

**chf** solutions

**Corporate  
Presentation**  
(NASDAQ: CHFS)

March 2021



# Safe Harbor Statement



## Forward Looking Statement

This presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended and Section 21E of the Securities and Exchange Act, as amended regarding our plans, expectations, beliefs, estimates, goals and outlook for the future that are intended to be covered by the Private Securities Litigation Reform Act of 1995. Except for statements of historical fact, all forward-looking statements are management's present expectations and are not guarantees of future events and are subject to a number of known and unknown risks and uncertainties and other factors that may cause actual results to differ materially from those expressed in, or implied by, such forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "could," "would," "should," "plan," "predict," "potential," "project," "promising," "expect," "estimate," "anticipate," "intend," "goal," "strategy," "milestone," and similar expressions and variations thereof. Various factors could cause actual results to differ materially from these statements including our ability to execute on our commercial strategy and to grow our Aquadex™ business, the possibility that we may be unable to raise sufficient funds necessary for our anticipated operations, our post-market clinical data collection activities, benefits of our products to patients, our expectations with respect to product development and commercialization efforts, our ability to increase market and physician acceptance of our products, potentially competitive product offerings, intellectual property protection, our expectations regarding anticipated synergies with and benefits of the Aquadex business, our business strategy, market size, potential growth opportunities and the other risks set forth under the caption "Risk Factors" and elsewhere in our periodic and other reports filed with the U.S. Securities and Exchange Commission ("SEC"), including our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 and subsequent reports. We are providing this information as of the date of this presentation we undertake no obligation to update any forward-looking statements contained in this presentation as a result of new information, future events or otherwise. Although the Company believes that the forward-looking statements are reasonable and based on information currently available, it can give no assurances that the Company's expectations are correct. All forward-looking statements are expressly qualified in their entirety by this cautionary statement.

## Financial and Statistical Data

This presentation also contains estimates and other statistical data made by independent parties and by us relating to market shares and other data about our industry. These data involve a number of assumptions and limitations and have not been reviewed or audited by our independent registered accounting firm. You are cautioned not to give undue weight to such estimates.

## Trademarks

The trademarks included herein are the property of the owners thereof and are used for reference purposes only. Such use should not be construed as an endorsement of such products.

Aquadex FlexFlow® and Aquadex SmartFlow® are registered trademarks of CHF Solutions, Inc.

Aquadex™ is a trademark of CHF Solutions, Inc.

Clarity RMST™ is a trademark of Renal Sense Ltd.



# Risk Factors



Investing in our securities includes a high degree of risk. You should consider carefully the specific factors discussed below, together with all of the other information contained in our SEC filings. If any of the following risks actually occurs, our business, financial condition, results of operations and future prospects would likely be materially and adversely affected. This could cause the market price of our securities to decline and could cause you to lose all or part of your investment. Risks include but are not limited to:

- We have a limited history of operations and limited experience in sales and marketing, and we might be unsuccessful in increasing our sales and cannot assure you that we will ever generate substantial revenue or be profitable.
- Our near-term prospects are highly dependent on revenues from a single product, the Aquadex system. We face significant challenges in expanding market acceptance of the Aquadex system, which could adversely affect our potential revenues.
- We have limited commercial manufacturing experience and could experience difficulties in producing commercial volumes of the Aquadex system and related components or may need to depend on third parties for manufacturing.
- We believe that we will need to raise additional capital to fund our operations. If additional capital is not available, we will have to delay, reduce or cease operations.
- We depend upon third-party suppliers, including single source suppliers, making us vulnerable to supply problems and price fluctuations.
- If we cannot develop adequate distribution, customer service and technical support networks, then we may not be able to market and distribute the Aquadex system effectively and our sales will suffer.
- The company may face significant risks associated with international operations, which could have a material adverse effect on business, financial conditions and results of operations.
- The COVID-19 outbreak and other public health threats or outbreaks of communicable diseases could have a material adverse effect on our operations and overall financial performance
- The company is a "smaller reporting company" under federal securities laws and the company cannot be certain whether the reduced reporting requirements applicable to such companies will make the common stock less attractive to investors.

