

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

**FORM S-1
REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933**

CHF SOLUTIONS, INC.
(Exact name of registrant as specified in its charter)

Delaware
(State of Incorporation)

3845
(Primary Standard Industrial
Classification Code Number)

68-0533453
(I.R.S. Employer
Identification Number)

12988 Valley View Road
Eden Prairie, Minnesota 55344
(952) 345-4200
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

John Erb
Chief Executive Officer
CHF Solutions, Inc.

12988 Valley View Road
Eden Prairie, Minnesota 55344
(952) 345-4200
(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

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Thomas P. Lynch, Esq.
Chief Legal and Compliance Officer

CHF Solutions, Inc.
12988 Valley View Road
Eden Prairie, MN 55344
Tel: (952) 345-4200

Approximate date of commencement of proposed sale to the public: From time to time after this Registration Statement becomes effective.

If any securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box:

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company or an emerging growth company. See definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered ⁽¹⁾	Proposed Maximum Offering Price Per Share ⁽²⁾	Proposed Maximum Aggregate Offering Price ⁽²⁾	Amount of Registration Fee
Shares of Common Stock, par value \$0.0001 per share, issuable upon exercise of warrants issued on May 5, 2020 ⁽³⁾	1,798,940	\$0.40	\$719,576	\$93.40
Total	1,798,940	\$0.40	\$719,576	\$93.40

- Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "Securities Act"), the shares offered hereby also include an indeterminate number of additional shares of common stock as may from time to time become issuable by reason of stock splits, stock dividends, recapitalizations or other similar transactions.
- Estimated solely for the purpose of calculating the registration pursuant to Rule 457(c) under the Securities Act, based upon the average of the high and low prices reported on the Nasdaq Capital Market on May 26, 2020.
- Represents shares of common stock issuable upon exercise of certain warrants to purchase common stock, at an exercise price currently fixed at \$0.41 per share, to be offered and sold by the selling stockholders identified in this registration statement.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. The Selling Stockholders may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities, and the Selling Stockholders are not soliciting offers to buy these securities, in any state where the offer or sale of these securities is not permitted.

SUBJECT TO COMPLETION, DATED MAY 29, 2020

PRELIMINARY PROSPECTUS



CHF SOLUTIONS, INC.

1,798,940 Shares of Common Stock issuable upon exercise of Warrants

This prospectus relates to the resale, from time to time, of an aggregate of 1,798,940 shares of our common stock, par value \$0.0001 per share (the “Common Stock”) issuable upon exercise of common stock purchase warrants issued on May 5, 2020 (the “Warrants”) by Anson Investments Master Fund LP (“Anson”), Empery Asset Master, LTD (“Empery Asset Master”), Empery Tax Efficient, LP (“Empery Tax Efficient”) and Empery Tax Efficient III, LP (“Emery Tax Efficient III” and together with Anson, Empery Asset Master and Empery Tax Efficient, we collectively refer to the “Selling Stockholders”).

We are not selling any securities under this prospectus and we will not receive proceeds from the sale of Common Stock by the Selling Stockholders. However, we may receive proceeds from the cash exercise of the Warrants, which, if exercised in cash at the current applicable exercise price with respect to all of the 1,798,940 shares of Common Stock, would result in gross proceeds of approximately \$737,565. We sold the Warrants to the Selling Stockholders under a purchase agreement, dated May 1, 2020 (the “Purchase Agreement”), for gross proceeds of approximately \$1,700,000 on May 5, 2020. For a more detailed description of the Warrants, see the section “Sale of Securities to Selling Stockholders”.

We will pay the expenses of registering the shares of Common Stock offered by this prospectus, but all selling and other expenses incurred by each Selling Stockholder will be paid by such Selling Stockholder. The Selling Stockholders may sell the shares of our Common Stock offered by this prospectus from time to time on terms to be determined at the time of sale through ordinary brokerage transactions or through any other means described in this prospectus under “Plan of Distribution.” The prices at which the Selling Stockholders may sell shares will be determined by the prevailing market price for shares of our Common Stock or in negotiated transactions.

Our Common Stock trades on The Nasdaq Capital Market under the ticker symbol “CHFS”. On May 26, 2020, the last reported sale price per share of our Common Stock was \$0.40 per share. See “Description of Capital Stock – Common Stock – Listing.”

Investing in our Common Stock involves a high degree of risk. Before making any investment in our Common Stock, you should read and carefully consider the risks described in this prospectus under the section of this prospectus entitled “Risk Factors” on page 8 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed on the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2020.

