Innovative clinical-stage biotechnology company with a proprietary patented high-energy plasma device delivering a potent therapeutic molecule, nitric oxide, directly into tissue.

August 2023

Glossary

“CMS”	**Center for Medicare and Medicaid Services**
“CSR”	**Clinical Study Report**
“DFU”	**Diabetic Foot Ulcer**
“FDA”	**Food and Drug Administration**
“IDE”	**Investigational Device Exemption**
“PMA”	**Pre-Market Approval**
“PoC”	**Proof-of-Concept**
“SOC”	**Standard of Care**
“CDER”	**FDA’s Center for Drug Evaluation and Research**
“CDRH”	**FDA’s Center for Devices and Radiological Health**
“SSTIs”	**Skin and soft tissue infections**

Origin™

Origin Life Sciences, Inc. ("Origin") - Introduction

- Has developed a proprietary device ("Ionojet™") that generates **nitric oxide** ("NO") from atmospheric air in the form of a high-energy plasma/NO stream and delivers it to targeted locations of the body
- The plasma/NO stream has been shown in investigations to date: (i) to be non-toxic, (ii) to generate NO activity up to 3 cm below the skin, (iii) to stimulate sustained biological activity in tissue for up to an hour after delivery of the therapy, and (iv) to penetrate and disrupt biofilm.
- Has identified over 40 target indications in seven clinical areas based on NO's recognized ability to:
  - Increase blood flow
  - Destroy pathogens (bacterial, viral and fungal)
  - Regenerate tissue
  - Control pain and inflammation
- Has completed a **dose-ranging feasibility** clinical trial in the U.S. for initial target indication (Diabetic Foot Ulcers, "DFU") to identify optimal dose & demonstrate preliminary safety/efficacy data for the device
- Has completed PoC studies in certain target indications
- Intends to initiate PoC studies in a number of additional indications

Origin Life – Introduction (cont.d)

- Is regulated by FDA as a device (CDRH) with drug oversight (CDER)
- Is currently preparing for a pivotal trial in DFU using an adaptive design
- Will pursue a PMA if pivotal trial is successful
- Intends to generate revenue by charging for use of the device rather than by its sale
- Has **4 issued, 3 pending U.S. patents and 4 issued, 3 pending non-U.S. patents related to Ionojet**
- Has assembled an experienced management team supported by scientific advisors including a Nobel prize-winner in nitric oxide and a Board Member for the World Health Organization's advanced wound care program
- Is addressing a **market for DFU of $3.8 billion in North America alone**
- Following DFU PMA, intends to seek regulatory approval of Ionojet™ to treat chronic wounds and SSTIs (combined U.S. market of approximately $12 billion)
- Investigational Device, Limited by Federal (or United States) Law to Investigational Use.

Clinical Strategy

DFU (Diabetic Foot Ulcer)

- $3.8B U.S. Market
- Device update and manufacturing
- IDE preparation
- Pivotal trial
- Investigators, sites, recruitment
- PMA process

Proof-of-concept studies (PoC)

We intend to complete PoC studies in each of the following indications:

- Onychomycosis (addressable U.S. market of $2.9 billion)
- Surgical Site Infections (addressable global market of $4.2 billion)
- Chronic Acne (addressable U.S. market of $4.27 billion)
- Tendonitis (addressable U.S. market of $86.6 billion)
- Digital Rheumatoid Arthritis (addressable U.S. market of $15 billion)
- Alopecia (addressable U.S. market of $3 billion)
- Respiratory Tract Infections (addressable U.S. market of $9 billion)

We intend to conduct further clinical studies in the following indications, for which we have already completed PoC studies, which demonstrated that the therapy generated by our medical device was well-tolerated:

- Infected pacemaker and defibrillator wounds (n=7)*
- Infected orthopaedic implant wounds (n=8)*

* Each study was the subject of a poster presented at conferences of the Symposium on Advanced Wound Care, one of the world's leading wound care education organizations

U.S. Target Indications – leading candidates

- *Wounds*
  - Diabetic foot ulcers
  - Acute wounds
  - Ulcers (venous leg and pressure)
  - Post-surgical wounds
  - Burns (radiation and thermal)
- *Anti-infective*
  - Onychomycosis (toenail fungus)
  - Surgical site infections
  - Skin and soft tissue infections
  - Infected implant wounds
- *Dermal Therapeutics*
  - Acne (chronic papulopustular and conglobate)
  - Cellulitis
  - Warts (plantar and viral)
  - Sports injuries
- *Musculoskeletal*
  - Arthritis
  - Tendinitis
  - Fasciitis
- *Cosmetic*
  - Alopecia
  - Plastic surgery scarring
- *Dental Infections*
  - Periodontitis
  - Gingivitis
  - Implantitis
  - Surgical extraction infections
- *Respiratory Tract Infections*
  - Viral
  - Bacterial

Intellectual Property (IP)

- We have three issued and two pending U.S. patents directed to Ionojet™ and the generation of NO, which relate to our NO generator, which is our core technology, our systemic NO applicator and our mobile console.
- Additionally, we have one patent and one pending patent application in the U.S. and four patents and three pending patent applications outside of the U.S. directed to our Ionojet technology. We have also been granted trademark registration in the U.S. for Ionojet™.
- In addition, we have acquired the U.S. patent for the delivery of plasma/NO from the Russian inventor of the Plason, the design of which the Ionojet plasma/NO delivery mechanism is derived from.
- The Plason has its origins in four Nobel Prize-winning discoveries, most notably the 1998 Nobel Prize for Medicine and the 1970 Nobel Prize for Physics.
- Our device has been significantly re-engineered and updated from the Plason with higher performance metrics in order to produce a reliable and consistent plasma/NO stream and to address regulatory requirements and “Western” medical expectations.