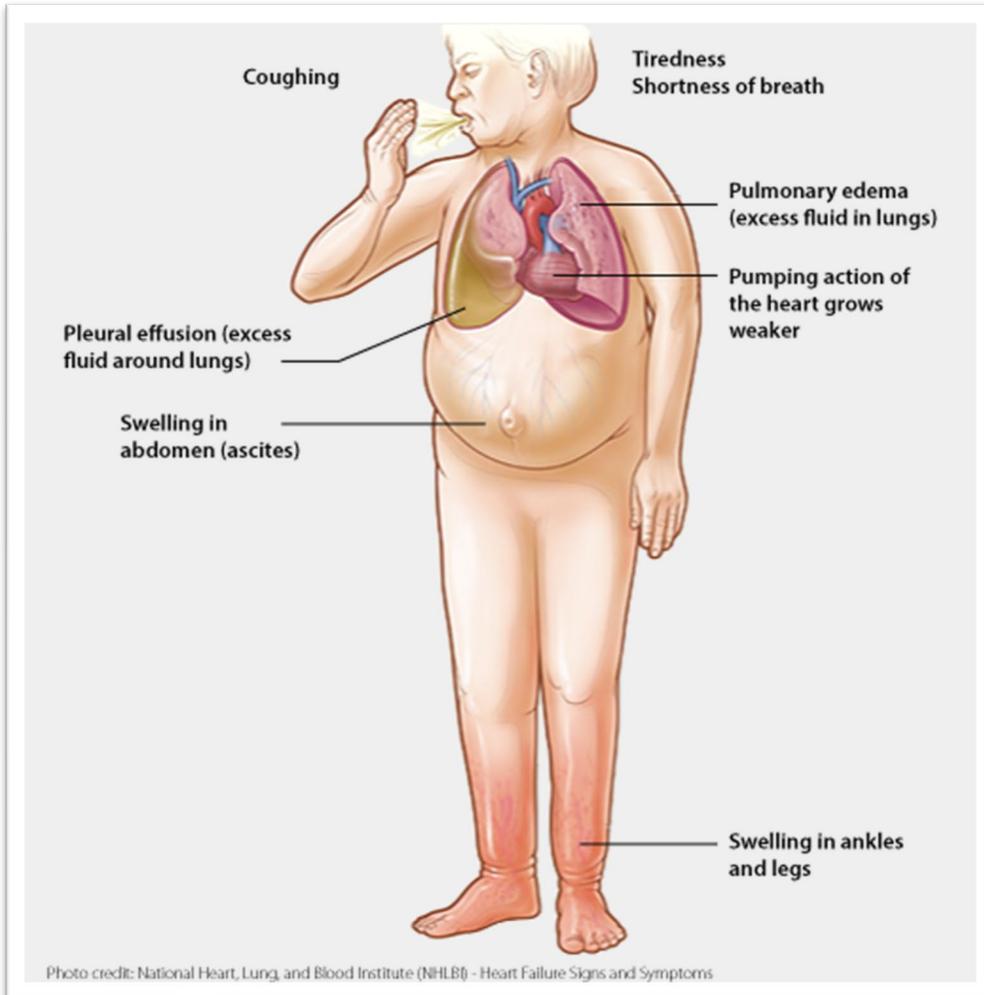
# Our Vision



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is dedicated to transforming the lives of patients suffering from fluid overload through science, collaboration, and innovation.

# Fluid Overload is a condition where there is too much fluid in the bloodstream, vital organs and interstitial space



90% of all heart failure hospitalizations are due to symptoms of fluid overload<sup>1</sup>



Fluid overload is the leading cause of hospital readmission post 30 days following cardiac surgery



Fluid overload is the leading cause of death for critically ill patients in the ICU within 90 days



Pediatric patients born absent renal function & experiencing heart disease are subject to elevated levels of fluid overload

1. Costanzo MR, et al. J Am Coll Cardiol. 2017 May 16;69(19):2428-2445

# Diuretics: Standard of care with significant limitations

- >40% of heart failure patients have poor diuretic response<sup>1</sup>
- High risk of rehospitalization<sup>2</sup>
- Long-term use of diuretics has been associated with kidney damage<sup>1,3,4,5</sup>
- No randomized trials have shown the effects of diuretics on mortality in chronic heart failure patients

1. Testani JM, et al. *CircHeart Failure*. 2016;9(1):e002370.
2. Costanzo MR, et al. *J Am Coll Cardiol*. 2017;69(19):2428-2445.
3. Felker MG and Mentz RJ. *J Am Coll Cardiol*. 2012;59(24):2145-53.
4. Al-Naher et al. *Br J Clin Pharmacol*. 2018 Jan; 84(1): 5-17.
5. Butler J et al. *Am Heart J*. 2004 Feb;147(2):331-8.

# aquadex

SmartFlow™



**SIMPLE FLEXIBLE  
SMART**

## A superior solution for fluid overload

- Safe and easy to use
- Flexible application
- Predictably removes excess fluid
- No significant changes to kidney function
- Stabilizes or improves cardiac hemodynamics
- Compared to diuretics, reduces risk of rehospitalization by 53%<sup>1</sup> and readmissions within 30 days by 48%<sup>2</sup>
- Significantly reduces length of hospital stay when initiated early

**The only device of its kind in the market:  
Saving lives, time + money**

1. Costanzo MR, et al. J Am Coll Cardiol. 2007;49(6):675-683.  
2. Watson, et. al. Ten Year Experience with Ultrafiltration for the Management of Acute Decompensated Heart Failure. Abington Hospital Jefferson Health, Abington, Pa.

