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## **Title page**

Title: Harm reduction strategies for androgen users: providing appropriate support and improving engagement with healthcare

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## **Abstract**

*Purpose of review:* As evidence continues to emerge of the harms associated with nonmedical androgen use, this review explores the implications from recent studies for designing strategies to reduce harm and support good health amongst androgen users.

*Recent findings:* Studies have predominantly come from researchers in the UK and Australia. Major themes include questioning the scope and content of harm reduction strategies and identifying approaches to improve engagement between the androgen using community and healthcare providers. Findings suggest that a broader range of interventions and forms of advice are needed than are commonly provided. This must be supported by efforts to increase opportunities to deliver harm reduction through new engagement approaches, better relationships with health professionals, and more guidance on identifying and managing associated adverse health impacts.

*Summary:* A fully developed harm reduction-based response to nonmedical androgen use will be one that not only seeks to reduce risk of bloodborne virus transmission and injecting-related harms, but that considers the range of needs amongst the diverse community of androgen users and respects their decisions and rights. Co-producing interventions with members of this community will help develop effective and engaging approaches. Rigorous studies are needed to evaluate new harm reduction interventions as well as those already delivered.

**Keywords:** anabolic steroids; harm reduction; interventions; engagement; co-production

## **Introduction**

This article reviews recent literature that helps us to understand current thinking and evidence on the provision of harm reduction to androgen users. While androgens can be prescribed for a variety of purposes, the review covers nonmedical use of the substances often collectively referred to as image and performance enhancing drugs, of which anabolic androgenic steroids are the most prominent. Relating to substance use, harm reduction approaches attempt to reduce or minimise the negative associated impacts on people who use drugs and the wider population [1]. They are commonly associated with supporting the rights of people who use drugs, and rejection of moral and disease models of substance use and addiction. Where harm reduction targeting androgen users is provided, this most commonly includes the provision of sterile injecting equipment and injection advice through needle and syringe programmes and substance use services. The review includes articles that include a substantial focus on harm reduction relating to nonmedical androgen use. This included but was not restricted to: exploration of harm reduction needs, evaluation of interventions, discussion of policy and practice, and debate about the nature and scope of harm reduction.

## **Recent developments**

The recent literature is dominated by studies from the UK and Australia, countries that have adopted policy positions that emphasise the role of harm reduction for androgen users. In other countries that are commonly represented in the androgen evidence base, such as the Nordic countries and the USA, focus is more towards prohibition, prevention, and treatment. Recent studies in the field most commonly contribute evidence relating to i) the scope of, and needs for, androgen-related harm reduction, including the need to reduce blood-borne virus (BBV) transmission, and ii) approaches to improve engagement between androgen users and healthcare professionals and services.

## **Recognising diversity in needs and practices amongst the user community**

Consensus appears to be building amongst scholars in the field that harm reduction interventions offered to androgen users are currently too limited in scope. Recent studies have questioned whether a focus on the prevention of BBV transmission is sufficient to meet the needs of the population, could be counterproductive, and is truly evidence-based. They suggest that, contrary to what is commonly provided, harm reduction should go beyond reducing harms related to BBVs and wider injecting issues, and provide information addressing a wide range of practices and concerns [2\*,3\*,4\*,5\*]. Beyond advice and information, additional types of interventions may include substance testing [3\*,6\*], psychosocial interventions [3\*,7\*], and blood tests that show the physiological impacts of androgen use [8\*\*,9\*\*]. Such approaches are suggested to not only help reduce harm through influencing decision-making and improving understanding, but may improve the attractiveness for users of engaging with health services that offer them.

Improving access to reliable and evidence-informed advice and information on a wide range of androgen issues is a harm reduction priority, given the reliance on information from online sources or peers [10\*,11\*]. These resources can be an important source of information and advice given their accessibility and the discretion they provide [6\*], but may frequently be unreliable [5\*,8\*\*]. A challenge in providing harm reduction to this population is that interventions must be developed for the diverse androgen using community [12]. While much of the focus is on those using androgens for muscular enhancement, there is growing recognition of those using in an attempt to retain their youthfulness [13] or as self-management of low testosterone [14\*] and there is great variation in characteristics of this population and their practices. For example, research focusing on harm reduction is commonly focused on androgen injectors, but analysis of data from the Global Drug Survey highlighted the sizable proportion of the population that only consume androgens orally [15\*]. For those who do not inject or those who purchase their injecting equipment online, services that prioritise injecting equipment provision are unlikely to be attractive and may reduce engagement [16]. The (unintended) consequence of this is reduced opportunities for discussion with healthcare professionals and engagement with any other interventions. Beyond generic information, providing

accessible advice specific to the experiences and risks associated with groups of androgen users such as women and men who have sex with men are required, and services need to consider what additional interventions and healthcare may be needed to respond to the often-complex needs of these subgroups [7\*,10\*].

