EAA Andrology Training Centre

Centre Report

2023

Unità Operativa Complessa di Andrologia Medica
Ospedale Civile San Salvatore
Università di L'Aquila
67100 Coppito, L'Aquila, Italy
Tel: +39 862 368338
Fax: +39 862 368342

CENTRE REPORT

History of Centre

Andrology in L'Aquila is a more than 30 years' experience. Among the scientific events organized in L'Aquila in this area, is worth mentioning the International Congress "Oligozoospermia: Recent progress in Andrology", held in 1980; this was a key event in promoting Andrology as new basic and clinical medical science. Twenty years later L'Aquila hosted the European Academy of Andrology (EAA) "1st European Congress of Andrology".

The "Complex Unit of Medical Andrology" of the University Hospital of L'Aquila was instituted in 2000. A bank for male gamete cryopreservation is operative since 2003. In the past two years, the biobank premises have been expanded and completely renovated in space and equipment in line with Italian regulations of the National Transplant Center. The Unit was certified as EAA training centre in 2005 (see report in Int J Androl 2006 vol.29, supplement 1, pag. 154-159), and since 2008 it was certified as Abruzzo reference centre for Andrology and Male Gametes Cryopreservation. In 2016 it was certified "Centre of Excellence" in Andrology and Sexual Medicine by the Italian Society of Andrology and Sexual Medicine. Since 2022, the L'Aquila Andrology Unit is the only public center in Abruzzo recognized by the Istituto Superiore di Sanità for the management of people with gender incongruence.

Organization of Centre

The L'Aquila EAA centre consists of the Complex Unit of Medical Andrology within the University Hospital of L'Aquila. The Unit includes medical clinic for outpatients, a seminology laboratory and the bank for male gamete cryopreservation. Close cooperation exists within the L'Aquila University Hospital with the Clinical Pathology Service (for hormonal determinations and bacterial colture of semen, including search for Clamydia and Ureaplasma in uretral swab and molecular genetic tests), the Medical Genetics Unit (for cytogenetic tests, including Y deletions analysis), the Urology Unit (for Micro-TESE and Surgical Andrology), the Unit of Operative Radiology (for scleroembolization of spermatic vein), the ART centre of Obstetrics and Gynaecology Unit, the Paediatric Unit (for handling young boys with defects of hypothalamus-pituitary-gonadal axis) and psychiatric service (for the management of sexual dysfunction and diagnosis of gender incongruence). Thus, patients have access to all medical requirements within short distance.

The Andrology Unit also cooperates with the Spinal Unit of San Raffaele Sulmona Institute for the management of sexual and reproductive dysfunctions of men with spinal cord injuries.

Educational activities

Current activities

Post-graduate School of Endocrinology. In 1981 a Postgraduate School of Andrology was instituted at the University of L'Aquila. In 1986 it was replaced by the Postgraduate School of Endocrinology. Postgraduate students spend at least 2 years of the course in the Andrology Unit.

Pre-graduate course of Andrology for medical students at the University of L'Aquila.

Pre-graduate course of Andrology for students in Reproductive Biotechnologies at the University of Teramo (professional training in andrology at the Andrology Unit of L'Aquila).

Previous activities

Course on Management of Male Infertility (2013, February). A 2 days Course reserved to 80 doctors from different area of Russia Federation, actively involved in Andrology clinics, and selected by FARMAMED, a pharmaceutical institution of Russia.

MASTER in Quality Management and Safety in Handling and Storage of Human Cells and Tissues (2012-2013 and 2013-2014).

Postgraduate course in Quality Management and Safety in Handling and Storage of Human Cells and Tissues (2014).

Master's degree in adolescent medicine (2022-2023).

Research activities

In the field of **erectile dysfunction (ED)** and its relationship with cardiovascular risk, we explored the molecular mechanisms involved in the inhibition of circulating angiogenic cells (CACs) in subjects with ED and explored the role of PDE5i on CACs and endothelial function (Atherosclerosis 2008,196:313; Int J Androl 2012,35:645; Asian J Androl 2014,16:290; J Sex Med 2016,13:1063). The correlates of ED have been assessed both in subjects with DE and VRF (Int J Impot Res 2007,19:597; Int J Androl 2009,32:74) as well as in spinal cord injured men (J Sex Med 2012,9:830; J Sex Med. 2020 May;17(5):911-918; J Clin Med. 2021 May 13;10(10):2090). The prevalence of ED and other sexual dysfunction was investigated in Klinefelter syndrome (J Sex Med. 2021 Jun;18(6):1053-1064), in men with homosexual orientation (J Sex Med. 2019 May;16(5):624-632) and in men with hyperuricemia (Andrology. 2022 Jan;10(1):72-81). The relationship between cannabis consumption and sexuality was also investigated in large study involving ≈5000 men (Andrology. 2024 Jan;12(1):9-19).