# Aquadex SmartFlow: A novel treatment in critically underserved markets



**PEDIATRIC:  
ULTRAFILTRATION**



**U.S. / International  
Approval (>20kg)**

**CRITICAL CARE:  
FLUID REMOVAL**



**Potential for Treatment  
with Aquadex**

**HEART FAILURE:  
ULTRAFILTRATION  
(Dedicated)**



**U.S. / International  
Approval**

# 2020 Achievements + 2021 Key Milestones

## EXPECTED TIMING

FDA 510(k) clearance of: <i>Expanded use in pediatric population (≥ 20kg) Next generation Aquadex SmartFlow console</i>	Completed
Receive CE mark for Aquadex SmartFlow	Completed
RenalSense Clarity RMS Launch	Completed
Submit CPT code application for ultrafiltration using Aquadex SmartFlow	Completed
Methodist Le Bonheur Healthcare System retrospective study on quality improvement measurements including LOS and readmissions out to 60-days. ACC abstract	Q1 2021
<i>10-Yr Experience With Ultrafiltration for the Management of ADHF Patients</i> manuscript; Dr. Beckles post-CV Surgery 42 patients	Q1 2021
Expanded clinical study results of ultrafiltration in tandem with extracorporeal membrane oxygenation (ECMO) in pediatric patients	Q2 2021
Final publication of therapy into advanced liver disease (pre & post transplant) at Mt. Sinai Hospital.	Q3 2021
Heart Failure CPT Code Reimbursement	Q3 2021
Preliminary data from ULTRAPeds pediatric registry	Q4 2021



# Targeting growing addressable market segments

**\$2B**



**\$150M Market**



**\$950M Market**



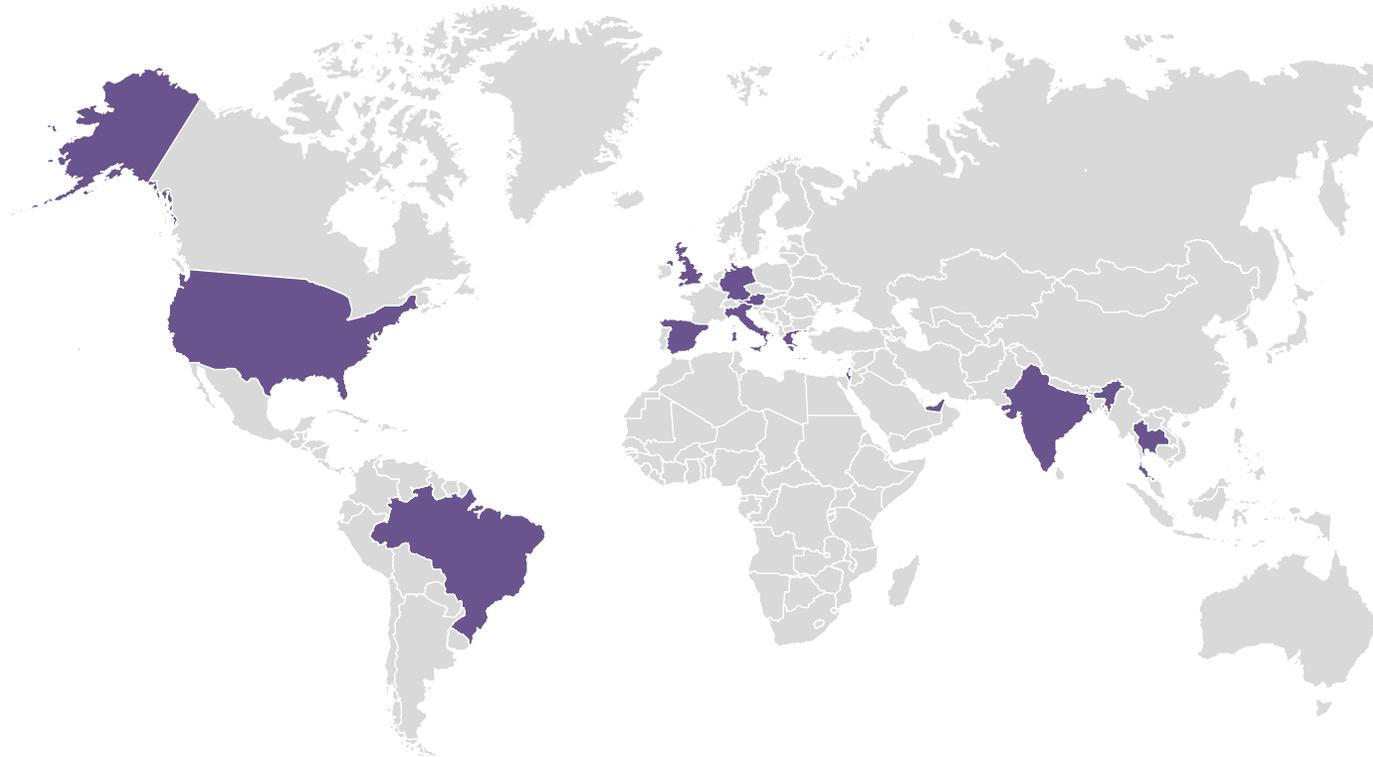
**\$900M Market**

## TREATING THE MOST VULNERABLE

From newborns to the elderly, our therapy is critical to improving care and outcomes

