

Hormone therapy, inclusion, and care for transgender patients in the field of laboratory medicine: Challenges and recommendations for a respectful approach. A systematic review



<https://doi.org/10.56238/sevened2023.002-016>

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ABSTRACT

OBJECTIVE: To show the laboratory care of trans people as part of clinical care, as well as the possible interactions between hormonal therapies (testosterone and estradiol) and relevant pharmacotherapies, with a focus on pre-exposure prophylaxis (PrEP) and antiretroviral therapies (ART). To explore the challenges faced by physicians in interpreting laboratory results for trans individuals on hormonal therapy and to report on the available strategies that can be used to interpret these results. **METHODOLOGY:** This is a narrative literature review in which 30 articles were found, 20 were excluded due to the exclusion criteria, theme. Period of time, plagiarism, sources, and only 10 were selected and used. **RESULTS:** The table shows the challenges faced by transgenic patients, of various types, from the family, hormone treatment, to specialized and welcoming care. **CONCLUSION:** We came to the conclusion that the interfering factors are diverse, from the lack of specialized staff, studies, reference values, to the form of care.

Keywords: Transsexual, Hormone therapy, Transgender.

1 INTRODUCTION

Contrary to what was scientifically believed today, I understand that the experience of a gender (social, cultural) discordant with what would be expected of someone of a certain sex (biological) is a matter of identification, and not a disease. This is the case of people known as transvestites, and transsexuals, who are recognized, together, as part of the group that some call "transgender", or more popularly, trans. But what does it mean to be a trans person, or transgender? First, it is essential to



highlight that, in terms of gender, all human beings can be framed (with all the limitations common to any classification) as transgender or "cisgender". Cisgender, or "cis", are people who identify themselves with the biological gender of their birth. There are also non-cisgender people, those who do not identify with the gender they were assigned at birth, such as transgender, or trans. In Brazil, there is still no consensus on the term, it is worth noting. There are those who consider themselves transgender, as a separate category from transvestites and transsexuals. There are still people who do not recognize themselves with any gender, there is no consensus on how to call them. Some use the term queer, others the old term "androgynous," or reuse the word transgender. (7)

Where historically, the transgender or trans population is judged, excluded, and cornered, due to the non-acceptance of people who do not identify with the gender in which they were born, the excluded and condemned, for not meeting their expectations of the correct, not behaving according to what is judged to be the "right" for the gender born. However, the various human experiences on how to identify oneself from one's body show that this idea is a lie, especially when it comes to trans people, who show that it is possible to have men with vaginas and women with penises. In our country, the place reserved for transsexual men and women, and for transvestites, is that of extreme marginality, without access to basic civil rights, not even to the recognition of their identity. They are citizens who still must fight hard to have their basic rights guaranteed, such as the right to life, which is threatened on a daily basis. Physical, psychological, and symbolic violence are common. According to the international organization Transgender Europe, in the three-year period between 2008 and 2011, three hundred and twenty-five trans people were murdered in Brazil. Most of the victims are transsexual women and transvestites. By mid-2012, according to a survey by the Gay Group of Bahia, ninety-three transvestites and transsexuals had been killed. These violations are constant, and the pattern of hate crimes is sharpened by prejudice against some characteristic of this and they are killed. Calling it "transphobia" refers to prejudice and discrimination suffered by transgender people in general. (7)

