

CytoSorbents™



HELPING REDUCE DEADLY UNCONTROLLED INFLAMMATION IN HOSPITALIZED PATIENTS WORLDWIDE

NASDAQ: CTSO

Biotech Showcase Presentation

January 13, 2020

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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

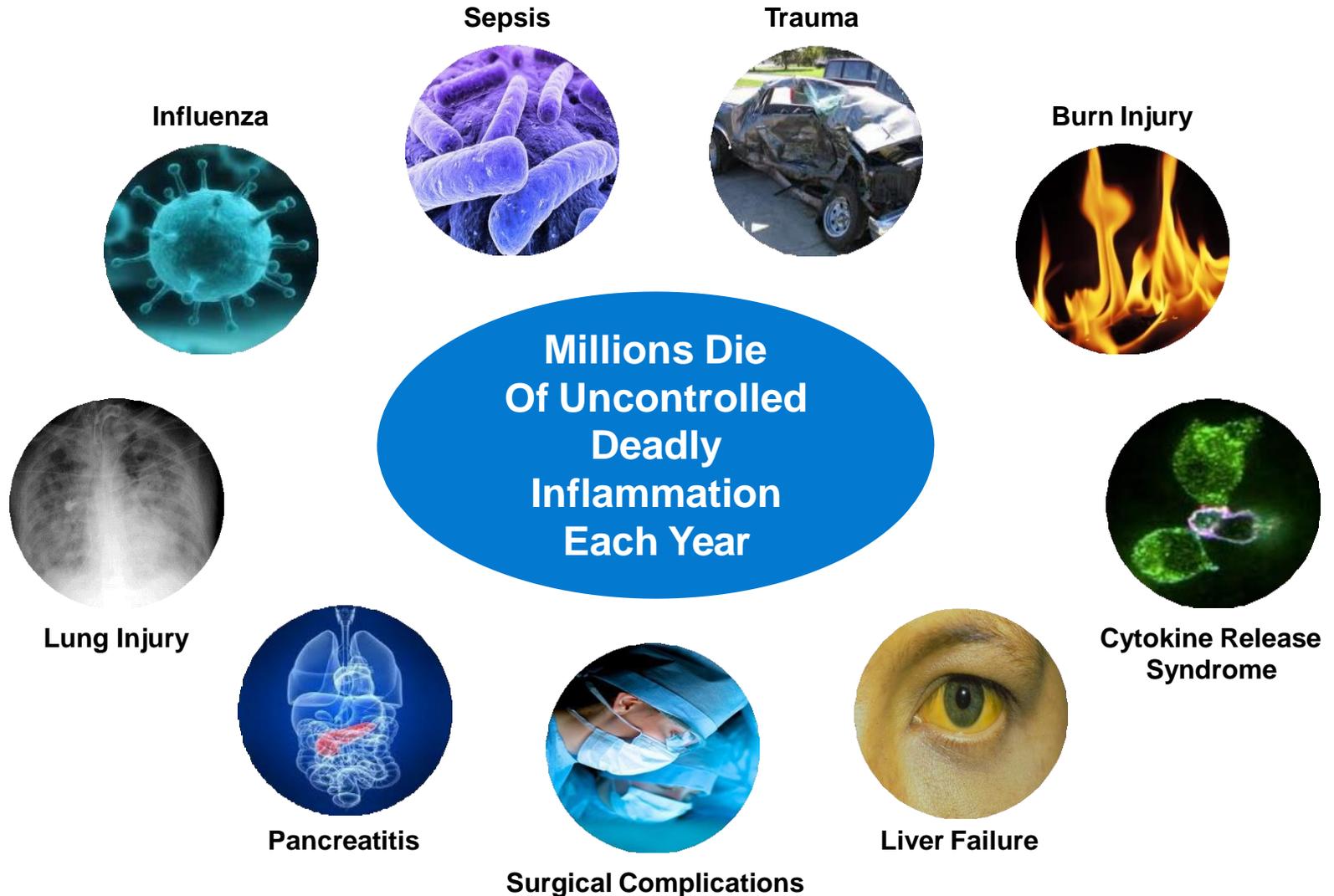
CytoSorbents At a Glance (NASDAQ: CTSO)

