

CytoSorbents™



HELPING REDUCE DEADLY UNCONTROLLED INFLAMMATION IN HOSPITALIZED PATIENTS WORLDWIDE

NASDAQ: CTSO

HC Wainwright 21st Global Investment Conference

September 10, 2019

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CytoSorbents is a Leader in Critical Care Immunotherapy



Leading the Prevention or Treatment of
Life-Threatening Inflammation
in the ICU and Cardiac Surgery using
CytoSorb® Blood Purification

CytoSorbents At a Glance (NASDAQ: CTSO \$5.15)

- CytoSorb® is E.U. approved as an extracorporeal cytokine adsorber with 67,000+ cumulative treatments (up from 46,000 a year ago) delivered and distributed in 58 countries
- Record 2018 Financial Performance:

	2017	2018	Increase
Total Revenue	\$15.1M	\$22.5M	+49%
Product Revenue	\$13.4M	\$20.3M	+51%
Blended Product Gross Margin	71%	74%	-

- Conducting the pivotal REFRESH 2-AKI cardiac surgery trial to support US FDA approval
- Healthy cash balance of ~\$20M (7/31/19)
- 152 employees with international footprint across two wholly-owned subsidiaries
 - CytoSorbents Medical, Inc: Headquarters - New Jersey, USA
 - CytoSorbents Europe GmbH: International sales office - Berlin, Germany
- Strategic Partnerships with Fresenius Medical Care, Terumo, Biocon, Dr. Reddy's
- Strong government support with ~\$26M in grants, contracts, other non-dilutive funds
- Russell 2000 & 3000 listed. Coverage by Cowen, B Riley, HCW, Maxim, Dawson James, Zacks

Uncontrolled Inflammation is Deadly



Massive Inflammation Causes Organ Failure

Organ failure occurs when vital organs stop working,
causing nearly half of all deaths in the ICU.



Little can be done to prevent or treat organ failure today

No Ideal Options to Treat Severe Inflammation

Anti-Inflammatory (too weak)

NSAIDs

Aspirin

**Anti-cytokine
antibodies**

**Anti-integrin
antibodies**

Anti-oxidants

Immunosuppressive (too strong)

Corticosteroids

Chemotherapy

**Organ transplant
Anti-rejection drugs**

Radiation

**Immune system
ablation**

Anti-leukocyte Abs

CytoSorb Bridges the Gap

Anti-Inflammatory (too weak)

NSAIDs

Aspirin

Anti-cytokine
antibodies

Anti-integrin
antibodies

Anti-oxidants



Immunosuppressive (too strong)

Corticosteroids

Chemotherapy

Organ transplant
Anti-rejection drugs

Radiation

Immune system
ablation

Anti-leukocyte Abs

CytoSorb® Reduces the Fuel to the Fire

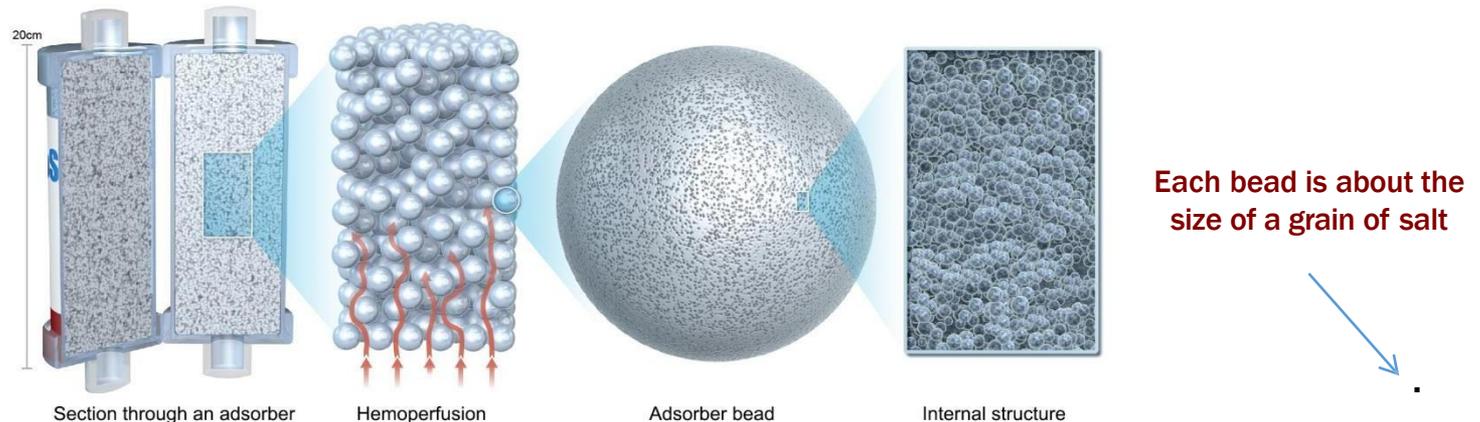
- CytoSorb® targets the \$20+ billion opportunity in critical care and cardiac surgery
- Approved in the European Union as the first specifically approved extracorporeal cytokine adsorber
- Broad indication for use where cytokines are elevated
- Removes cytokines and many other inflammatory mediators such as free hemoglobin, bacterial toxins, myoglobin, and activated complement
- Safe and well-tolerated: 67,000+ cumulative treatments delivered, up from 46,000 a year ago