### *Preventing BBV transmission*

For many androgen users, their harm reduction needs are likely to reflect factors other than, or in addition to, those related to injecting. Common challenges experienced by androgen users include those such as the varying quality of drugs, a range of side effects and associated harms, and lacking access to healthcare and reliable information. However, there are timely reminders amongst recent studies that approaches to prevent BBV transmission remain an important part of public health work with this population. In the past decade, concerning rates of HIV, hepatitis B and hepatitis C amongst users have been identified [17,18]. Alongside recent identification of the low rate of BBV testing uptake [9\*\*] and a lack of awareness and concern about risk of hepatitis C [19\*], this suggests that BBV-focused interventions are still required. The perceived role of sexual risks in the transmission of HIV and hepatitis B amongst this population [12,18] indicates that relevant harm reduction will include interventions such as condom provision and advice about sexual risks as well as access to injecting equipment and BBV testing.

While recent studies may highlight that BBVs may not be seen as a priority harm reduction strategy for many in the androgens community, we should not overlook evidence relating to BBV transmission nor the importance of BBV prevention for the health of the wider population. All harm reduction approaches should be developed based upon a deep understanding of the problem that they seek to address rather than historical or current assumptions or preferences about what is needed [20\*]. Actions to reduce risk of BBV transmission that facilitate testing, injecting and sexual risk advice, injecting equipment and condom provision, appear to form one part of an evidence-based harm reduction approach alongside actions to provide support for a range of needs [4\*].

## **Increasing engagement between androgen users and health professionals**

As well as addressing the content and scope of harm reduction, recent studies draw attention to the need to increase accessibility of healthcare and support services. The benefits of improved engagement include improved access to whatever advice and interventions are available through services, identification of adverse effects, and provision of (or referral to) appropriate treatment and support. Within the androgen using population, some sub-groups are at risk of additional harms beyond those related to the substances themselves and engagement with health professionals provides an opportunity to provide important additional support and healthcare [21\*]. Increasing opportunity for discussion between health professionals and androgen users may lead to engagement on other important matters [5\*].

There remain significant gaps in our understanding of how to improve engagement between healthcare professionals and the androgen community although studies continue to highlight the importance for engagement of fostering trust and positive relationships [2\*,5\*]. Fraser et al. propose that re-framing users as potential connoisseurs, in recognition of their knowledge and experience, who can engage in two-way debate with healthcare professionals will help to create the conditions for meaningful discussion [5\*]. The same study however recognises that barriers to this include negative attitudes and limited understanding about androgens and the user community, also recognised elsewhere [3\*,22\*,23\*].

A case study of a harm reduction service in Scotland [8\*\*] provides useful insight into additional strategies services can employ to facilitate engagement and reduce androgen-related harms beyond provision of injecting equipment and advice. Anecdotal evidence from this case study suggests that offering blood tests showing the physiological effects of androgens improves engagement and discussion between users and practitioners, and it is suggested that offering substance testing services to users may have similar benefits for engagement and opportunities for harm reduction work [6\*]. Rigorous evaluation to help us understand the extent to which, and how, these interventions improve

engagement and harm-reduction behaviours will be an important next step to move this debate forwards.

### *Skills and knowledge of healthcare professionals*

As part of efforts to improve engagement and access to healthcare, it is important to improve the skills and competencies of healthcare professionals who will provide advice and interventions. Recent studies support the need for training and guidance to help healthcare professionals to gain understanding about androgens and the community [23\*,24\*\*,25\*\*]. Evaluation of the implementation of a training programme to improve healthcare professionals' androgens knowledge suggested that such attempts are perceived to be valuable [24\*\*]. The study provided important feedback on the content of the training that future approaches can learn from including difficulties with complex terminology and time resources.

Bonnecaz et al. [26\*] identified strategies that medical professionals can apply to identify problems experienced by patients who use androgens. The study primarily focused on the need to increase screening for health conditions and referrals for specialist treatment. Additionally, it is worth noting how this US study conceptualised harm reduction largely as a strategy worth pursuing as it may lead to androgen cessation. Where engagement is increased this will indeed increase opportunities to support and promote cessation [4\*,8\*\*], but supporting the health and rights of those who choose to use androgens and increasing their access to healthcare and support are important goals consistent with harm reduction ideals. A second US study provides guidance on identification of androgen use amongst men who do not disclose this to medical practitioners, focusing on dependence and therapeutic strategies [27\*]. In the absence of a clinical evidence base the authors of this study propose a symptomatic treatment model based on three pathways; body image, neuroendocrine and hedonic pathways.