- CytoSorbents (NASDAQ: CTSO) is a New Jersey-based, vertically-integrated medical device company that specializes in blood purification to treat life-threatening conditions
- CytoSorb® is E.U. approved as an extracorporeal cytokine adsorber to help treat hyperinflammatory conditions where cytokines are elevated (e.g. “cytokine storm”)
- We sell CytoSorb either direct in 10 countries in Europe, or through partners/distributors in another in 48 countries worldwide (58 total)
- 155 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 ~\$29M in grants, contracts, other non-dilutive funds
- Russell 2000 & 3000 listed. Coverage by Cowen, B Riley, HCW, Maxim, Dawson James, Zacks

Pre-Announcement of Q4 2019 and Full Year 2019 Preliminary Unaudited Financials

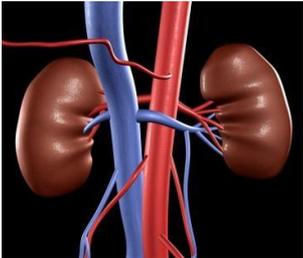
- Cumulative CytoSorb treatments surpassed 80,000 for the first time, up from 56,000 at the end of 2018
- Q4 2019 Total Revenue (including product sales and grant income) was ~\$7.4M versus \$6.1M a year ago, an increase of 21%
- Q4 2019 Product Sales growth accelerated to ~\$6.6M, a 21% increase versus \$5.5M a year ago, bolstered by a 30% increase in direct sales
- 2019 Total Revenue was ~\$24.9M versus \$22.5M in 2018
- 2019 Total Product Sales were ~\$22.8M versus \$20.3M in 2018
- On a constant currency basis, 2019 Total Revenue and Product Sales were \$26.0M and \$23.9 million, respectively
- Preliminary blended product gross margins are expected to be at or near 80% for Q4 2019, combining higher margin direct and lower margin distributor and partner sales. This represents an up to 600 basis increase compared to 74% in 2018

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

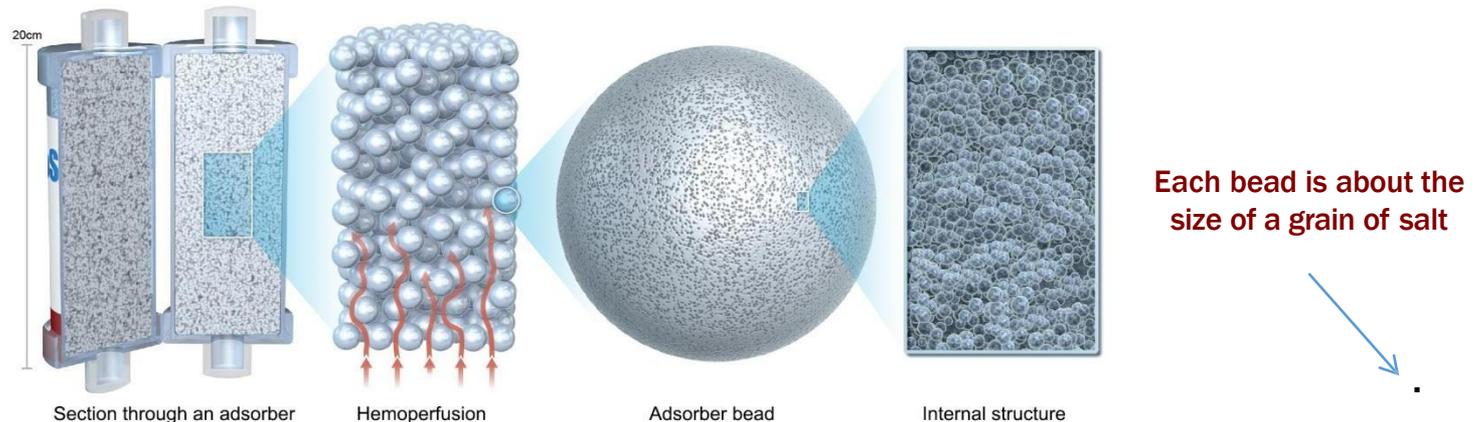
- CytoSorb® targets the \$20+ billion opportunity in critical care and cardiac surgery
- Approved in the European Union as the first specifically approved extracorporeal cytokine adsorber
- Broad indication for use where cytokines are elevated
- Removes cytokines and many other inflammatory mediators such as free hemoglobin, bacterial toxins, myoglobin, and activated complement
- Safe and well-tolerated: 80,000+ cumulative treatments delivered, up from 56,000 a year ago



