



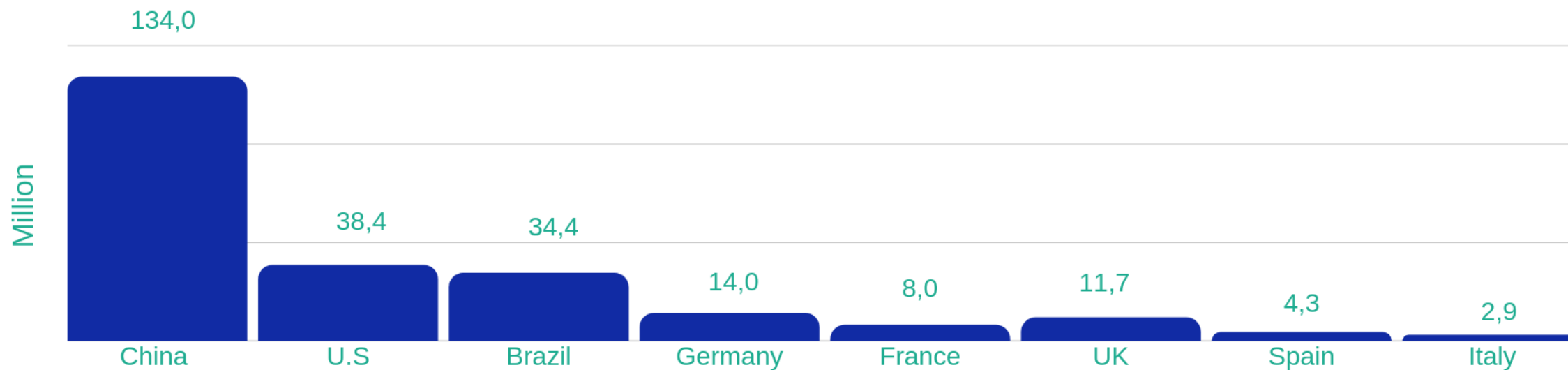
MyoSTIM

bioelectric treatment of erectile dysfunction

ED

Scientific and Clinical Rationale

Erectile dysfunction is a global issue projected to affect 332 million people by 2025

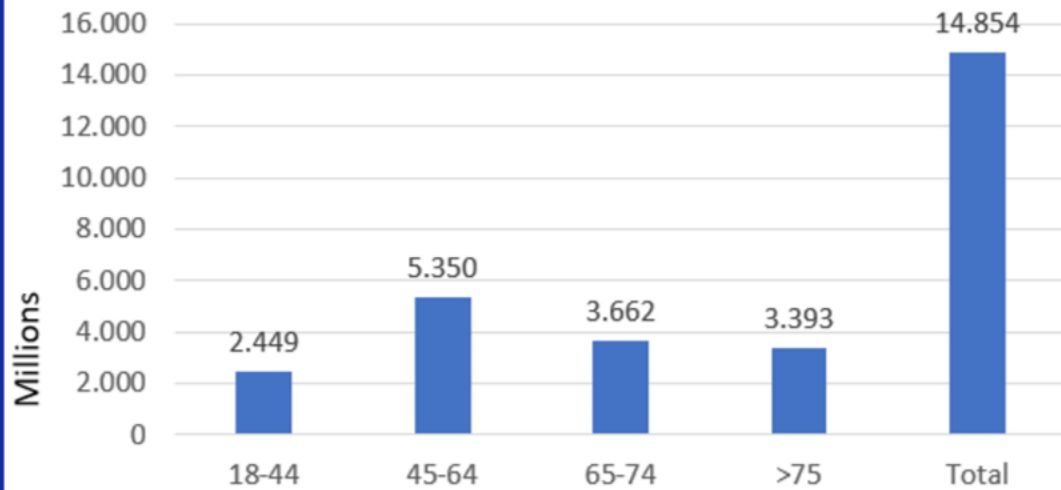


Junior, 2002; Zhag, 2017; Hallanzy, 2019; Giullinano, 2002; McKinlay, 2000; Kessler, 2017

*Reporting by market may vary based on survey methodology, willingness to admit sexual issues, age distribution of population, etc.

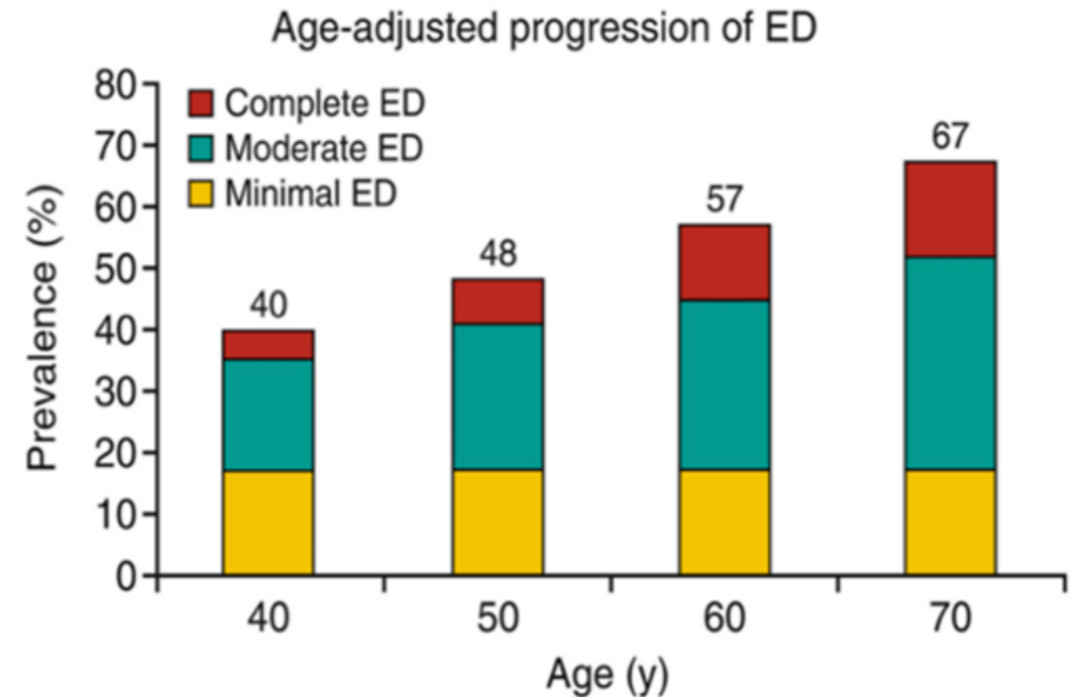
Erectile dysfunction is exceedingly common, affecting 35-40 million male Americans. Risk factors include coronary heart disease, diabetes and COPD

Coronary Heart Disease in males by age (000)²



- Hypertension in males (000): 33.1 million
- Diabetes in males: 15.3 million³
- Chronic bronchitis & emphysema in males: 4.8 million⁴

Major Risk Factors for ED: Aging



ERECTILE
DYSFUNCTION IS
ASSOCIATED WITH
AGING, CHRONIC
DISEASES,
MEDICATIONS AND
BEHAVIORAL
HEALTH

ED ASSOCIATIONS

- Age
- Hypertension
- Cardiovascular disease
 - Coronary artery disease, stroke, peripheral vascular disease
- Depression
- Diabetes
- Neurological disease
 - Parkinson's Disease, Multiple Sclerosis
- Medications for hypertension, diabetes, etc.
- Psychological factors (10-20% of cases)
 - Post-surgical complications
 - Radical prostatectomy, TURP

DIABETES AND ERECTILE DYSFUNCTION

- 30.3 million Americans have diabetes; 9.4% population and 25.2% seniors. Approximately 1.5 million new cases per year
- “In the Massachusetts Male Aging Study, diabetic men showed a threefold probability of having ED when compared to men without diabetes; moreover, the age-adjusted risk of ED doubled in diabetic men when compared to those without diabetes.
- The occurrence of ED is 10–15 years earlier in men with diabetes; moreover, ED is more severe and less responsive to oral drugs in diabetes, leading to reduced quality of life.”



INITIAL
TARGETING
TO BE
DRIVEN BY
CLINICAL
DATA AND
FOCUSED ON
ED
SPECIALISTS

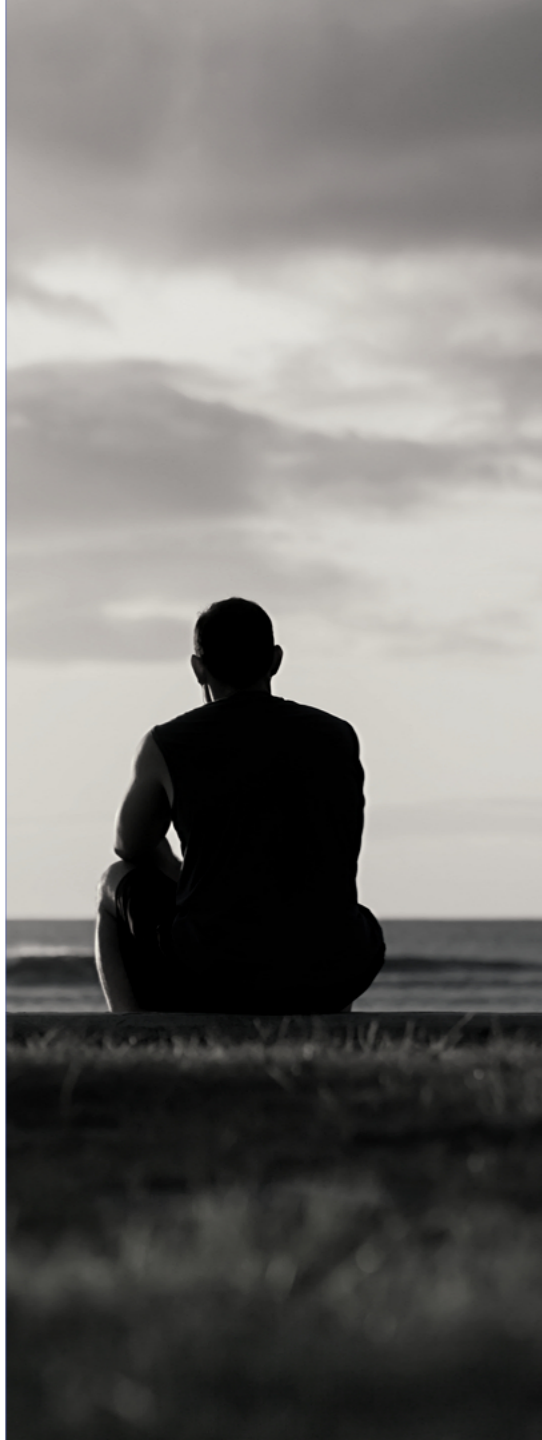


ED FACTOIDS

- Approximately one-third of American males age 35-74 have moderate-to-complete ED (25.5 million)
- An estimated 12% seek physician treatment from a urologist (3.1 million)
- According to the AUA, there are 226 ED subspecialists (1.8% of total), estimated to account for 10.6% of ED patient visits
- Within the generalist urologist physician pool are physicians who focus on male reproductive health issues

