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Image and Performance Enhancing Drugs

2016 National Survey Results

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The National IPEDinfo Survey is a study exploring image and performance drug use in Wales, England and Scotland. The survey is a Public Health Wales initiative working collaboratively with the Public Health Institute at Liverpool John Moores University, NHS Scotland, Nine Zero Five and Public Health England. All partners contributed to the development and delivery of the survey. Further information about the National IPED Info Survey can be found at <http://ipedinfo.co.uk>.

Introduction

Image and Performance Enhancement Drugs (IPEDs) encompasses a wide range of substances that are taken to alter body image and/or performance [1]. Some IPEDs are predominantly injected whilst others are taken orally, for example, injectable IPEDs include Human Growth Hormones (HGH), peptide hormones such as melanotan II and anabolic steroids [2]. Oral IPEDs also include a range of anabolic steroids as well as oestrogen control, post cycle and fat loss drugs. These synthetically made substances are often illicitly manufactured and sourced [3-5], although they are legal to possess for personal use [6]. Studies indicate that anabolic steroids are most commonly used by men and often alongside a repertoire of different drugs [2, 7].

Traditionally participants of elite sports, body building and power lifting were the predominate consumers of IPEDs, however over the past two decades use of IPEDs has increased and become more widespread [8, 9]. In particular, data from the Crime Survey for England and Wales (CSEW) indicates that the estimated number of 16-59 year olds reporting lifetime use of anabolic steroids has increased from 194,000 in 2005/06 to 271,000 in 2015/16 [10]. The CSEW is likely to be unreliable for rare events like anabolic steroid use and so may under-estimate the number of people using drugs; however, data from needle and syringe programmes also indicate that use is likely to be increasing [7, 11-13].

Globally there is a growing concern about the extent of the health consequences of IPED use, including physical and psychological harms. Many well established harms reported are superficial (e.g. acne, balding), however they also include more severe physical (e.g. cardiovascular disease, liver function) and psychological (e.g. mood changes, increased aggression) problems [14, 15]. Emerging evidence indicates that IPED use may also lead to dependence [16, 17].

Furthermore, the complicated drug regimes that people who use IPEDs employ, often alongside the use of illicit psychoactive substances or alcohol, and the adulteration of drugs used, are likely to impact on the extent of the adverse consequences [7, 18]. For example, there is a growing body of evidence that alcohol [19] and oral anabolic steroids [14] are linked to adverse liver conditions. Similarly psychoactive drugs [20] and anabolic steroids [1, 14] are linked to psychological issues such as, depression, aggression or anxiety, although the role of the specific substances and their synergistic effects remain unclear [21, 22]. As many of the people using IPEDs inject their drugs they are also at risk of injecting related harms, such as, injection site infections and injuries e.g. redness, swelling, tenderness and abscesses [2]. Additionally people who inject drugs are also vulnerable to infection with blood borne viruses, and recent research has indicated an increased risk of blood borne virus infection among those who inject IPEDs [23].

Despite the established adverse effects of IPEDs and the risky behaviours associated with their use, people who use IPEDs are often reluctant to seek professional medical advice or visit primary care services [12, 15]. Data from previous IPEDinfo surveys also indicate that people who use IPEDs will often choose to either wait for symptoms to go away or self-medicate with natural remedies or other pharmaceutical substances [24]. Equally people who use IPEDs may not perceive themselves as a '*drug user*' as they are not using psychoactive drugs like heroin and so may not access specialist drug services, such as needle and syringe programmes. Therefore there is a need for health care services to be aware of this and provide appropriate non-judgmental services that are responsive to the specific needs of these individuals [11].

In order to better understand these issues, Public Health Wales initiated the National IPED Info survey in collaboration with colleagues at the Public Health Institute, Liverpool John Moores University; NHS Scotland; Nine Zero Five and Public Health England. This document summarises key findings from the fourth year of this survey.

Findings from the previous waves of this survey are available at:

2013 Survey (Chandler & McVeigh, 2014):

<http://www.cph.org.uk/wp-content/uploads/2014/06/Steroids-and-Image-Steroid-Image-Enhancing-Drugs-2013-Survey-Results-FINAL.pdf>

2014 survey (McVeigh, Bates & Chandler, 2015):

<http://www.cph.org.uk/wp-content/uploads/2015/07/SIEDs-report-GB-JL-10-7-15-Final.pdf>

2015 survey (Bates & McVeigh, 2015):

http://www.cph.org.uk/wp-content/uploads/2016/07/IPEDs-2015-survey_final1.pdf

Survey Methods

The methodology used for this survey is described in more detail in the reports of the previous surveys (see links above).

Fieldworkers recruited participants via needle and syringe programmes, harm reduction outreach and/or through gyms and sports settings across 18 areas in England, Scotland and Wales. They obtained verbal consent from participants and assisted them with completing the questionnaire. Additionally, survey participants could also complete the questionnaire online in their own time, an option which was promoted within needle and syringe programmes, gyms and online forums. As in previous years, eligible participants must have used oral and/or injectable IPEDs at some point during their lifetime.

The questionnaire was drafted by the Public Health Institute at Liverpool John Moores University with Public Health Wales and refined following feedback from research partners and other stakeholders. The questionnaire used in this survey was modified slightly from that used previously, to make it quicker for participants to complete. Changes included removal of the section on most recent cycle and the inclusion of more multiple choice and rating scale (0-10) questions. The survey was constructed using the Bristol Online Survey Tool, an online resource made available to Universities across the UK (<http://www.survey.bris.ac.uk>). Ethical approval for the survey was obtained via the Liverpool John Moores University Research Ethics Committee. The survey was open from May-December 2016.

Acknowledgements

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Key Findings: Snapshot

A total of 684 participants completed the 2016 National IPEDinfo Survey questionnaire. The majority of the participants were recruited from gyms and needle and syringe programme across England, Wales and Scotland; only 25 (4%) were completed by participants online.

The majority of the participants were male (94%) and described themselves as being white British (80%) and UK nationals (95%). Participants were mostly employed (78%), and were aged between 17 and 74 years (mean age 32 years). Overall more reported ever using oral IPEDs (89%) than injecting IPEDs (85%), steroids were the most commonly used IPEDs. The most frequently reported oral IPED was methandrostenolone also known as Dianabol (D-Bol); testosterone enanthate (Test E), was the most frequently injected IPED. Aesthetic reasons, such as changing their body image and for cosmetic purposes, were the most important motivation for use of IPEDs for more than half (56%) of the participants.