Prototype of the U.S. version of our therapy delivery platform that was used in our dose-ranging clinical trial and in our proof-of-concept studies. THIS DEVICE IS CURRENTLY UNDER DEVELOPMENT. THE PROTOTYPE DEPICTED ABOVE IS IN THE PROCESS OF BEING REENGINEERED AND, THEREFORE, IS NOT THE DEVICE WE INTEND TO USE IN OUR PIVOTAL CLINICAL TRIAL.

Regulatory & Reimbursement

Regulatory

- The FDA previously determined that our product will be a Class III Device
- Prior to commencing a pivotal trial, and subject to consummation of the IPO, we intend to submit a new IDE for our reengineered device
- As a Class III medical device, we are required to follow the PMA process, which has guided the product and clinical development programs which underpin our strategy
- Per our last discussions with the FDA, our PMA application will be reviewed by CDRH consulting with CDER as necessary

Reimbursement

- Our ability to commercialize the Ionojet in the U.S. depends in part on the availability of adequate reimbursement from third-party payers, including governmental payers such as the Medicare and Medicaid, which are managed by CMS
- Private payers often rely on the lead of the governmental payers in rendering coverage and reimbursement determinations
- Therefore, achieving favorable CMS coverage and reimbursement is a significant gating issue for successful introduction of our product

Origin Summary

To Date

- Our technology has been studied in (i) numerous animal studies for safety, (ii) a single center study of 40 patients in 2013 to treat chronic wounds; (iii) a clinical study in 10 patients to treat diabetic foot ulcers completed in 2016; and (iv) a dose-ranging feasibility clinical trial for the treatment of patients with diabetic foot ulcers (GENESIS)
- Our device allows us to turn atmospheric air into a plasma/NO stream that has been shown in investigations to date: (i) to be non-toxic, (ii) to generate NO activity up to 3 cm below the skin, and (iii) to stimulate sustained biological activity in tissue for up to an hour after delivery of the therapy
- We believe that animal and human studies have shown evidence of efficacy and that the therapy is well-tolerated
- We have identified target indications for which we intend to explore treatment using the therapy generated by the Ionojet™ device

What's Next

We hope to:

- Complete the final prototype of our Ionojet™ device
- Initiate and complete the pivotal trial for DFUs and seek PMA from the FDA as a Class III medical device
- If Ionojet™ is approved as a Class III medical device, create a commercial infrastructure to launch the marketing of our product
- Complete PoC studies for additional target indications with goal to expand indications for use of Ionojet
- Subject to supplemental approvals, become the leading provider of topical NO treatments using our device for various therapeutic purposes, including as an anti-infective, anti-inflammatory and tissue-regenerative therapy for chronic wounds and SSTIs

Executive Team

Michael Preston

Chairman (2010-Present) and Chief Executive Officer (2015-Present)

Founder of Origin Life Sciences, Inc.
Price Waterhouse, London

MA, University of Oxford

David Dantzker, MD

Deputy Chairman and Chief Medical Officer (2012-Present)

Director, Surmodics (SRDX)
Former Chair American Board of Internal Medicine
Former President of North Shore-LIJ Health System

MD, University at Buffalo School of Medicine

Johnny Fernandes

Chief Financial Officer (2015-Present)

Former Senior Vice President of Coty Inc.
Associate, Institute of Chartered Accountants (1984-Present)

BSc, University of St. Andrews, Scotland

Board Members and Scientific Advisors

Anthony Brampton

Non-executive Director

Former Managing Director of Healthcare & Life Sciences Corporate Finance at J.P.Morgan Cazenove (until retirement)

MS, University of Oxford

Jerome Boda Korten

Non-executive Director

EVP, Retia Medical Systems, Inc.
Director, Onebreath, Inc.

MS, University of Michigan

Victor Micati

Non-executive Director

Former President of Pfizer Europe (until retirement)

MBA, Columbia Business School

Terry Treadwell, MD, FACS

Scientific Advisor

Founder, of The Institute for Advanced Wound Care
V-P, Wound Council, WHO

Southwestern Medical School, University of Texas

Ferid Murad, MD, PhD

Scientific Advisor

Nobel prize-winner, Physiology and Medicine (1998)