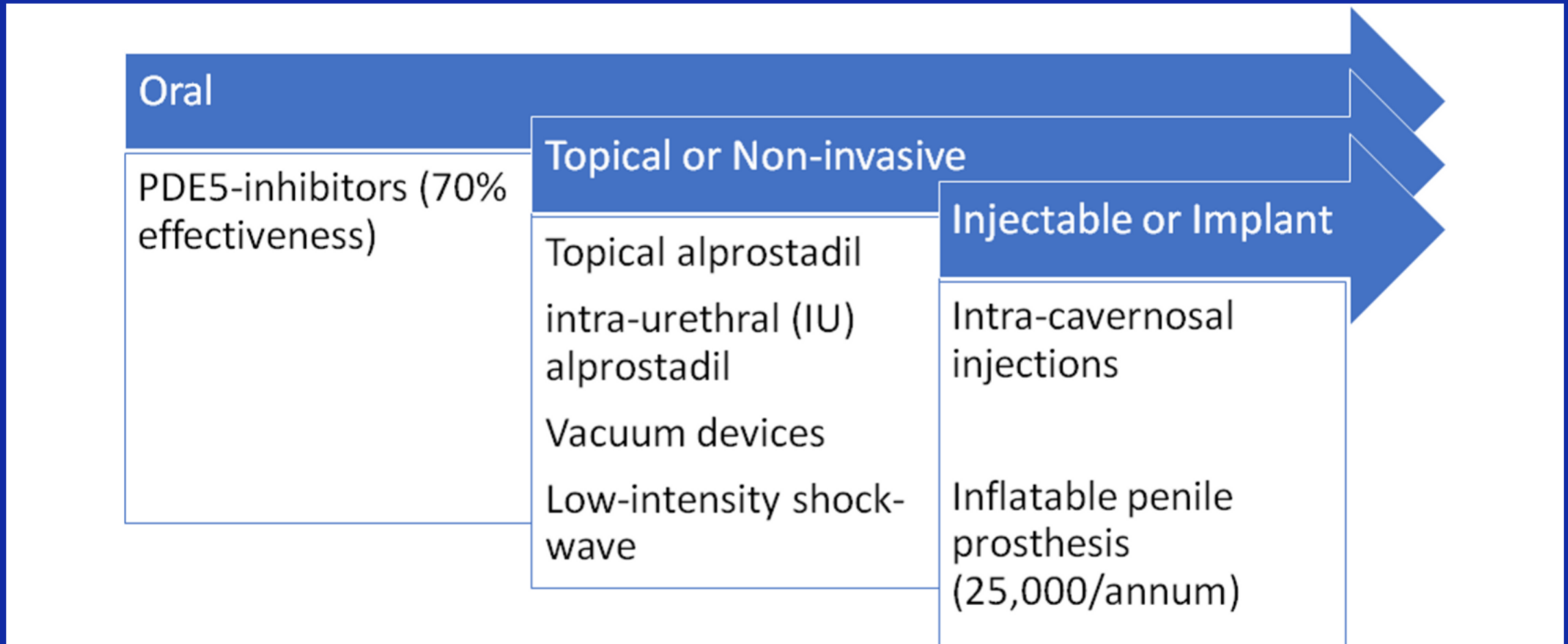


INITIAL TARGETING TO BE DRIVEN BY CLINICAL DATA AND FOCUSED ON ED SPECIALISTS



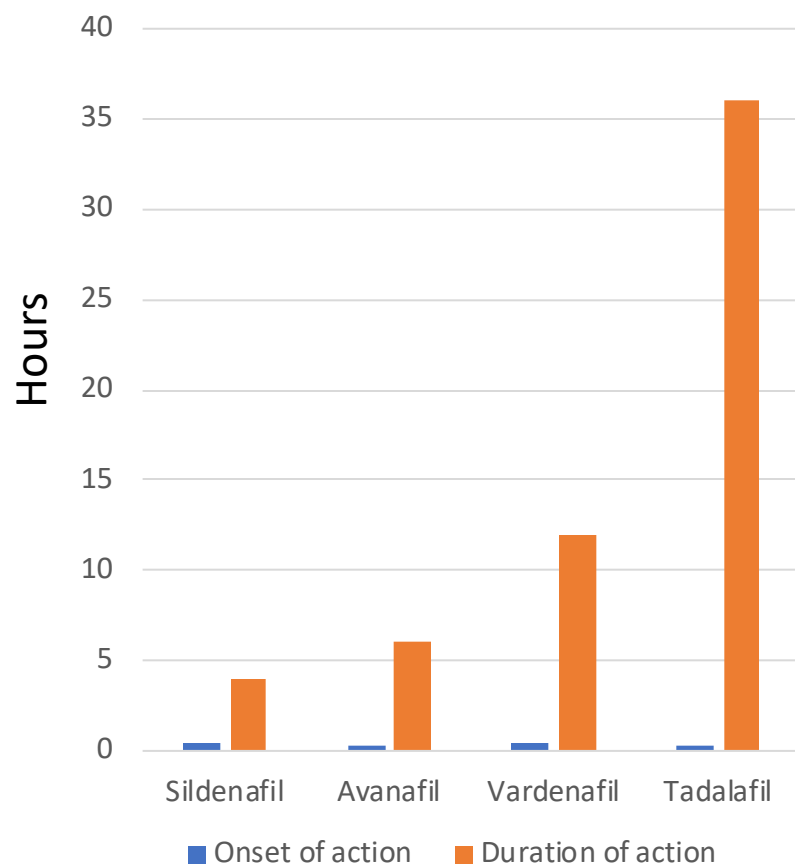
U.S.							
Year of launch	<u>t=1</u>	<u>t=2</u>	<u>t=3</u>	<u>t=4</u>	<u>t=5</u>	<u>t=6</u>	
Male population: 35-74 years	77,461	77,855	78,249	78,643	79,037	79,429	
x % ED	<u>51.9%</u>	<u>52.0%</u>	<u>52.0%</u>	<u>52.0%</u>	<u>52.1%</u>	<u>52.1%</u>	
= ED population (000)	40,215	40,447	40,679	40,911	41,143	41,373	
ED population moderate-to-complete							
Moderate	19,658	19,771	19,884	19,997	20,110	20,225	
Complete	<u>5,839</u>	<u>5,883</u>	<u>5,927</u>	<u>5,971</u>	<u>6,015</u>	<u>6,057</u>	
ED target population	25,497	25,654	25,811	25,968	26,125	26,282	
% ED population 35-74	32.9%	33.0%	33.0%	33.0%	33.1%	33.1%	
Physician referrals: Patients seeking treatment (000) ¹							
6%	1179	1186	1193	1200	1207	1214	
9%	2,295	2,309	2,323	2,337	2,351	2,365	
12%	3,060	3,078	3,097	3,116	3,135	3,154	
15%	<u>3,825</u>	<u>3,848</u>	<u>3,872</u>	<u>3,895</u>	<u>3,919</u>	<u>3,942</u>	
Specialist concentration							
	ED Specialists	Generalists	Total				
Number of urologists	226	12,291	12,517				
x ED patients/week	<u>30.0</u>	<u>4.6</u>	<u>5.1</u>				
Number of patients/week	6,780	56,981	63,761				
x 48 weeks/year	<u>48</u>	<u>48</u>	<u>48</u>				
ED patients/year	325,440	2,735,092	3,060,532				

Alternative treatment modalities may be inappropriate, ineffective or associated with adverse events



Note: Intra-cavernous injections may include phentolamine, papaverine, and alprostadil. It's an invasive procedure that is associated with dropout rates as high as 40%–50% due to pain, priapism, penile fibrosis, hematoma, ecchymosis, or fear of the needle


First line of treatment, PDE-5 Inhibitors, do NOT meet the needs of all patients (and are contra-indicated in angina, heart attack and uncontrolled hypertension)



Efficacy: Successful intercourse for general ED population
<https://www.pharmaceutical-journal.com/download?ac=1072931>

Sildenafil

Viagra




EFFICACY: 69%

- ▶ **Recommended dose:** 50mg, 1 hour before sexual activity, may be adjusted to 100mg or 25mg
- ▶ **Bioavailability:** 41%
- ▶ **Time to peak plasma levels:** 60 minutes
- ▶ **Half-life:** 3–5 hours
- ▶ **Onset of action:** 25 minutes
- ▶ **Duration of action:** up to 4 hours
- ▶ **Food:** high-fat meals delay the time to peak plasma concentration by 60 mins and reduce peak plasma levels by 29%
- ▶ **Common side effects:** headache, dizziness, flushing, nasal congestion, nausea, dyspepsia, visual abnormalities