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

Patented Blood Purification Technology

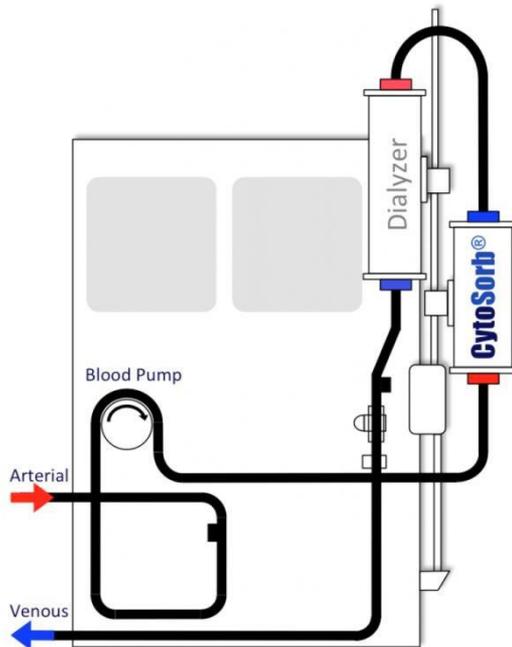
The underlying blood purification technology is based on biocompatible, highly porous polymer beads that act like tiny sponges to remove harmful substances from blood



- 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

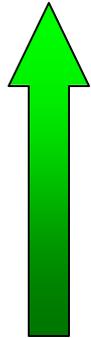
CytoSorb is “Plug and Play”

Compatible with Existing Dialysis and Heart-Lung Machines

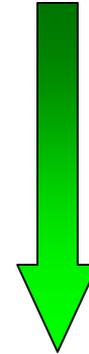


- Place a temporary dialysis catheter in a major vein
- Connect the device to a standard dialysis, ECMO, or heart-lung machine found in hospitals worldwide
- Pump blood out of the body and through the cartridge
- The polymer beads directly contact blood and remove unwanted or toxic substances
- “Purified” 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

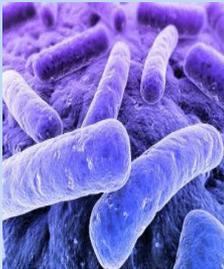


Improve
Patient
Outcome
and
Survival

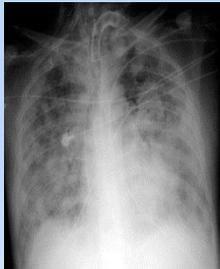


Decrease
Costs Of
ICU and
Patient
Care

Sepsis



ARDS



Burn Injury



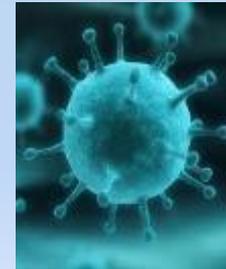
Trauma



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® Has a Hybrid Sales Model

58 Countries Worldwide and 80,000+ treatments

Critical Care and Cardiac Surgery

Direct Sales



Distributor and Partner Sales



Direct sales in 10 countries:

Germany, Austria, Switzerland, Belgium,
Poland, Netherlands, Denmark, Norway,
Sweden, Luxembourg