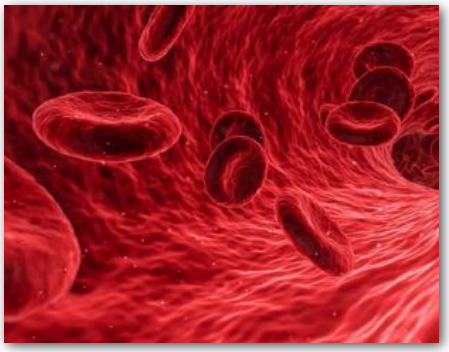
Western Reserve School of Medicine

Appendix - Clinical Data

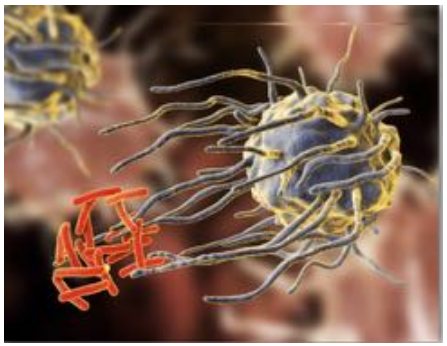
Nitric Oxide – Biological Activity

Nitric Oxide in the Body

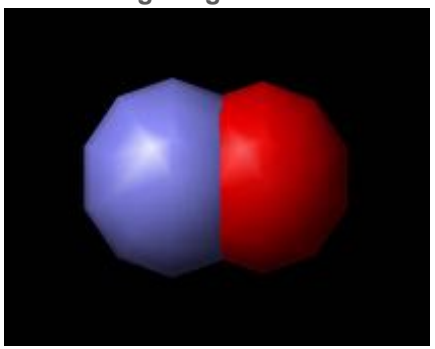
Increases Blood Flow



Immune System Regulation



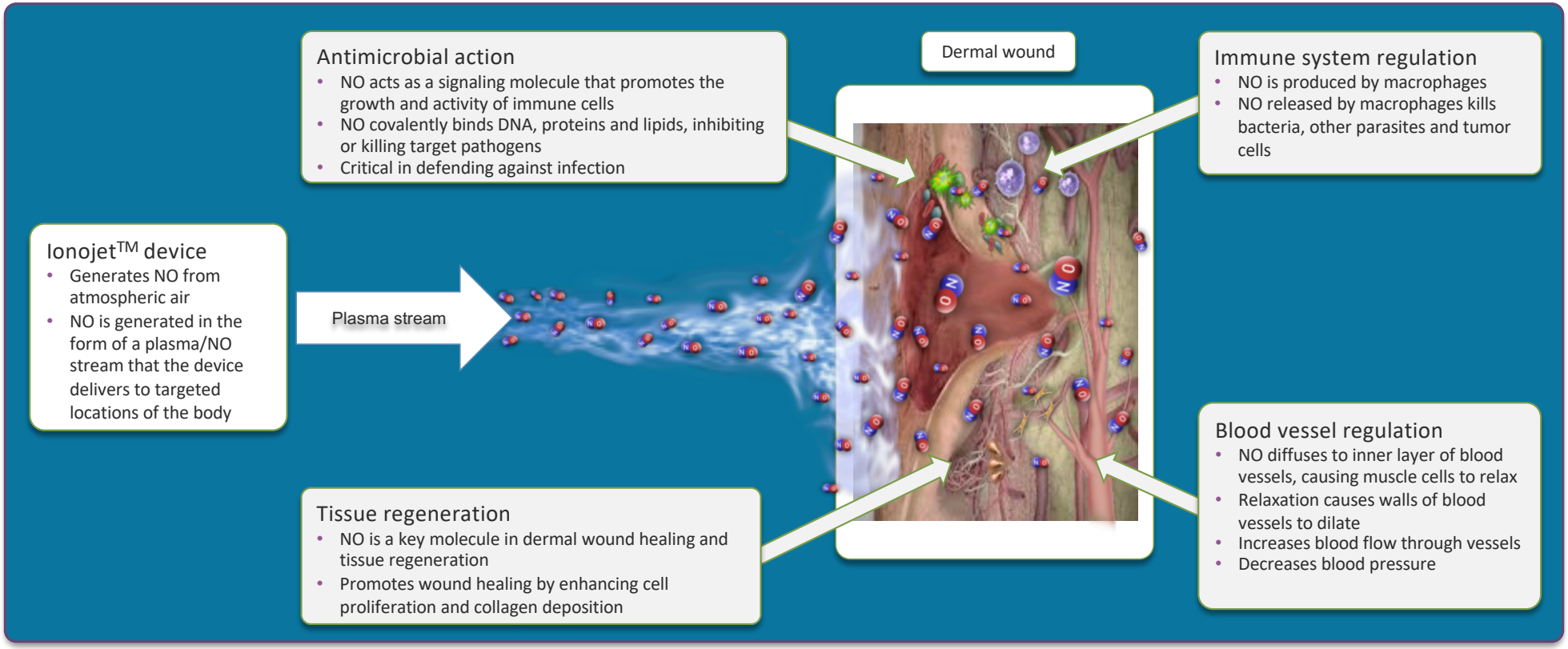
Signaling Molecule



- Nitric oxide has been found to be important in many other bodily systems, acting as a signaling molecule in the cardiovascular, nervous and immune systems, and used by the nervous system as a neurotransmitter to regulate digestion, blood flow, memory and vision.
- In the immune system, nitric oxide is released by macrophages (a type of white blood cell), killing bacteria, other parasites and tumor cells by disrupting their metabolism.
- The main site of nitric oxide's synthesis is in the inner layer of blood vessels, where it causes the walls of blood vessels to dilate, which in turn increases blood flow and decreases blood pressure.
- Nitric oxide represents a potential wound therapeutic agent due to its ability to regulate inflammation and eradicate bacterial infections.