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You should rely only on the information contained in this prospectus or any prospectus supplement or amendment thereto. We have not authorized anyone to provide you with different information.

ABOUT THIS PROSPECTUS

This prospectus relates to the resale by the Selling Stockholders of up to 1,798,940 shares of our Common Stock issuable upon exercise of the Warrants, in each case as described below under “Sale of Securities to Selling Stockholders” and “Description of Capital Stock.” We are not selling any shares of Common Stock under this prospectus and will not receive any proceeds from the sale of shares of Common Stock by the Selling Stockholders.

This prospectus is part of a registration statement on Form S-1 that we filed with the Securities and Exchange Commission (“SEC”). It omits some of the information contained in the registration statement and reference is made to the registration statement for further information with regard to us and the securities being offered by the Selling Stockholders. You should review the information and exhibits in the registration statement for further information about us and the securities being offered hereby. Statements in this prospectus concerning any document we filed as an exhibit to the registration statement or that we otherwise filed with the SEC are not intended to be comprehensive and are qualified by reference to the filings. You should review the complete document to evaluate these statements.

You should read this prospectus, any documents that we incorporate by reference in this prospectus and the additional information described below under “Where You Can Find Additional Information” and “Information Incorporated By Reference” before making an investment decision. You should rely only on the information contained or incorporated by reference in this prospectus. We have not authorized any other person to provide you with different information. If anyone provides you with additional, different or inconsistent information, you should not rely on it. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

You should not assume that the information in this prospectus or any documents we incorporate by reference herein is accurate as of any date other than the date on the front of such document. Our business, financial condition, results of operations and prospects may have changed since those dates.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC in accordance with the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Our reports, proxy statements and other information filed with the SEC are available free of charge to the public over the Internet at the SEC’s website at <http://www.sec.gov>. These documents may also be accessed on our website at www.chf-solutions.com. Information contained in, or accessible through, our website is not a part of this prospectus.

INFORMATION INCORPORATED BY REFERENCE

SEC rules allow us to “incorporate by reference” into this prospectus much of the information we file with the SEC, which means that we can disclose important information to you by referring you to those publicly available documents. The information that we incorporate by reference into this prospectus plus consolidated financial statements included in this prospectus is considered to be part of this prospectus. These documents may include Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, as well as proxy statements. You should read the information incorporated by reference because it is an important part of this prospectus.

This prospectus incorporates by reference the documents listed below, other than those documents or the portions of those documents deemed to be furnished and not filed in accordance with SEC rules:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, filed with the SEC on [March 5, 2020](#);
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2020, filed with the SEC on [May 14, 2020](#);
- our Current Reports on Form 8-K filed with the SEC on [January 29, 2020](#), [March 20, 2020](#), [March 30, 2020](#), [April 23, 2020](#), [May 4, 2020](#), [May 12, 2020](#) and [May 22, 2020](#);

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- the information specifically incorporated by reference into our Annual Report on Form 10-K for the year ended December 31, 2019 from our definitive proxy statement for the annual meeting of stockholders to be held on May 20, 2020, filed with the SEC on [April 13, 2020](#), and supplemented on [May 22, 2020](#);
- the description of our common stock in our registration statement on Form 10 filed with the SEC on [September 30, 2011](#), including any amendment or report filed for the purpose of updating such description; and
- the description of our Series A Junior Participating Preferred Stock, par value \$0.0001 per share, in our registration statement on Form 8-A filed with the SEC on [June 14, 2013](#).

Any statement contained in any document incorporated by reference herein shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or any prospectus modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

We also incorporate by reference any future filings, other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items, made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, in each case, other than those documents or the portions of those documents deemed to be furnished and not filed in accordance with SEC rules, until the offering of the securities under the registration statement of which this prospectus forms a part is terminated or completed. Information in such future filings updates and supplements the information provided in this prospectus. Any statements in any such future filings will be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

Because we are incorporating by reference future filings with the SEC, this prospectus is continually updated and later information filed with the SEC may update and supersede some of the information included or incorporated by reference in this prospectus. This means that you must look at all of the SEC filings that we incorporate by reference to determine if any of the statements in this prospectus or in any document previously incorporated by reference have been modified or superseded.

These documents may also be accessed on our website at www.chf-solutions.com/investor-relations. Information contained in, or accessible through, our website is not a part of this prospectus. We will provide without charge to each person, including any beneficial owners, to whom this prospectus is delivered, upon his or her written or oral request, a copy of any or all reports or documents referred to above which have been or may be incorporated by reference into this prospectus but not delivered with this prospectus, excluding exhibits to those reports or documents unless they are specifically incorporated by reference into those documents. You may request a copy of these documents by writing or telephoning us at the following address.