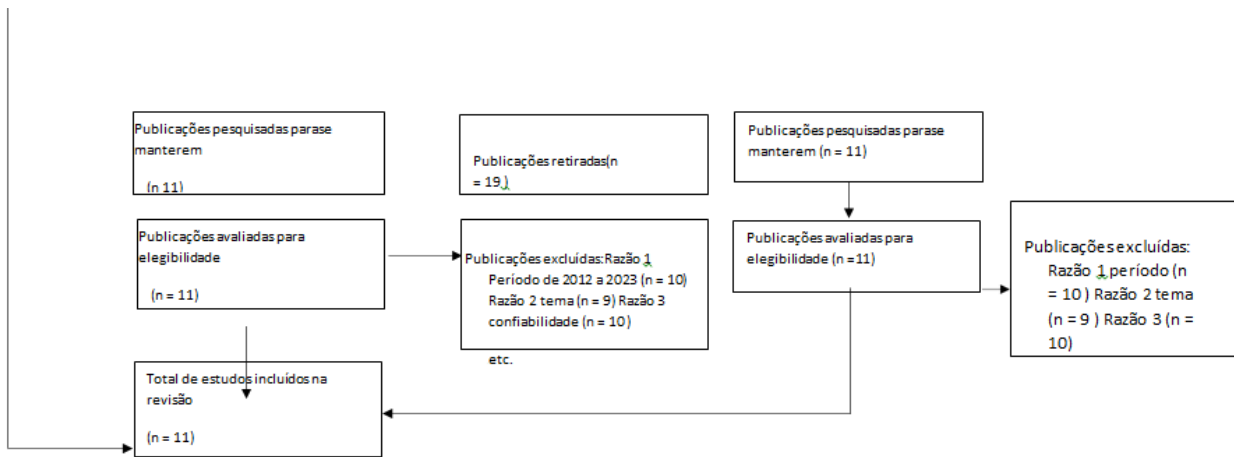
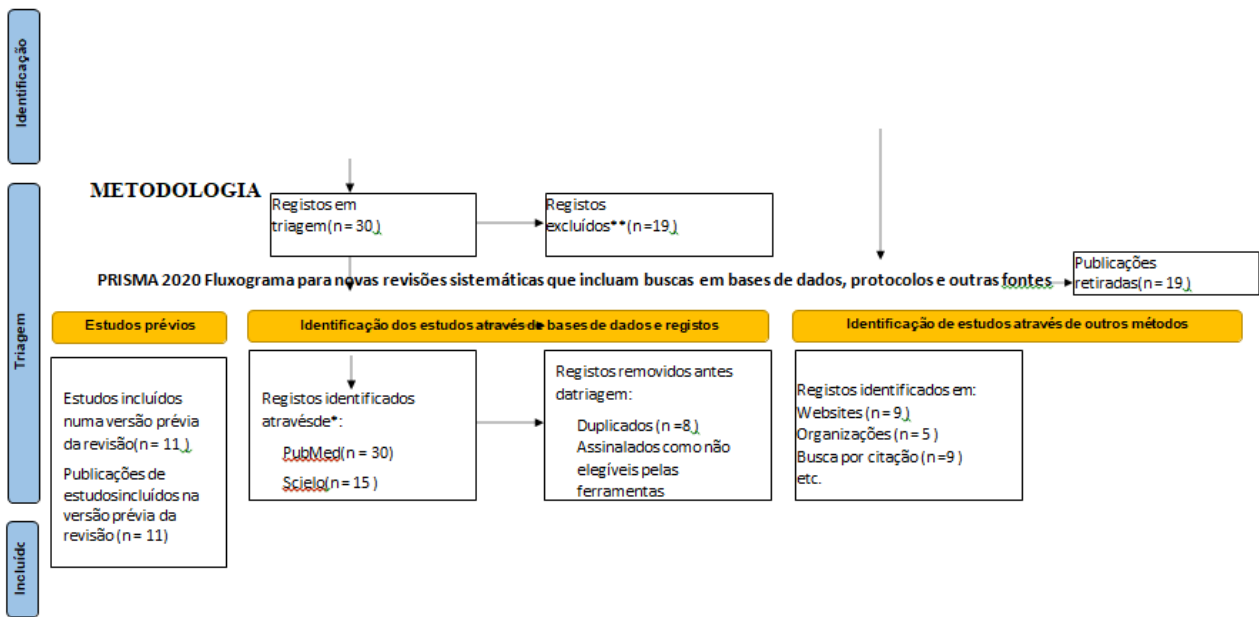
Gender identity is extremely important that it is given attention within the health area, especially in the laboratory to assist in the exact diagnosis. Where we see that there is a lack of clarity in the service to trans people on how to fill in demographic/gender information during sample collection. Assigning the gender to the trans person on the request forms for laboratory tests, this also extends to other health sectors. As such, it is a challenge for healthcare professionals making decisions about the choice of biological gender or a new one, having to assign the sex correctly on laboratory request forms, so all healthcare professionals must confirm that the identity listed on the barcode matches the identity of the patient from whom the sample is being collected or the form being filled out. Questioning if someone is doing hormone therapy for gender transformation, the duration of the therapy, question, medications used, amounts, what is the natural sex and who identifies, this information should be contained in the form. What happens is that most of the time the health



professional wants to ask the patients the correct sex. They look at the patient and assume gender based on physical appearance. (1)