Origin's Proprietary Nitric Oxide Transdermal Delivery

Origin's Plasma-generated Nitric Oxide Has Potential to Promote Healing In Various Ways



DFU – Clinical Development for Regulatory Approval (initial target indication)

Initial Target Indication – Large Unmet Medical Need Diabetic Foot Ulcers (DFU)

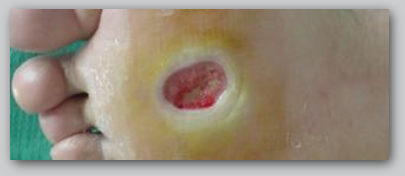
Diabetes and DFUs

According to the CDC, 1 in 10 adults have diabetes

In the last 20 years, the number of adults with diabetes has more than doubled

- Diabetes, a metabolic disorder characterized by prolonged hyperglycemia, affects approximately 37.3 million Americans according to the CDC
- Diabetic neuropathy often leads to diabetic foot ulcers (DFUs), where a thickened wound forms at the balls of the feet
- Over their lifetime, 12% of diabetics develop diabetic foot ulcers
- In 2016 there were 4.9 lower-extremity amputations per 1,000 adults with diagnosed diabetes and that 130,000 diabetes-related hospital discharges involved a lower-extremity amputation, according to the CDC
- In the U.S., the cost of diabetic foot ulcer treatments in annual direct health care costs is $9 to $13 billion
- Global diabetic foot ulcer treatment market was valued at $8.6 billion in 2021 and is projected to reach $14.8 billion by 2030, per report by GlobeNewswire

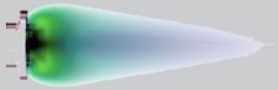
DFUs and Nitric Oxide



- Because of the serious medical risks and socioeconomic burden of diabetic foot ulcers, there is a critical unmet need for effective diabetic foot ulcer treatment
- This need is not adequately addressed by standard-of-care (SOC) wound therapies, which have been demonstrated to yield 12-week closure in less than 50% of patients
- We believe that our therapy, if approved by the FDA, will treat this critical unmet need for an effective treatment of diabetic foot ulcers, with potential to both disinfect and promote the healing of infected wounds, and deliver site-specific and therapeutically relevant concentrations of NO to the wounds
- Our clinical trials to date have demonstrated that our therapy is well-tolerated

Origin's Clinical Journey to Date - DFU

Technology Verification (2013-2016)



Animal safety studies – COMPLETE

- Numerous animal studies were conducted to determine safety of the technology

A 2013 single-center non-controlled observational study for the treatment of various chronic wounds including DFUs - COMPLETE

- Approximately 40 patients
- 100% of patients achieved >50% wound closure after 8 weeks of therapy
- 84% of patients had resolution of wound pain
- There were no device-related adverse events, as determined by the principal investigator

Clinical Pilot Study (2016)

Clinical pilot study to treat DFUs – COMPLETE

- 10-week, randomized, controlled study to evaluate the efficacy and safety of our plasma/NO therapy in subjects with a diabetic foot ulcer (n=10)
- No device- or procedure-related adverse events
- Patients' pain ratings and wound size decreased from baseline at end of treatment
- Plasma-generated NO therapy was well-tolerated in patients

PROTOTYPE OF THE U.S. VERSION OF OUR THERAPY DELIVERY PLATFORM USED IN DOSE-RANGING CLINICAL TRIAL AND IN POC STUDIES. DEVICE IS IN THE PROCESS OF BEING REENGINEERED AND IS NOT THE DEVICE THAT WILL BE USED IN PIVOTAL TRIAL

Dose-Ranging Feasibility (2017-2020)

"GENESIS", a human dose-ranging study for DFUs – COMPLETE

- After 83 patients randomized, an interim analysis of 63 subjects, 53 of whom completed the twelve-week treatment, was performed. Additional analysis (n=36) was performed that excluded one clinical site with abnormal data.
- In analysis excluding the site with abnormal data, the best-performing arm of 12-minute treatments 4 times/week delivered a 100% median wound-size reduction at 12 weeks compared to 49% in the control arm and wound closure greater than 95% in 86% of patients at 12 weeks compared to 33% in the control arm. Further, 71% of patients in that arm achieved full wound closure after 12 weeks. These results enabled us to complete the trial early.*
- Clinical trial completed in 2018, CSR submitted to FDA in 2019, FDA acknowledged completion and submission of CSR in 2020.
- **Upon submission and acceptance of new IDE for reengineered device, Origin can proceed to a pivotal trial**

genesis TRIAL

* The GENESIS study was not powered for these endpoints or to demonstrate statistical differences between groups.

Diabetic Foot Ulcer (DFU) Feasibility Study

genesis TRIAL

Trial Design, Data, and Clinical Observations

Origin™

Dose-Ranging Feasibility Trial

genesis TRIAL

Study objectives:

- Evaluate whether device is safe and well-tolerated
- Determine best dose(s) for use in pivotal trial
- Identify desirable design modifications for the Ionojet