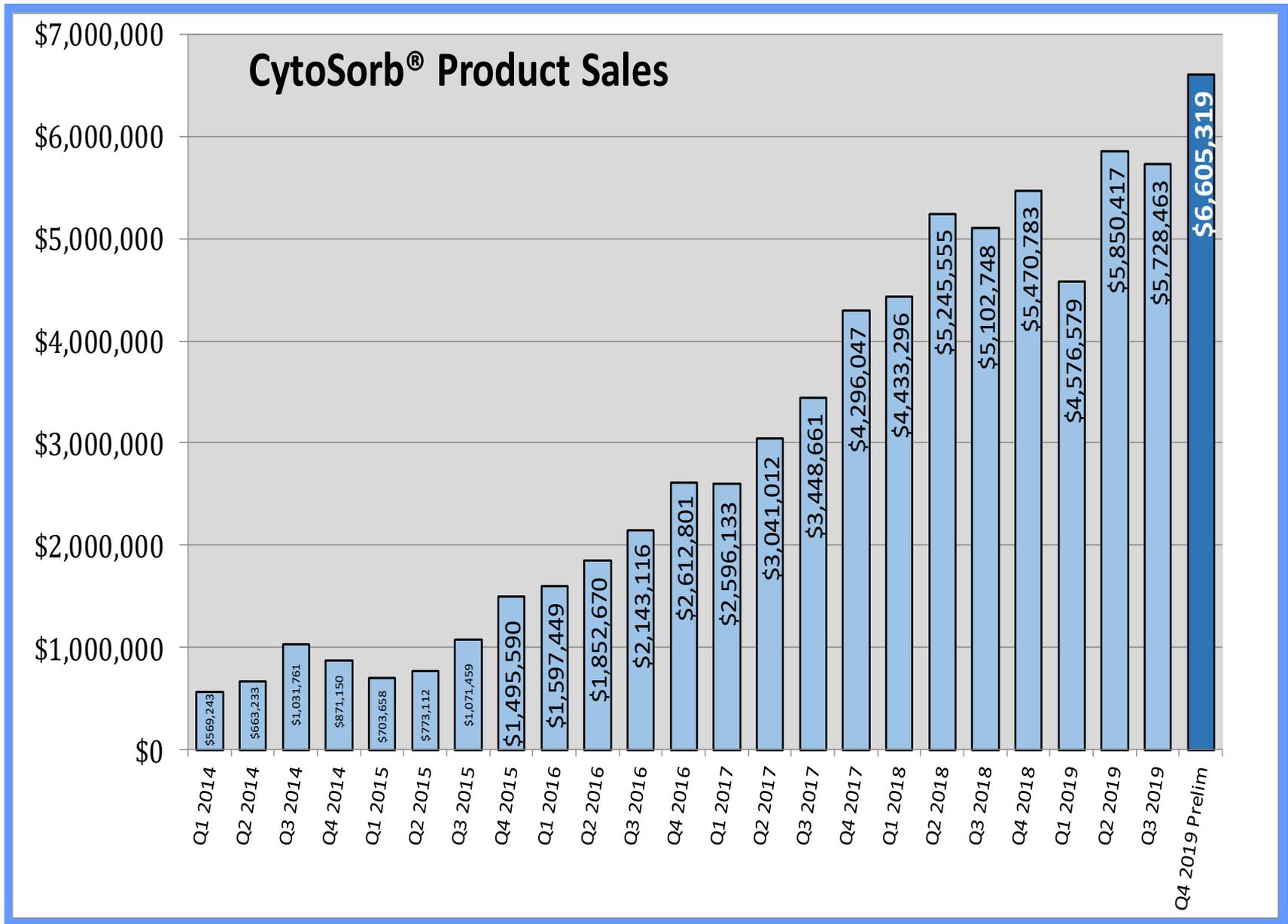
Distributor and Partner sales in 48 countries

Recently added Mexico and South Korea
with partner, Fresenius Medical Care
Also added Brazil, Colombia, and Costa Rica