CHF Solutions, Inc.
12988 Valley View Road
Eden Prairie, Minnesota 55344
(952) 345-4200
ir@chf-solutions.com
Attention: Claudia Drayton
Chief Financial Officer

PROSPECTUS SUMMARY

This summary highlights information contained elsewhere in this prospectus and does not contain all of the information that you should consider in making your investment decision. Before deciding to invest in our securities, you should read this entire prospectus carefully, including our financial statements and related notes, the information in the section “Risk Factors” and our filings incorporated by reference herein to which we have referred you in the sections “Where You Can Find Additional Information” and “Information Incorporated by Reference.” Unless the context otherwise requires, references in this prospectus to the “Company,” “CHFS,” the “registrant,” “we,” “us” and “our” refer to CHF Solutions, Inc.

Company Overview

We are a medical device company dedicated to changing the lives of patients suffering from fluid overload through science, collaboration, and innovative technology. The company is focused on developing, manufacturing, and commercializing medical devices used in ultrafiltration therapy, including the Aquadex FlexFlow® and the Aquadex SmartFlow™ systems (collectively, the “Aquadex System”). The Aquadex System is indicated for temporary (up to eight hours) or extended (longer than 8 hours in patients who require hospitalization) use in adult and pediatric patients weighing 20kg or more whose fluid overload is unresponsive to medical management, including diuretics.

The Aquadex System

The Aquadex System is designed and clinically proven to simply, safely, and precisely remove excess fluid (primarily excess salt and water) from patients suffering from fluid overload who have failed diuretic therapy. With the Aquadex System, medical practitioners can specify and control the amount of fluid to be extracted at a safe, predictable, and effective rate. The Aquadex System has been shown to have no clinically significant impact on electrolyte balance, blood pressure or heart rate.¹ Unlike other forms of ultrafiltration, which typically require administration specifically by a nephrologist, the Aquadex System may be prescribed by any physician and administered by a healthcare provider, both of whom have received training in extracorporeal therapies.

Benefits of the Aquadex System

The Aquadex System offers a safe approach to treating fluid overload and:

- Provides complete control over rate and total volume of fluid removed by allowing a medical practitioner to specify the amount of fluid to be removed from each individual patient;
- Can be performed via peripheral or central venous access;
- Removes isotonic fluid (extracts sodium while sparing potassium and magnesium)²;
- Following ultrafiltration, neurohormonal activation is reset toward a more physiological condition and diuretic efficacy is restored³;
- Provides highly automated operation with only one setting required to begin;
- Utilizes a single-use, disposable auto-loading blood filter circuit that facilitates easy set-up;
- The console guides medical practitioner through the setup and operational process; and
- Decreased hospital readmissions and duration⁴ resulting in cost savings at 90 days⁵.

Components of the Aquadex System

The Aquadex System consists of:

- A console, a piece of capital equipment containing electromechanical pumps and an LCD screen;

¹ SAFE Trial: Jaski BE, et al. J Card Fail. 2003 Jun; 9(3): 227-231; RAPID Trial: Bart BA, et al. J Am Coll Cardiol. 2005 Dec 6; 46(11): 2043-2046

² Ali SS, et al. Congest Heart Fail. 2009; 15(1):1-4.

³ Marenzi G, et al. J Am Coll Cardiol. 2001 Oct; 38(4): 963-968.

⁴ Costanzo MR, et al. J Am Coll Cardiol. 2005 Dec 6; 46(11): 2047-2051.

⁵ Costanzo MR, et al. Ultrafiltration vs. Diuretics for the Treatment of Fluid Overload in Patients with Heart Failure: A Hospital Cost Analysis.

- A one-time disposable blood set, an integrated collection of tubing, filter, sensors, and connectors that contain and deliver the blood from and back to the patient; and
- A disposable catheter, a small, dual-lumen extended length catheter designed to access the peripheral venous system of the patient and to simultaneously withdraw blood and return filtered blood to the patient.

The Aquadex blood circuit set is proprietary and the Aquadex System can only be used with the Aquadex blood circuit set. The dual lumen extended length catheter (dELC) is designed for use with the Aquadex System, although it is one of many potential catheter options available to the healthcare provider.

Corporate Information

CHF Solutions, Inc. was incorporated in Delaware on August 22, 2002. We began operating our business in November 1999 through Sunshine Heart Company Pty Limited, which currently is a wholly owned Australian subsidiary of CHF Solutions, Inc. Our common stock began trading on the Nasdaq Capital Market on February 16, 2012.