Almost one-in-five of the participants who had injected (18%) reported that they had reused their own injecting equipment, and around one in seven (15%) reported that they had shared a multi-dose drug vial. The majority of participants were sexually active (91%) and around half of these participants reported more than one sexual partner during the past year; condom use was infrequent.

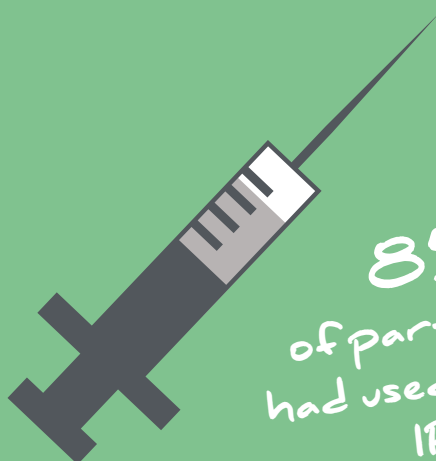
The most commonly reported side effect for men was testicular atrophy (58%); other commonly reported side-effects were sleep difficulties, changes to libido, mood swings, aggression and acne. More than half of those reporting side effects waited for symptoms to go away on their own without seeking healthcare. One-in-five (20%) reported that they had redness, tenderness and swelling at an injection site, indicating an injection site infection or injury. Lastly, less than a third of participants reported ever having diagnostic tests for HIV (31%), hepatitis B (30%) or hepatitis C (29%).



684
participants
in total



89%
of participants
had used oral
IPEDs



85%
of participants
had used injectable
IPEDs



56%
said aesthetic
reasons were the
most important
motivation

58%
had side
effects like
testicular
atrophy



Who is using IPEDs?

A total of 684 people using IPEDs in the past 12 months were recruited throughout England, Scotland and Wales (see figure 1). **The majority of participants were men (94%),** who had been born and were residing in the UK (95%, 99% respectively). **The mean age of the participants was 32 years** (median 30 years; ranged 17 to 74 years) and most described themselves as heterosexual (95%). Numerous ethnicities (n=15) were reported, with the majority of participants being white British (80%), followed by Indian/Pakistani/Bangladeshi (8%) and white other (6%). Almost three-in-four participants reported being in full time employment and a small minority were either unemployed or other (incl. full time education (figure 2)). A full demographic breakdown is provided in appendix 1. **One-in-six of the participants reported that they had been in a young offenders institute or prison (n=112, 17%), less than half of whom (n=33, 29%) reported that they had consumed IPEDs during incarceration.**

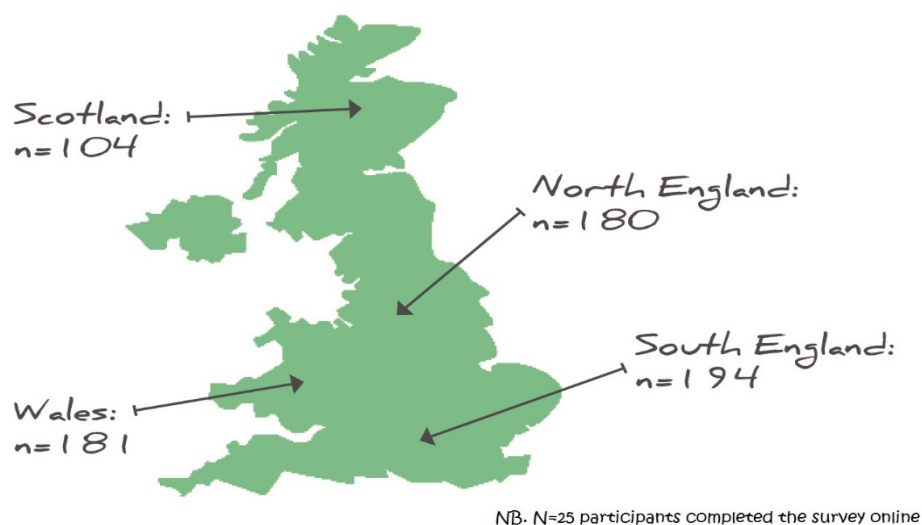


Figure 1. Distribution of survey participants across England, Scotland and Wales.

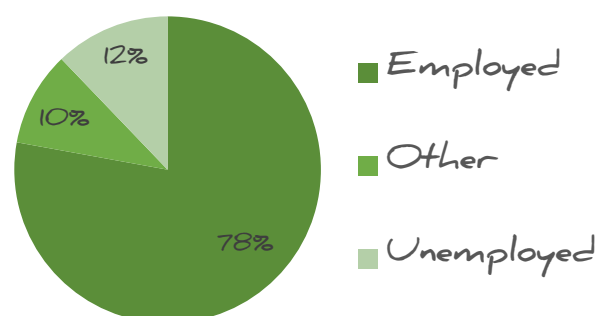


Figure 2. Employment status of the participants.

What IPEDs have people used during the past 12 months?

Nine-in-ten (89%) of the participants reported using IPEDs orally and more than eight-in-ten (85%) through injection, with almost three-quarters (73%) having used IPEDs both orally and through injection (see appendix 2).

IPEDs taken orally: Participants were asked about the various oral and injectable IPEDs they had used during the past 12 months. Oral IPEDs were categorised into three groups: oral steroids, oestrogen control and post cycle, and fat loss/others (figure 3). Two-fifths reported using drugs in all three of these groups, and almost one-in-five had combined oral steroids with fat loss substances. The most common oral steroid was methandrostenolone (also known as Dianabol or D-Bol) which more than half of the survey participants reported using. Other oral IPEDs commonly used were oestrogen control and post-cycle drugs, with one-in-two people reporting tamoxifen citrate use (see appendix 2). **Compared to the earlier IPEDinfo surveys there was a concerning increase in the proportion of participants reporting the use of dinitrophenol (DNP), though this remained rare, its use had risen from 1.8% in 2015 to 3.1% in 2016. DNP is used to promote weight loss, however it has severe adverse effects including liver failure and has been associated with a number of deaths [25].**

IPEDs injected: The injectable IPEDs used were also categorised into three groups: injectable steroids, peptides and associated growth hormones, and melanotan/other. The most common injectable IPED was testosterone enanthate (also known as Test E) reported by almost half of survey participants. Around one-quarter of survey participants also reported using human growth hormones (HGH) and human chorionic gonadotropin (hCG (see appendix 2)). Of those who reported injecting IPEDs, combining steroids with peptides and associated growth hormones was reported by two-fifths (40% (see figure 3)).