In addition to the lack of clarity about gender-specific reference ranges for transgender individuals during the interpretation of their laboratory tests, it contributes to a certain percentage of barriers in the healthcare system for this specific population. Due to the lack of references regarding the exams, taking into account the individuality and uniqueness of the transsexual person, whether female, trans or men, the laboratory information system (LIS) and the electronic medical record (EMR) allow only the male or female gender, thus resulting in an incorrect attribution of the choice to transsexual patients(2). Thus see the importance of reviewing the recommendations for laboratory diagnosis in transgender people. Seeing the difficulties and challenges in accessing health care for the transgender population, the following five points can be cited: Lack of guidelines and/or policies for transsexual individuals (TG); Lack of formal training on TG health issues for allied medical and health personnel; Only binary options in LIS and EMR systems; Lack of established laboratory reference intervals for post-hormonal intervention of individuals; Sample collection, handling, and reporting challenges for histological and cytological samples. (10)

The main objective of this article is to show the laboratory care of trans people as part of clinical care, as well as the possible interactions between hormonal therapies (testosterone and estradiol) and relevant pharmacotherapies, with a focus on pre-exposure prophylaxis (PrEP) and antiretroviral therapies (ART), explore the challenges faced by physicians in interpreting laboratory results for trans individuals on hormone therapy, and report the strategies that can be used to interpret these results.



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de: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

Description of the search strategy: Which databases were queried, which search terms were used, and which inclusion/exclusion criteria were applied. Article selection process: How the studies were selected and what criteria were used. Data extraction: What information was collected from the selected studies. Evaluation of methodological quality: How the studies were evaluated for quality.

2 RESULTS AND DISCUSSIONS

Hormone therapy is a key part of the gender transition process for many transgender people. It is prescribed to assist in changing physical and hormonal characteristics, making them more congruent with your gender identity. There are two main forms of hormone therapy: feminizing hormone therapy (for female transgender people) and masculinizing hormone therapy (for male transgender people). Feminizing hormone therapy involves the use of female hormones, such as estrogen and antiandrogens



(testosterone blockers), to induce bodily changes, such as breast growth, fat redistribution, and facial hair reduction.

Androgen therapy consists of the use of male hormones, such as testosterone, to promote physical changes, such as increased muscle mass, a deeper voice, and facial hair growth. Importantly, hormone treatment is an important part of the transgender transition and happiness process. However, access to this type of treatment can be associated with a number of challenges, including the need for proper medical supervision, availability of medical resources, financial aspects, and lack of sensitivity of medical professionals. Healthcare professionals, especially endocrinologists and family doctors, play an important role in prescribing and monitoring hormone therapy for transgender people. It is important that they are aware of up-to-date clinical guidelines and are aware of the special needs of these patients.

Additionally, ensuring a respectful and sensitive approach to transgender patients is essential. This includes using the correct name and pronouns in accordance with the patient's gender identity, maintaining the confidentiality of personal information, and treating them without bias or discrimination. Research and scientific literature play an important role in understanding the effects of hormone therapy and developing best health care practices for transgender people. Continuous studies in this area are essential to improve the quality of life and health of these individuals, as well as to guide public health policies.

Gender identity is an essential part of a person's individuality, and laboratory medicine plays a critical role in providing effective and inclusive healthcare for transgender patients. Hormone therapy is a key part of the gender transition process for many individuals, and research in this area is vital to ensure that healthcare is respectful and sensitive to the needs of these patients.