Our principal executive offices are located at 12988 Valley View Road, Eden Prairie, Minnesota 55344, and our telephone number is (952) 345-4200. Our website address is www.chf-solutions.com. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to reports filed pursuant to Sections 13(a) and 15(d) of the Exchange Act will be made available free of charge on our website as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission (“SEC”). The information on, or that may be accessed through, our website is not incorporated by reference into and should not be considered a part of this prospectus or the registration statement of which it forms a part.

We are a “smaller reporting company” as defined in Rule 405 of the Securities Act. We will remain a smaller reporting company until the last day of the fiscal year in which the aggregate market value of our common stock that is held by non-affiliates is at least \$250 million or the last day of the fiscal year in which we have at least \$100 million in revenue and the aggregate market value of our common stock that is held by non-affiliates is at least \$700 million (in each case, with respect to the aggregate market value of our common stock held by non-affiliates, as measured as of the last business day of the second quarter of such fiscal year). Also, as long as we remain a non-accelerated filer, we are exempt from the attestation requirement in the assessment of our internal control over financial reporting by our independent auditors pursuant to section 404(b) of the Sarbanes-Oxley Act of 2002 but are required to make our own internal assessment of the effectiveness of our internal controls over financial reporting.

Recent Developments

Nasdaq Notice

On December 17, 2019, we received a letter (the “Notice”) from The Nasdaq Stock Market (“Nasdaq”) advising that for 30 consecutive trading days preceding the date of the Notice, the bid price of our common stock had closed below the \$1.00 per share minimum required for continued listing on the Nasdaq Capital Market pursuant to Nasdaq Listing Rule 5550(a)(2) (the “Minimum Bid Price Requirement”). The Notice has no effect on the listing of our common stock at this time, and our common stock continues to trade on the Nasdaq Capital Market under the symbol “CHFS.” Under Nasdaq Listing Rule 5810(c)(3)(A), if during the 180 calendar day period following the date of the Notice (the “Compliance Period”), the closing bid price of our common stock is at or above \$1.00 for a minimum of 10 consecutive business days, we will regain compliance with the Minimum Bid Price Requirement and our common stock will continue to be eligible for listing on the Nasdaq Capital Market, absent noncompliance with any other requirement for continued listing. If we do not regain compliance with the Minimum Bid Price Requirement by the end of the Compliance Period (or the Compliance Period as may be extended) the Company’s common stock will be subject to delisting. We intend to monitor the closing bid price of our common stock and may, if appropriate, consider implementing available options to regain compliance with the Minimum Bid Price Requirement under the Nasdaq Listing Rules.

On April 17, 2020, Nasdaq notified the Company that the 180-day period to regain compliance with the Minimum Bid Price Rule has been extended due to the global market impact caused by COVID-19. More specifically, Nasdaq has stated that the compliance periods for any company previously notified about

non-compliance are suspended effective April 16, 2020, until June 30, 2020. On July 1, 2020, companies will receive the balance of any pending compliance period exception to regain compliance with the Minimum Bid Price Rule. As a result of this extension, the Company now has until August 28, 2020 to regain compliance with the Minimum Bid Price Rule.

At its Annual Meeting on May 20, 2020, the Company asked stockholders to approve an amendment to its Fourth Amended and Restated Certificate of Incorporation, as amended, to give discretion to the Board of Directors to effect a reverse stock split. Due to insufficient votes for such proposal, the Annual Meeting was adjourned until 2:00 p.m. US Central Time on June 19, 2020 to allow the Company to accept additional stockholder votes for such proposal. The Board of Directors intends to effect a reverse stock split if necessary to maintain compliance with the Minimum Bid Price Rule. Therefore, the Board of Directors now has until August 28, 2020 to make this determination.

Pediatrics

In first quarter 2020, the Company received 510(k) clearance and CE Mark for the Aquadex System to include pediatric patients who weigh 20kg or more. The Aquadex System is being prescribed by physicians to treat various conditions in pediatric patients, including heart failure, cardiac surgery, extracorporeal membrane oxygenation (ECMO) therapy, solid organ transplantation, and kidney replacement therapy for neonatal patients.

Public Offering

On January 28, 2020, we closed on an underwritten public offering of 6,046,367 shares of common stock, 11,517,269 shares of Series H Convertible Preferred Stock, and warrants to purchase 17,563,636 shares of common stock, which included the full exercise of the underwriter's over-allotment option, for gross proceeds of \$9.66 million. Net proceeds totaled approximately \$8.6 million after deducting the underwriting discounts and commissions and other costs associated with the offering.