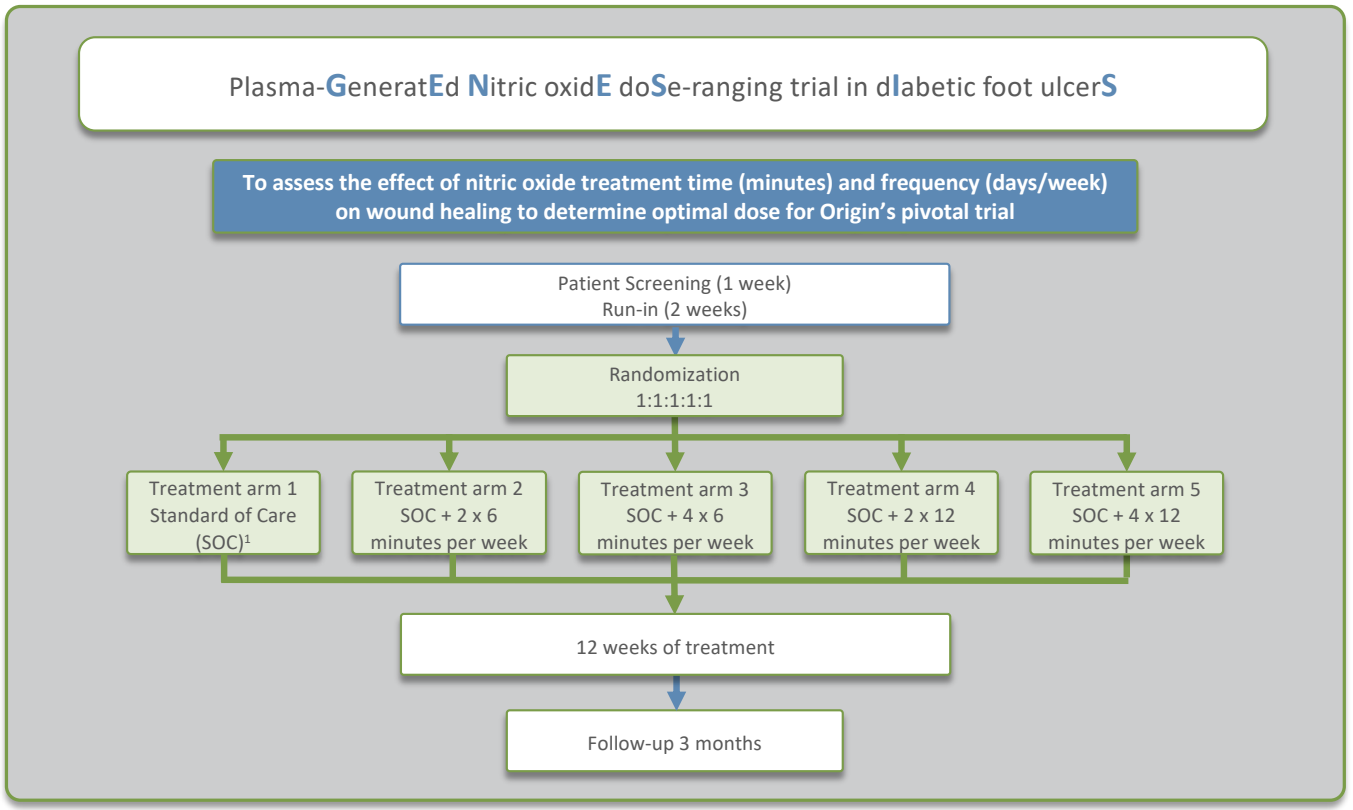
Description:

- DFUs
- Up to 100 adult patients in 15 study sites in the United States
- Designed to evaluate the effect of time and frequency of NO treatment over 12-week period on wound healing
- Evaluated four doses of NO treatment (ranging from 6 minutes 2x per week to 12 minutes 4x per week) and SoC

Results:

- Interim data analysis performed after 83 patients randomized
- Determined that we had sufficient information to end enrollment early
- Study completed in 2018 and CSR submitted to FDA in 2019
- Provided information to develop final safety and effectiveness hypotheses for pivotal trial

Study Design



1: Standard of Care (SOC) includes bandaging, debridement and pressure reduction.
ClinicalTrials.gov Identifier: NCT03078933. ; www.clinicaltrials.gov/ct2/show/NCT03078933?cond=apt-001&rank=2 (FDA drug dose-ranging feasibility)

Origin™

Interim Analysis

Analysis Conclusions

- Interim analysis conducted on 63 subjects, 53 of whom completed treatment (the results reported below exclude one clinical trial site that did not follow inclusion/exclusion criteria for the study and reported results that the independent analyst determined were abnormal and warranted exclusion from the analysis, which resulted in an analysis of 36 patients).*
- After 12 weeks of treatment, the best-performing arm of 12-minute treatment 4x per week achieved:
    - Wound closure >95% in 86% of patients compared to 33% in the control (SoC) arm
    - 100% median wound-size reduction compared to 49% in the control (SoC) arm
    - Full wound closure in 71% of patients, compared to 0% in the control (SoC) arm
- More than 1,000 treatments were administered to patients during the trial and there were no recorded therapy-related adverse events
- Although the study was not statistically powered to evaluate the differences between groups, we have concluded that this analysis supports moving forward to a pivotal trial
- These results demonstrate potential for treating wounds with NO to promote healing