The table below identifies the various challenges faced by transgender patients in the field of laboratory medicine. These challenges include the lack of familiarity of laboratory health professionals with the specific needs of patients, the absence of correct reference intervals in the interpretation of laboratory results. Especially related to patients using hormone therapy transgender people experience a disconnect between their gender identity and the sex assigned at birth. To mitigate this discrepancy, many opt for hormone therapy, which results in notable changes in various laboratory parameters. However, due to the fact that reference ranges in clinical laboratory reports are often delineated based on gender distinctions between biologically cisgender individuals, transgender people on hormone therapy often face difficulties in interpreting their laboratory results, which can potentially lead to misdiagnosis or poor medical decisions. MC Bezuidenhout 2022, highlights the challenges faced by health professionals in this context and addresses some strategies used to interpret these results. Establishing specific reference ranges for transgender people will contribute to a more accurate



interpretation of laboratory results and improve the management of their overall health, psychological well-being, and self-affirmation.

Evaluation of laboratory tests in transgender individuals who have begun hormone therapy requires a careful approach, especially for analytes with gender-specific reference ranges. There is divergent information in the literature regarding the impact of hormone therapy on laboratory parameters. In our study with a large sample, our intention is to determine which reference category (male or female) is most appropriate to guide the monitoring of the transgender population throughout the gender-affirming process (Boekhout-Berends, 2023). The generation of transgender-specific reference ranges is not essential to correctly interpret laboratory results. As a practical approach, we recommend using gender-affirmed reference intervals starting at 1 year after starting hormone therapy ((Boekhout-Berends, 2023).

The effects of exogenous hormone therapy on gender affirmation on the distribution of fat, muscle mass, and other physiological changes have significant implications for the interpretation of laboratory tests that have specific sex differences. In addition to promoting an affirmative approach, ensuring the correct use of patients' names, genders, and pronouns, we suggest that once individuals have started gender-affirming hormone therapy, reference intervals should be based on self-identified gender (and specified by treating physicians), with the exception of tests such as PSA or cardiac troponin. that depend on the size of the organ. While implementing these recommendations can be challenging, they represent an opportunity to lead best practices and enhance the quality of care and care experience for all transgender people (Cheung, 2020).

Clinical guidelines advise for laboratory monitoring in people who are undergoing cross-sex hormone therapy. However, the existence of gender-specific reference intervals presents clinicians with the challenge of determining what is considered "normal" for each patient. The use of appropriate reference intervals when interpreting laboratory test results decreases the likelihood of misdiagnosis associated with testing. Initial information indicates that it is necessary to establish new reference intervals to meet the needs of transgender patients (Roberts, 2014).

Irwig, 2021, proposed the idea that laboratories could consider making both male and female reference ranges available for transgender patients. This suggestion argues that more information is preferable to less, offering clinicians greater flexibility in interpreting test results. For example, when using the estimated glomerular filtration rate, which is calculated based on a formula that takes sex into account, knowing whether choosing one sex over the other could affect a crucial treatment decision, such as the dosage of a medication, would be of great use. Setting specific reference ranges for transgender individuals will play a key role in accurately interpreting patient outcomes and managing their care. In addition, this will contribute to optimizing your overall health, psychological well-being, and personal fulfillment.