Registered Direct Offerings

On March 23, 2020, we closed on a registered direct offering of 4,161,392 shares of common stock for gross proceeds of approximately \$1,248,000, prior to deduction of commissions and offering expenses. In a concurrent private placement, we agreed to issue to the investors in the registered direct offering, unregistered warrants to purchase up to 4,161,392 shares of our common stock. On April 29, 2020, we filed a registration statement to register the shares of common stock issuable upon exercise of the warrants. The registration statement was declared effective by the SEC on May 8, 2020.

On April 1, 2020, we closed on a registered direct offering of 5,130,228 shares of common stock for gross proceeds of approximately \$2,226,000, prior to deduction of commissions and offering expenses. In a concurrent private placement, we agreed to issue to the investors in the registered direct offering, unregistered warrants to purchase up to 2,565,114 shares of our common stock. On April 29, 2020, we filed a registration statement to register the shares of common stock issuable upon exercise of the warrants. The registration statement was declared effective by the SEC on May 8, 2020.

On May 5, 2020, we closed on a registered direct offering of 3,597,880 shares of common stock for gross proceeds of approximately \$1,700,000, prior to deduction of commissions and offering expenses. In a concurrent private placement, we agreed to issue to the investors in the registered direct offering, unregistered warrants to purchase up to 1,798,940 shares of our common stock.

Paycheck Protection Program

On April 21, 2020, we announced that we had received \$1.66 million under the Paycheck Protection Program ("PPP") under the federal Coronavirus Aid, Relief, and Economic Security (CARES) Act. Subsequent to applying and receiving the funds under the PPP, the United States Treasury Department and the U.S. Small Business Administration issued new guidance regarding eligibility for these loans. As a result, on May 12, 2020, the Company announced it had elected to return all funds it had received under the PPP, so that these funds could be used to help another small business in greater need during the COVID-19 pandemic.

Impact of COVID-19 Pandemic

We have been subject to challenging social and economic conditions created as a result of the novel strain of coronavirus, SARS-CoV-2 ("COVID-19"). The resulting impact of the COVID-19 outbreak created disruptions

in our operations resulting from rapid and evolving changes implemented to keep our customers, their patients, and our employees safe. These changes included restrictions on hospital access imposed on our employees by customers dealing in the front lines of COVID-19, changes to employees work practices by requiring employees to work remotely and ensuring the safety of those employees that remained on site. The extent of the impact of the COVID-19 outbreak on our operational and financial performance will depend on certain developments, including the duration and spread of the outbreak, impact on our customers and our sales cycles, employee or industry events, and effect on our vendors, all of which are uncertain and cannot be predicted.

We may experience constrained supply or curtailed customer demand that could materially adversely impact our business, results of operations and overall financial performance in future periods. Specifically, we may experience impact from changes in how we conduct business due to the COVID-19 pandemic, including but not limited to restrictions on travel and in-person meetings, production delays, warehouses and staffing disruptions and shortages, decreases or delays in customer demand and spending, difficulties or changes to our sales process and customer support. In addition, the disruption created by COVID-19 have created significant uncertainty about our ability to access the capital markets in future periods. As of the date hereof, the extent to which COVID-19 may impact our financial condition or results of operations or guidance is uncertain and cannot be reasonably estimated but could be material and last for an extended period of time. The effect of the COVID-19 pandemic will not be fully reflected in our results of operations and overall financial performance until future periods.

Several hospitals in the U.S. have included the Aquadex System, into their treatment protocol for fluid management for COVID-19 patients, especially when dialysis equipment and staff are limited. In March 2020, we increased production of the Aquadex System to meet anticipated demand due to the COVID-19 pandemic.

The Offering

Securities offered by the Selling Stockholders	1,798,940 shares of our Common Stock
Common stock outstanding	39,407,968 (as of May 26, 2020)
Common stock to be outstanding after this offering, assuming full conversion or exercise of all Warrants	41,206,908 shares
Use of proceeds	We will not receive any proceeds from the sale by the Selling Stockholders of the shares of Common Stock being offered by this prospectus.
NASDAQ Symbol	“CHFS”.
Risk Factors	Investing in our securities involves a high degree of risk. You should carefully review and consider the section of this prospectus entitled “Risk Factors” on page 8 of this prospectus for a discussion of factors to consider before deciding to invest in shares of our Common Stock.