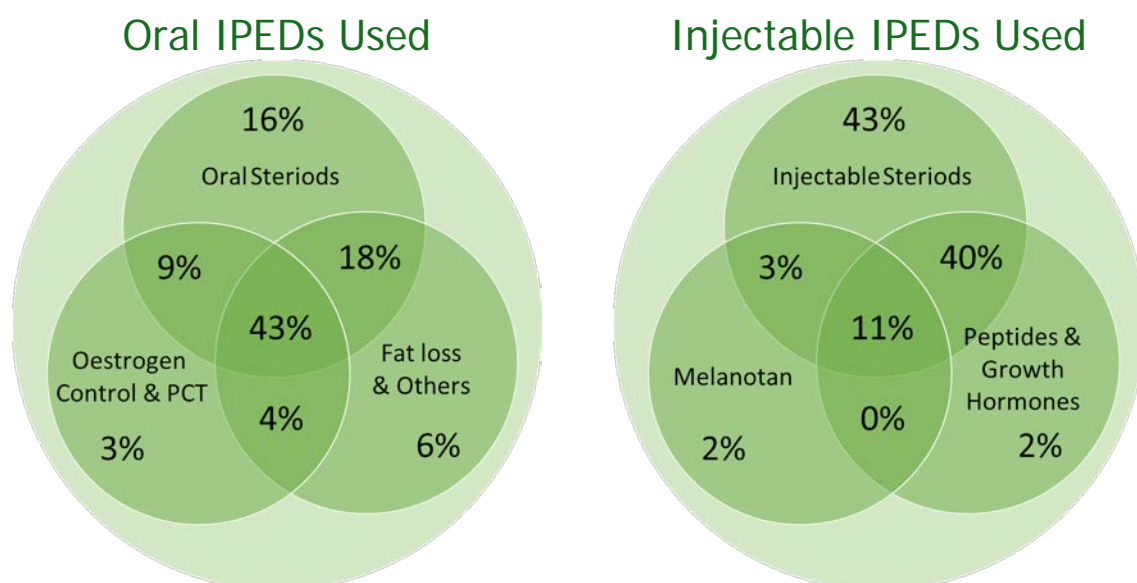


Figure 3. Patterns of oral and injectable IPED use.

At what age do people start using IPEDs?

Onset of IPED use was most common between the ages of 20 and 24 years old. However, the reported age of first IPED use ranged from 14 years to 53 years and varied slightly depending on the method of use (appendix 3). Almost three quarters of participants reported first using oral and injecting IPEDs (73%, 78% respectively) before the age of 30, see figure 4 and 5.

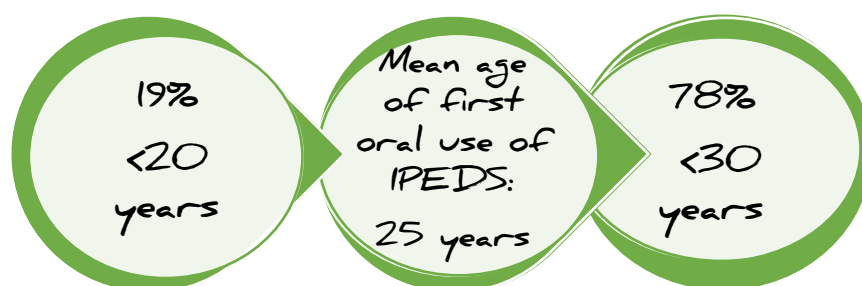


Figure 4. Age of first use of oral IPEDs.

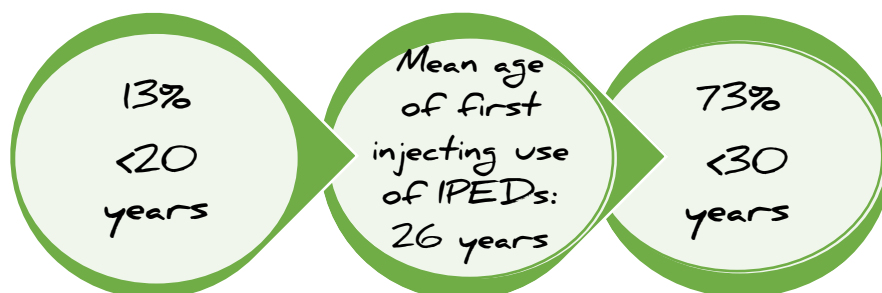
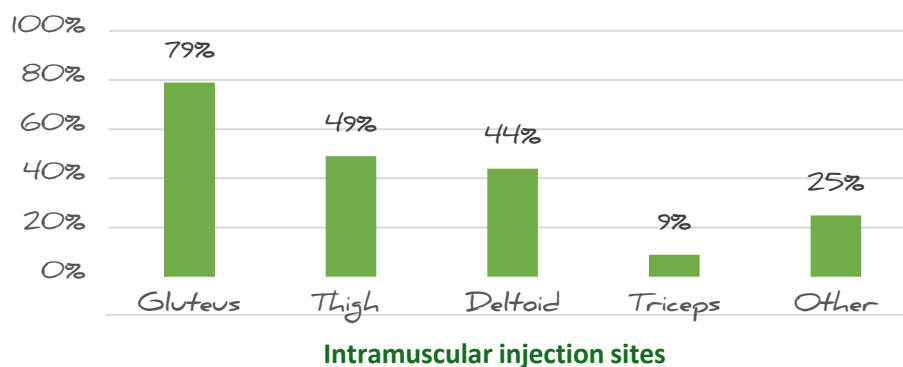


Figure 5. Age of first of injecting IPEDs.

How are IPEDs used?

Patterns of use: The use of IPEDs is typically cyclic, with several substances used in sequence and/or in combination during different periods of the cycle. The reported number of cycles and the length of breaks in-between use varied widely. **When asked about typical on and off cycles over the past 12 months, the average reported cycle length was 11 weeks for those using orally or 16 weeks for those injecting.** However, almost two-fifths of people frequently reported longer cycle periods, see appendix 3 (most common cycle length was 12 weeks; oral and injecting cycles ranged from 0-104 and 0-161 weeks, respectively). People most commonly reported taking 12 week breaks between periods of IPED use during the past year, with one-in-seven reporting this; the average (mean) length of break between cycles was 20 weeks.