| ARTICLE TITLE: | AUTHORS: | STUDY OBJECTIVES: | METHODOLOGY | CHALLENGES IDENTIFIED: | MAIN RESULTS: | RECOMMENDATIONS AND GOOD PRACTICES | REFERENCES |
|---|---|--|---|--|---|--|--|
| Laboratory Monitoring in Transgender People Quality care depends on understanding interactions among hormones and pharmacotherapies | Ethel D. Weld, MD, PhD | focuses on laboratory testing of transgender people as part of clinical care, as well as on possible interactions between hormonal therapies (testosterone and estradiol) and relevant pharmacotherapies, with a focus on pre-exposure prophylaxis (PrEP) and antiretroviral therapies (ART) | revision | A substantial subset of transgender people use gender-affirming therapies, which often include various formulations of exogenous hormones like testosterone and estrogen, as well as androgen blockers | There is a lamentable paucity of data on the interactions of PrEP/ART and testosterone GAHT in transgender men, and transgender men have been excluded from many of the seminal trials on PrEP and antiretrovirals, including newer and long-acting antiretrovirals | a sophisticated approach to the unique medical needs of transgender people, including appropriate laboratory monitoring of GAHT and sensitivity to the interaction between gender-affirming therapies and common pharmacotherapies, can and should inform the clinical care of transgender people and lead to the optimization of medication management and clinical outcomes in this community, which has long been marginalized, neglected, and underserved by the mainstream medical community. | WELD, Ethel D. Laboratory Monitoring in Transgender People Quality care depends on understanding interactions among hormones and pharmacotherapies |
| Role of clinical laboratories in reporting results of transgender individuals on hormonal therapy | | The purpose of this review is to explore the challenges faced by clinicians in interpreting laboratory results for transgender individuals on hormone therapy and to report on the available strategies that can be used to interpret these results. | REVISION | There is a lack of clarity on how to fill in demographic/gender information during sample collection. Assigning gender to transgender individuals on application forms for laboratory tests, pharmaceuticals, or imaging studies can be challenging for doctors and nurses making decisions about choosing a biological gender or a new one. | highlight the challenges faced by physicians in this regard and some strategies used to interpret these results. The establishment of reference intervals for transgender individuals will help in the correct interpretation of patient outcomes and their management. | To provide optimal healthcare to transgender individuals, many barriers must be overcome by increasing awareness and decreasing stigmatization. To overcome the barriers associated with transgender individuals, context-specific transgender care guidelines and policies need to be urgently developed. | MC Bezuidenhout, M Conradie-Smit, E de Vries, JA Dave, IL Ross & AE Zemlin (2022) Correspondence: Role of clinical laboratories in reporting results of transgender individuals on hormonal therapy by Phiri-Ramongane and Khine, Journal of Endocrinology, Metabolism and Diabetes of South Africa, 27:3, 131-132, DOI: 10.1080/16089677.2022.2079819 |
| Interpreting laboratory results in transgender patients on hormone therapy | Tiffany K Roberts 1, Colleen S Kraft 2, Déborah França 3, Wu Yang Ji 3, Alan H.B. Wu 4, Vin Tangpricha 5, Corinne R Fantz 2 | The aim of this study was to identify consistent changes in measurands with hormone therapy and to determine which reference interval is appropriate. | Laboratory data were extracted from the medical records of 55 male-to-female patients on hormone therapy and compared with 20 non-transgender males and 20 females. | Reference values for the exams | Clinical guidelines recommend laboratory monitoring of transgender people on cross-sex hormone therapy, but gender-specific reference ranges leave clinicians with the dilemma of deciding | The use of correct reference intervals in the interpretation of laboratory results reduces the risk of diagnostic errors related to the tests. Preliminary data suggest that new reference ranges need to be established for transgender patients. | Roberts TK, Kraft CS, French D, Ji W, Wu AH, Tangpricha V, Fantz CR. Interpreting laboratory results in transgender patients on hormone therapy. Am J Med. 2014 Feb; 127(2):159-62. doi: 10.1016/j.amjmed.2013.10.009. Epub 2013 Oct |