*CytoSorb is not yet approved in the U.S.

Patented Blood Purification Technology

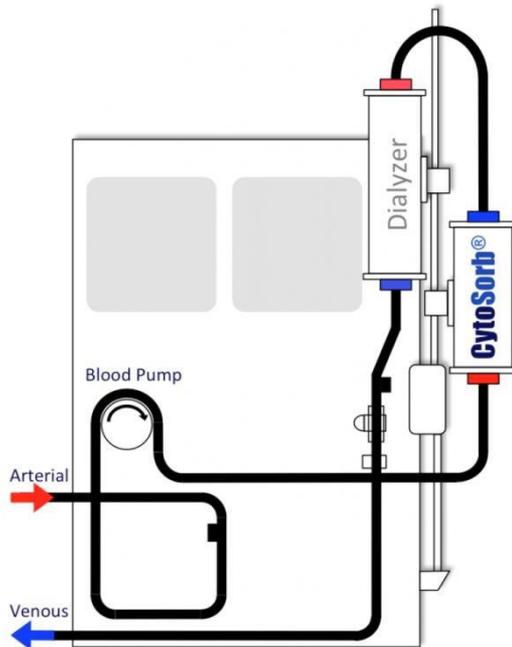
The underlying blood purification technology is based on biocompatible, highly porous polymer beads that act like tiny sponges to remove harmful substances from blood



- Proprietary patented technology with multiple patents pending worldwide
- Manufactured at our ISO 13485 certified facility in New Jersey
- One of the highest grade medical sorbents on medical market today

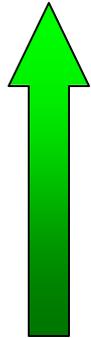
CytoSorb is “Plug and Play”

Compatible with Existing Dialysis and Heart-Lung Machines

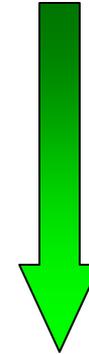


- Place a temporary dialysis catheter in a major vein
- Connect the device to a standard dialysis, ECMO, or heart-lung machine found in hospitals worldwide
- Pump blood out of the body and through the cartridge
- The polymer beads directly contact blood and remove unwanted or toxic substances
- “Purified” blood is pumped back into the patient
- Can treat 70+ total blood volumes per 24 hour treatment
- Each treatment uses a new cartridge

Goal: To Prevent or Treat Organ Failure

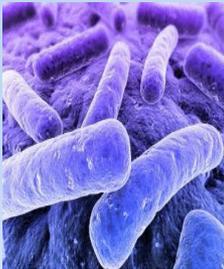


Improve
Patient
Outcome
and
Survival

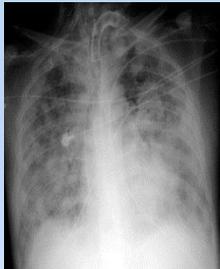


Decrease
Costs Of
ICU and
Patient
Care

Sepsis



ARDS



Burn Injury



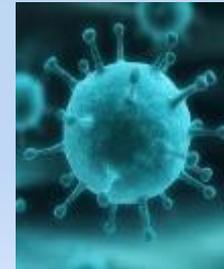
Trauma



Pancreatitis



Influenza



Surgical



The Potential to Revolutionize Critical Care Medicine

Refractory Septic Shock

Prospective, single arm study in 20 patients with refractory late-stage septic shock using CytoSorb aggressively every 12 hours with a new cartridge