How injected: Most of those injecting IPEDs reported injecting intramuscularly at least twice a week and the body site they most commonly injected into was the gluteus (79% (figure 6)). A third of participants reported injecting subcutaneously (that is under the skin). The most commonly used body site reported for subcutaneous injection was the abdomen (appendix 4).



Other category includes sites such as: the abdomen, biceps, pectoral, latissimus dorsi and the calf.

Figure 6. Intramuscular injection sites reported.

Where do they source their IPEDs?

Participants were most likely to obtain IPEDs from their friends (54%) and they considered the substances that they had obtained to be genuine most of the time (74% (appendix 8)).

What other substances do they use?

People who use IPEDs also report use of a wide range of other substances including alcohol and illicit psychoactive substances such as cannabis, cocaine and amphetamines [12, 26].

Use of alcohol: Three-quarters of participants reported consuming alcohol monthly or more frequently. Of the men who reported drinking alcohol in the past 12 months, 42% consumed more than 10 units on a typical day drinking (appendix 6, and figure 7).



Figure 7. Units of alcohol consumed on a typical drinking day past 12 months among those reporting alcohol use.

Use of other drugs and substances: Almost half (47%) of all participants reported using one or more psychoactive drug during the past year. Cannabis was the most commonly reported psychoactive drug used in both the past month (21%) and the past 12 months (33% (figure 8)); of those who reported using psychoactive drugs around one-in-twenty had ever injected a psychoactive drug (5.6% (appendix 6)).

Participants commonly reported use of over the counter or prescribed painkillers; over two fifths (46%) of those reporting use of other substances had used either prescribed or over the counter pain relief in the past 12 months, with one-in-ten using both over the counter and prescribed pain relief in the past month (appendix 6).

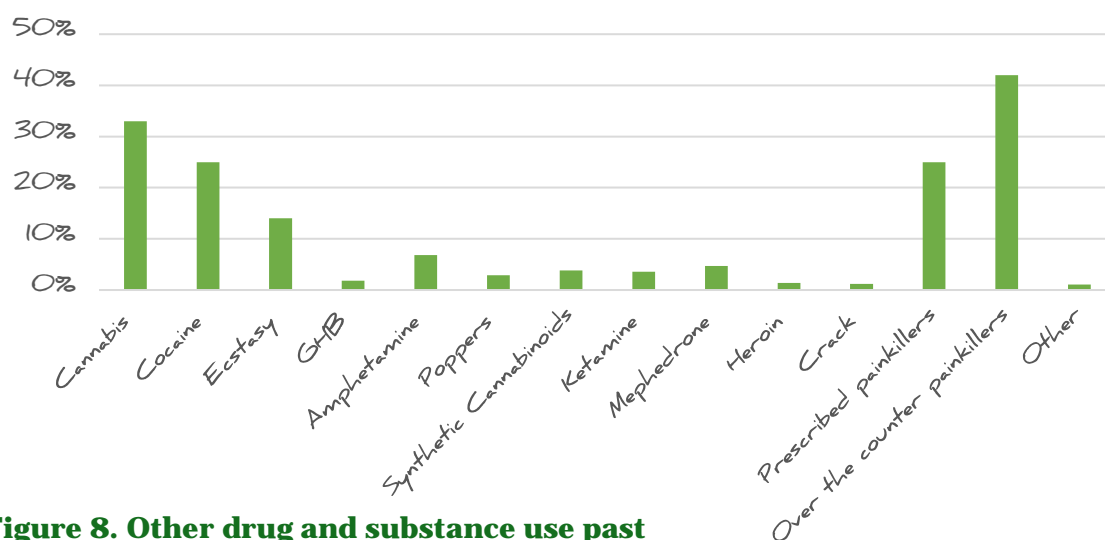


Figure 8. Other drug and substance use past 12 months.

What are the motivations for use?

Motivations for using IPEDs varied. Just over half (56%) of survey participants reported aesthetic reasons (changing their body image or for cosmetic purposes) as a very important motivation for their use of IPEDs. This was followed closely by non-competitive bodybuilding (45% (see figure 9)). Other motivations for IPED use, such as: hormone replacement therapy, retaining youthfulness or to aid injury pain/anxiety/increase confidence were generally reported as being less important (appendix 8).



Figure 9. Motivations for IPED use.

What are the adverse side effects?

There are a range of physiological and psychological harms and risks associated with the use of IPEDs. Research has linked anabolic steroids with increased risk of acne, accelerated balding, gynaecomastia, sexual dysfunction, mood changes as well as chronic conditions such as cardiac, metabolic, neurologic and musculoskeletal disorders [14]. Survey participants described experiencing a range of adverse side effects which they attributed to their IPED use. These varied differently by gender; more than half of male participants reported testicular atrophy and almost half of female participants reported nausea. In addition to the different effects sex hormones have in men and women, the side effects are probably related to the differences in the IPEDs used by men and women, notably melanotan use which was more often reported by women [27] (see figure 10 and appendix 5 for full breakdown).

One-in-five (20%) reported that they had redness, tenderness and swelling at an injection site, indicating an injection site infection or injury. However, only 2% reported that they had an abscess, sore or open wound at injection site (appendix 5).



Oral IPEDs used by men

Methandrostenolone
Tamoxifen
Oxandrolone
Oxymetholone
Preworkout
Clomiphene
Clenbuterol
Stanozolol
ECA*
Viagra
Arimidex
Ephedrine
Mesterolone
Liothyronine
Letrozole
Diuretics
Levothyroxine
DNP



Injectable IPEDs used by men

TestE
Nandrolone
TestP
Sustanon
TestCyp
HCG
TrenAce
Blend
TrenE
HGH
Sus250
Masteron
Boldenon
Stanozolol
Melanotan
Methenolone
Insulin
GHRP
IGF
CJC1295
MGF



Adverse effects reported by men

Testicular Atrophy
Sex drive
Sleep difficulties
Aggression
Mood swings
Acne
Injection site pain
Depression
Raised Blood Pressure
Gynaecomastia
Hair loss
Unwanted hair
Nausea
Deep voice