# Expanding Commercial Distribution

United States direct sales team  
of 13 sales territories and  
14 clinical education specialists



## DISTRIBUTION PARTNERS

Brazil

UK

Spain

Germany

Italy

Austria

Greece

Israel

India

Thailand

Singapore

United Arab Emirates

Switzerland

Hong Kong



# Pediatric Opportunity



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# Pediatric Market Opportunity

\$150  
Million

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Annual U.S.  
Market  
Opportunity

41,000

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Annual  
Incidence

Fully  
Commercial

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510(k) label in  
February 2020  
(>20kg.)

\$27,500

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Avg Sales  
Price

\$940

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Consumable  
Circuit Price

~4

---

Circuits per  
patient



# Uniquely positioned to address significant unmet need in pediatric patients

## Aquadex SmartFlow

- First-mover advantage in market where experience/familiarity is critical
- Simple and easy to use for clinicians & nurses
- Requires only 35ml circuit blood volume
- Delivers gentle and precise therapy
- Includes non-invasive diagnostics (Hct & SvO<sub>2</sub>) to safely guide therapy by allowing physicians to observe real-time changes in intravascular volume

## Competitors

- Circuit blood volume often higher: up to 66% more in some cases
- No blood volume or blood oxygen saturation diagnostics to inform therapeutic decisions
- System complexity → less simple to set up and use for clinicians & nurses
- Limited supply and field support
- One competitor only temporarily FDA-approved with COVID-19 Emergency Use Authorization



# Clinical Study – Mortality Benefit in Pediatric Patients

Attributes	Grp 1: <10kg	Grp 2: 10-20kg	Grp 3: >20kg
# of Patients	N=72	N=13	N=34
Primary disease	43% kidney 29% cardiac	54% kidney 31% other	38% kidney 28% cardiac
<b>Survival at end of treatment (AQUADEX)</b>	<b>43 (60%)</b>	<b>13 (100%)</b>	<b>33 (97%)</b>

**Group 1 patients traditionally do not receive any kind of therapy**

Menon S. et al. CJASN. August 28, 2019.



# Investing in real-world clinical data to expand awareness



## Purpose

Collect real-world evidence on performance, safety, and utilization

## Registry Design (ULTRAPeds)

Prospective, multi-center, single-arm

- 10 sites
- 500 patients minimum

## Key Clinical Data:

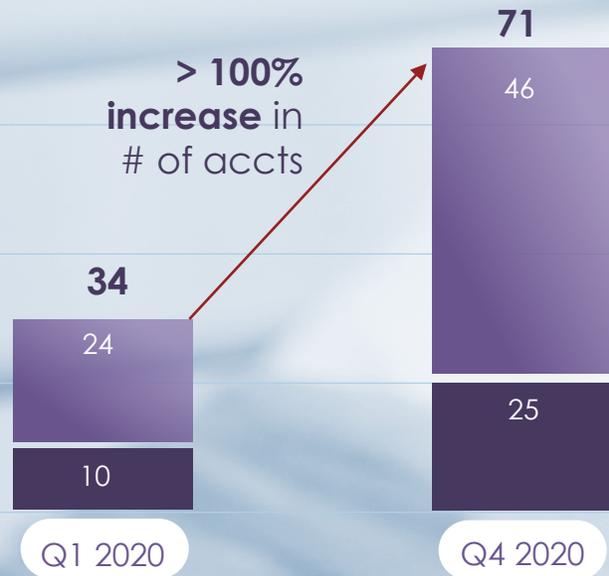
- Treatment course survival
- ICU Survival and Length of Stay
- Change in kidney function
- Hemodynamic stability
- Change in %FO
- Complications/Adverse Events



# Growing Pediatric Business

In 3 quarters, we have more than doubled the number of active and pipeline pediatric accounts

## # of Pediatric Accounts



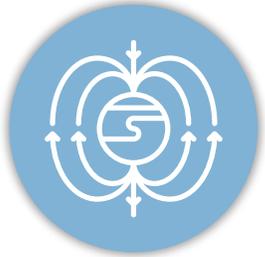
Received 510(k) in February 2020 and launched commercially in March 2020.