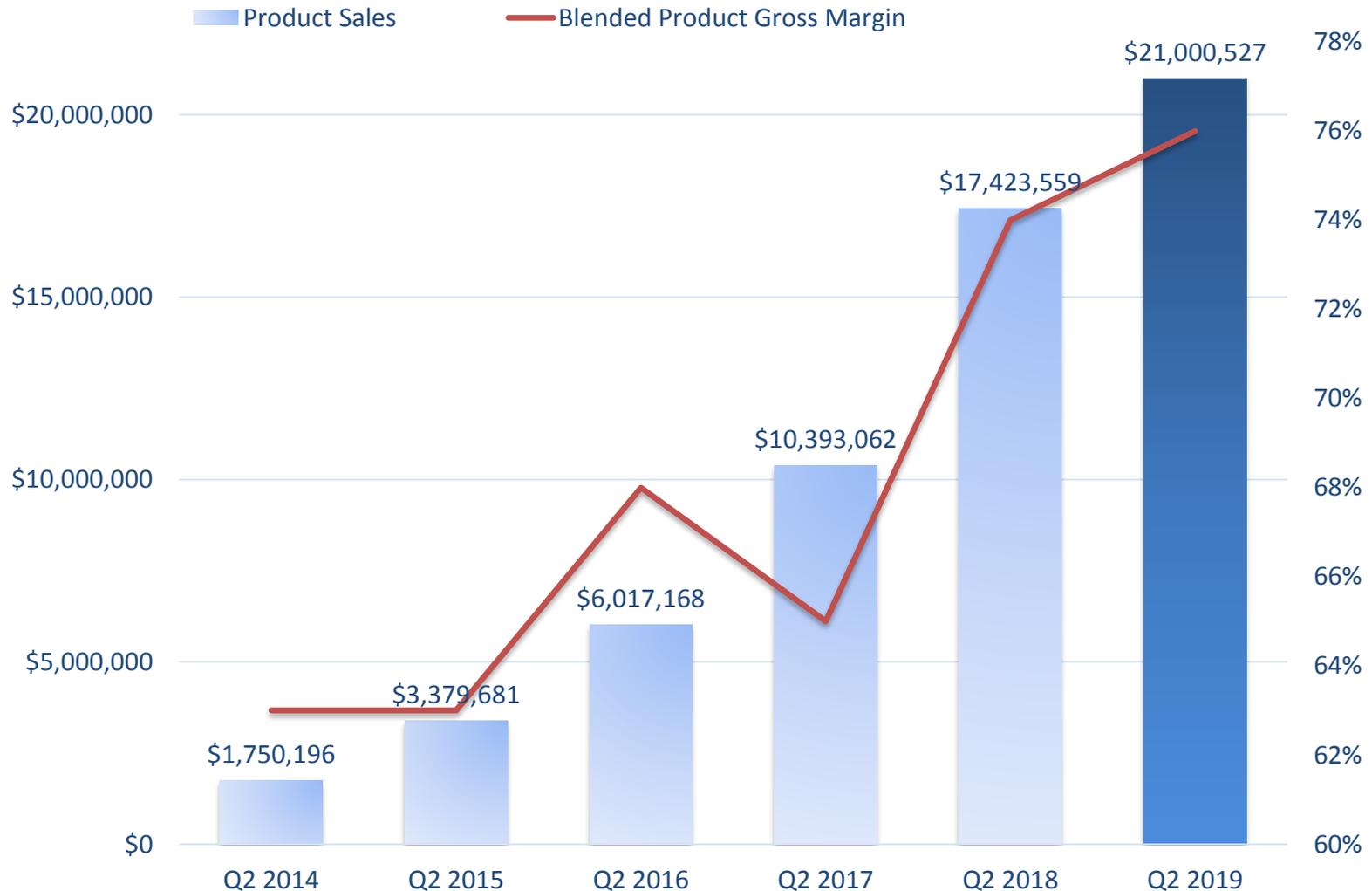
- Patients had refractory shock despite high doses of vasopressors, respiratory failure requiring mechanical ventilation, oligo-anuric kidney failure requiring dialysis, and lactate > 8 mmol/L
- Results from the CytoSorb Greifswald Study
 - Resolution of shock in 65% of patients treated with CytoSorb
 - 28-day survival was 45%, a 30-40% absolute improvement over expected (0-10%)
 - Reduction of IL-6 from an initial average of 87,000 pg/mL to below 10,000 pg/mL after 24 hours of treatment
- A similar population (n=16) receiving standard of care but no CytoSorb therapy, where shock could not be reversed, also on mechanical ventilation with an initial lactate level of 6.1 ± 4 mmol/L, and 75% requiring renal replacement therapy had a mortality of 100% at 28 days.*
- Conrad, M., et. al., "Early prediction of norepinephrine dependency and refractory septic shock with a multimodal approach of vascular failure", J Crit Care, 2015; 30:739-743.
- Friesecke, S, et.al., "Extracorporeal cytokine elimination as rescue therapy in refractory septic shock: a prospective single center study", J Artif Organs 2017 Sep; 20(3):252-259.