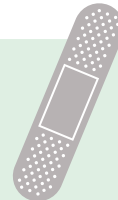
Oral IPEDs used by women

Oxandrolone
ECA*
Clenbuterol
Preworkout
Ephedrine
Liothyronine
Methandrostenolone
Diuretics
Levothyroxine
Stanozolol
Tamoxifen
Oxymetholone
Mesterolone
DNP



Injectable IPEDs used by women

Melanotan
HGH
TestE
Methenolone
Blend
Stanozolol
Nandrolone
TestP
Masteron
Boldenon
GHRP



Adverse effects reported by women

Nausea
Sleep difficulties
Mood swings
Sex drive
Acne
Depression
Unwanted hair
Deep voice
Aggression
Injection site pain
Raised Blood Pressure
Gynaecomastia

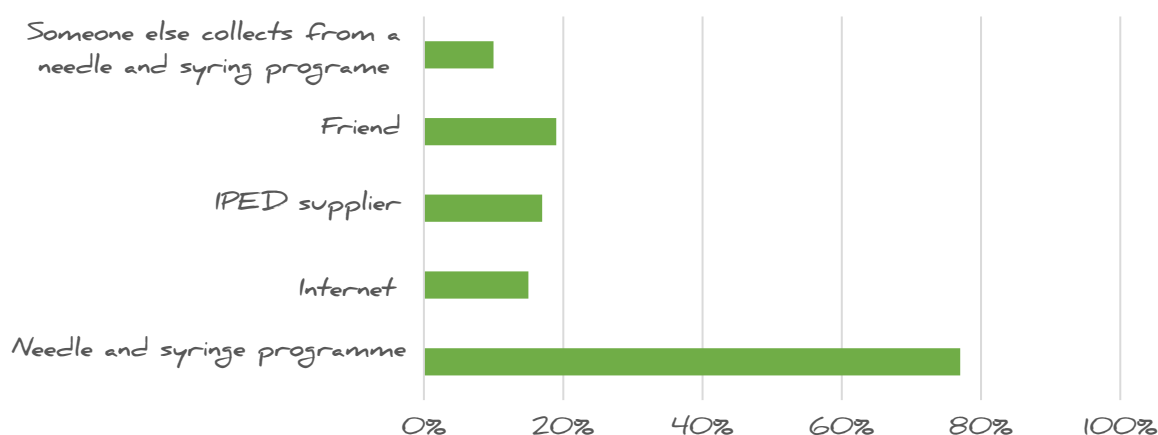


*Ephedrin, Caffeine and Aspirin (ECA)

Figure 10. IPED use and reported adverse effects by gender

What are the injecting risks?

The survey data indicate that risky injecting practices – those that could put them at risk of infection - occurred among the participants; **almost one-in-five (18%) of the participants who had injected reported reusing their own injecting equipment, and around one-in-seven (15%) had shared a multi-dose vial.** More than half reported washing their hands and cleaning their injection sites before injecting, (appendix 4). Participants most commonly obtained new injecting equipment via needle and syringe programmes, either by collecting it themselves or someone else collected for them (figure 11 and appendix 5).



Survey participants could report more than one source.

Figure 11. Reported sources of injecting equipment.

What are the sexual risks?

The majority of survey participants were sexually active (91%) and around half of sexually active participants reported having more than one sexual partner within the past year (see figure 12 and appendix 7 for more details). **Amongst those sexually active, condom use was infrequent, indicating many are at risk of sexually transmitted infections.** The number of people who reported same sex partners was small; 9% of males reported having a same sex partner in the past year (see appendix 7).

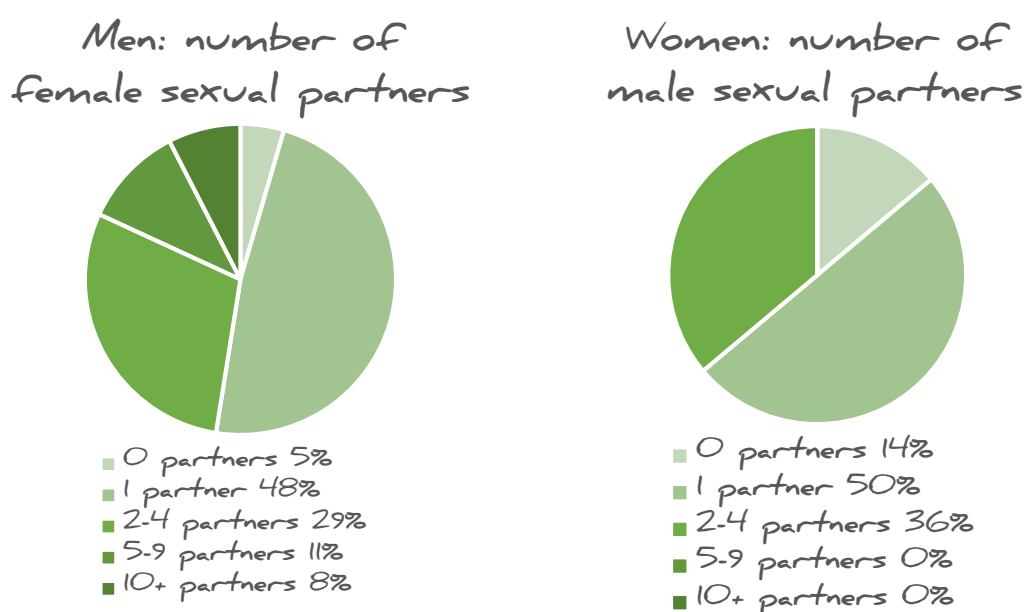


Figure 12. Number of sexual partners during past 12 months.

What were the responses to harms and what health services were used?

Globally there is growing concern about the health consequences of IPED use, including infections such as HIV and hepatitis B and C and the side-effects of use [23]. It is important to understand the ways in which people who use IPEDs respond to the risks and harms that can arise from the use of these drugs in order to ensure health services can provide appropriate help. Our survey data indicated that **more than half of those reporting side effects waited for symptoms of these to go away on their own**, without seeking medical help/advice (figure 13).



Figure 13. Participant responses to side effects from their IPED use.

The majority of people reported that they had used health services, such as, walk-in clinics, General Practitioners, Accident and Emergency departments or sexual health clinics, (65%) in the past 12 months (appendix 5). However, this also indicates that over one third of those using IPEDs had no contact with health services during the previous year. This is a particular concern due to the reported adverse effects and common route of administration associated with IPED use (i.e. injection).