Vardenafil

Levitra




EFFICACY: 71–80%

- ▶ **Recommended dose:** 10mg, 25–60 minutes before sexual activity. May be adjusted to 20mg or 5mg (film-coated only)
- ▶ **Bioavailability:** 15%, (film-coated), 19% (orodispersible)
- ▶ **Time to peak plasma levels:** 60 minutes (film-coated), 45–90 minutes (orodispersible)
- ▶ **Half-life:** 4–5 hours
- ▶ **Onset of action:** 25 minutes
- ▶ **Duration of action:** up to 12 hours
- ▶ **Food:** high-fat meals delay the time to peak plasma concentration by 60 mins (film-coated) and reduce peak plasma levels by 20% (film-coated) or 35% (orodispersible)
- ▶ **Common side effects:** headache, dizziness, flushing, nasal congestion, dyspepsia. Inhibits PDE6, which can cause transient visual abnormalities. Can prolong QTc interval

Tadalafil


Cialis



EFFICACY: 75%

- ▶ **Recommended dose:** 10mg, 30 minutes before sexual activity, may be adjusted to 20mg; or 2.5–5.0mg daily
- ▶ **Bioavailability:** not determined
- ▶ **Time to peak plasma levels:** 120 minutes
- ▶ **Half-life:** 17.5 hours
- ▶ **Onset of action:** 15–30 minutes
- ▶ **Duration of action:** up to 36 hours
- ▶ **Food:** rate and extent of absorption are not influenced by food
- ▶ **Common side effects:** headache, flushing, nasal congestion, dyspepsia, myalgia and back pain

Avanafil



EFFICACY: 47–59%

- ▶ **Recommended dose:** 100mg, 15 to 30 minutes before sexual activity, may be adjusted to 200mg or 50mg
- ▶ **Bioavailability:** not determined
- ▶ **Time to peak plasma levels:** 30–45 mins
- ▶ **Half-life:** 6–17 hours
- ▶ **Onset of action:** 15–30 minutes
- ▶ **Duration of action:** up to 6 hours
- ▶ **Food:** high-fat meals delay the time to peak plasma concentration by 75 mins and reduce peak plasma levels by 39%
- ▶ **Common side effects:** headache, flushing, nasal congestion

Second- and third-line product offerings may impact intimacy, result in local adverse events or be invasive

	<u>Efficacy</u> ¹	<u>Impact on intimacy</u>	<u>Functional recovery period</u>	<u>Immediacy of effect</u>	<u>Sustainability of effect</u>	<u>Adherence</u>	<u>Safety</u>	<u>Cost</u>
<i>First-line</i>								
PDE5 inhibitors	70%	Low	NA	15-30 minutes	4-36 hours	NA	systemic side effects; drug interactions. Contra-indicated CV disease	\$25-60/pill x 40 pills/year =\$1,000-2,400/annum
<i>Second-line</i>								
Topical alprostadil ²	39-75%	Moderate	NA	5-30 minutes	1 hour	Dose titration often required	Local burning, pain erythema; resolve 2 hours	
intra-urethral (IU) alprostadil (suppository)	68%	Moderate	NA	5-20 minutes	1 hour	Dose titration may be required	Penile pain (36%), urethral burning and pain (13%), erythema, bleeding	\$66/suppository
Vacuum devices	50-80%	High	NA	2-3 minutes	30 minutes	Difficult in obese men; need coordination	Numbness, pain, bruising, painful ejaculation; unnatural feeling	\$300-500/unit
Low-intensity shock-wave ³	60-65% in patient subsets	None	4-16 weeks?	Spontaneous		No standard protocol (6-12 applications x 1-2/week) +/- break	+/- painful during administration	\$2,500-6,000; platelet rich plasma extra
MyoStim ED	70-80%	None	4-8 weeks	Spontaneous	>6 months	Two 45 minute office visits per week x 4-8 weeks	No side effects	\$1,600
<i>Third-line</i>								
Intra-cavernosal injections	94%	High	2 session injection training	5-15 minutes	<2-4 hours	Penile injection required	wrong injection site, trauma, fibrosis, priapism	\$3-6/dose, syringes
Inflatable penile prosthesis (IPP) ¹	80-90%	Moderate	2-4 weeks	NA	Manual controls	Permanent	Infection, bleeding, scar tissue	\$20-30,000
¹ Based on patient selection criteria; ² Pending FDA approval; ³ FDA status unclear								

ORAL AND TOPICAL ED THERAPIES HAVE LIMITATIONS

Limitations and adverse events of erectile dysfunction (ED) treatment with phosphodiesterase type 5 (PDE5) inhibitors

Limitation	Adverse event
Systemic side effects	<ul style="list-style-type: none">• Headache• Visual disturbance• Priapism• Flushing• Muscular pain• Dyspepsia• Sinus congestion
Drug interactions <ul style="list-style-type: none">• Inhibitors/inducers of P-450[*]• Antihypertensive agents• Alpha-blockers^{**}• Nitrates	<ul style="list-style-type: none">• Variable efficacy as a result of increased/decreased PDE5 inhibitor plasma concentration• Enhanced variable efficacy• Severe hypotension
Decreased absorption with fatty meals	<ul style="list-style-type: none">• Decreased efficacy• Loss of spontaneity

Notes:

^{*}Cytochrome P-450 inhibitors;

^{**}alpha-blockers are used for the treatment of hypertension and benign prostatic hyperplasia.

MyoStim
ED targets a
large global
market with
unmet needs



Erectile dysfunction is very common, especially in the rapidly aging population with co-morbid cardiovascular disease and diabetes



Unmet needs are global and remain despite the presence of several treatments (algorithms) in the U.S. and Europe; PDE-5 inhibitors as first line therapy and a range of topicals, devices and procedures as second line therapy



Patient preferences are integral to product selection and the trade-off between satisfaction and adverse events



Myostim represents a potentially significant and differentiated entrant targeting the pathophysiology of erectile dysfunction with proprietary signals

PATHOPHYSIOLOGY OF AGING AND ERECTILE DYSFUNCTION

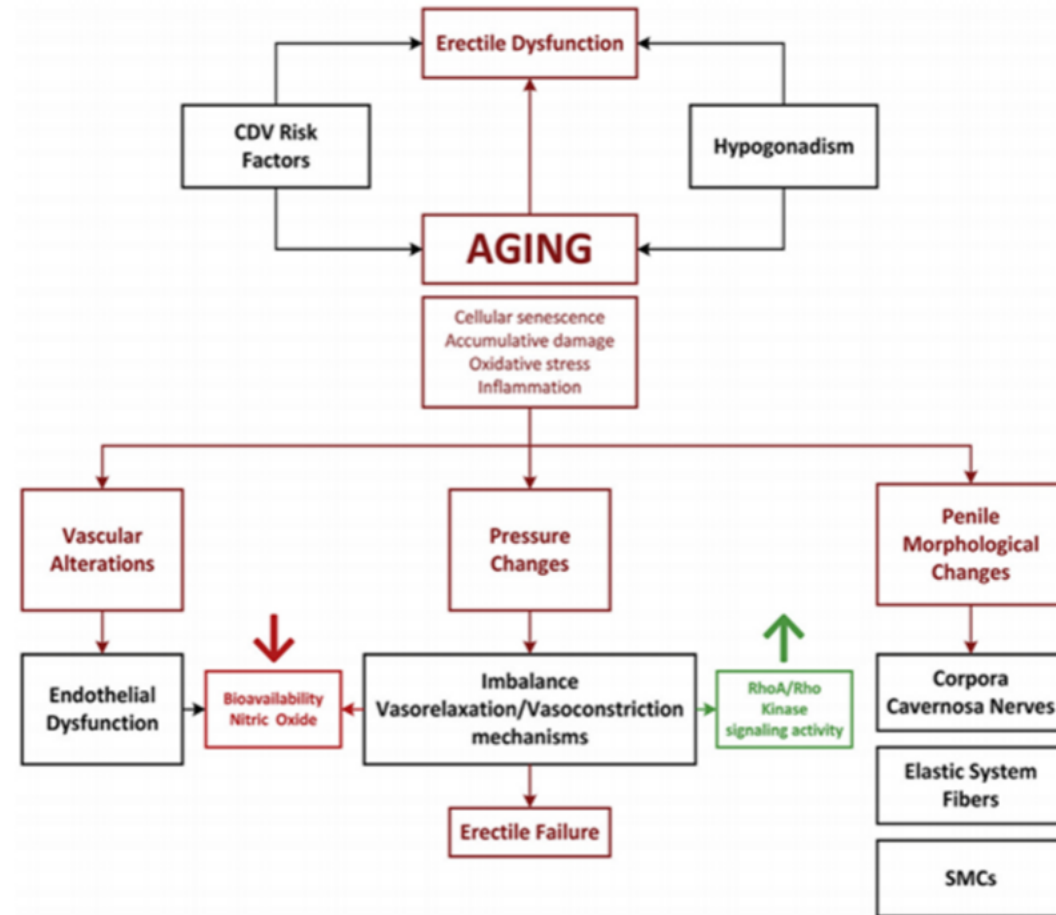


Figure 1. There are morphologic and physiologic mechanisms involved in the process of aging that play a key role in the development of sexual dysfunction. Cardiovascular risk factors and hypogonadism have a critical impact during the establishment of the aging process that could also lead to erectile dysfunction. Cellular senescence could induce oxidative stress and hence inflammation that with time leads to accumulative damage. With this overview, the main mechanisms of the aging process that drive toward erectile dysfunction include vascular and physiologic alterations and penile morphologic changes.