In the field of **male infertility**, interest has been focused on clinical correlates of asthenozoospermia ranging from the study of the spontaneous variability of seminal parameters in infertile subjects (Int J Androl 2007,30:174) to the relationship of seminal leucocytes with sperm pathophysiology (oxidative stress, DNA damage, apoptosis) (Int J Androl 2009,32:623; Fertil Steril 2011,95:2676; Andrology 2016,4:808), seminal levels of endocannabinoids (Andrology 2017,5:87), semen quality and ART outcomes (Andrology, 2020;8:125-135.). Studies have been also carried out on the relevance of both morphological and functional mitochondrial modifications in spermatozoa of subjects with asthenozoospermia (Fertil Steril 2011, 95:641; Fertil Steril 2011, 95: 2315) and on ultrastructural characterization of genetic sperm tail defects (Fertil Steril 2006, 85:940; Hum Reprod 2008,4:996, Hum Reprod 2008,23:1957). A cross-over study on the efficacy of intrauterine insemination in oligo-astheno-terato-zoospermia and in male immunological infertility was also carried out (Fertil Steril 2009,92:1009). Expertise in the field of immunological infertility is documented by the publication of various reviews by invitation (Front Biosci 2007,12:2890; MALE AUTOIMMUNE INFERTILITY In: WKH Krause & RK Naz: IMMUNE INFERTILITY, Ed. Springer-Werlag, Berlin pp.145-153, 2009, and an updated 2nd Edition in 2017; INFERTILITY: IMMUNLOGICAL ASPECTS In: eLS, John Wiley & Sons, Ltd: Chichester, 2012) and by large retrospective analysis of over 10,000 men (the largest published so far) assessing the prevalence of anti-sperm antibodies and the relationship of degree of sperm auto-immunization to semen parameters and post-coital test outcome (Hum Reprod 2019,34:834) as well as the relationship between natural and intrauterine insemination-assisted live births and the degree of sperm autoimmunization (Hum Reprod. 2020 Jun 1;35(6):1288-1295). Attention has been also focused on the effect of varicocele repair on male reproductive outcomes (J Endocrinol Invest. 2019 Oct;42(10):1215-1221; Andrologia 2018,50:e13118; J Endocrinol Invest

2017,40:1145), as well as on the clinical significance of epididymal ultrasound in the diagnosis of excretory and secretory azoospermia, and in oligozoospermia (Andrology 2013,1:133; Hum Reprod 2014,7:1368). Moreover, we recently also carried out a comprehensive evaluation of the risk of testicular cancer (Front Endocrinol 2019,10:164), as well as clinical and seminal features (Hum Reprod. 2021 Mar 18;36(4):891-898) in men with testicular microlithiasis. As far as the treatment of male infertility is concerned, we coordinated the guidelines on the FSH use from the Italian Society of Andrology and Sexual Medicine (SIAMS) (J Endocrinol Invest. 2018 Sep;41(9):1107-1122) and carried out the largest network meta-analysis on the efficacy of nutraceutical interventions (Andrology. 2024 Mar;12(3):538-552).

In the field of **physiology and physiopathology of human spermatozoon** we explored the dynamics of tyrosine phosphorylation during capacitation in relation to the acquisition of sperm fertilizing ability (Biol Reprod 2008,79:649; Asian J Androl 2010,12:853); the role of the chemokine system (Mol Hum Reprod 2008,14:387; HumReprod 2009, 24:2979) and of endocannabinoid system (Endocrinology 2009,150:4692; Endocrinology 2010,151:5882; Andrology 2014,2:502; Nat Rev Urol. 2021 Jan;18(1):19-32). We also demonstrated the involvement of mitochondrial dysfunction in the inhibitory effect on sperm motility exerted by the seminal plasma from men with spinal cord injury (Andrology 2013,1: 456-63; Antioxidants (Basel). 2021 Apr 28;10(5):695) and the protective role of lactobacilli on sperm oxidative damage (Fertil Steril 2011, 95:2485; PLoS One 2013,8:e83136). We carried out the first studies assessing the effects in vitro of the plasticizer bisphenol A (Reprod Toxicol 2016,66:61; Front Endocrinol (Lausanne). 2020 Jun 12;11:353; Front Endocrinol (Lausanne). 2020 Oct 8;11:597609; Biochem Pharmacol. 2022 Mar;197:114896), S and F (Reprod Toxicol. 2021 Aug;103:58-63) on human spermatozoa. We also demonstrated the expression of ACE2 Receptor and Its Isoform Short-ACE2 in human spermatozoa (Int J Mol Sci. 2022 Mar 28;23(7):3694).