Due to the risk of contracting blood borne viruses associated with injecting drug use, survey participants were asked about hepatitis B vaccination and testing for blood borne viral infections such as HIV. **Data indicated that the majority of participants had not been vaccinated against hepatitis B, and that testing for blood borne viral infections was uncommon** (figure 14). However, of those reporting a diagnostic test for a blood borne virus and providing information on year of their last test, 2016 was the most frequently reported year of test (appendix 5).

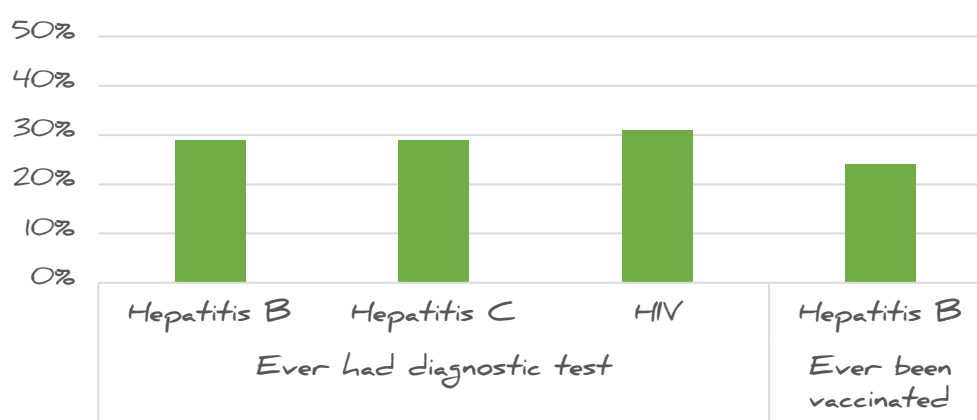


Figure 14. Ever been tested for blood borne viruses or vaccinated against Hepatitis B.

Conclusions

The data presented here corroborate findings from the previous surveys of people using IPEDs [24, 28, 29]. They highlight that the average person using IPEDs in the UK is likely to be a white British male, in their 30s; most of whom use a mixture of injectable and oral anabolic steroids and typically inject their IPEDs intramuscularly. New data from this survey indicate that motivations for use are often complex, but were most often related to aesthetic purposes, though athletic performance and non-competitive bodybuilding were also common motivations, these findings are consistent with the wider evidence on motivations [21, 30].

Most had started using IPEDs before the age of 30, however, some had initiated use whilst in adolescence and it is a particular concern that some reported having done so at the ages 14 and 15 years. **Initiating use at such a young age is a public health concern, as those who start using IPEDs at younger ages may be at risk of negative impacts on their development and maturation [6].**

It is reassuring to find that the average age for starting to inject IPEDs and the average age for first use of needle and syringe programmes were both 26 years. This indicates most people are probably directly accessing clean sterile equipment when they start injecting. This also offers an opportunity for healthcare professionals to provide harm reduction advice early on. Although there has been a marked increase in the number of people using IPEDs accessing NSPs [7] some of these also collect equipment for others, who may not be directly accessing services [31]. There needs to be a continued effort to engage people who are using IPEDs with services, such as needle and syringe programmes and primary health care.

The data from this survey confirm that IPED use is complex and varied, including complex regimes/cycles of use and poly-drug use repertoires. People using IPEDs also report the use of a broad range of other illicit drugs, most commonly cannabis, cocaine and ecstasy alongside their use of IPEDs. Many survey respondents also reported using prescription and/or over the counter pain relief medication. This complexity makes informing policy and practice challenging. Further research is needed to investigate and understand the combinations of drugs used and drug use practices among people using IPEDs in order to establish effective health responses.

The uptake of testing for blood borne viruses and hepatitis B vaccination remains low amongst people using IPEDs, the reason for this is currently unclear. Effective and targeted qualitative research is therefore required in order to explore these factors further. Harms associated with the use of IPEDs extend beyond the transmission of infections through injection [32]. For example, people using IPEDs commonly report low levels of condom use and can be highly sexually active so are at increased risk of sexually transmitted infections [2, 12]. In order to combat this, targeted interventions to address the sexual health needs of this population will also be required.

What's next?

The National IPEDinfo survey has provided an important insight into a population using IPEDs. However, we lack detailed information on the size and nature of this population, and so it is unlikely that this survey will have adequately captured all types of use and groups of people using IPEDs. Therefore further research is needed to investigate particular sub-group populations (e.g. young people) that may be most difficult to reach through surveys such as this one. Additionally conducting more qualitative research with people using IPEDs will help us better understand behaviours and develop responses to: patterns of drug use, the transition between use of different substances, and issues with health service engagement. Understanding these behaviours will better equip us to deliver effective and appropriate health responses for those using IPEDs.

Appendix 1. Demographics

Recruitment site where participants took part	Completed surveys (N=684)
Bradford	35
Bristol	27
Glasgow	35
Kirklees	34
Bolton	22
Sheffield	21
Edinburgh	64
South East Wales	71
North Wales	70
West Wales	40
Shrewsbury	69
North East	66
Devon & South West	77
Other	27

*25 online submissions

Sex of participants	Completed surveys (N=684 respondents)
Male	643 (94%)
Female	41 (6%)

Age, years of participants	Frequency (N=684 respondents)
Up to 19	30 (4%)
20-24	118 (17%)
25-29	167 (24%)
30-34	127 (19%)
35-39	108 (16%)
40 and over	134 (20%)
Mean (median) age	32 (30)

Employment	Frequency (N=682 respondents)
Employed	531 (78%)
Full time education/Other	68 (10%)
Unemployed	83 (12%)

Ethnicity	Frequency (N=684 respondents)
White British	548 (80%)
White (Irish, Eastern European, Other)	42 (6%)
Mixed other (white & black Caribbean/African, white Asian, other mix)	21 (3%)
Indian, Pakistani, Bangladeshi	53 (8%)
Black Caribbean/British, Arab, Other	20 (3%)

Self-reported sexuality	Frequency N=681
Heterosexual or straight	646 (95%)
Gay or Lesbian	20 (3%)
Bisexual	11 (2%)
Prefer not to say	4 (0.6%)

Imprisonment and IPED use	Frequency (%)
Have you ever been incarcerated (N=662)	112 (17%)
Have you ever taken IPEDs in prison (oral or injectable; N=112)	33 (29.4%)