Except as otherwise indicated, all information in this prospectus is based on 39,407,968 shares of Common Stock outstanding as of May 26, 2020 and excludes the shares of Common Stock being offered by this prospectus and issuable upon exercise of the Warrants and also excludes the following:

- 523,213 shares of common stock issuable upon the exercise of outstanding stock options, having a weighted average exercise price of \$16.71 per share;
- 24,925,464 shares of our common stock issuable upon the exercise of outstanding warrants (other than the warrants offered hereby) with a weighted-average exercise price of \$1.73 per share;
- 1,450,290 shares of common stock issuable upon the conversion of the 435 outstanding shares of our Series F Preferred Stock (excluding additional shares of common stock that we may be required to issue upon such conversion due to the full ratchet anti-dilution price protection in the certificate of designation for the Series F Preferred Stock as described in the following bullet); and
- 1,765,759 shares of our common stock reserved for future issuance under our equity incentive plans.

All share and per share amounts for all periods presented in this prospectus and the registration statement of which it forms a part have been retroactively adjusted to reflect the reverse stock splits we previously effected on January 12, 2017, October 12, 2017 and January 2, 2019.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before deciding to invest in our securities, you should consider carefully the risks and uncertainties described under Item 1A. “Risk Factors” in our [Annual Report on Form 10-K for the fiscal year ended December 31, 2019](#), filed with the SEC on March 5, 2020 (the “Annual Report”), and our [Quarterly Report on Form 10-Q for the quarter ended March 31, 2020](#), filed with the SEC on May 14, 2020 (the “Quarterly Report”), each of which is incorporated by reference in this prospectus, together with all of the other information contained in this prospectus and documents incorporated by reference herein. If any of the matters discussed in the risk factors were to occur, our business, financial condition, results of operations, cash flows or prospects could be materially adversely affected, the market price of our common stock could decline and you could lose all or part of your investment in our securities. Additional risks and uncertainties not presently known or which we consider immaterial as of the date hereof may also have an adverse effect on our business. There have been no other material changes to the Risk Factors described under Item 1A. “Risk Factors” in the Annual Report and the Quarterly Report.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Exchange Act. Any statements about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and may be forward-looking. These statements are often, but are not always, made through the use of words or phrases such as “anticipates,” “estimates,” “plans,” “projects,” “continuing,” “ongoing,” “expects,” “management believes,” “we believe,” “we intend” and similar words or phrases. Accordingly, these statements involve estimates, assumptions and uncertainties which could cause actual results to differ materially from those expressed in them. Any forward-looking statements are qualified in their entirety by reference to the factors discussed throughout this prospectus, and in particular those factors included in the section entitled “Risk Factors.”

Because the factors referred to in the preceding paragraph could cause actual results or outcomes to differ materially from those expressed in any forward-looking statements we make, you should not place undue reliance on any such forward-looking statements. Further, any forward-looking statement speaks only as of the date on which it is made, and we undertake no obligation to update any forward-looking statement or statements to reflect events or circumstances after the date on which such statement is made or to reflect the occurrence of unanticipated events. New factors emerge from time to time, and it is not possible for us to predict which factors will arise. In addition, we cannot assess the impact of each factor on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements.

You should carefully read this prospectus and any related free writing prospectus and with the understanding that our actual future results may materially differ from what we expect.

Except as required by law, forward-looking statements speak only as of the date they are made, and we assume no obligation to update any forward-looking statements publicly, or to update the reasons why actual results could differ materially from those anticipated in any forward-looking statements, even if new information becomes available.

SALE OF SECURITIES TO SELLING STOCKHOLDERS

General

On May 1, 2020, we entered into the Purchase Agreement with the Selling Stockholders under which we agreed to issue and sell warrants to purchase an aggregate of 1,798,940 shares of Common Stock, pursuant to an exemption from the registration requirements of the Securities Act provided in Section 4(a)(2) thereof and/or Rule 506 of Regulation D promulgated thereunder. We received gross proceeds of approximately \$1,700,000 at the closing on May 5, 2020, before deducting fees owed to Ladenburg Thalmann & Co. Inc. (the “Placement Agent”) and other fees applicable to the offering. The Purchase Agreement contains customary representations, warranties and agreements by the Company, customary conditions to closing, indemnification obligations of the Company, other obligations of the parties and termination provisions.

Placement Agent

In connection with the Purchase Agreement, we separately entered into a placement agent engagement letter with the Placement Agent pursuant to which we agreed to pay the Placement Agent an aggregate cash placement fee equal to 8% of the aggregate purchase price raised in the transaction. Subject to certain conditions, we also have agreed to reimburse certain out-of-pocket expenses of the Placement Agent, including but not limited to legal fees. The engagement letter contains customary representations, warranties and agreements by us and customary conditions to closing. We have further agreed to indemnify the Placement Agent against certain liabilities arising out of or in connection with the transactions.