Active Pipeline



# Pediatrics: Strategy



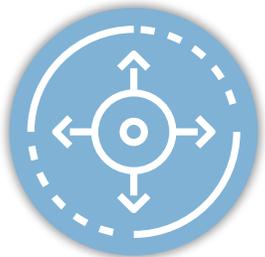
## **ADOPTION + UTILIZATION**

Grow awareness and drive adoption



## **EDUCATION + TRAINING**

Invest in patient registry + clinical studies



## **INDICATION EXPANSION WITH A NEW INTEGRATED PEDIATRIC DEVICE**

Grow indication to expand market opportunities

# Critical Care Opportunity

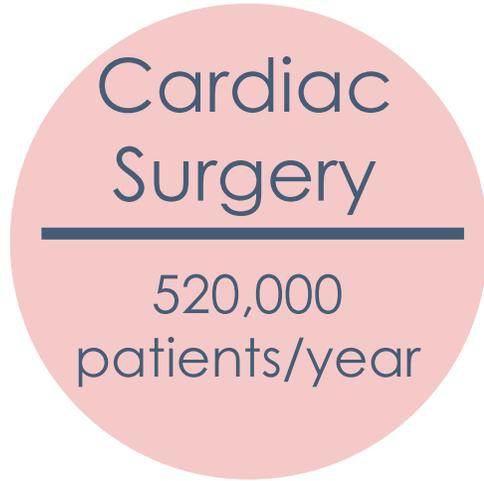


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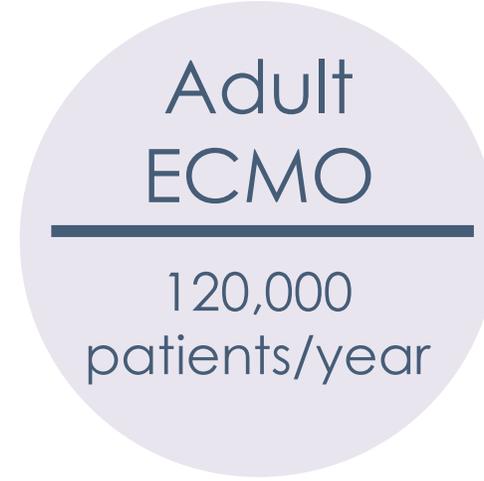
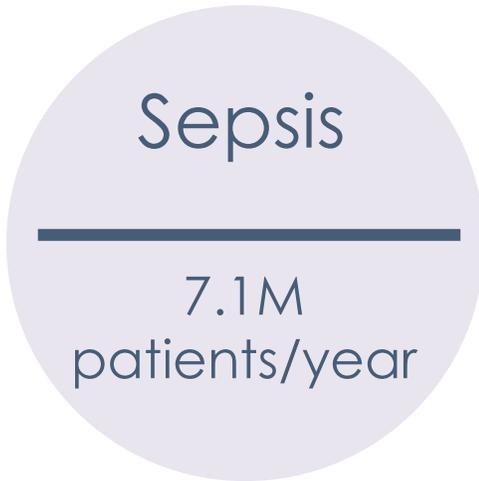




# Use of Ultrafiltration in ICU improves outcomes for Fluid Overloaded Patients



Near Term Opportunities



Long Term Opportunities



# Aquadex SmartFow simply & predictably removes excess fluid post cardiac surgery

520K  
Patients/Year

Additional fluid added to compensate for blood flowing through heart lung machine



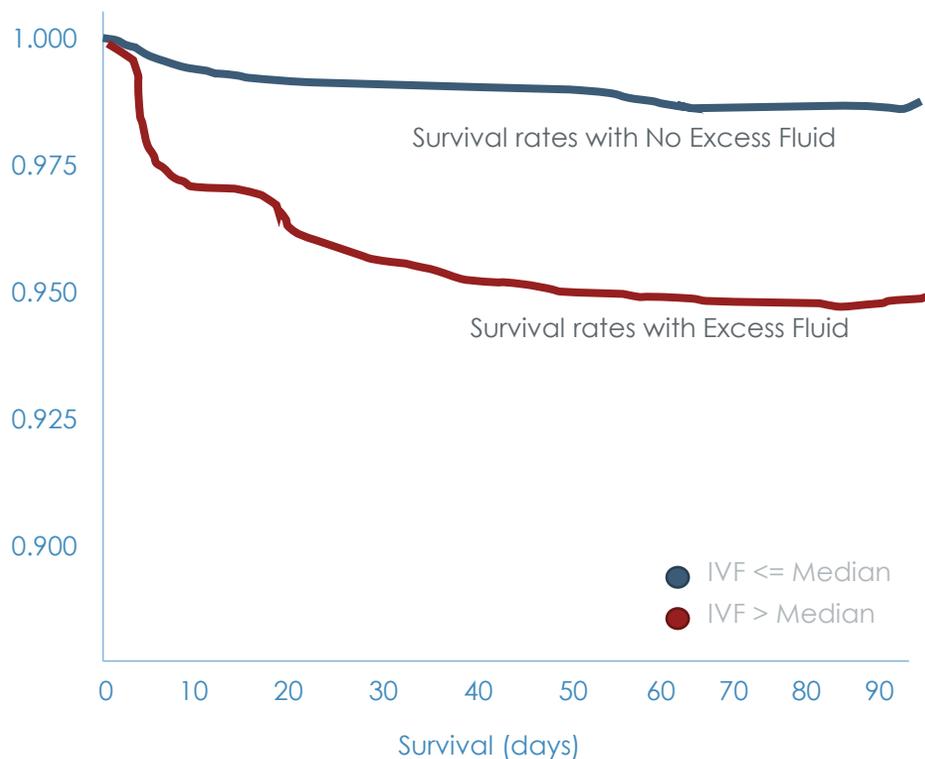
Immediately removing fluid post-surgery

- **Reduces** time to be extubated
- **Shortens** time in ICU
- **Improves** outcomes
- **Lowers** costs