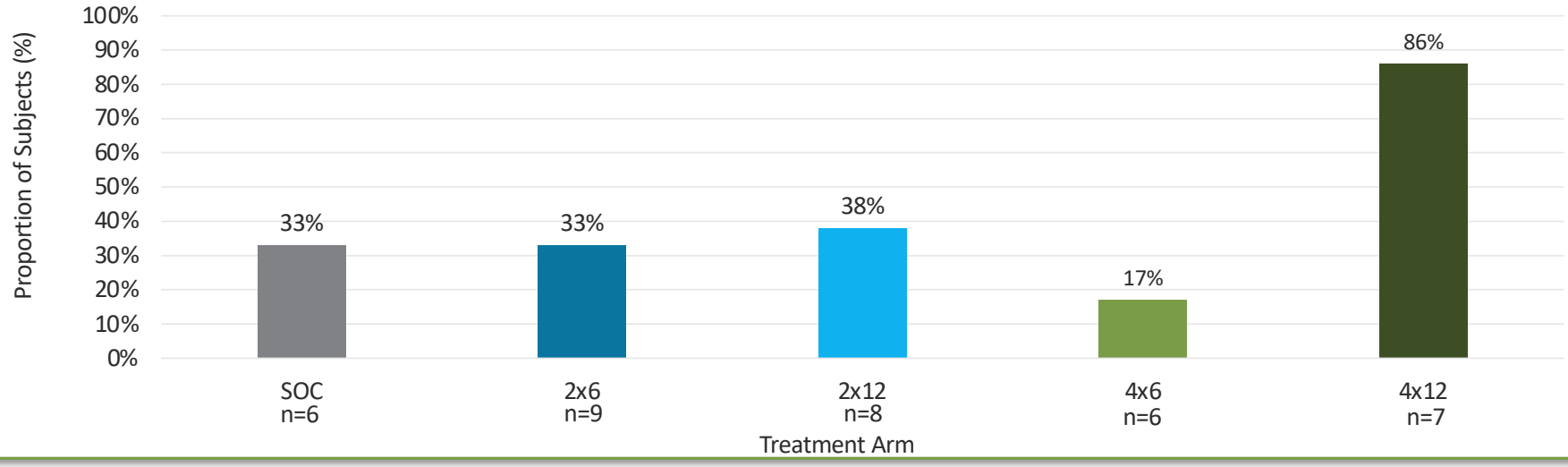
* Because the final clinical study report evaluated the full 83 patients who were randomized, including patients that did not complete treatment and the previously excluded clinical trial site, the results in the final report differ substantially from those reported in the interim analysis. We believe the results of the interim analysis (n=36) are more appropriate for determining whether to move forward with the pivotal trial and selecting the most promising dose arms to study.

GENESIS Analysis

GENESIS Trial – Interim Data for DFU

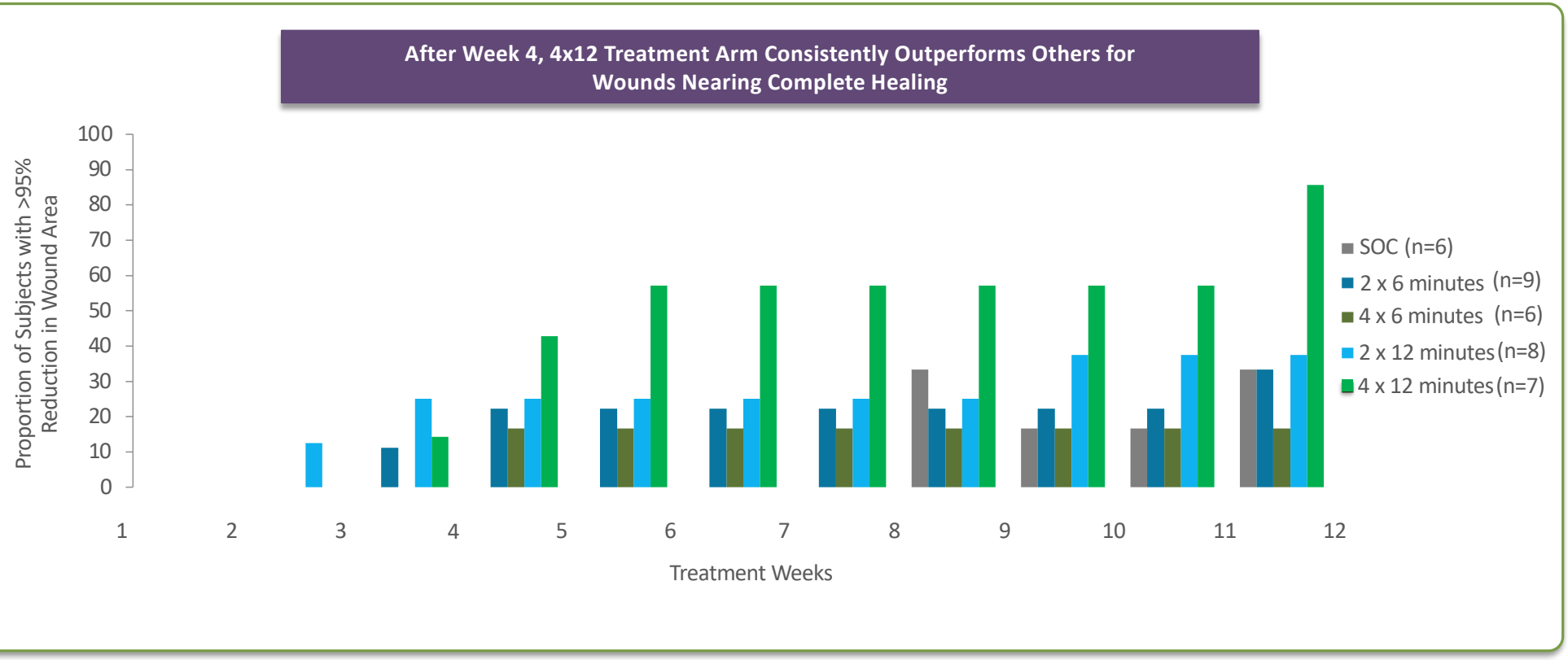
Proportion of Subjects >95% Wound reduction at 12 weeks