Scientific Basis of Competitive Advantage



- Bioelectrical stimulation (BES) is applied clinically for treating a variety of disorders, such as wound healing
- BES is based on safely modulating various electrical signals to stimulate or inhibit the expression of specific key genes, to counteract the known molecular pathophysiology of ED and not just induce vasodilation



Current Electrode



Current Portable Device



- Effects may potentially repair for a long-term solution: vasculature, pressure (vasoconstriction/dilation balance), nerves and penile corporal histopathology
- The first ED treatment to not just address temporary blood flow improvement but to treat muscle and nerve damage recovery



Future Portable Device
Look





Proprietary precise bioelectric signaling affects local physiology



**SDF-1 for
stem cell
homing**



**IGF-1 for
DNA
repair**



**Follistatin
for
muscle
repair**



**eNOS for
dilating
blood
vessels**



**VEGF,
PDGF,
EGF,
HIF1a,
CXCL5
and SDF1**



**DNA REPAIR AND ANTI
AGING**



Regenerative Spontaneity*

The regeneration of smooth muscle cavernosa by BES should result in the *spontaneous return* of erectile¹ in contrast to the oral, injection therapy and the use of a vacuum pump where the patient is treatment dependent²

1. Stief CG. Wolrd J Urol (1995) 13:243-247.
2. Feys H. PHYS THER. 2003; 83:536-543.

- **Klotho:** the secretory Klotho results in the reduction in TNF α and IFN γ , which can show anti-inflammatory properties. Klotho can interact with Wnt, which results in the inhibition of Wnt pathway activity, thus inhibiting the aging process³.
- **IGF-1:** improve nerve regeneration and neuromuscular recovery⁴.
- **Follistatin:** promotes muscle regeneration and recovery. Follistatin is able to accomplish accelerated muscle restoration not only by leveraging the regenerative effects of myostatin inhibition but potentially through modulating inflammation⁵.

3. Neurological Sciences (2018) 39:1677–1682 <https://doi.org/10.1007/s10072-018-3496-x>

4. Muscle Nerve. 2010 March ; 41(3): 335–341. doi:10.1002/mus.21485.

5. Journal of Pharmacology and Experimental Therapeutics · March 2014 DOI: 10.1124/jpet.113.211169

PAPERS ON BES FOR ED

Vol. 170, No. 2, 1990

BIOCHEMICAL AND BIOPHYSICAL

July 31, 1990

Pages 843-850

NITRIC OXIDE AND CYCLIC GMP FORMATION UPON ELECTRICAL FIELD STIMULATION
CAUSE RELAXATION OF CORPUS CAVERNOSUM SMOOTH MUSCLE

Louis O. Ignarro, Peggy A. Bush, Georgette M. Buga, Keith S. Wood
Jon M. Fukuto and Jacob Rajfer*

Department of Pharmacology and Division of Urology, *Department of Surgery University
of California, Los Angeles, California 90024

Received June 18, 1990

SUMMARY: In the presence of functional adrenergic and cholinergic blockade, electrical field stimulation relaxes corpus cavernosum smooth muscle by unknown mechanisms. We report here that electrical field stimulation of isolated strips of rabbit corpus cavernosum promotes the endogenous formation and release of nitric oxide (NO), nitrite, and cyclic GMP. Corporal smooth muscle relaxation in response to electrical field stimulation, in the presence of

대한남성과학회지 : 제 18권 제 2호 2000년 8월
Kor J Androl. Vol 18, No. 2, August 2000

발기부전 환자에서 전기자극치료효과

동아대학교 의과대학 비뇨기과학교실

길명철 · 옥윤철 · 강태우 · 정경우

=Abstract=

The Effect of Treatment of Erectile Dysfunction with Electrical Stimulation

Myung-Cheol Gil, Yun-Chul Ok, Tae-Woo Kang and Gyung-Woo Jung

From the Department of Urology and the Institute of Andrology, Dong-A university, Pusan, Korea

World J Urol (1995) 13:243-247

Free paper

World Journal of
Urology
© Springer-Verlag 1995

Functional electromyostimulation of the corpus cavernosum penis – preliminary results of a novel therapeutic option for erectile dysfunction*

C. G. Stief¹, E. Weller², T. Noack³, M. Djamilian¹, M. Meschi¹, M. Truss¹, and U. Jonas¹

¹Department of Urology, Medizinische Hochschule Hannover, D-30623 Hannover, Germany

²Department of Physical Medicine and Rehabilitation, Medizinische Hochschule Hannover, D-30623 Hannover, Germany

³Department of Physiology, University of Marburg, Marburg, Germany

PAPERS ON BES FOR ED POST PROSTATECTOMY

PD28-03

EFFECTS OF FUNCTIONAL ELECTROSTIMULATION ON ERECTILE FUNCTION RECOVERY FOLLOWING BILATERAL NERVE-SPARING RADICAL PROSTATECTOMY: A RANDOMIZED SHAM-CONTROLLED STUDY

Ana Paula Bispo*, Scheila Nascimento, Roberto Soler, Sao Paulo, Brazil

INTRODUCTION AND OBJECTIVES: To evaluate the effect of functional electrostimulation (FES) as a penile rehabilitation procedure on the erectile function (EF) of patients following nerve sparing radical prostatectomy (NSRP).

METHODS: This was a prospective, blind, randomized, sham-controlled trial. The study included men ≤ 70 yr undergoing radical prostatectomy with bilateral preservation of the neurovascular bundle, with previous unassisted normal EF (International Index of Erectile Function, Erectile Function domain [IIEF-EF] score ≥ 26); total PSA < 10 ng/mL and Gleason score ≤ 7 . Patients were randomly assigned, in a 1:1 ratio, to undergo FES or sham procedure. Penile rehabilitation was performed for 6 months, twice a week, during 30 minutes. Patients were evaluated at 1, 3, 6, 9 and 12 months after the start of the procedures. The primary endpoint was proportion of patients with IIEF-EF score ≥ 22 after 12 months of the start of treatment. Secondary endpoints included rate of positive responses to Sexual Encounter Profile (SEP) questions 2 and 3 and to Global Assessment Question (GAQ) questions 1 and 2.

RESULTS: Twenty and three patients were randomized to FES and 26 to sham. After 12 months of the start of the study procedures 52.2% and 19.2% of patients reached IIEF-EF score ≥ 22 in FES and sham groups, respectively ($p = 0.016$). This effect was also observed in other endpoints (table 1). A significantly higher proportion of patients in FES group compared to sham group had positive responses to SEP2 and GAQ1 from the 6th month to the end of the study. There was numerical, but no statistical, difference in the rate of SEP3 and GAQ2 positive responses between the groups. No adverse events related to FES were reported by patients.

CONCLUSIONS: Functional electrostimulation was efficacious and safe as a penile rehabilitation procedure in improving recovery of unassisted EF in patients undergoing NSRP. The effect of FES was maintained after cessation of active therapy.

Table 1 – Proportion of patients with IIEF-EF ≥ 22 according to treatment group

Month	Treatment		P
	FES (n=23)	SHAM (n=26)	
1	16.7%	11.8%	1.000
3	26.1%	4.0%	0.044
6	45.5%	15.4%	0.022
9	47.8%	19.2%	0.033
12	52.2%	19.2%	0.016

Source of Funding: Coordination for the Improvement of Higher Education Personnel (CAPES)

MYOSTIM ED CLINICAL TRIALS

Ulr: Your Sexual Medicine Journal (2018) 30:97–101
<https://doi.org/10.1038/s41443-018-0024-8>

ARTICLE



An initial study on the effect of functional electrical stimulation in erectile dysfunction: a randomized controlled trial

Cristiane Carboni ¹ · Alexandre Fornari¹ · Karoline C. Bragante¹ · Marcio A. Averbek ¹ ·
Patrícia Vianna da Rosa¹ · Rodrigo Della Mea Plentz¹

Received: 7 April 2015 / Revised: 27 December 2017 / Accepted: 12 February 2018 / Published online: 22 May 2018
© Macmillan Publishers Limited, part of Springer Nature 2018

Abstract

Erectile dysfunction (ED) affects approximately 150 million men worldwide. Functional electrical stimulation (FES) therapy has shown a high regenerative capacity for smooth muscle cells and, therefore, is being increasingly adopted. FES can be a beneficial treatment option when the cause of ED is related to degeneration of cavernous smooth muscle. To evaluate the

MYOSTIM ED CLINICAL TRIALS

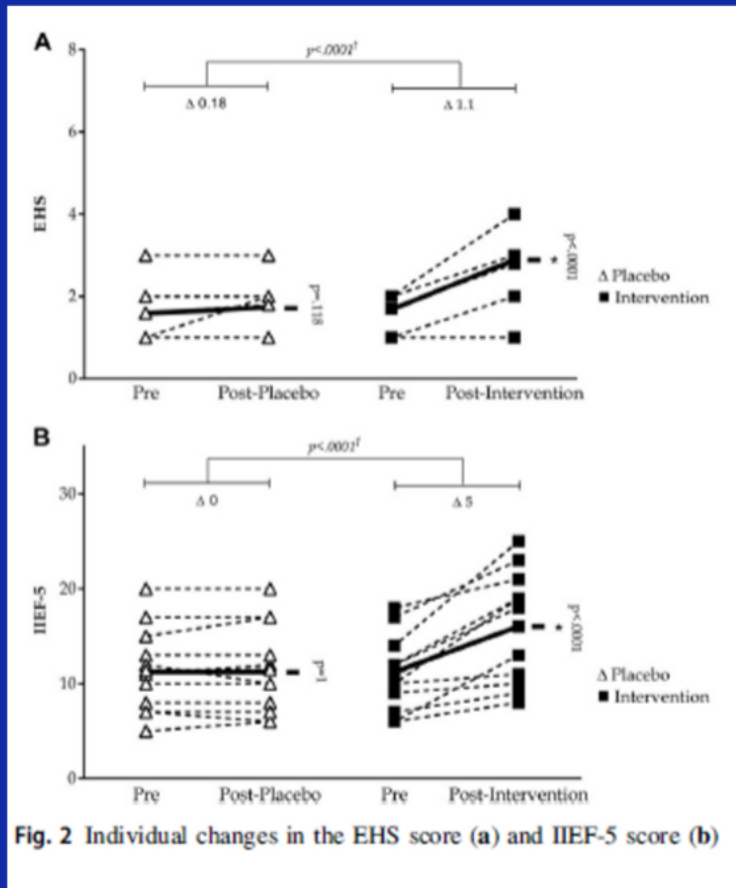


Fig. 2 Individual changes in the EHS score (a) and IIEF-5 score (b)