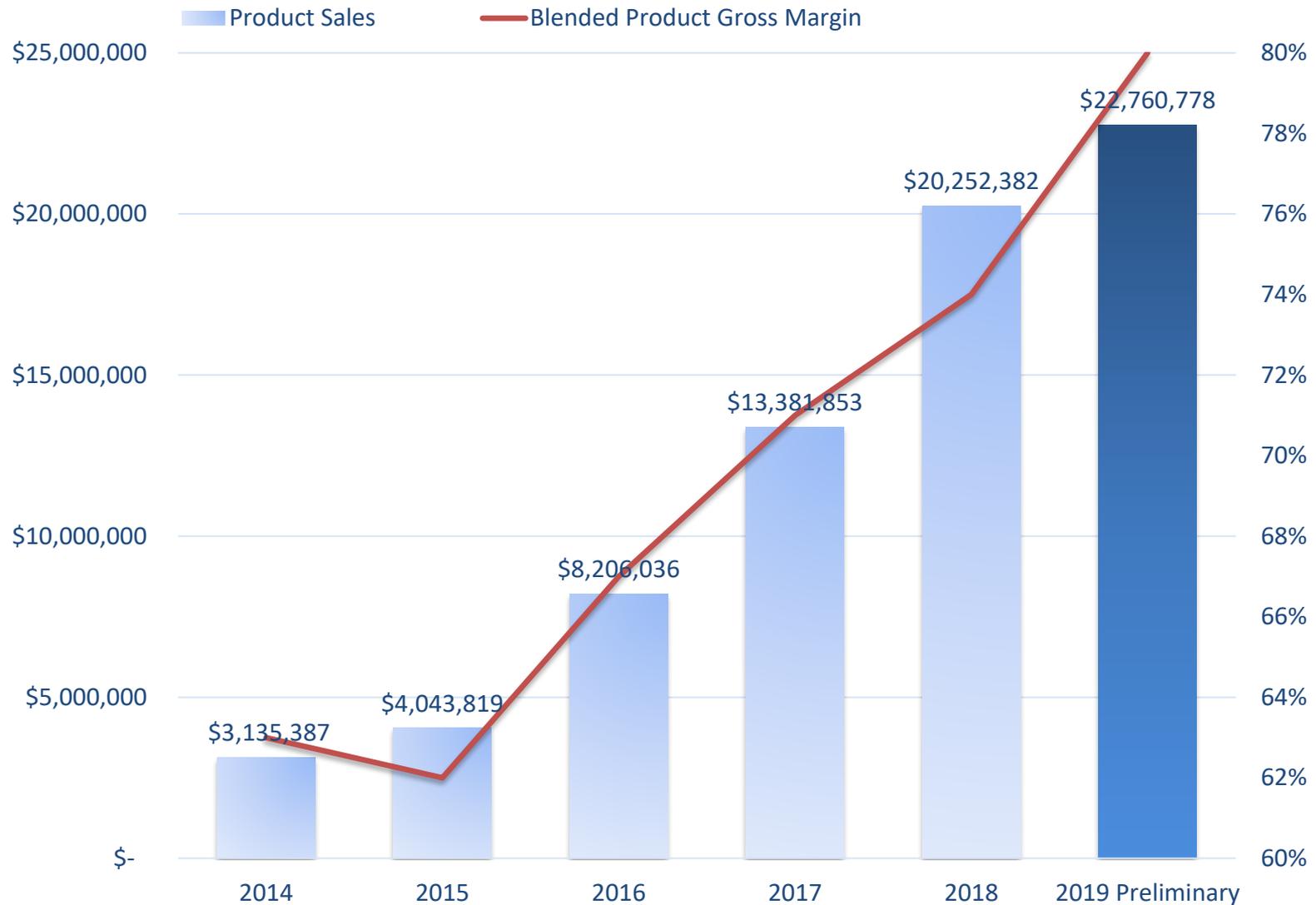
CytoSorb® Is a High Margin “Razorblade”

- 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 at or near 80% in Q4 2019, driven by volume production from our new manufacturing facility and manufacturing efficiencies
- 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

Quarterly Product Sales Resume Growth



Continued Annual Sales Growth and Product Margin Expansion



Forecast CytoSorbents 2020: Faster Growth Ahead

Demand for CytoSorb Continues to Grow

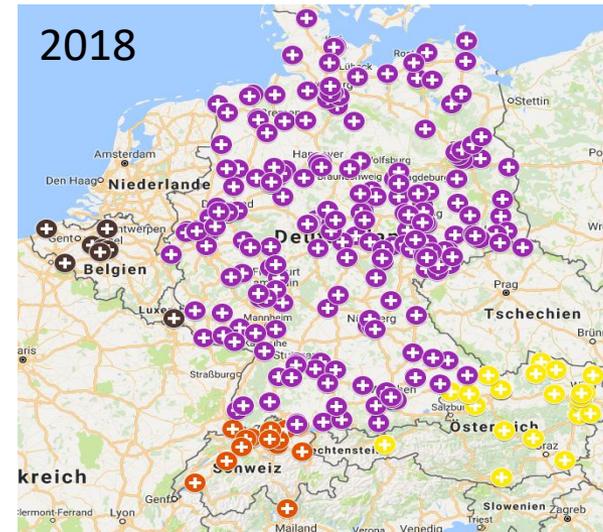
- CytoSorb sales are driven primarily by re-orders with ~85% of our invoices from repeat customers
- The average number of CytoSorb cartridges per invoice at many accounts continues to rise, demonstrating increased usage and adoption
- Usage is increasing because CytoSorb is helping physicians “regain 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
- New applications and new data are expected to drive more rapid adoption and broader based usage