CytoSorb® Is a High Margin “Razorblade”

- High margin “razorblade” fully compatible with existing installed base of “razor” blood pumps: Dialysis/CRRT, ECMO machines (ICU), heart-lung machines (OR)
- Blended gross margins are 76%, expected to rise to ~80% on a quarterly basis in 2019, driven by volume production from our new manufacturing facility
- Average Direct Selling Price is approximately \$1,000 per cartridge
- Approximately 1 - 10 cartridges are typically used per patient
 - Open heart surgery: 1-2 cartridges
 - Sepsis: 3-5 cartridges or roughly 1 day in the ICU
 - Severe acute pancreatitis: 5-10 cartridges
- In Germany, 400 hospitals have >400 beds. Each hospital typically sees 300-600 sepsis patients per year. At 3-5 cartridges per patient:
 - Revenue per patient = ~\$3,000-5,000
 - Potential revenue per hospital = \$1-3M for sepsis alone
- Previously disclosed one German hospital has already achieved sales >\$1M, validating revenue model

Product Sales (TTM) and Blended Gross Margins



80% Blended Product Gross Margins Are Near

- We are a vertically-integrated ISO 13485 certified manufacturer of CytoSorb
 - Manufacture our proprietary porous polymer beads from raw chemicals
 - Assemble fully-finished devices
 - Send out for third-party gamma sterilization
 - Conduct all quality assurance and quality control, and ship worldwide
- Increases in blended product gross margins over time have been due primarily to improved manufacturing efficiencies
- New manufacturing facility opened seamlessly in June 2018, with capacity of \$80M in sales
- Achieving economies of scale at all levels. Examples include:
 - More efficient and streamlined large scale manufacturing
 - Improved product yields
 - Volume purchasing discounts of raw materials
 - Bulk waste disposal
 - Pallet freight shipping
- We are the beneficiary of cost reductions in manufacturing and continue to expect achievement of 80% blended product gross margins on a quarterly basis this year

Demand for CytoSorb Continues to Grow

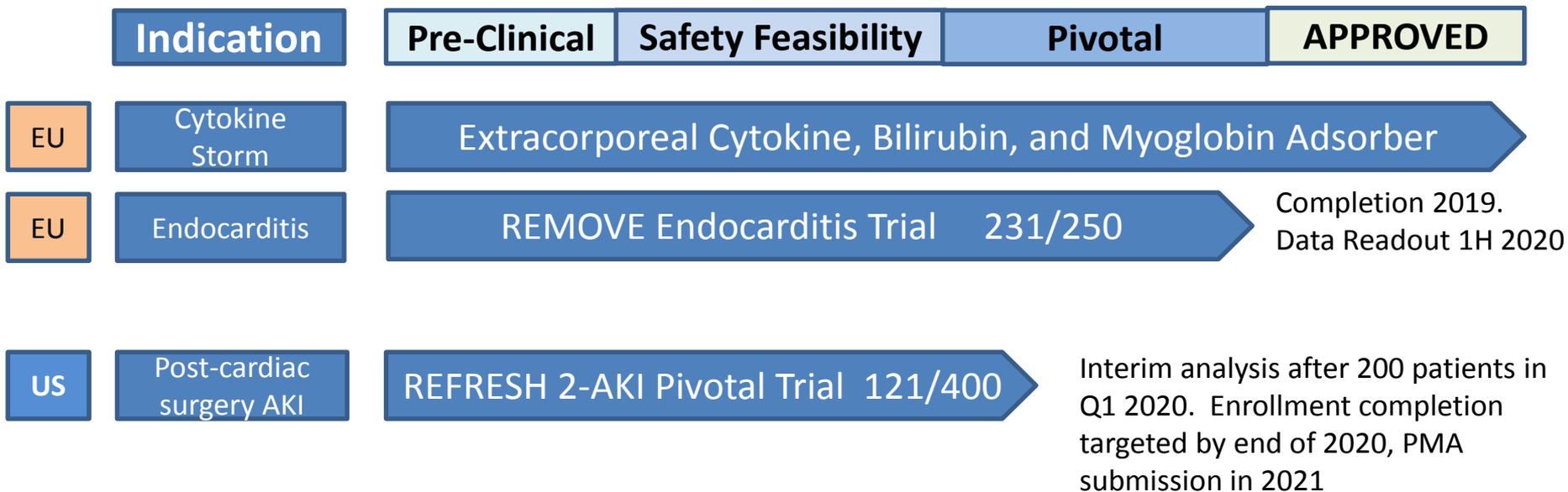
- CytoSorb sales are driven primarily by re-orders with ~85% of our invoices from repeat customers
- The number of CytoSorb cartridges per invoice continues to rise, demonstrating increased usage and adoption at many accounts
- Usage is increasing because CytoSorb is helping physicians “regain control” of their very sick patients, particularly in controlling complications of inflammation
- Clinical data generation continues to be robust with more than 120 publications in peer-reviewed scientific and medical journals
- Clinicians have honed in on key areas where CytoSorb works well such as sepsis, cardiac surgery, and liver failure
- Starting in the second half of 2018, we had begun to put into place a growth strategy to take advantage of this strong market for CytoSorb