After 12 weeks of treatment, 86% of the patients in the 4X12 group achieved >95% wound healing compared to 33% of patients in the SOC group



GENESIS Trial – Interim Data for DFU

Proportion of Subjects >95% Reduction in Wound Area Each Week



GENESIS Analysis

The Treatment of Infected Pacemaker and Defibrillator Wounds with Nitric Oxide / Plasma Therapy

Terry Treadwell, MD, FACS, FAAWC   Donna Walker, LPN

Institute for Advanced Wound Care   Baptist Medical Center   Montgomery, Alabama

Background

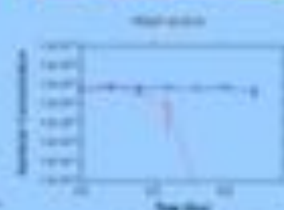
Treatment

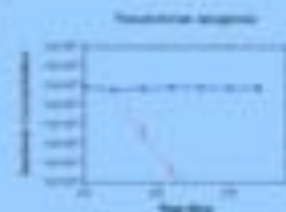
Results

Nitric Oxide

NO Production

Antimicrobial Effect of NO





Cases

The Treatment of Infected Wounds with Orthopedic Implants and Skeletal Fixation with Nitric Oxide / Plasma Energy

Terry Treadwell, MD, FACS, FAAWC   Lyudmila Nikolaychook, DO

Institute for Advanced Wound Care   Baptist Medical Center   Montgomery, Alabama

Background

Open reduction and internal fixation has become a standard practice for the treatment of many fractures and other skeletal problems. The technique provides more stable reduction of the fracture or deformity, stimulates bony union, and allows an earlier return to function. (1,2,3) Unfortunately, postoperative infection of the wound and hardware occurs in about 100,000 cases annually.(4) These infections, usually caused by Staphylococcus, can result in poor wound healing, delayed and abnormal union of the fracture or repair, more significant morbidity, prolonged hospitalization, and significantly increased cost. (5,6) Treatment of these infections is historically difficult because of the presence of the implant and the presence of the bacteria in the form of a biofilm on the implant. (7,8) As a result, many times the hardware must be removed resulting in more problems securing the fracture or repair site and adding to the recovery time and cost. (3) In an attempt to provide healing of these wounds and skeletal problems without having to remove the hardware, we have turned our attention to treatment of these wounds and infected hardware with nitric oxide/plasma energy gas.

Nitric oxide is a molecule generated normally in the body by nitric oxide synthase and functions as an intracellular signaling molecule. There is significant evidence that nitric oxide plays a major role in wound healing by stimulating collagen synthesis and wound strength, stimulating angiogenesis, reducing inflammation, killing bacteria, stimulating microvascular vasodilatation, inhibiting platelet and erythrocyte aggregation, reducing leukocyte adhesion, and stimulating endothelial and fibroblast proliferation and differentiation. (9,10) It functions as an anti-microbial killing bacteria by its direct effect on bacteria and by combining with the superoxide anion to form an antimicrobial agent (NO + O2 = ONOO-). Because it has been found to penetrate up to 3cm into intact tissue, it has been proved to be effective in killing bacteria in biofilms. It plays a large role in vasodilatation of the microcirculation by restoring the function of endothelial nitric oxide synthase (eNOS). The patient with diabetes mellitus is especially at risk of impaired wound healing due to nitric oxide deficiency because hyperglycemia results in the overproduction of superoxide which inactivates nitric oxide. (11,12,13)

Treatment of wounds and infections with nitric oxide has proved to be difficult because the molecule has a very short half-life, in the range of seconds. Restoration of nitric oxide levels in diabetic mice has been possible with gene therapy (14), but this can be impractical in humans. This study does show that the restoration of nitric oxide levels in tissues will improve wound healing. In an attempt to restore normal nitric oxide activity to tissues and improve healing in chronic wounds, attention was turned to a device first developed in Russia by Drs. Pekshev and Shekhter. The NO-therapy device is a device that uses plasma energy to deliver nitric oxide to the tissues. (15) The combination of atmospheric oxygen and nitrogen at the high temperatures generated by an electric arc results in nitric oxide and plasma energy (N2 + O2 = 2NO + 181 KJ energy). (15) When combined with plasma energy, the nitric oxide molecule has an extended half-life long enough to be clinically useful in the treatment of wounds and infections.

After generation, the nitric oxide/plasma flow is cooled to ~35C, and nitric oxide is delivered to the tissues in a "dose" between 800 and 1000 ppm. (15) It has been shown that the nitric oxide will penetrate intact skin up to 3 cm in depth, making this therapy ideal for many wounds. (16)

This study will evaluate the efficacy of plasma / nitric oxide for the treatment of infected postoperative wounds with implanted skeletal hardware following open reduction and internal fixation of fractures and skeletal repair without removing the hardware.