# Fluid Overload is Associated with Greater Mortality

90-day mortality by intravenous fluid median



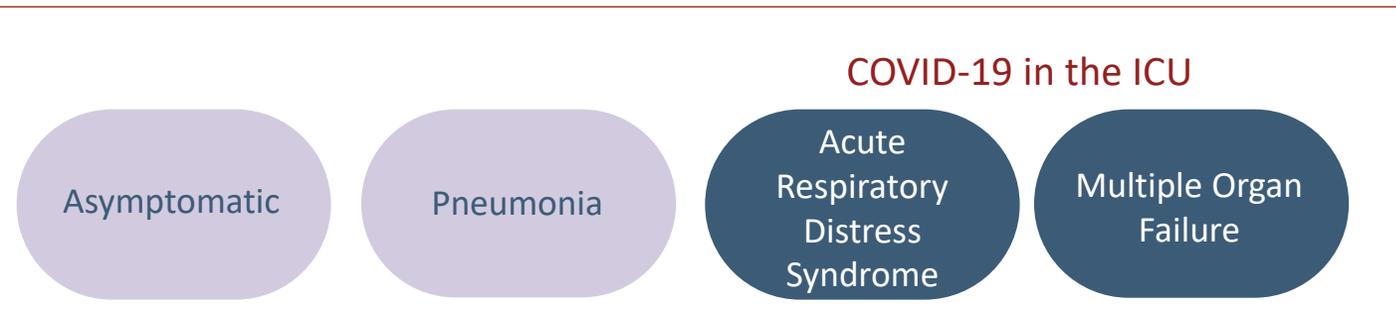
Excess fluid post cardiac surgery leads to **three-fold increase** in mortality at 90 days

Source: Pradeep, A. et al. HSR Proc IC and Car An. 2010 Mar; 2(4): 287-296

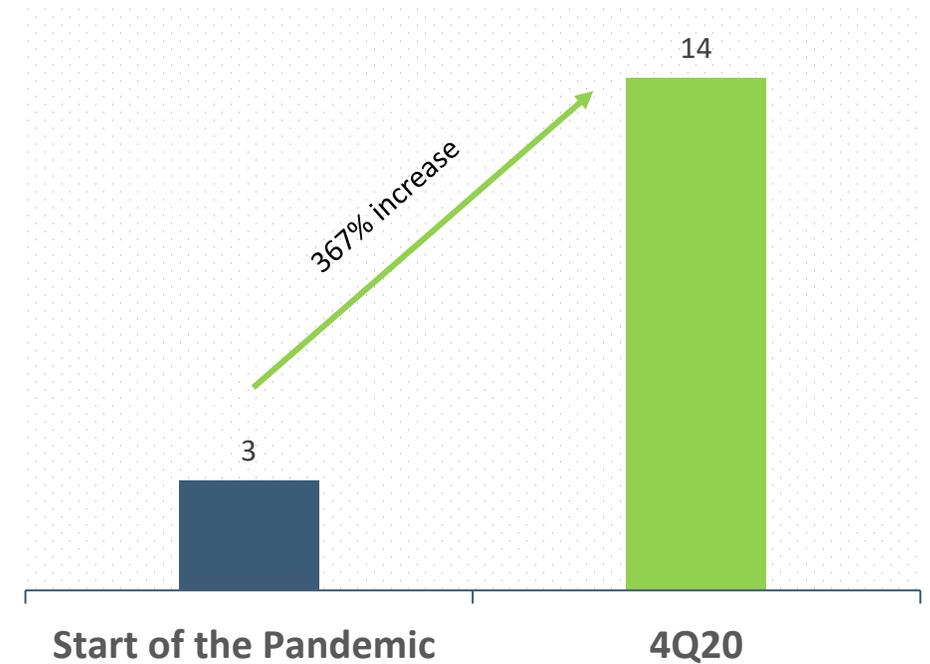


# Aquadex SmartFlow Treatment of COVID-19 patients increasing awareness in ICU

## Clinical Course of COVID-19



## ICU Centers treating COVID-19 Patients



**Synergistic effect treating COVID-19 patients is increasing utilization among other non-COVID-19 critically ill patients**



# Teaming up with **RenalSense**

## **Problem**

Manual monitoring of urine output and SCr levels is inefficient and inaccurate



## **Solution**

Continuous automated monitoring detects early signs of AKI and improves outcomes

# Targeting use of Aquadex system earlier & more frequently in ICU



# Critical Care: Strategy



## **ADOPTION + UTILIZATION**

Target high volume ICU centers  
Leverage COVID-19 experience



## **STRENGTHEN HEALTHCARE PARTNERSHIPS**

Increase sales synergies with RenalSense  
Partner with hospital systems to improve outcomes