Investing Heavily for Growth

- Direct sales are ~75% of our product sales, with higher product gross margins
- Doubled the number direct sales countries from 5 to 10 in 2019, adding Poland, Sweden, Netherlands, Norway and Denmark, to Germany, Austria, Switzerland, Belgium and Luxembourg with a combined population of 190M
- Expanded countries to 58, with registration pending at major countries including Brazil, Mexico, South Korea and Colombia that add more than 440M people
- Since September 2018, added 47 people or a 45% increase in headcount to 152, with many key hires in the past 3-6 months. Expansion was lengthy and challenging due to insistence of quality people, tight labor market, and labor laws
- Significantly strengthened the commercial organization
 - Doubled customer facing sales reps and specialists, particularly in Germany
 - Subdivided management of direct sales
 - New leadership and expansion of distributor and partner sales
 - New head of marketing who will report to Christian Steiner, SVP of Sales and Marketing
 - Bolstered manufacturing, quality, clinical, and reimbursement personnel
- Manpower will enable more focused targeting of key accounts, with modest impact this year, but is expected to be a major catalyst for strong growth in 2020

Near Term Clinical Data May Catalyze Sales Also

CytoSorb®



HemoDefend-RBC™



CE Mark Renewal to May 2024 Ensures Supply

- The new Medical Device Regulation (MDR) in the E.U. replaces the Medical Devices Directive (MDD) for CE Mark approval for medical devices
- The MDR was published in May 2017 and will be in full effect in May 2020 after a 3-year grace period and will apply to all medical device companies
 - Increased requirements on efficacy and clinical data
 - Increased technical documentation
 - Stringent requirements on post-market surveillance
 - Changes to product labels that will enable "track and trace" of individual devices
- Through significant effort, we have received an extension of our CE Mark for CytoSorb through May 2024 under the MDD
- We believe we would have met the MDR requirements now, but the key is that we have eliminated a significant regulatory risk of any supply interruption of CytoSorb to the market for the next ~5 years

Investment Summary

- We believe we are a unique company in the medical device space with a high margin razorblade in another company's razor business model
- We are helping to treat some of the biggest unmet medical needs in modern medicine and are riding the wave of multiple macro trends
 - Aging baby boomer generation and risk of sepsis, structural heart disease, and trauma
 - The pandemic of liver failure
 - The rise of cancer immunotherapy (CART-cell)
 - The opiate crisis
 - Many others
- We have extensive validation from physicians around the world, leading strategic partners, US government agencies, and the media
- We are confident in the future, with management purchasing 100,000+ shares recently



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FOX BUSINESS



THE WALL STREET JOURNAL WSJ

The New York Times



***Providing Hope
in a helpless situation***



HELPING PATIENTS SURVIVE CRITICAL ILLNESSES WORLDWIDE



CytoSorbents™

Working to Save Lives Through Blood Purification

NASDAQ: CTSO

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