COLLECTION | 10 MAY 2019

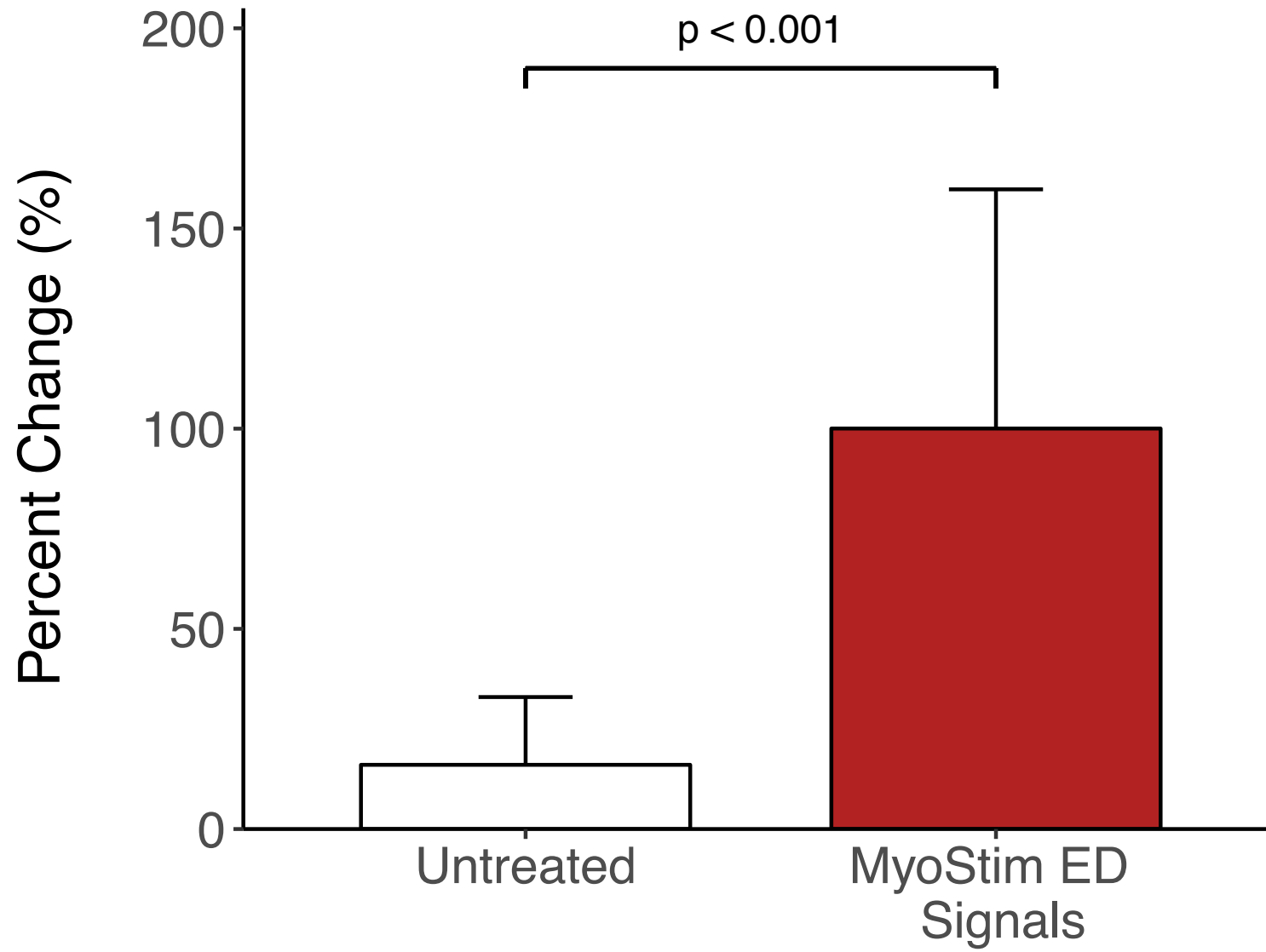
IJIR: Your Sexual Medicine 30th Anniversary Collection

IJIR: Your Sexual Medicine Journal is one of the leading journals in the field of sexual medicine and it has been a privilege to serve as Editor-in-Chief since 2018. I would like to express my sincere gratitude to our readers, authors, reviewers and editorial board members for their ongoing support to our journal.