Hypogonadism and its correlates have been addressed in men with spinal cord injury (SCI), who exhibit a high prevalence of biochemical androgen deficiency (Andrology 2014,2:721; J Spinal Cord Med 2016,25:1; J Spinal Cord Med 2016,39:246; Arch Phys Med Rehabil 2016,97:726; Spinal Cord 2018,56:494; Arch Phys Med Rehabil 2017;98:940; J Endocrinol Invest 2019;42:167; J Endocrinol Invest. 2020 Nov;43(11):1599-1606), as well as in men with vitamin D deficiency (Endocrine. 2021 Apr;72(1):49-61). We also assessed the intervention strategies for androgen deficiency (Andrology. 2020 Nov;8(6):1551-1566; Expert Rev Clin Pharmacol. 2021 Sep;14(9):1091-1103; Andrology. 2023 Sep;11(6):1067-1076). More recently we first identified a negative association between iodine exposure and testosterone levels in a large cohort from the NHANES (JAMA Netw Open. 2023 Dec 1;6(12):e2348573).

In recent years, our area of clinical and research interest has included **gender incongruence** with neurobiology analyses (J Sex Med. 2020 Mar;17(3):543-550) and studies on the effects of gender affirming hormone therapy on coagulation (Front Endocrinol (Lausanne). 2021 Nov 9;12:741866; Thromb Res. 2024 Mar 4;236:170-178) and anthropometric-cardiovascular profile (Transgender Health. 2023, ahead of prin; doi:10.1089/trgh.2023.0040).

Clinical activities

1. *Andrology Clinic:* The Medical Andrology Unit is mainly active in the evaluation and management of infertile patients and those with sexual dysfunctions. Patients with primary or secondary hypogonadism, boys with delayed puberty and patients with

other endocrine diseases are also seen. In the 2023 the Andrology Unit has been recognized regional reference centre for the management of congenital hypogonadotropic hypogonadism.

2. *Seminology laboratory:* **Conventional semen analysis** is performed according to the World Health Organization recommended procedures (2021). Nevertheless, IgG-MAR-test continue to be performed as screening test for immunological infertility on all ejaculates in the contest of the standard semen analysis. In the presence of a positive IgG-MAR-test, IgA-MAR test is also performed in the same ejaculate, and sperm-agglutinating activity is titrated in serum and seminal plasma. Laboratory participates to external quality assessment for semen analysis UK NEQAS (Birmingham).
Sperm **DNA fragmentation** (TUNEL assay) is assessed using flow cytofluorimetry in cases of ART failure and recurrent pregnancy loss.
Flow cytometry is also employed for quantifying and phenotyping seminal leukocytes by using monoclonal antibodies (anti-CD45, anti-CD14 and anti-HDL-DR) and the Flow-Count™ Fluorospheres kit.
Computer-Assisted Semen Analysis (CASA) is performed for an objective assessment of sperm motility in selected cases (i.e., on evaluating effectiveness of treatments).
For research purpose, CASA and flow cytometry analyses are carried out to assess mitochondrial membrane potential, mitochondrial ROS generation, membrane lipid peroxidation, DNA 8OHdG, caspase activation, sperm tyrosine phosphorylation during capacitation and anti-sperm antibody load on sperm surface.
Transmission electron microscopy (TEM) can be offered to ascertain genetic conditions of total sperm immotility with preserved sperm vitality.