Appendix 2. Reported IPED use

Ever used IPEDs	Frequency
Oral (N=682)	605 (89%)
Injectable (N=683)	580 (85%)
Both oral and injectable (N=684)	501 (73%)

Last 12 month Oral IPED use

Substance	Total use past year N=587 (%)
Anabolic Steroids (N=507, 86%)	
Methandrostenolone (Dianabol; D-Bol)	329 (56%)
Mesterolone (Proviron; Pro-V)	75 (13%)
Oxandrolone (Anavar)	274 (47%)
Oxymetholone (Anapolan 50; Oxies)	214 (36%)
Stanozolol (Winstrol; Winnie)	172 (29%)
Estrogen control and post-cycle drugs (N= 347, 59%)	
Arimidex	138 (24%)
Tamoxifen citrate (Nolvadex)	301 (51%)
Clomiphene citrate (Clomid)	200 (34%)
Letrozole	53 (9%)
Fat loss & others drugs (N=419, 71%)	
Clenbuterol	199 (34%)
Diuretics	43 (7%)
Dinitrophenol (DNP)	21 (4%)
Ephedrin, Caffeine and Aspirin	177 (30%)
Prohormones/ designer steroids	84 (14%)
Levothyroxine (T4)	38 (6%)
Liothyronine (T3)	72 (12%)
Ephedrine	123 (21%)
Pre-workout (stimulant type)	227 (39%)
Viagra/ Cialis	141 (24%)

Last 12 month injectable IPED use

Substance	Past year N=563 (%)
Injectable Steroids (N=542, 96%)	
Testosterone Propionate (Test P)	237 (42%)
Testosterone Cypionate (Test Cyp)	190 (34%)
Testosterone Enanthate (Test E)	310 (55%)
Testosterone Suspension (Sus 250)	131 (23%)
Sustanon	223 (40%)
Trenbolone Acetate (Tren Ace)	186 (33%)
Trenbolone Enanthate (Tren E)	165 (29%)
Stanozolol (Winstrol; Winnie)	98 (17%)
Boldenone (Equipose; EQ)	105 (19%)
Masteron (Drostanolone; Mast)	117 (21%)
Methenolone (Primobolan; Primo)	75 (13%)
Nandrolone (Deca-Durabolin; Deca)	298 (53%)
Blend of steroids in one vial (e.g. Fast Rip, Tri-Tren)	188 (33%)
Peptides & associated growth hormones (N= 298, 53%)	
GHRP	55 (10%)
Human growth hormone	169 (30%)
IGF	39 (7%)
Insulin	55 (10%)
CJC 1295	18 (3%)
MGF (Mechano Growth Factor)	7 (1%)
HCG (Human Chorionic Gonadotropin)	189 (34%)
Other listed IPEDs (N=92, 16%)	
Melanotan	89 (16%)
Other	5 (0.8%)

Appendix 3. Age of onset and cycle routines

Age of onset first use IPEDs	Injection N=537 respondents	Oral N=590 respondents
Up to 19	70 (13%)	113 (19%)
20-24	182 (34%)	202 (34%)
25-29	142 (26%)	144 (24%)
30-34	73 (14%)	78 (13%)
35-39	44 (8%)	33 (6%)
40 and over	26 (5%)	20 (3%)
Mean (median) age	26 (25)	25 (24)

Duration of IPED cycle routines	Mode	Mean	Range
Length of oral cycle*	12	11	0-104
Length of injectable cycle*	12	16	0-161
Length of break in use*	12	20	0-54
No. of cycles	1	2	0-52

*reported in weeks

Appendix 4. Injection practices and equipment

Frequency of injecting IPEDs by method	Intramuscular injection N=553 (%)	Subcutaneous injection N=194 (%)
More than once per day	4 (0.7%)	30 (15%)
Daily	17 (3%)	83 (43%)
Every other day	167 (30%)	35 (18%)
Twice per week	263 (48%)	14 (7%)
Once per week	96 (17%)	8 (4%)
Less than once per week	6 (1%)	24 (12%)

Injection site	Intramuscular injection N=553	Subcutaneous injection N=194
Gluteus	457 (83%)	12 (6%)
Thigh	284 (51%)	8 (4%)
Deltoid	253 (46%)	6 (3%)
Abdomen	9 (2%)	163 (84%)
Triceps	50 (9%)	1 (0.5%)
Biceps	39 (7%)	1 (0.5%)
Pectoral	28 (5%)	-
Latissimus dorsi	20 (4%)	-
Calf	10 (2%)	3 (2%)

Before injecting have you	Frequency
Always washed your hands (N=577)	395 (68%)
Always cleaned the injection site (N=580)	432 (74%)

Before injecting have you	Frequency
Ever reused injecting equipment used by someone else?	Frequency N= 574 respondents
Yes	11 (2%)

Before injecting have you	Frequency
Ever reused your own injecting equipment?	N= 575 respondents
Yes	102 (18%)

Before injecting have you	Frequency
Ever shared a multi-dose vial	N= 576 respondents
Yes	84 (15%)

Proportion of those collecting equipment for other people	Frequency N=538
1 person	69 (13%)
2-9 people	51 (9%)
10+ people	8 (1.5%)
Those who haven't collected equipment for others	410 (76%)

Self-reported source for obtaining injecting equipment	Frequency N=578
Needle and syringe programme	446 (77%)
The Internet	86 (15%)
IPED supplier	97 (17%)
A friend	109 (19%)
Someone else collects equipment from an NSP for me	57 (9.8%)

Appendix 5. Adverse effects/risks and responses to risk

Self-reported adverse effects and problems	Self-report past year N=628	
	Males n=592 (%)	Females n=36 (%)
Pain at injection site	207 (35%)	3 (8.3%)
Mood swings	233 (39%)	13 (36%)
Testicular atrophy	345 (58%)	-
Increased aggression/irritability	233 (39%)	3 (8.3%)
Raised blood pressure	175 (30%)	2 (5.5%)
Redness, tenderness and swelling at injection site	118 (20%)	6 (17%)
Gynaecomastia	147 (25%)	1 (2.7%)
Unwanted facial or body hair	81 (14%)	6 (17%)
Hair loss (male pattern baldness)	90 (15%)	-
Nausea	63 (11%)	20 (56%)
Deepening of voice	43 (7.2%)	5 (14%)
Acne	221 (37%)	7 (19%)
Abscess, sore or open wound at injection site	12 (2.0%)	-
Depression/low mood	182 (31%)	6 (17%)
Sleep difficulties/disturbed sleep	243 (41%)	19 (53%)
Change in sex drive	316 (53%)	9 (25%)