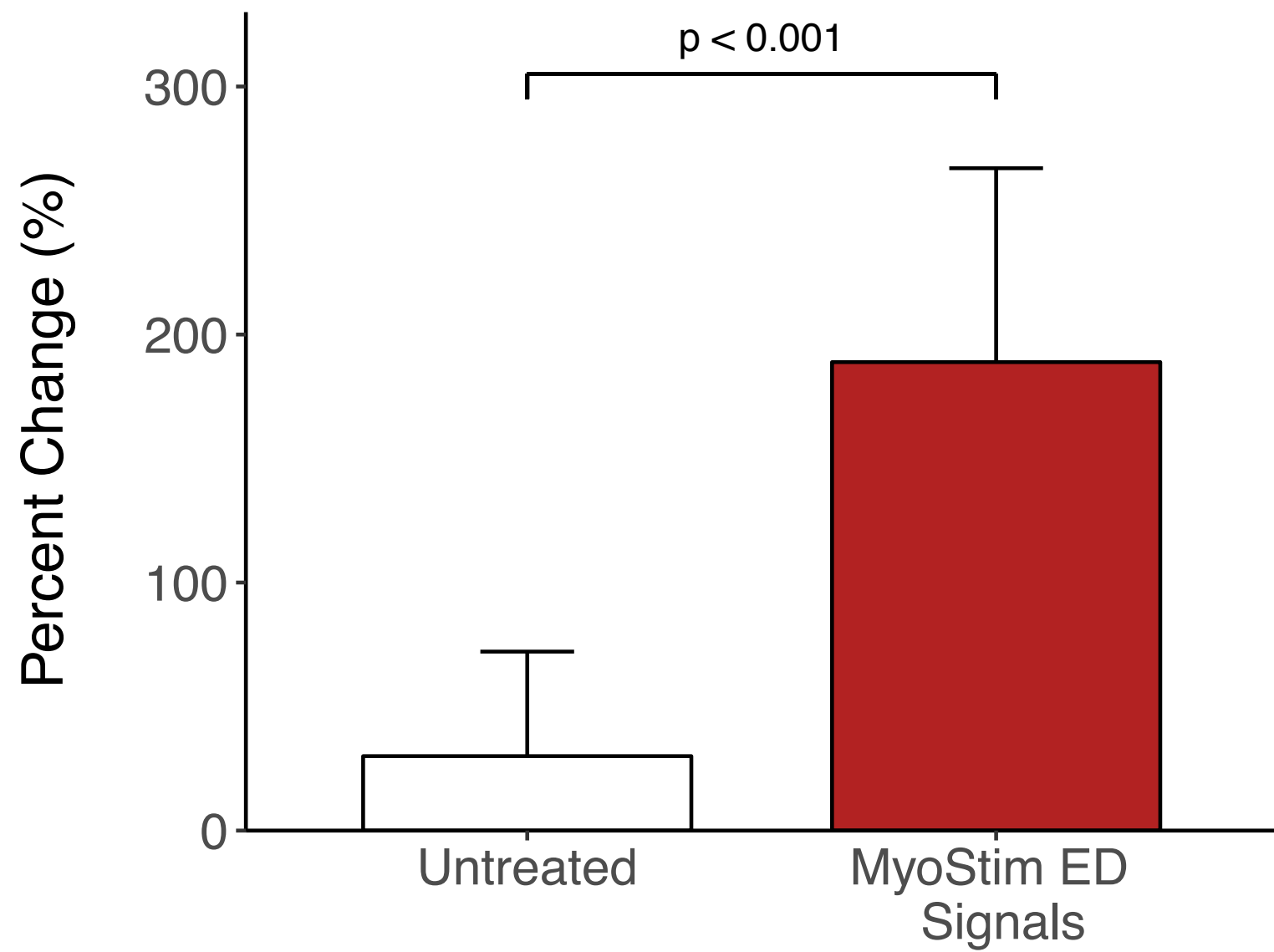


MYOSTIM ED II CLINICAL TRIALS
UNPUBLISH DATA

International Index of Erectile Function Questionnaire

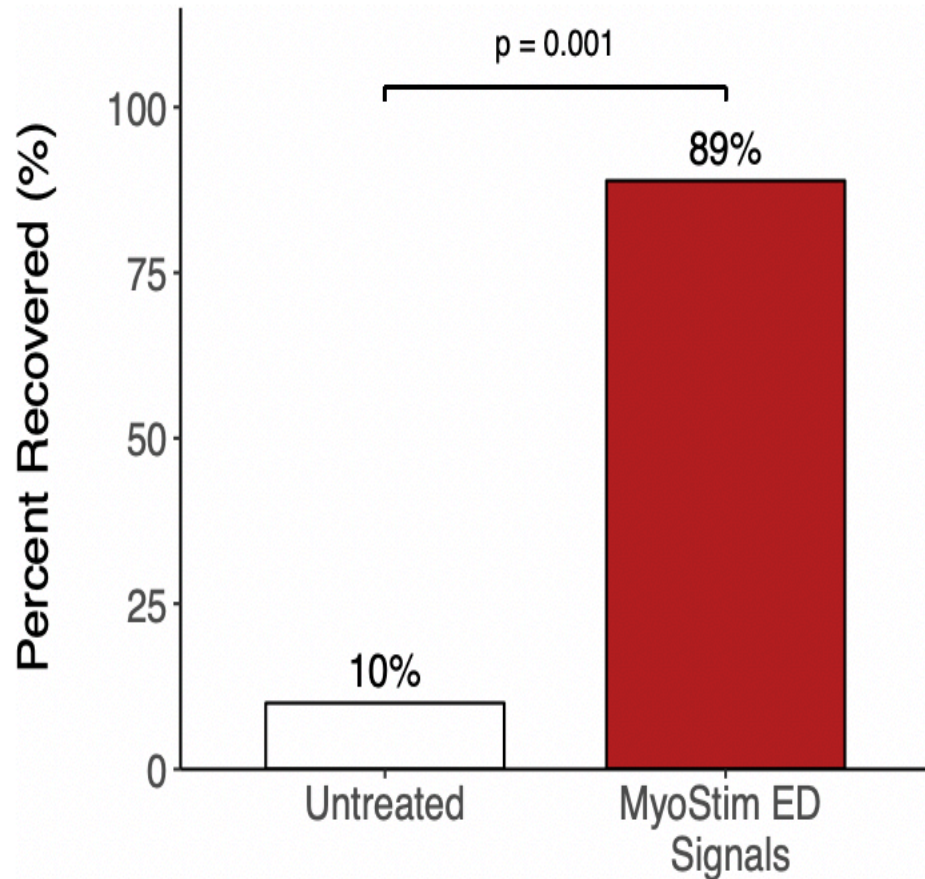


Erection Hardness Score

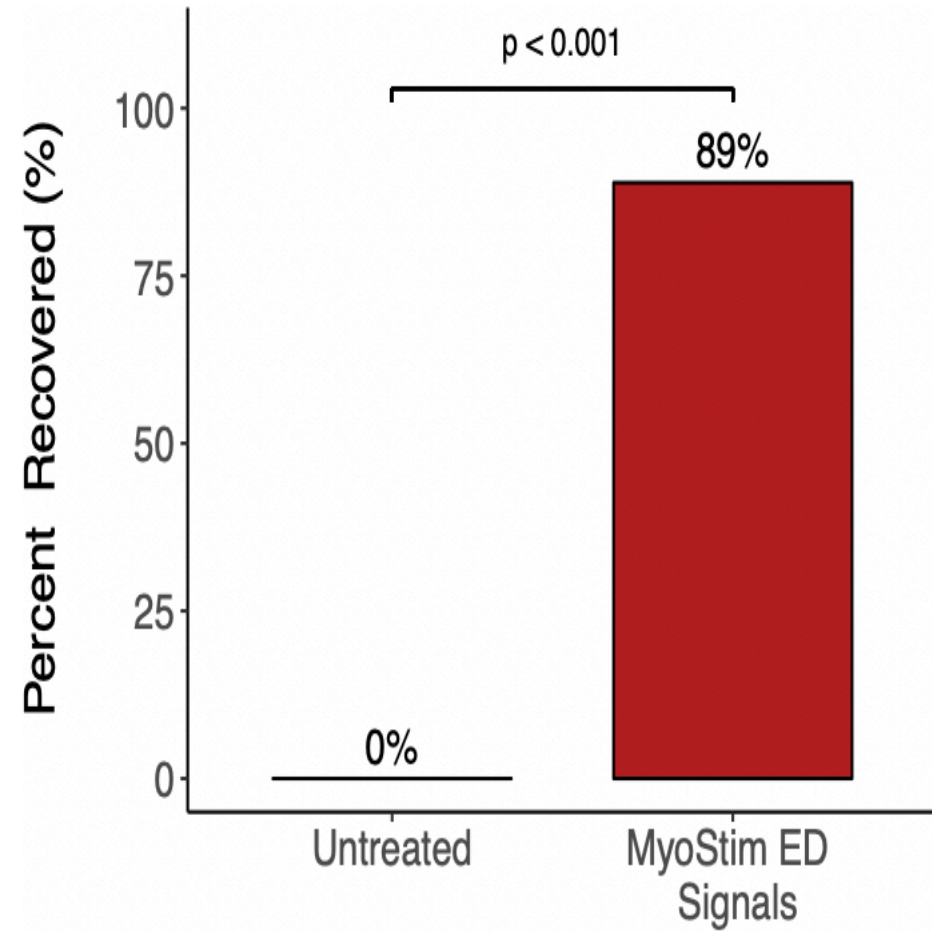


MyoStim ED II study results

Recovery of Morning Erection



Recovery of Penis Enlargement



“

**Blood Flow + Muscle + Nerve
Regeneration. We have the Only
Complete ED Solution
addressing ALL Causes**

HOWARD LEONHARDT, CEO

SHOCK WAVE THERAPY: ED CURE OR UNPROVEN TREATMENT?



- American Urological Association: “investigational” (2018); Sexual Medicine Society of North America “experimental, for use under research protocols” (March 2019)¹
- Poorly designed clinical studies precludes generalizability of results :different treatment protocols (application frequency and duration, therapy duration), inclusion/exclusion criteria, types of devices (# shock waves, energy level), Clinical end-points, etc.*
- Pooling of data (n=873) suggests improvement in vasculogenic patients.² Registry trial planned by GAINSWave
- Expensive \$3-6,000 for treatment
- Unclear patient selection criteria
- Off-label use in “packages” with platelet rich plasma and other adjunctive technologies (e.g., vacuum pumps)
- Targets vasculogenic source of ED i.e., atheromatous plaque destruction and not neovascularization, tissue regrowth, etc.
- Device offerings from Storz Medical (Cellatcor), Zimmer (Z-wave), Eclipse Medical (Evide), Direx and others
- Use by unscrupulous clinic, spa and chiropractic clinics

Physician imprimatur (brand equity)

Physician office
application

Physician sale to
patient for
personal use

OTC device
designation
(DTC)

Urologists (12,660)¹

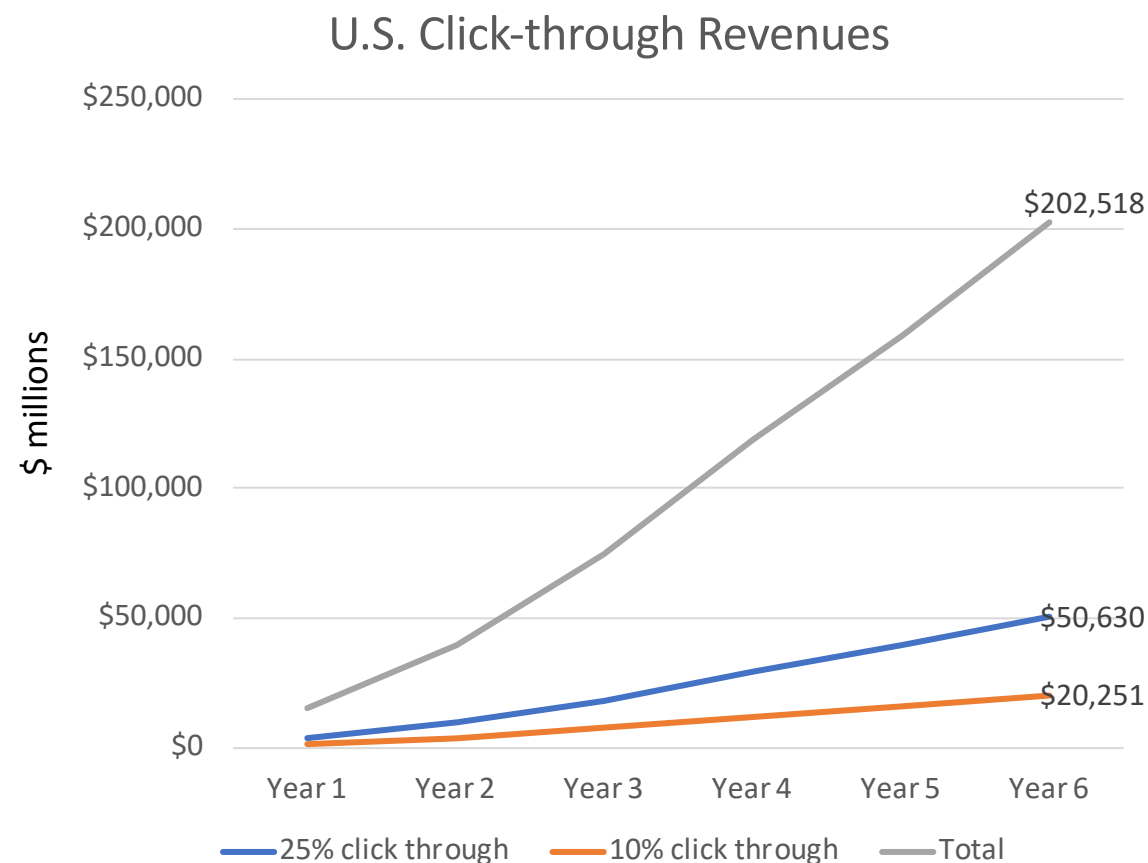
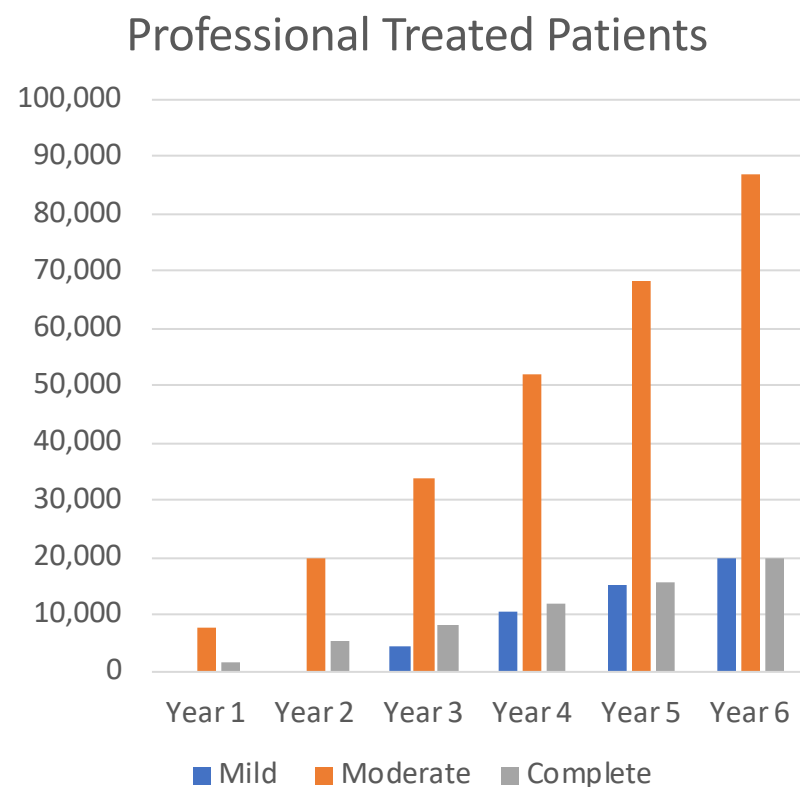
ED subspecialists (226)