The Warrants

Each Warrant is exercisable beginning on May 5, 2020 (the “Warrant Initial Exercise Date”) at an exercise price of \$0.41 per share, subject to adjustment as provided therein, and terminates five and a half years after the Warrant Initial Exercise Date. A holder of the Warrants will not have the right to exercise any portion of its Warrants if the holder, together with its affiliates, would beneficially own over 4.99%; provided, however, that upon prior notice to us, the holder may increase its ownership, provided that in no event will the ownership exceed 9.99%. The exercise price and number of the shares of our Common Stock issuable upon exercising the Warrants will be subject to adjustment in the event of any stock dividends and splits, reverse stock split, recapitalization, reorganization or similar transaction, as described therein.

USE OF PROCEEDS

We are not selling any securities under this prospectus and will not receive any proceeds from the sale of shares of Common Stock offered by this prospectus by the Selling Stockholders. However, we may receive proceeds from the cash exercise of the Warrants, which, if exercised in cash at the current exercise price with respect to all 1,798,940 shares of Common Stock, would result in gross proceeds of \$737,565 to us.

MARKET INFORMATION AND DIVIDEND POLICY

Our common stock is currently listed on The Nasdaq Capital Market under the symbol “CHFS.” See “Prospectus Summary— Recent Developments” in this prospectus for important information about the listing of our common stock on The Nasdaq Capital Market. The Warrants will not be traded on a national securities exchange.

As of May 26, 2020, the last reported sale price of our common stock on The Nasdaq Capital Market was \$0.40.

As of May 26, 2020, there were approximately 21 stockholders of record for our common stock. A substantially greater number of stockholders may be “street name” or beneficial holders, whose shares are held of record by banks, brokers and other financial institutions.

We have not historically paid cash dividends on our capital stock. We intend to retain our future earnings, if any, to finance the expansion and growth of our business, and we do not expect to pay cash dividends on our capital stock in the foreseeable future. Payment of future cash dividends, if any, will be at the sole discretion of our board of directors after taking into account various factors, including our financial condition, earnings, capital requirements of our operating subsidiaries, covenants associated with any debt obligations, legal requirements, regulatory constraints and other factors deemed relevant by our board of directors. Moreover, if we determine to pay any dividends in the future, there can be no assurance that we will continue to pay such dividends.

Our transfer agent is American Stock Transfer & Trust Company LLC, 6201 15th Avenue, Brooklyn, New York 11219; Telephone: 800-937-5449.

DESCRIPTION OF CAPITAL STOCK

The following description of our Common Stock is a summary only and is qualified in its entirety by reference to our certificate of incorporation and bylaws, both of which are exhibits to the registration statement of which this prospectus is a part.

General

Our authorized capital stock consists of 100,000,000 shares of common stock, par value \$0.0001 per share, and 40,000,000 shares of preferred stock, par value \$0.0001 per share, (i) 30,000 of which are designated as Series A Junior Participating Preferred Stock and (ii) 435 of which are designated Series F Convertible Preferred Stock (the “Series F Preferred Stock”) as of May 26, 2020. Once shares of Series F Preferred Stock are converted, redeemed or reacquired by us, such shares shall resume the status of authorized but unissued shares of undesignated preferred stock.

As of May 26, 2020, we had (i) 39,407,968 outstanding shares of common stock, (ii) 435 outstanding shares of Series F Preferred Stock, which, at the currently applicable conversion price, would convert into 1,450,290 shares of common stock, subject to future adjustment, (iii) outstanding options to acquire 523,458 shares of our common stock, and (iv) outstanding warrants to purchase 26,724,404 shares of our common stock (which includes the warrants offered hereby). In December 2018, the Company’s stockholders approved a reverse split of its outstanding common stock at a ratio in the range of 1-for-2 to 1-for 14 and, in January 2019, the board of directors approved a 1-for-14 reverse split of the Company’s outstanding common stock that became effective after trading on January 2, 2019. All share and per share amounts presented herein have been retroactively adjusted to reflect the reverse stock split.

The following description summarizes the most important terms of our capital stock. Because it is only a summary, it does not contain all the information that may be important to you. For a complete description you should refer to our certificate of incorporation, bylaws and certificate of designation of preferences, rights and limitations of Series F Preferred Stock, copies of which have been incorporated by reference as exhibits to the registration statement of which this prospectus forms a part, and to the applicable provisions of the Delaware General Corporation Law.