## **EXPANSION WITH THE ADDITIONAL CLINICAL EVIDENCE**

Expand beyond cardiac surgery

# Heart Failure Opportunity



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# Heart Failure: Large unmet need

>1 Million

Annual HF hospitalizations<sup>1</sup>

90%

Hospitalizations due to fluid overload<sup>1</sup>

50%

patients discharged with residual excess fluid<sup>1</sup>

40%

Patients exhibit diuretic resistance<sup>2</sup>

Per patient **savings** of **\$3,975** over 90 days when **Aquadex System** is used compared to diuretics<sup>3</sup>

1. Costanzo MR, et al. J Am Coll Cardiol. 2017 May 16;69(19):2428-2445
2. Testani JM, et al. CircHeart Failure. 2016;9(1):e002370.
3. Costanzo MR, et al. J Med Econ. 2019, VOL. 22, NO. 6, 577-583.



# Obtain Ultrafiltration CPT Code to expand access in outpatient setting

**Q2'19:** Attended CPT Editorial Panel Meeting

**Q4'19:** ACC Coding Committee recommended ultrafiltration using Aquadex for CPT code

**Q1'21:** Editorial board recommended the new T-code

**Q3'21:** Notification of new CPT code (if approved)

**Q3'19:** Gained support of specialty societies for application

**Q4'20:** Submitted CPT code application sponsored by RPA and ACC

**Q1'22:** Effective date of new CPT code (if approved)



# 10-Year Real-World Experience with Ultrafiltration **chf** solutions

## ABINGTON HOSPITAL JEFFERSON HEALTH

- Retrospective, single center analysis
- **335 consecutive** acutely decompensated heart failure patients
- Treated with adjustable rate UF using Aquadex
- Fluid removed weight loss
- Unchanged kidney function

## HF HOSPITALIZATIONS

Average **2.14 hospitalizations**  
Year **before** Aquadex UF

1 Year After Aquadex UF  
Average **0.4 hospitalizations**

## HOSPITAL READMISSIONS

### NATIONAL AVERAGE

**24%** at 30 days

**50%** at 6 months

**12.4%** at 30 days

**14.9%** at 90 days

**27.3%** at 1 year

Source: Watson R, Hummel M et al. HFSA poster session 2020.

1. Costanzo MR, et al. J Am Coll Cardiol. 2017 May 16;69(19):2428-2445



# Why Outpatient setting is attractive market?



## CHF Solutions

- Greater cumulative impact on outcomes through earlier intervention on healthier patients
- Increased revenue by treating more patients
- Uniquely positioned to deliver OP therapy with peripheral venous access



## Patients

- Improved patient QoL:
  - Earlier resolution when diuretic therapy cannot relieve congestion → patient feels better faster
  - Reduce hospitalizations through proactive fluid management (rate per patient per year decreased by 81%)<sup>1</sup>
  - Readmission avoidance
- Reduced financial burden to patient and family



## Hospitals

- Hospitals actively trying to reduce economic burden of heart failure (HF)
- Reduced patient readmissions within 30-days may help decrease costly CMS penalties
- Early intervention may help decrease patient hospital length of stay (LOS)
  - Most US hospitals lose money on HF admissions: average LOS is ~5 days<sup>2</sup>, while DRG payments often cover ≤ 4 days



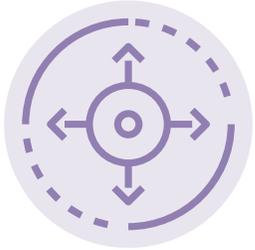
## US Healthcare System

- Concern throughout the US healthcare system regarding the growing economic burden of HF treatment
- HF treatment is Medicare's largest expenditure
- CMS controlling HF spending through the Hospital Readmission Reduction Program focused on 30-day readmissions
  - Readmissions after UF treatment with Aquadex was 48% less than nat'l average at 30 days<sup>2</sup>

1. Watson, et. al. *Ten Year Experience with Ultrafiltration for the Management of Acute Decompensated Heart Failure*. Abington Hospital Jefferson Health, Abington, Pa.  
2. Chen J, et al. *J Am Coll Cardiol*. 2013 Mar 12; 61(10): 1078-1088