Investing 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 (adding a population of 190M)
- Expanded countries to 58, with registration pending at major countries including Brazil, Mexico, South Korea and Colombia (population: 440M people)
- Since September 2018, added 50 people or a 48% increase in headcount to 155, 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

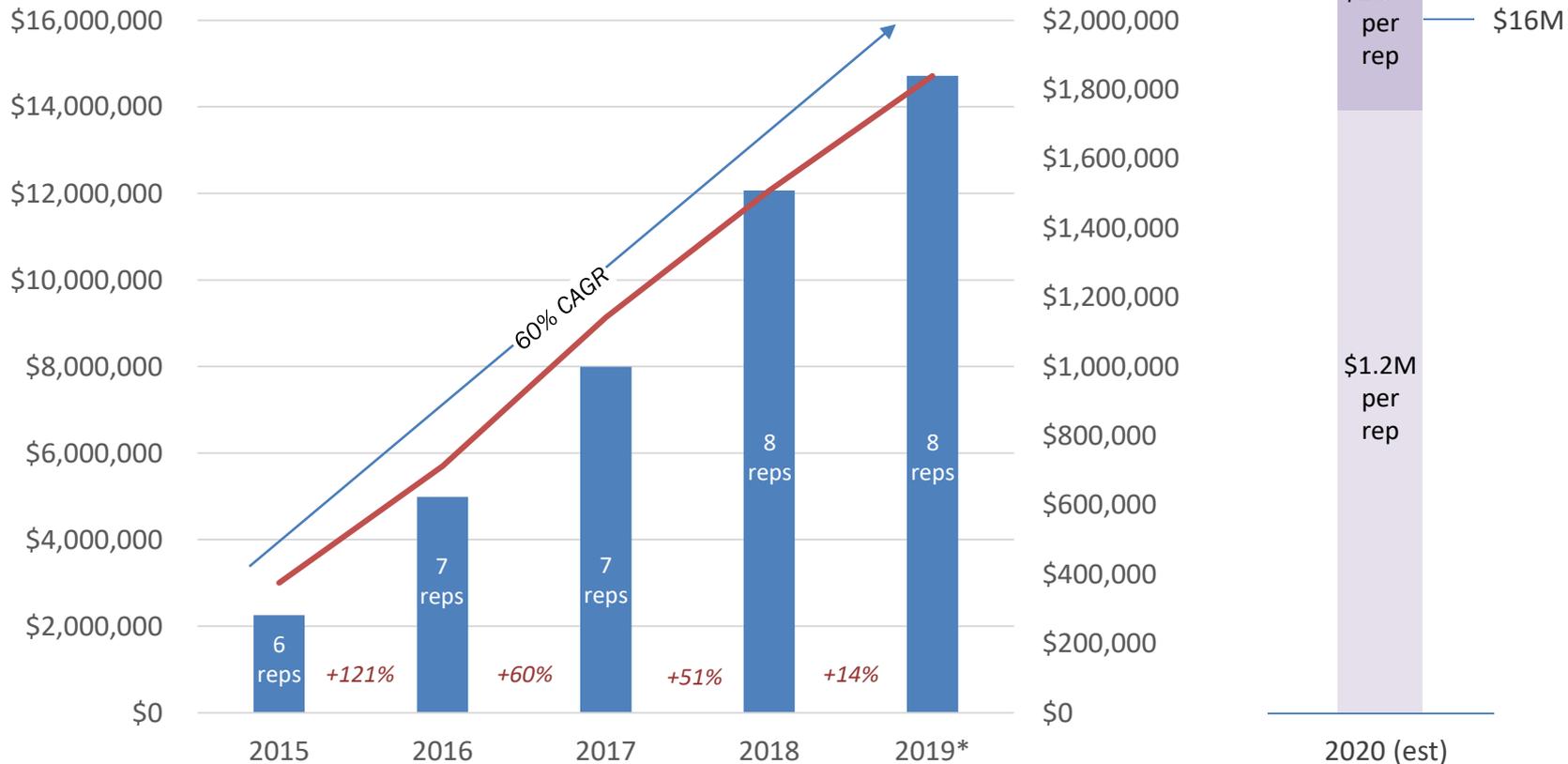
Strong Focus on Germany

- Germany is the largest medical device market in the E.U. and the third largest in the world. The German market alone represents a \$1.0-1.5 billion total addressable market for CytoSorb
- CytoSorb has a strong foundation for growth in Germany
 - Outstanding sales team, including sales reps, product, technical, and clinical support
 - Strong key opinion leader and healthcare community support
 - Dedicated reimbursement supported by major medical societies
 - Penetration into hundreds of hospitals throughout the country
 - Multiple promising therapeutic applications