GP/FP/IM (160,000)²

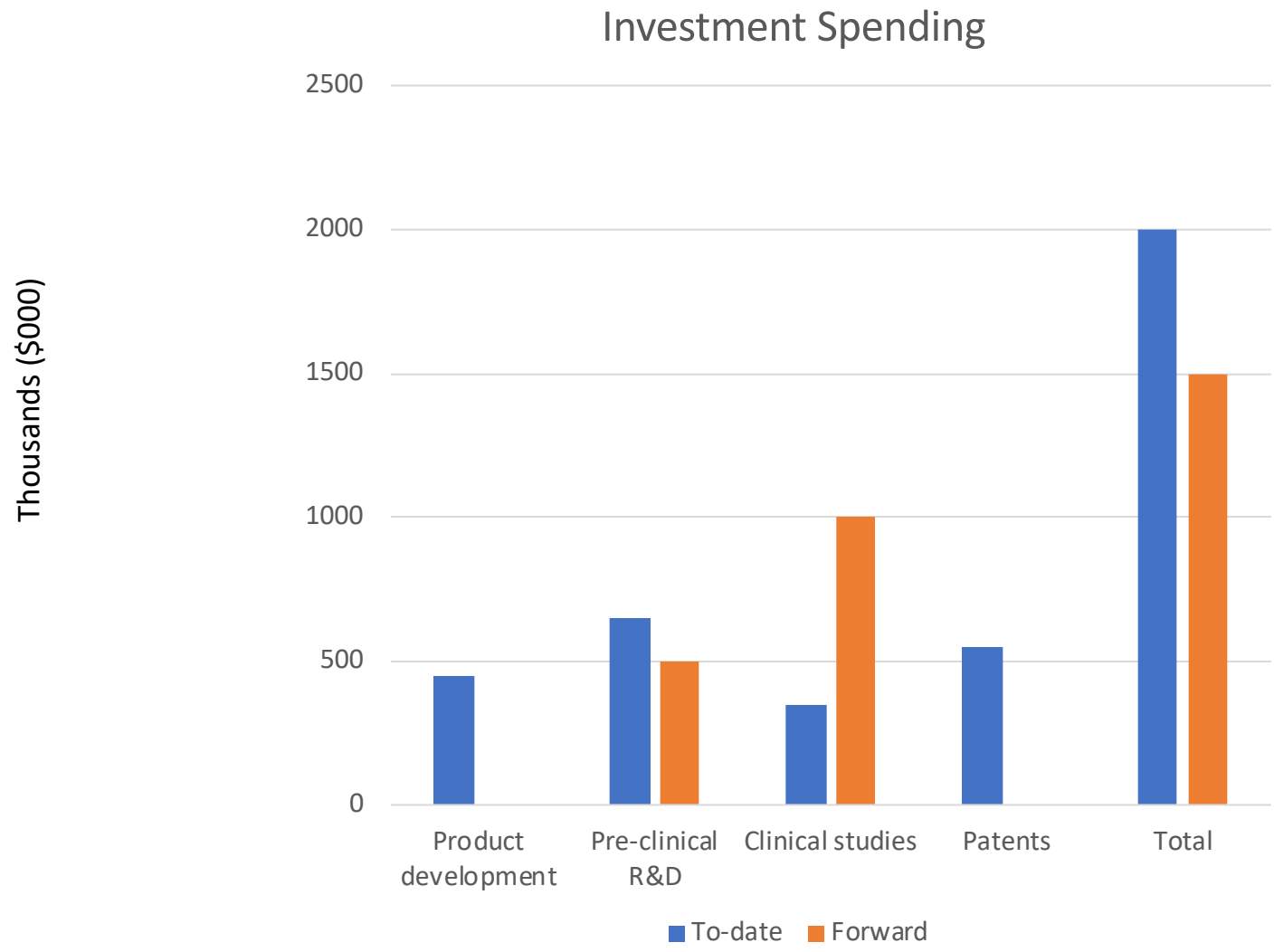
¹<file:///C:/Users/grube/Downloads/2018%20The%20State%20of%20the%20Urology%20Workforce%20Census%20Book.pdf>

²<https://www.ahrq.gov/research/findings/factsheets/primary/pcwork1/index.html#targetText=Of%20the%20624%2C434%20physicians%20in,%2C%20general%20pediatricians%2C%20and%20geriatricians.>

127k Myostim patients – 4.2% of the referral population - at \$1,600 per patient (\$200 per treatment) generates >\$200m in U.S. high margin practice revenues.

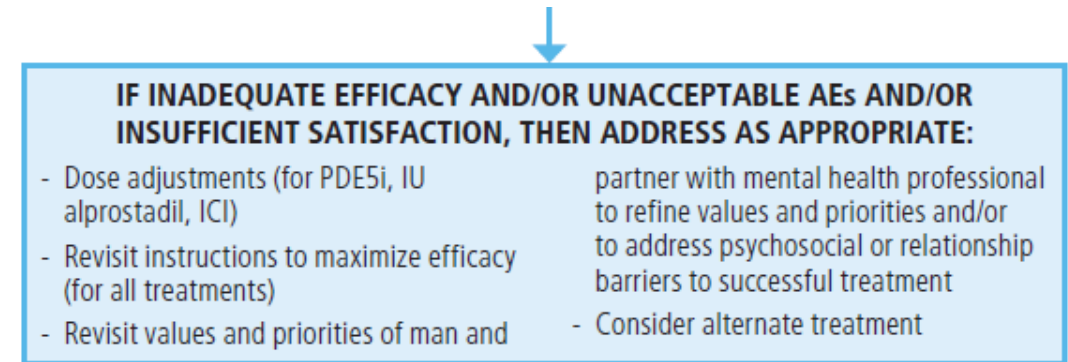
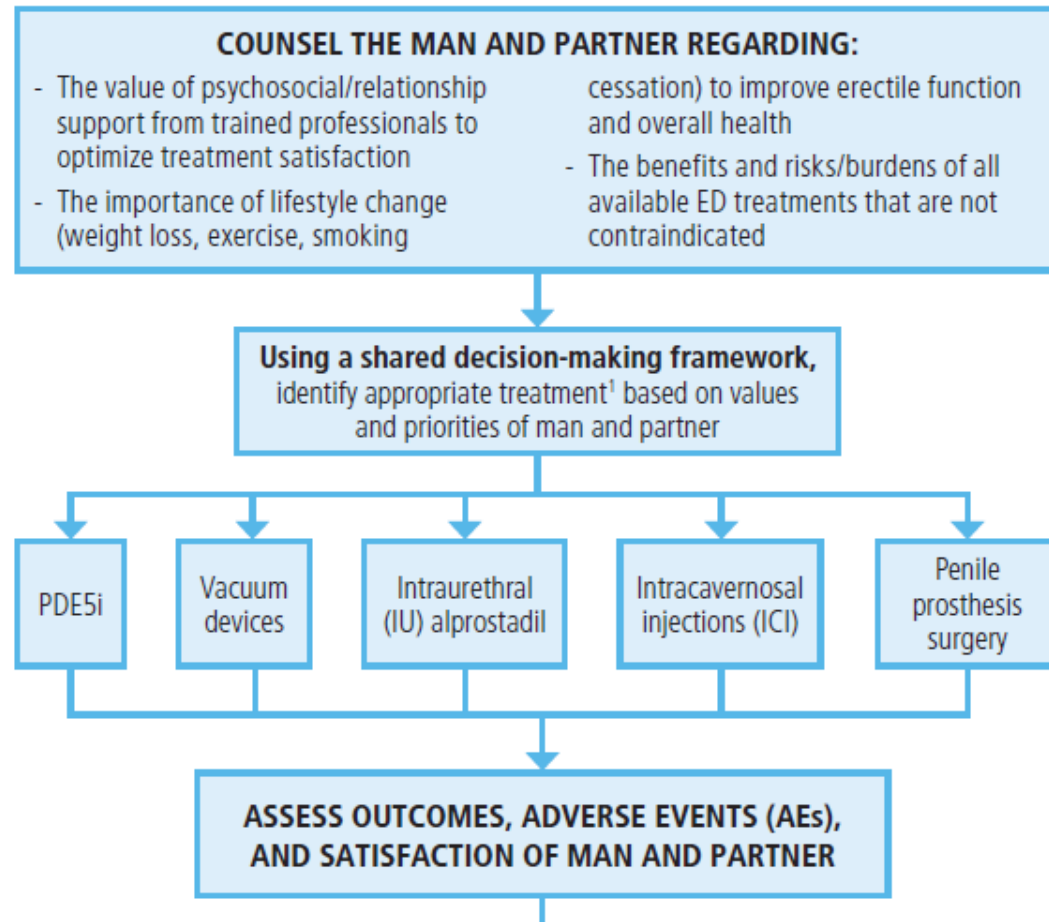


*Revenues also generated from premium device sales to urologists and professional sale of “basic” device to patients. *Excludes use of Myostim as commercially available consumer product.* European ED market (patients) > U.S. > Brazil. China has 3-4x number of ED patients as compared to the U.S.