3. *Centre for male gamete cryopreservation:* A bank for male gamete cryopreservation is operative since 2003. Sperm cryopreservation is offered mainly to patients with malignant diseases before chemotherapy or radiotherapy but also to patients with severe oligozoospermia or intermittent presence of motile spermatozoa in the semen (as backup for ICSI), to patients with hypothalamo-pituitary hypogonadism after gonadotrophin treatment and to patients undergoing pelvic surgery.
Cryopreservation of testicular sperm is also routinely performed after TESE/Micro-TESE.

4. *Testicular sperm extraction:* Up to December 2018, TESE has been performed by Andrology Unit staff in azoospermic patients. Starting from January 2019, Micro-TESE is performed in cooperation with the Urology Unit of the Hospital. Specimens are immediately transferred to Andrology laboratory for sperm extraction and histology.

5. *Medically assisted ejaculation procedures:* Penile vibratory stimulation (PVS) is offered to spinal cord injured men for semen evaluation and/or cryopreservation.

6. *Ultrasonography:* Ultrasonographic examinations are performed with a duplex scanner equipped with colour flow imaging (General Electric, Healthcare, WI, USA). Scrotal color-Doppler ultrasound (CDU) as diagnostic tool in patients with poor semen quality, in those with an increased risk of malignancy and in those with evidence of varicocele at physical examination. Penile CDU, 10 and 30 minutes following intracavernous injection of 10 μg of the vasoactive drug prostaglandin E1, is offered to men with erectile dysfunction associated to vascular diseases or vascular risk factors. This is also offered in men with Peyronie's disease. Penile examination is associated to ultrasound determination of common carotid arteries intima-media thickness as an

objective evaluation of preclinical atherosclerosis of large arteries. Trans-rectal CDU is performed as a diagnostic tool in patients with azoospermia or severe oligozoospermia to screen possible obstructions of the distal seminal tract. This is also offered to men with persistent leucocytospermia or possible prostate-vesciculitis after general and physical examination. Transvaginal sonography is performed to monitor follicular development and ovulation for Post Coital Test (PCT).

7. The *activity of the ART centre of Obstetrics and Gynaecology Unit*, discontinued after the 2009 earthquake (intrauterine inseminations continued to be offered at the Andrology Unit), restarted from 2019. A strict co-operation exists with the Andrology Unit. Female outpatients are visited by gynecologist within the Andrology Unit.

8. Since 2022, the L'Aquila Andrology Unit is the only public center in Abruzzo recognized by the Istituto Superiore di Sanità (ISS) for the management of people with *gender incongruence*. The center works in close cooperation with the hospital's mental health service, and after the diagnosis of gender incongruence, gender affirming hormone therapy can be prescribed to AFAB and AMAB transgender people free of charge at the endocrinology outpatient office of our Andrology center based on Italian legislation (Law #164/82).

Name and address of Centre

Unità Operativa Complessa di Andrologia Medica

Ospedale Civile San Salvatore
Università di L'Aquila
67100 Coppito, L'Aquila, Italy
Tel: +39 862 368338
Fax: +39 862 368342

Type of Centre

University	
University Hospital	X
Private Centre	

Other (please specify) _____

1. Director Arcangelo Barbonetti

Academician		Affiliated Member		Clinical Andrologist	X

3. Present Staff *(Senior Scientists)*

1)	Name	Arcangelo Barbonetti
	Degree	Associate professor
	Speciality	Endocrinology

Academician [ ] Affiliated Member [ ] Clinical Andrologist [X]

2)	Name	Marco Giorgio Baroni
	Degree	Full professor
	Speciality	Endocrinology, Diabetology

Insert any additional staff below *(if required)*

MD/Biologists/Chemists

1)	Name	Giuliana Cordeschi
	Degree	
	Speciality	Biologist, funzionario tecnico University of L'Aquila
	Full time	

Insert any additional staff below *(if required)*

PhD Students

1) Name	Maria Totaro, M.D., PhD

Nurses

1) Name	Anna Spaziani
2) Name	Rita Nannicola

4. Clinical Activity

A. Outpatients: Consultations per year in the last 3 years

	2021	**2022**	**2023**
New patients	1290	1276	1018
Follow-up patients	1171	1659	1460

Type of patients in the last years (%)	**2021**	**2022**	**2023**
Infertility	≈ 30%	≈ 30%	≈ 30%
Erectile dysfunction	≈ 25%	≈ 25%	≈ 25%
Hypogonadism	≈ 25%	≈ 25%	≈ 25%
Klinefelter	≈ 1%	≈ 1%	≈ 1%
Gynaecomastia	<1%	<1%	<1%
Varicocele	Included in "infertility"	Included in "infertility"	Included in "infertility"
Testicular tumours	<1%	<1%	<1%
Disorders of gender identity	<1%	<1%	<1%
Other	≈ 15-20%	≈ 15-20%	≈ 15-20%