# Heart Failure: Strategy



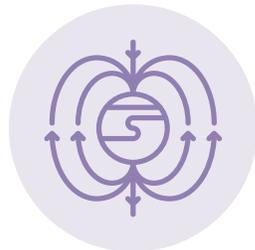
## **EXPAND INTO OUTPATIENT SETTING**

Expand patient access with new CPT code



## **EDUCATION THROUGH ADVANCED CLINICAL EVIDENCE**

Invest in clinical studies to increase awareness  
Support CPT Code application



## **ADOPTION + UTILIZATION**

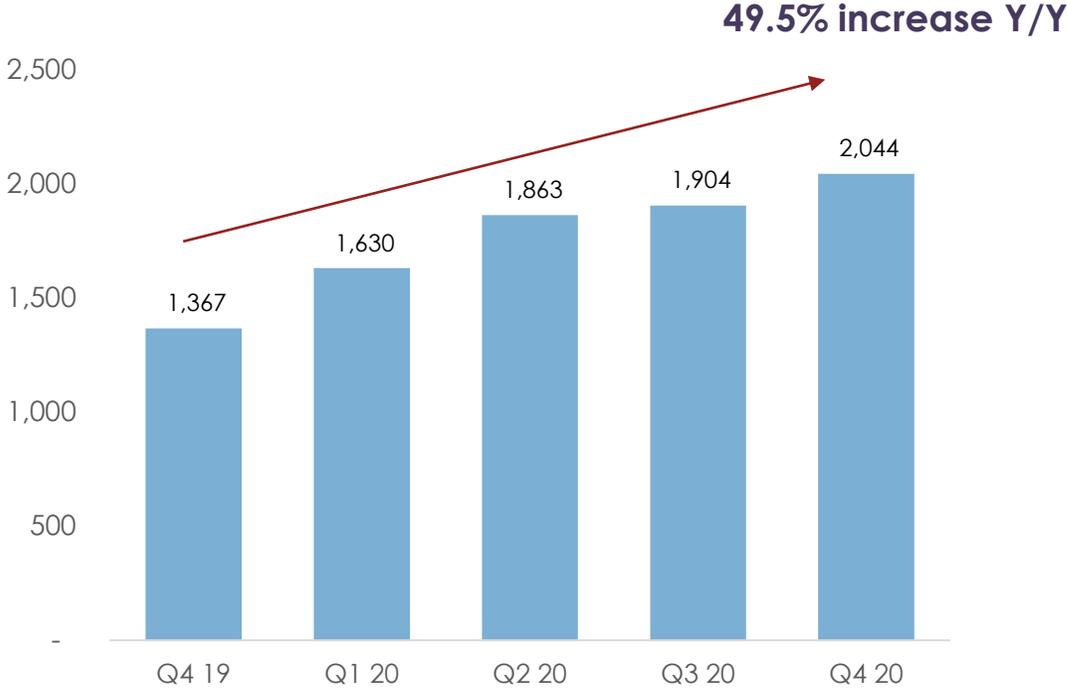
Drive high volume inpatient hospital systems  
Ultrafiltration is better than diuretics therapy

# Financials & Capitalization



## Quarterly Revenue

\$ in 000s



### Q3 - Q4 2019

Commenced salesforce restructuring and refocus to critical care and pediatrics

### 2020 growth factors

- Pediatric 510(k) late February 2020
- Pediatric launch
- COVID-19 pandemic – tailwinds and headwinds
- Maturing sales organization, strategy and structure

### Cash

\$14.4M as of Dec 31, 2020



# Capitalization Table

- **Cash:** \$14.4M as of December 31, 2020
- **No Debt**

- (1) From November 2017 offering. Convertible at \$9.0 per share, anti-dilution rights to next offering price
- (2) Consists of 130,312 warrants at \$9.0, price protection down to \$1.65, exp Jan 2025; 138,715 warrants at \$11.18, exp 9/25; 85,506 warrants at \$11.15 exp 10/25, 59,966 warrants at \$12.30, exp 11/25; 1,064,683 at \$13.5; exp 8/25.
- (3) Consists of 19,196 warrants at \$42.3, expire Apr 2025; 40,638 warrants at \$29.83, expire May 2025; and 92,932 warrants exercisable at a weighted average exercise price of \$360.96, expiring Feb 2022-Nov 2024. No anti-dilution rights.

\* Share numbers adjusted for stock split effective Oct. 16, 2020

## Capitalization as of February 28, 2021

<b>Common Shares Outstanding (Nasdaq CHFS)*</b>	<b>2,736,060</b>
Series F Convertible Preferred <sup>(1)</sup>	14,224
Warrants from 2020 Financings <sup>(2)</sup>	1,479,182
Other warrants <sup>(3)</sup>	152,766
Options	141,658
<b>Fully Diluted Shares</b>	<b>4,523,890</b>

# Investment Highlights

1. Strategically focused on treatment of pediatric & critically ill patients in the ICU (incl. COVID-19)
2. Attractive capital equipment + consumables revenue growth model
3. Fully developed commercial infrastructure
4. Uniquely positioned to penetrate underserved \$150 million pediatric market
5. Investing in real world clinical data to increase pediatric utilization
6. Establishing reimbursement to expand Chronic Heart Failure market in outpatient setting
7. Increased Critical Care sales synergies with Strategic Partnership adjacent markets within heart-kidney care
8. Significant product development and compelling clinical studies (higher level indication)