Responses to side effects or problems experienced with IPED use	Frequency N= 614 (%)
Waited for side effects to go away on their own	440 (72%)
Treated side effects myself	270 (44%)
Sought treatment from a General practitioner	34 (5.5%)
Sought treatment from another health service	28 (4.5%)
Other	28 (4.5%)

History of testing for Blood Borne Viruses	Frequency
Ever had a dose of the hepatitis B vaccine (n=676)	165 (24%)
Ever been tested for hepatitis B (n=673)	201 (30%)
Ever been tested for hepatitis C (n=672)	197 (29%)
Ever been tested for HIV (n=672)	211 (31%)

Reported year last test for	1986-1999	2000-2010	2011-2016	2016
Hepatitis B (n=188)	6 (3.1%)	37 (20%)	145 (77%)	56 (30%)
Hepatitis C (n=172)	5 (2.9%)	38 (22%)	129 (75%)	49 (28.4%)
HIV (n=187)	5 (2.6)	38 (20%)	144 (77%)	56 (30%)

Health services accessed for any reason during past 12 months	Frequency N=652 (%)
NHS walk-in clinic	72 (11%)
General practitioner or family doctor	300 (46%)
Accident and Emergency	70 (10.7%)
Genitourinary, sexual transmitted disease or sexual health clinic	72 (11%)
None of these services	227 (35%)

Any other clinical health tests in the past 12 months	Frequency N=651 (%)
Liver function Test	115 (18%)
Blood Pressure	186 (28.5%)
Testosterone Levels	84 (13%)
Electro-cardiograph (ECG)	35 (5.3%)
Cholesterol test	96 (14.7%)
None of these tests	425 (65%)

Appendix 6. Other reported substance use

	Last Month N=662 (%)	Last Year N=662 (%)
Prescribed painkillers only	5 (0.7%)	10 (1.5%)
Over the counter painkillers only	35 (5.3%)	71 (11%)
Both over the counter and prescribed painkillers reported	66 (10%)	108 (16%)

Other substance use N=662	Past month	Past year
Cannabis	142 (21%)	216 (33%)
Cocaine	84 (13%)	166 (25%)
Ecstasy	34 (5.1%)	94 (14%)
GHB	4 (0.6%)	12 (1.8%)
Amphetamine	12 (1.8%)	45 (6.8%)
Poppers	11 (1.6%)	19 (2.9%)
Synthetic Cannabinoids	9 (0.9%)	25 (3.8%)
Ketamine	6 (0.9%)	24 (3.6%)
Mephedrone	7 (1%)	31 (4.7%)
Heroin	3 (0.4%)	9 (1.4%)
Crack	3 (0.4%)	8 (1.2%)
Prescribed painkiller medication	87 (13%)	168 (25%)
Painkiller medication purchased over the counter	170 (26%)	278 (42%)
Other	4 (0.6%)	7 (1.4%)

Injecting drug use		Ever N=672 (%)
Ever injected a psychoactive drug		38 (5.6%)

Frequency of alcohol consumption	Frequency N= 681 (%)
Monthly or less	230 (34%)
2-4 times a month	179 (26%)
2-3 times per week	74 (11%)
4+ times per week	22 (3%)
Never	176 (26%)

Number of units on a typical day drinking	Frequency N = 516 (%)
1 or 2	61 (12%)
3 or 4	80 (15%)
5 or 6	90 (17%)
7 to 9	70 (14%)
10 or more	215 (42%)

Appendix 7. Sex and sexual health

Have you been sexually active past 12 months	Frequency N=671 (%)
Yes	609 (91%)
No	62 (9%)

Males reporting on No. of sexual partners past year	Female Partners (N=596 respondents)	Male Partners (N=341 respondents)
0	27 (4.5%)	310 (91%)
1	286 (48%)	11 (3.2%)
2-4	175 (29%)	11 (3.2%)
5-9	63 (10.5)	4 (1.1%)
10 or more	45 (7.5%)	5 (1.4%)

Females reporting on No. of sexual partners past year	Female Partners (N=26 respondents)	Male Partners (N=36 respondents)
0	19 (73%)	5 (14%)
1	5 (19%)	18 (50%)
2-4	2 (7.6%)	13 (36%)

Condom use	Amongst all sexually active N=609	Amongst those with 2+ partners N=294
Always	77 (13%)	43 (14.6%)
Usually	75 (12%)	67 (22.7%)
About half the time	50 (8%)	46 (15.6%)
Occasionally	49 (8%)	38 (13%)
Never	367 (60%)	100 (34%)

Appendix 8. Other aspects of IPED use

Where do you get your IPEDs from	Frequency N=677
Friend	363 (54%)
Trainer	79 (12%)
Prescribed by doctor	6 (0.8%)
Dealer	249 (37%)
Underground lab	72 (11%)
Bought abroad	56 (8.2%)
Home made	2 (0.2%)
Internet	156 (23.4%)
Not obtained any	2 (0.2%)

Motivations	Extremely important, Score of 10	Not important, Score of 1	Mean
Develop sporting/athletic performance (non-bodybuilding) N=557	151 (27%)	176 (33%)	5.48
Support occupational performance N=529	53 (10%)	332 (63%)	3.19
Bodybuilding (competitive) N=591	120 (22%)	336 (62%)	3.67
Bodybuilding (non-competitive) N=591	268 (45%)	132 (22%)	6.97
Increase sex drive N=534	45 (8.4%)	295 (55%)	3.49
Develop body image/cosmetic purposes N= 557	338 (56%)	50 (8.2%)	8.27
Hormone Replacement Therapy N=512	40 (7.8%)	407 (79%)	2.21
Retain/regain youthful appearance	34 (6.5%)	333 (64%)	3.03
Other Strength, injury pain, cope with depression/anxiety, confidence, and increase energy. N=94	12 (13%)	74 (79%)	2.67

Frequency of using IPEDs thought to be fake	Frequency N=663
Always	1 (0.1%)
Often	13 (2%)
Sometimes	159 (24%)
Never	490 (74%)

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Survey

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