B1. Male ultrasound (testis, penile, prostate)

	2021	**2022**	**2023**
Total	276	196	191

B2. Female ultrasound (transvaginal ultrasonography)

	2021	**2022**	**2023**
Total	484	272	152

C. Andrological surgery procedures

	2021	**2022**	**2023**
mTESE	13	4*	3*
Varicocele scleroembolization *(Performed at the Interventional Radiology Unit)*	35	32	38
Prostate biopsies			
BPH			
Prostate cancer			
Vasectomy			
Vaso-vasostomy			

**The numbers refers to the months: January-April 2022 and May-December 2023 only. This is due to the suspension of the activities to carry out earthquake-resistant consolidation construction work. On average, 1-2 mTESE are performed per month.*

5. A. Andrology laboratory activity

	2021	**2022**	**2023**
Semen analyses	779	763	613
Sperm antibodies: in our lab MAR test is an integral part of standard semen analysis			

5. B. Andrology laboratory activity

Sperm banking donors	Yes		No	X
Sperm banking cancer patients	Yes	X	No	

If yes:			
	2021	**2022**	**2023**
Number of samples	180	55*	62*

**Low numbers due to the suspension of the activities to carry out earthquake-resistant consolidation construction work.*

5. C. Histopathologial evaluation of biopsies Yes [X] No [ ]

5. D. Reproductive Hormones Assays Yes [ ] No [X*]
** Reproductive hormones assays are performed in the campus*

If yes please specify type of assays and number of samples in the last year:

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5. E. Y chromosome microdeletions according to EAA/EMQN guidelines Yes [ ] No [X*]
** Reproductive hormones assays are performed in the campus*

If yes number of tests in the past year _____

Participation to the EAA quality control scheme?	Yes		No	X
If no, specify if available in another lab of the same hospital	Yes		No	X
Blood karyotyping	Yes	X	No	
If no, specify if available in another lab of the same hospital	Yes		No	

Other genetic tests (please specify)

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6. Collaborations with other Clinical Units of the University/Hospital

IVF Unit Yes [X] No [ ]
If yes please specify: Children, Endocrinology, IVF, Urology, Genetics, Pathology, Psychiatry

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Urology Clinic Yes [X] No [ ]

Endocrine Clinic Yes [X] No [ ]

Genetics Lab/Unit Yes [X] No [ ]

Paediatric Unit Yes [X] No [ ]

Central Hospital Laboratory Yes [X] No [ ]

Private Centres Yes [ ] No [X]

If yes please specify:

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7. Clinical teaching activity
Duration of training (years): 2 years of Reproductive Medicine and Andrology out of 5 years of Postgraduate School of Endocrinology

	Number
A: Trainees in the last five years	5
B: Trainees who passed EAA-ESAU\exam for Clinical Andrologist in the last 5 yrs	3
C: Trainees working in the centre preparing to pass the EAA-ESAU examination	2
D: PhD Students	1
E: Medical Students	80/yr
F: Other students (MSc): Students of Biotechnologies of Reproduction	25/yr

8. Formal Andrology teaching program Yes [X] No [ ]

If yes: specify duration (years/months): Years [2] Months [0]

	Hours of formal teaching per year	**Professional training (weeks/months)**
Medical Students	20	1 week
PhD Students		
Post Graduate students	30	11 months
Trainees		
Students of Biotechnologies of Reproduction	25	1 week

9. Research Activity (main topics of the last 5 years)

Sexual dysfunction

Continuing our traditional research on erectile dysfunction (ED), in the last 5 years, correlates of ED have been assessed both in spinal cord injured men (J Sex Med. 2020;17:911; J Clin Med. 2021;10:2090). The prevalence of ED and other sexual dysfunction was investigated in Klinefelter syndrome (J Sex Med. 2021;18:1053), in men with homosexual orientation (J Sex Med. 2019;16:624) and in men with hyperuricemia (Andrology. 2022;10:72). The relationship between cannabis consumption and sexuality was also investigated in large study involving ≈5000 men (Andrology. 2024;12:9).