Sales of CytoSorb in Germany

- Subdivided Germany to shrink territories to allow maximization of revenue opportunity: Enables focus and growth of key accounts, increased efficiency due to shorter travel, and ability to detail small and mid-sized hospitals better
- For 2020, we have doubled Germany sales reps/specialists from 8 to 12. We expect productivity to increase from existing sales reps by focusing and growing key accounts, and rapid productivity for new reps, as they will start in active territories with sales



* Preliminary, unaudited financials

New Application May Be Key Driver for 2020

- Anti-thrombotic drugs, such as Eliquis[®], Xarelto[®], Pradaxa[®], Brilinta[®], Plavix[®] and others are blockbuster products with collective sales of more than \$20 billion
 - 6+ million people in the U.S. are on these medication to reduce stroke and cardiac risk following a heart attack or stent placement, patients with atrial fibrillation, peripheral artery disease, etc.
 - However, ~4% of patients will have an acute cardiac event due to their underlying disease that will require either urgent or emergency cardiac surgery
 - Because these drugs reduce the ability to clot, approximately 30% of patients that undergo emergency surgery will suffer severe or massive bleeding peri-operatively
- A recent study from St. Georg Hospital in Hamburg, Germany, evaluated 55 patients on either ticagrelor (Brilinta[®]) and rivaroxaban (Xarelto[®]) that underwent emergency cardiac surgery. Of these, 39 were treated with CytoSorb intraoperatively in an investigational application
 - Patients not using CytoSorb had significant bleeding complications
 - CytoSorb significantly:
 - Reduced need for red blood cell (p=0.01) and platelet (p=0.05) transfusions
 - Reduced surgical drainage (p=0.004)
 - Reduced the need for rethoracotomy (0% vs 37.5% control, p<0.001)
 - Reduced length of operation (p=0.004)
 - Reduced time in ICU (p=0.01) and hospital stay (p=0.02)
- A separate cost-effectiveness analysis concluded a savings of approximately \$5,000 per case due to these clinical benefits. CE Mark label expansion is pending. UK TISORB trial underway

Near Term Clinical Data May Catalyze Sales Also



	Indication	Pre-Clinical	Safety Feasibility	Pivotal	APPROVED	Post-market
EU	Cytokine Storm, Liver Disease	Extracorporeal Cytokine, Bilirubin, and Myoglobin Adsorber				
EU	Endocarditis	REMOVE Endocarditis Trial – Germany (complete/over-enrolling)				
EU	Endocarditis	TISORB Ticagrelor Removal – United Kingdom				
EU	CAR T-cell	CAR T-cell Immunotherapy CRS/CRES trial				
EU	Cytokine Storm, Liver Disease	50+ Investigator initiated studies				
US	Post-cardiac surgery AKI	REFRESH 2-AKI Pivotal Trial			Enrollment temporarily suspended	
US	Emergency Cardiac Surgery	Anti-thrombotic removal				

HemoDefend-RBC™

US	Purification pRBC	HemoDefend-RBC
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Investment Summary

- We believe we are a unique company in the medical device space with a high margin razorblade in another's razor business model
- We are helping to treat some of the largest 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 liver disease pandemic
 - Cancer and the rise of cancer immunotherapy (CART-cell)
 - The opiate crisis
 - Many others
- We have extensive validation from physicians around the world, leading strategic partners, U.S. government agencies, and the media
- We are confident in the future, with management purchasing 100,000+ shares recently



TheStreet



FORTUNE

Bloomberg



Bloomberg Businessweek

This Cartridge of Plastic Beads Can Filter Blood During Surgery

• CytoSorb, attached to a hospital's existing blood pumps, aims to remove toxins from a patient's system.

By Michelle Cortez



THE WALL STREET JOURNAL
WSJ

The New York Times

CytoSorbents™



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



HELPING PATIENTS SURVIVE CRITICAL ILLNESSES WORLDWIDE



CytoSorbents™

Working to Save Lives Through Blood Purification

NASDAQ: CTSO

Dr. Phillip Chan, MD, PhD – CEO

pchan@cytosorbents.com