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| | | | | | what is "normal" for each patient. | | 19. PMID: 24332725. |
| Changes in laboratory results in transgender individuals on hormone therapy - a retrospective study and practical approach | Evelien Tm Boekhout-Berends 1,Chantal M Wiepjes 2,Nienke M Nota 2,Hans Hm Schotman 1, Annemieke C Heijboer 3 4, Martin den Heijer 2 | Interpretation of laboratory results for transgender individuals who have started hormone therapy requires careful consideration, specifically for analytes that have sex-specific reference ranges | A Retrospective Study and Practical Approach | In the literature, there are conflicting data on the effect of hormone therapy on laboratory parameters. By studying a large cohort, we aim to define which reference category (male or female) is most appropriate to use for the transgender population throughout gender-affirming therapy | Overall, the reference ranges in transgender people after 1 year of hormone therapy resembled those of their stated gender. | As a practical approach, we recommend using gender-affirmed reference intervals starting at 1 year after starting hormone therapy. | Boekhout-Berends ET, Wiepjes CM, Nota NM, Schotman HH, Heijboer AC, den Heijer M. Changes in laboratory results in transgender individuals on hormone therapy - a retrospective study and practical approach. Eur J Endocrinol. 2023 May 24;lvad052. doi: 10.1093/ejendo/lvad052. Epub ahead of print. PMID: 37224509. |
| Challenges in Transgender Healthcare : The Pathology Perspective | Sarika Gupta 1, Katherine L Imborek 2, Mateus D Krasowski 3 | Summarize the available gender transition options and discuss health challenges, from a pathology/laboratory medicine perspective, in the care of transgender patients. | Revision | The transgender community is one of the most marginalized sectors of our society. The literature is scarce regarding the challenges of pathology and laboratory medicine associated with the care of transsexual patients. | Major transgender health challenges in the practice of laboratory pathology/medicine include the inflexibility of electronic medical records in documenting stated gender, medical and laboratory professionals' lack of knowledge of the needs and terminology related to the transgender population, lack of referral ranges for laboratory tests, unclear guidelines on gender classification for blood donation eligibility criteria, and Lack of experience in handling and interpreting | Targeted efforts to overcome these deficiencies, coupled with a more welcoming attitude, are essential to achieving the highest standards of care for the transgender population. | Gupta S, Imborek KL, Krasowski MD. Challenges in Transgender Healthcare: The Pathology Perspective. Lab Med. 2016 Aug; 47(3):180-8. doi: 10.1093/labmed/lmw020. Epub 2016 Jun 10. PMID: 27287942; PMCID: PMC4985769. |

Contemporary Reflections: Exploring Social Dynamics in the Current World

Hormone therapy, inclusion, and care for transgender patients in the field of laboratory medicine: Challenges and recommendations for a respectful approach. A systematic review



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| | | | | | surgical and cytological specimens from individuals undergoing gender transition. | | |
| | | to present a recent case report of a transsexual woman with a single presentation at the author's institution. | Non-systematic electronic literature search to identify pertinent studies. The PubMed search engine was queried using the following search terms: "prostate cancer," "male-to-female transsexual," "transgender patient," "androgen + prostate cancer," "estrogen therapy + prostate cancer," and "health care barrier." In addition, a clinical case managed at our institution was critically reviewed and discussed. | Barriers to care for the transgender female population include access to resources, medical knowledge deficits, transition-related ethics of medical care, diagnosis versus pathologization of transgender patients, patient financial constraints, and health care system determinants. | an emerging body of literature has questioned the role of androgens in the development of PCA and suggested that estrogen therapy may not be as protective as initially thought. Therefore, current evidence suggests that the trans woman should be screened for PCA in the same way as a non-trans man. | Although rare, PCA in transgender women has been documented. Both the mechanism and impact of receiving a bilateral orchiectomy on the development of the disease are unclear. Future studies are needed to examine these factors and further shape the treatment and screening regimen for these patients. | |

3 CONCLUSION

The main obstacles in the area of pathology and laboratory medicine related to the health of transgender people encompass several challenges. These include the rigidity of electronic medical record systems regarding self-reported gender registration, a lack of knowledge on the part of medical and laboratory professionals about the specific needs and terminology related to the transgender population, the absence of adequate referral ranges for laboratory tests, unclear guidance with regard to gender categorization for eligibility criteria for blood donation, and a shortage of Experience in the manipulation and interpretation of surgical and cytological specimens from individuals in the process of gender transition. It is imperative to direct specific efforts to overcome these limitations, accompanied by a more inclusive stance, in order to achieve the highest standards of care for the transgender population. Medical professionals must acquire skills for effective communication with transgender patients. They must understand that the unique anatomy and use of gender-affirming hormones can influence the prevalence of certain diseases, such as cardiovascular disease, venous thromboembolism, and osteoporosis. In addition, physicians must be prepared to address specific issues related to hormone therapy.



Healthcare institutions need to strive to provide inclusive systems of care. This involves properly identifying and integrating transgender patient information into electronic medical records, considering the unique needs of these patients in healthcare facilities, and creating a welcoming environment through education and policies that promote quality care for all.



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