Male infertility

Our interest has been focused on the relationship of seminal leukocytes with semen quality and ART outcomes (Andrology. 2020;8:125). Continuing our traditional research on the field of immunological infertility, in a recent retrospective analysis of over 10,000 men (the largest published so far), we assessed the prevalence of anti-sperm antibodies and the relationship of degree of sperm auto-immunization to semen parameters and post-coital test outcome (Hum Reprod. 2019;34:834) as well as the relationship between natural and intrauterine insemination-assisted live births and the degree of sperm autoimmunization (Hum Reprod. 2020;35:1288). Attention has been also focused on the effect of varicocele repair on male reproductive outcomes (J Endocrinol Invest. 2019;42:1215; Andrologia 2018,50:e13118). Moreover, we carried out a comprehensive evaluation of the risk of testicular cancer (Front Endocrinol. 2019;10:164), as well as clinical and seminal features (Hum Reprod. 2021;36:891) in men with testicular microlithiasis. Recently, our interest has been focused on the treatment of male infertility: we coordinated the first guidelines on the FSH use from the Italian Society of Andrology and Sexual Medicine (SIAMS) (J Endocrinol Invest. 2018;41:1107) and carried out the largest network meta-analysis on the efficacy of nutraceutical interventions (Andrology. 2024;12:538).

Physiology and physiopathology of human spermatozoon

Over the past five years we have continued to deal with 1) the role of mitochondrial dysfunction (Antioxidants. 2021;10:695) and endocannabinoid system (Nat Rev Urol. 2021;18:19) in sperm biology and function; 2) the effects of the plasticizer bisphenols on human spermatozoa (Front Endocrinol. 2020;11:353; Front Endocrinol. 2020;11:597609; Reprod Toxicol. 2021;103:58; Biochem Pharmacol. 2022;197:114896). We also demonstrated the expression of ACE2 Receptor and Its Isoform Short-ACE2 in human spermatozoa (Int J Mol Sci. 2022;23:3694).

Hypogonadism and other endocrine disorders in men with spinal cord injury (SCI)

Continuing our clinical research on androgen deficiency in men with spinal cord injury, we explored the bone-testis axis, revealing a strong positive association between osteocalcin and testosterone levels (J Endocrinol Invest 2019;42:167). We also demonstrated significant and independent associations of testosterone, level of the lesion and age with prostate volume (J Endocrinol Invest. 2020;43:1599). In the same population we carried out a longitudinal study demonstrating that vitamin D levels are independent predictors of 1-year worsening in physical function (Spinal Cord. 2018;56:494). We contributed to clarify the clinical significance of the association between hypovitaminosis D and androgen deficiency through a large systematic literature review with meta-analysis (Endocrine. 2021;72:49). As for the treatment of hypogonadism, we produced a critical comparative analysis of available guidelines on testosterone replacement therapy (Andrology. 2020;8:1551), with special reference to the patient with metabolic disorders (Expert Rev Clin Pharmacol. 2021;14:1091), and evaluated the therapeutic efficacy of selective estrogen receptor modulators, especially in the obese hypogonadal patient (Andrology. 2023;11:1067). More recently we first

identified a negative association between iodine exposure (as assessed by urinary iodine concentration) and both total and calculated free testosterone levels in a large cohort from the NHANES (JAMA Netw Open. 2023;6:e2348573).
In recent years, our area of clinical and research interest has included **gender incongruence.** In this field we revealed a significant association between longer CAG repeats in the androgen receptor and transgender identity of AMAB people (J Sex Med. 2020;17:543). We also assessed the effects of gender affirming hormone therapy (GAHT) on coagulation parameters in both AMAB (Front Endocrinol. 2021;12:741866) and AFAB people (Thromb Res. 2024;236:170-178). The changes in anthropometric-cardiovascular profile under testosterone-based GAHT was also evaluated (Transgender Health. 2023, ahead of prin; doi: 10.1089/trgh.2023.0040).