Treatment algorithms established by AUA and European Association of Urology based on severity of ED, outcomes, adverse events and satisfaction. Patient preferences noted

ERECTILE DYSFUNCTION ALGORITHM



¹ For men with testosterone deficiency, defined as the presence of symptoms and signs and a total testosterone <300 ng/dl, counseling should emphasize that restoration of testosterone levels to therapeutic levels is likely to increase efficacy of ED treatments other than prosthesis surgery.

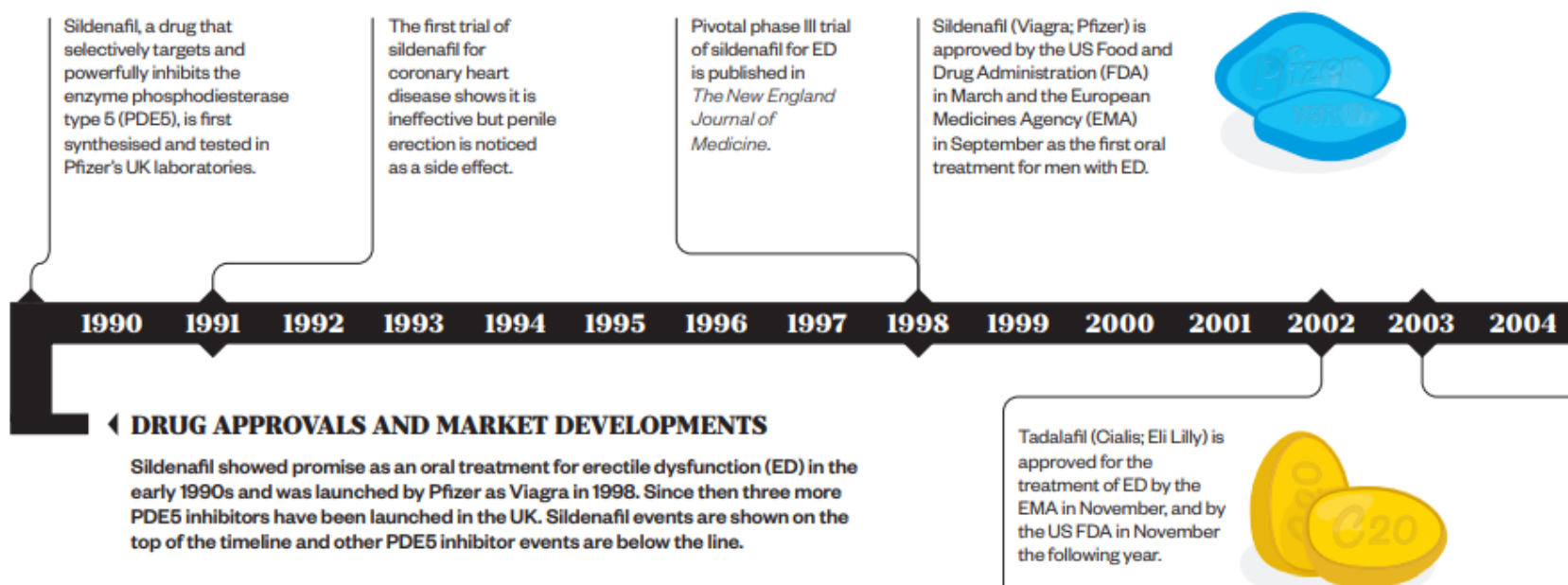
Erectile dysfunction market development exceeding 30 years!

INFOGRAPHIC

THREE DECADES OF VIAGRA

Sildenafil (Viagra) – the first oral drug for erectile dysfunction to hit the market in 1998 – has been prescribed for more than 64 million men worldwide, and may soon be reclassified as a pharmacy medicine in the UK.

BY DAWN CONNELLY & ALISDAIR MACDONALD



INFOGRAPHIC



37.0m

2008

By 2008, Viagra had been prescribed for more than 37 million men worldwide



64.0m

2016

By 2016, Viagra had been prescribed for more than 64 million men worldwide



5.4bn

2016

5.4 billion Viagra tablets had been dispensed worldwide by 2016

Pfizer withdraws an application to the EMA to market Viagra over the counter for ED after the regulator expresses concerns that there would be no medical supervision, which could delay diagnosis of possible cardiovascular disease.

Boots becomes the first UK pharmacy to offer Viagra without a prescription under a patient group direction.

Tesco breaks into the Viagra market and offers the drug to customers without a prescription under a patient group direction.

The UK patent on Viagra expires, opening the way for generic versions of sildenafil to be launched.

Generic sildenafil can now be prescribed on the NHS for any male with ED, whereas previously it was restricted to those with ED because of an underlying health condition, such as diabetes or prostate cancer.

The Medicines and Healthcare products Regulatory Agency (MHRA) recommends sildenafil 50mg (Pfizer) should be available as a pharmacy medicine, and launches a consultation that closes in April.

2005

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

2016

2017

Vardenafil (Levitra; Bayer) is approved by the EMA for the treatment of ED in March and the US FDA in August.



The European Commission approves low-dose (2.5mg and 5.0mg) tadalafil as single-daily ED therapy.

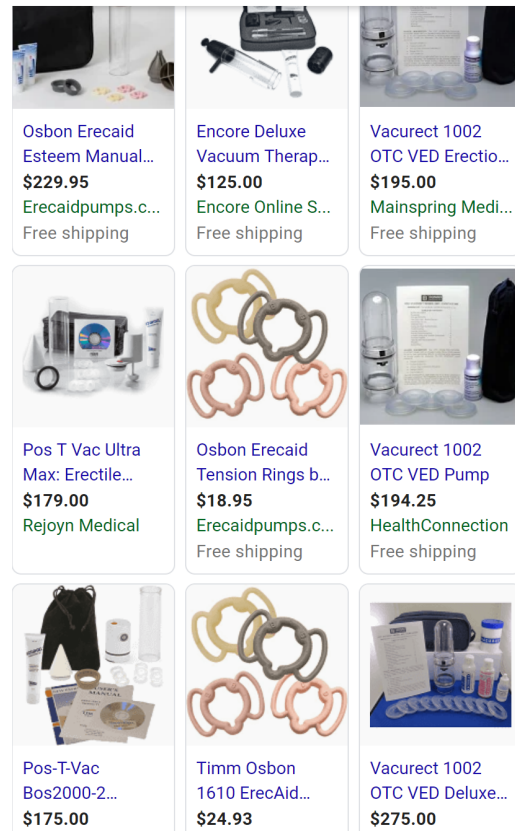
Vardenafil (10mg) is the first PDE5 inhibitor introduced for ED in an orodispersible tablet.

Avanafil (Spedra; Vivus) is approved for treatment of ED by the US FDA in April and by the EMA in June 2013.

Manufacturer of Cialis, Lilly, agrees a deal with Sanofi to allow the French firm to buy exclusive rights to apply to sell Cialis as a non-prescription medicine in Europe, the United States, Canada and Australia after certain patents expire.



Vacuum devices are effective in 50-80% of patient but have side effects and other possible



Side effects

Side effects of using a penis pump can include:

- **Pinpoint-sized red dots (petechiae).** This is caused by bleeding under the surface of the skin of the penis.
- **Numbness, coldness or bluish-colored skin.** This can occur when the constriction band is in place.
- **Pain or bruising.** Knowing how to use the penis pump correctly can help you avoid injury to your penis.
- **Feeling of trapped semen.** You might feel like your semen is trapped when you ejaculate, or ejaculation might be painful. Some manufacturers make constriction rings with a small cutout that might help with this.

Penis pumps have some other possible drawbacks:

- **Unnatural-feeling erections.** Penis pumps can cause an erection that doesn't feel natural or spontaneous. You might have a lack of firmness at the base of the penis, which can allow the penis to rotate or pivot more than it would with a natural erection.
- **Awkwardness.** Use of a penis pump requires patience and understanding from both you and your partner. It might take some time to become comfortable with the device.
- **Manual coordination is required.** Penis pumps require use of the hands and fingers to operate, which can be a problem for some men or their partners.

Shockwave therapies are effective in 60-65% of patients at one month; treatment is expensive and inconvenient (\$3,000 x 10-12 sessions).
It is NOT FDA approved for this indication

The researchers found that at one month, treatment was successful in 99 patients (63.5%), but during follow-up a gradual decrease in efficacy was observed. At 2 years, the beneficial effect was maintained in only 53.5% of patients in whom success was initially achieved. Over follow-up the treatment effect was lost in all patients with diabetes who initially had severe erectile dysfunction. However, for patients with milder forms of erectile dysfunction without diabetes there was a 76% chance that the beneficial effect of low-intensity shock wave treatment would be preserved after 2 years.

Although erectile dysfunction does not present risks to the individual's life, it can provoke a series of disorders, such as decreased self-esteem, increased anxiety, social relationship impairment and depression, among others. Such disorders may cause repercussions on the general health of the patient.

This is the reason why our team worked in the Complete Solution for ED.

MyoSTIM **ED**
bioelectric treatment of erectile dysfunction



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