References

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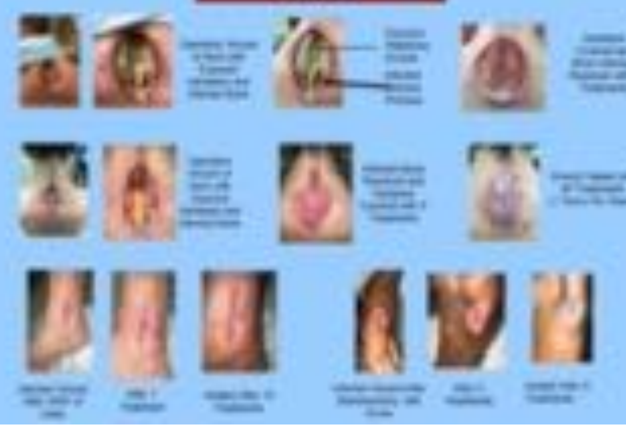
Treatment

8 subjects with infected wounds with implanted skeletal hardware following open reduction and internal fixation of fractures or repair of skeletal deformities received plasma / nitric oxide treatments for approximately 8 minutes once per week (6 patients) or twice per week (2 patients) without removal of the hardware. After the wounds were treated with the plasma / nitric oxide therapy, each was covered with a non-adherent dressing and an absorptive dressing. Subjects were evaluated for efficacy with clinical observations and photos.

Results

All 8 patients with infected orthopedic or skeletal hardware healed without removal of the hardware. The smaller orthopedic wounds healed in an average of 10 weekly treatments. The large, neurosurgical wounds healed with an average of 22 treatments with the nitric oxide/plasma energy therapy. There have been no recurrences of the wound or infection to date.

Cases



The Treatment of Wounds Occurring in Radiated Tissue with Nitric Oxide / Plasma Therapy

Terry Treadwell, MD, FACS, FAWC Lyudmila Nikolaychook, DO Jessica Baker, RN Angela Pickens, RN

Institute for Advanced Wound Care Montgomery, Alabama

Background

Radiation therapy has been used in the treatment of certain cancers for over 100 years with variable results. (1) Even though it is effective in treating selected malignancies, the potential damage to normal tissues can be significant. The most frequently injured tissue is the skin overlying or surrounding the area of treatment. These injuries may be acute occurring within 10-14 days of starting radiation therapy or chronic occurring 3 months or more after therapy. (1) These effects of radiation therapy, both acute and chronic, may be the result of death of and damage to cells especially fibroblasts, loss of circulation to the tissues due to microcirculation damage, and development of an abnormal inflammatory reaction in the tissues that may be prolonged. (1,2,3,4)

Nitric oxide is a molecule generated normally in the body by nitric oxide synthase and functions as an intracellular signaling molecule. There is significant evidence that nitric oxide plays a major role in wound healing by stimulating collagen synthesis and wound strength, stimulating angiogenesis, reducing inflammation, killing bacteria, stimulating microvascular vasodilatation, inhibiting platelet and erythrocyte aggregation, reducing leukocyte adhesion, and stimulating endothelial and fibroblast proliferation and differentiation. (5,6) It functions as an anti-microbial killing bacteria by its direct effect on bacteria and by combining with the superoxide anion to form an antimicrobial agent (NO + O2 + ONOO-). The nitric oxide/plasma energy combination has been found to penetrate up to 3cm into intact tissue making it effective in treating certain conditions under intact skin. It plays a large role in vasodilatation of the microcirculation by restoring the function of endothelial nitric oxide synthase (eNOS). (7,8,9)

Treatment of wounds with nitric oxide has proved to be difficult because the molecule has a very short half-life, in the range of seconds. In an attempt to restore normal nitric oxide activity to tissues and improve healing in chronic wounds, attention was turned to a device first developed in Russia by Drs. Petrishev and Shekhter. The NO-therapy device uses plasma energy to deliver nitric oxide to the tissues. (10,11) The combination of atmospheric oxygen and nitrogen at high temperatures generated by an electric arc results in nitric oxide and plasma energy ($N_2 + O_2 + 2NO + 181$ KJ energy). (10,11) This combination of plasma energy and nitric oxide results in the molecule having an extended half-life long enough to be clinically useful in the treatment of wounds and infections. After generation, the nitric oxide/plasma flow is cooled to ~35C, and nitric oxide is delivered to the tissues in a "dose" between 800 and 1000 ppm. (11) The nitric oxide is generated out of the surrounding air without the need for additional gases. During the treatment of the patient no part of the device touches the patient, so there is no need for disposable parts or sterilization of the device.

Nitric oxide promotes wound healing by stimulating angiogenesis, reducing inflammation, killing bacteria, stimulating microvascular vasodilatation, inhibiting platelet and erythrocyte aggregation, reducing leukocyte adhesion, and stimulating endothelial and fibroblast proliferation and differentiation. (12,13) All of these effects would benefit the radiated wound and help with healing. (14,15)

This study was done to evaluate the efficacy of plasma / nitric oxide for the treatment of acute and chronic wounds occurring in radiated tissue.

References

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Methods and Treatment

After IRB approval of the protocol, a series of 5 patients with acute or chronic wounds occurring in tissue following radiation therapy were enrolled in the study. The wounds have been present from 3 to 20 years with an average of 6.8 years. Each wound was debrided and treated with the nitric oxide/plasma energy therapy once per week for an average of 6 minutes per treatment.

Cases

Results

Each patient showed an immediate reduction in the size of the wound in the radiated tissue. With treatments once per week for 6 minutes each time, 2 patients have healed, and 3 have had a significant reduction in size of the wound and continue with therapy. Continued work with the nitric oxide / plasma energy therapy is warranted to determine its ideal treatment duration and interval.