10. Research Funding

Funding from University of L'Aquila to support annual projects in the last 3 years: 20.000 Euro

ORGANIZATION CHARTS

Organization charts legend: Department / Unit Structure

Name of the Centre Complex Unit of Medical Andrology
Director of the Unit: Prof. Marco Giorgio Baroni **Director of the EAA training center:** Prof. Arcangelo Barbonetti
Staff members: Please, see pages 8-10

Clinical activities:
Andrological outpatient clinics Endocrinological outpatients clinics Infertility outpatient Clinic (couples) Gender incongruence outpatient clinics Seminology Ultrasound Cryopreservation of sperm mTESE* ** In collaboration with the Urology Unit of L'Aquila Hospital*

Contribution to EAA training:
Infertility investigation, infertility management and fertility preservation Management of andrological disorders Andrological ultrasound

FULL LIST OF PUBLICATIONS of staff members from the last 5 years

1: Tienforti D, Pastori D, Barbonetti A. Effects of gender affirming hormone therapy with testosterone on coagulation and hematological parameters in transgender people assigned female at birth: A systematic review and meta- analysis. Thromb Res. 2024 Mar 4;236:170-178. doi: 10.1016/j.thromres.2024.02.029. Epub ahead of print. PMID: 38457996.

2: Di Giulio F, Castellini C, Palazzi S, Tienforti D, Antolini F, Felzani G, Baroni MG, Barbonetti A. Correlates of metabolic syndrome in people with chronic spinal cord injury. J Endocrinol Invest. 2024 Jan 29. doi: 10.1007/s40618-023-02298-8. Epub ahead of print. PMID: 38285309.

3: Barbonetti A, Castellini C, Di Giulio F, Antolini F, Tienforti D, Muselli M, Baroni MG. Iodine Intake and Testosterone. JAMA Netw Open. 2023 Dec 1;6(12):e2348573. doi: 10.1001/jamanetworkopen.2023.48573. PMID: 38117501; PMCID: PMC10733805.

4: Tienforti D, Castellini C, Di Giulio F, Spagnolo L, Muselli M, Fisher AD, Vignozzi L, Baroni MG, Barbonetti A. Metabolic Features of Assigned Female at Birth Transgender People on Gender-Affirming Hormone Therapy: A Meta-analysis. Transgender Health.ahead of printhttp://doi.org/10.1089/trgh.2023.0040

5: Barbonetti A, Tienforti D, Castellini C, Giulio FD, Muselli M, Pizzocaro A, Vena W, Baroni MG, Pivonello R, Isidori AM, Maggi M, Corona G. Effect of antioxidants on semen parameters in men with oligo-astheno-teratozoospermia: a network meta-analysis. Andrology. 2024 Mar;12(3):538-552. doi: 10.1111/andr.13498. Epub 2023 Jul 26. PMID: 37495550.

6: Di Giulio F, Castellini C, Tienforti D, Felzani G, Baroni MG, Barbonetti A. Independent association of hypovitaminosis d with non-alcoholic fatty liver disease in people with chronic spinal cord injury: a cross-sectional study. J Endocrinol Invest. 2024 Jan;47(1):79-89. doi: 10.1007/s40618-023-02124-1. Epub 2023 Jun 5. PMID: 37273143.

7: Santi D, Lotti F, Sparano C, Rastrelli G, Isidori AM, Pivonello R, Barbonetti A, Salonia A, Minhas S, Krausz C, Vignozzi L, Maggi M, Corona G. Does an increase in adipose tissue 'weight' affect male fertility? A systematic review and meta-analysis based on semen analysis performed using the WHO 2010 criteria. Andrology. 2024 Jan;12(1):123-136. doi: 10.1111/andr.13460. Epub 2023 Jun 5. PMID: 37226894.

8: Hoxha M, Barbonetti A, Zappacosta B. Arachidonic Acid Pathways and Male Fertility: A Systematic Review. Int J Mol Sci. 2023 May 3;24(9):8207. doi: 10.3390/ijms24098207. PMID: 37175913; PMCID: PMC10178949.

9: Sentinelli F, Barchetta I, Cimini FA, Dule S, Bailetti D, Cossu E, Barbonetti A, Totaro M, Melander O, Cavallo MG, Baroni MG. Neurotensin Gene rs2234762 C>G Variant Associates with Reduced Circulating Pro-NT Levels and Predicts Lower Insulin

Resistance in Overweight/Obese Children. Int J Mol Sci. 2023 Mar 30;24(7):6460. doi: 10.3390/ijms24076460. PMID: 37047432; PMCID: PMC10095103.

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3. BARBONETTI – COCCIA: LEZIONI DI ENDOCRINOLOGIA – 1^ edizione 2023 – isbn 978-88-9385-349-1 – Società Editrice Esculapio – Bologna.