With their focus on identifying and treating dependence and adverse effects, these studies highlight points of overlap between harm reduction and treatment approaches. There remains a lack of



evidence to support healthcare professionals to manage negative health effects following cessation or as part of any treatment. For example, while the adverse consequences of prolonged hypogonadism are recognised there remains no clinical evidence to support the effective management of symptoms or a return to normal testosterone production in androgen users [28,29\*]. There is a need to develop evidence-based guidance on the identification and management of psychological and physiological adverse effects associated with androgens.

### **Evaluations of harm reduction interventions and policies**

A scoping review assessed the available evidence on the effectiveness of interventions targeting androgen users in healthcare and service settings [30\*]. The review highlighted the lack of evidence on the impacts of any form of harm reduction provided to this population, including relatively-well established approaches such as needle and syringe programmes in countries such as the UK and Australia. The limited evidence base relating to androgen interventions remains dominated by evaluations of prevention programmes and we identified no new evidence here to address the gaps in knowledge about interventions and services, beyond the evaluation of the implementation of a training programme for health professionals [24\*\*] and anecdotal accounts of approaches to increase service engagement [8\*\*].

While the recent studies reviewed here advance our understanding about harm reduction needs and gaps, the evidence-base evaluating harm reduction interventions remains severely lacking. Greater and improved evaluation and reporting of all androgen interventions is urgently required to help us to understand what types of approaches are effective and ineffective [20\*].

### **Future directions**

In the context of the Covid-19 pandemic it is a timely moment to consider how harm reduction may be better delivered in the future. Evidence suggests that utilisation of needle and syringe programme services declined substantially in the UK in Spring 2020 [31\*] and access to some health services that

was already low amongst androgen users has been further restricted during the pandemic [32]. There is mixed evidence on the impact of the pandemic on androgen use during this period [32,33] and a challenge remains in how to re-engage those who have stopped attending services, and to identify alternative approaches that can overcome barriers to engagement. New harm reduction interventions being developed can draw upon the needs and priorities identified in recent studies reviewed here. For example, Hope et al. discuss the potential to better draw on online technologies to provide reliable information, building upon the accessibility of internet fora and information sites [23\*]. A challenge for research is to identify how to provide evidence-based messages online that will be accessible and acceptable to users [6\*]. An additional challenge in providing harm reduction messages, for example relating to 'safe' or 'in moderation' androgen regimes and practices, is that there continues to be a lack of evidence on what specifically this advice should constitute [4\*].

To try and address these challenges the recent literature is supportive of the co-production of services and advice with users [10\*,20\*,22\*,24\*\*]. Co-production can help ensure that what is provided truly reflects need, is of good quality, and is delivered in ways that are acceptable to both users and those involved in delivering interventions. Involving the androgen community in the provision of harm reduction may also be beneficial. For example, supporting influential members of fitness communities to promote services to others and dissemination of information through peer networks may help to reach more users with reliable messages [3\*,25\*\*]. Co-production and delivery will have benefits for engagement and effectiveness and reduce the likelihood of causing harm or unintended consequences. Importantly, by incorporating the perspectives of users, co-production may also help to reduce stigma that is commonly experienced by this population when accessing healthcare [24\*\*].

## **Conclusion**

A fully developed harm reduction-based response to nonmedical androgen use will be one that not only seeks to reduce risk of BBV transmission and injecting-related harm, but considers the range of needs amongst this diverse population and respects their decisions and rights. To deliver this, new

approaches to reach the androgen community with information and support and to increase engagement with healthcare services are required. While recent studies continue to support the justification of harm reduction, there remains a scarcity of evidence to help us understand how, where and when to best provide interventions that aim to reduce harms associated with androgens and to support good health. Rigorous studies are urgently needed to help us to understand what sorts of approaches will improve engagement between users and health professionals, and what interventions can help to reduce the associated health harms. This includes evaluation of existing harm reduction interventions and services to help our understanding of whether they are effective or not, and what factors influence this effectiveness.

### **Key points**

- Harm reduction strategies should recognise the diverse needs and heterogenous nature of the androgen community and include a broader range of information and interventions than are currently commonly delivered.
- While prevention of blood-borne virus transmission may not necessarily be perceived as the primary harm reduction priority by the androgen community, provision of sterile injecting equipment and advice on safe sex and injecting practices remains an important part of harm reduction strategies.
- New approaches are needed to improve engagement with androgen users and to increase accessibility of information and support, such as through peer-based and online delivery methods, and guidance for healthcare professionals.
- There is a need for co-production with members of androgen using communities to ensure effective and accessible interventions to reduce harm and promote health together with research strategies for their evaluation.

- It is important to build the evidence base on the effectiveness and implementation of harm reduction interventions to support understanding of what works, where changes in practice may be needed, and where interventions and services may be having harmful effects.

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