Piracetam relieves symptoms in progressive myoclonus epilepsy: a multicentre, randomised, double blind, crossover study comparing the efficacy and safety of three dosages of oral piracetam with placebo*. *Journal of neurology, neurosurgery, and psychiatry*. 64 (3): 344–8
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2169975/>

- McVeigh, J., Bates, G., & Chandler, M. (2015). *Steroid and Image Enhancing Drugs 2014 Survey Results*. Centre for Public Health.
<http://www.ipedinfo.co.uk/resources/downloads/SIEDs%20Survey%20report%202014%20FINAL.pdf>
- Morton, W.A. & Stockton, G.G. (2000). *Methylphenidate Abuse and Psychiatric Side Effects*. *Prim Care Companion J Clin Psychiatry*. 2000 Oct; 2(5): 159–164.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC181133/>
- NICE (2014). *Needle and syringe programmes NICE guidelines [PH52]* Published date: March 2014
<https://www.nice.org.uk/guidance/ph52>
- The Parliamentary Office of Science and Technology. (2013). *Skin Lightening Treatments*. The Houses of Parliament.
https://www.parliament.uk/documents/post/postpb011_skin_lightening_treatments.pdf
- Public Health England. (2016). *Unlinked Anonymous Monitoring Survey of HIV and Hepatitis in People Who Inject Drugs: People who inject image and performance enhancing drugs*.
<https://www.gov.uk/government/statistics/people-who-inject-drugs-hiv-and-viral-hepatitis-monitoring>
- Singh, I., Bard, I., & Jackson, J. (2014). *Robust Resilience and Substantial Interest: A Survey of Pharmacological Cognitive Enhancement among University Students in the UK and Ireland*. *PLoS ONE* 9(10): e105969.
<https://www.ncbi.nlm.nih.gov/pubmed/25356917>
- United States Food and Drug Administration. (2015). *Provigil: Prescribing information*.
http://www.accessdata.fda.gov/drugsatfda_docs/label/2015/020717s037s038lbl.pdf
- Van de Ven, K., & Mulrooney, K.J.D. (2016). *Social suppliers: Exploring the cultural contours of the performance and image enhancing drug (PIED) market among bodybuilders in the Netherlands and Belgium*. *International Journal of Drug Policy*.
[http://www.ijdp.org/article/S0955-3959\(16\)30262-6/abstract](http://www.ijdp.org/article/S0955-3959(16)30262-6/abstract)
- Whitfield, M., (2015). *Integrated Monitoring System Annual Report Cheshire and Merseyside, 2014/15*. Centre for Public Health Liverpool John Moores University.
<http://www.cph.org.uk/publication/integrated-monitoring-system-annual-report-cheshire-and-merseyside-201415/>
- World Anti-Doping Agency (2016). *Prohibited List January 2016*.
<https://www.wada-ama.org/en/what-we-do/prohibited-list>