Common Stock

Dividends

Holders of our common stock are entitled to receive dividends when and as declared by our board of directors out of funds legally available.

Voting

Holders of our common stock are entitled to one vote for each share on each matter properly submitted to our stockholders for their vote; provided however, that except as otherwise required by law, holders of our common stock will not be entitled to vote on any amendment to our certificate of incorporation (including any certificate of designation filed with respect to any series of preferred stock) that relates solely to the terms of a series of outstanding preferred stock if the holders of such affected series are entitled, either separately or together as a class with the holders of one or more other such series, to vote thereon by law or pursuant to our certificate of incorporation (including any certificate of designation filed with respect to any series of preferred stock).

Subject to the voting restrictions described above, holders of our common stock may adopt, amend or repeal our bylaws and/or alter certain provisions of our certificate of incorporation with the affirmative vote of the holders of at least 66 $\frac{2}{3}$ % of the voting power of all of the then-outstanding shares of our capital stock entitled to vote generally in the election of directors, voting together as a single class, in addition to any vote of the holders of a class or series of our stock required by law or our certificate of incorporation. Those provisions of our certificate of incorporation that may be altered only by the super-majority vote described above relate to:

- the number of directors on our board of directors, the classification of our board of directors and the terms of the members of our board of directors;
- the limitations on removal of any of our directors described below under “—Anti-Takeover Effects of Certain Provisions of Our Certificate of Incorporation and Bylaws and Delaware Law;”

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- the ability of our directors to fill any vacancy on our board of directors by the affirmative vote of a majority of the directors then in office under certain circumstances;
- the ability of our board of directors to adopt, amend or repeal our bylaws and the super-majority vote of our stockholders required to adopt, amend or repeal our bylaws described above;
- the limitation on action of our stockholders by written action described below under “—Anti-Takeover Effects of Certain Provisions of Our Certificate of Incorporation and Bylaws and Delaware Law;”
- the choice of forum provision described below under “—Choice of Forum;”
- the limitations on director liability and indemnification described below under the heading “—Limitation on Liability of Directors and Indemnification;” and
- the super-majority voting requirement to amend our certificate of incorporation described above.

Conversion, Redemption and Preemptive Rights

Holders of our common stock do not have any conversion, redemption or preemptive rights pursuant to our organizational documents.

Liquidation, Dissolution and Winding-up

In the event of our liquidation, dissolution or winding up, holders of our common stock are entitled to share ratably in any assets remaining after the satisfaction in full of the prior rights of creditors and the aggregate of any liquidation preference pursuant to the terms of any certificate of designation filed with respect to any series of preferred stock, including our outstanding Series F Preferred Stock.

Listing

Our common stock is listed on The Nasdaq Capital Market under the symbol “CHFS.” See “Prospectus Summary—Recent Developments” in this prospectus for important information about the listing of our common stock on The Nasdaq Capital Market.

Preferred Stock

We may issue any class of preferred stock in any series. Our board of directors has the authority to establish and designate series, and to fix the number of shares included in each such series and to determine or alter for each such series, such voting powers, designation, preferences, and relative participating, optional, or other rights and such qualifications, limitations or restrictions thereof. Our board of directors is not restricted in repurchasing or redeeming such stock while there is any arrearage in the payment of dividends or sinking fund installments. Our board of directors is authorized to increase or decrease the number of shares of any series subsequent to the issuance of shares of that series, but not below the number of shares of such series then outstanding. The number of authorized shares of preferred stock may be increased or decreased, but not below the number of shares thereof then outstanding, by the affirmative vote of the holders of a majority of the common stock, without a vote of the holders of the preferred stock, or of any series thereof, unless a vote of any such holders is required pursuant to the terms of any certificate of designation filed with respect to any series of preferred stock.

Prior to issuance of shares of any series of preferred stock, our board of directors is required by Delaware law to adopt resolutions and file a certificate of designation with the Secretary of State of the State of Delaware. The certificate of designation fixes for each class or series the terms, preferences, conversion or other rights, voting powers, restrictions, limitations as to dividends or other distributions, qualifications and terms or conditions of redemption for each class or series. Any shares of preferred stock will, when issued, be fully paid and non-assessable.

Description of Outstanding Warrants

As of May 26, 2020, there were warrants outstanding to purchase a total of 26,724,404 shares of our common stock (which includes the warrants offered hereby), which expire between 2021 and 2025. Each of these warrants entitles the holder to purchase one share of common stock at prices ranging from \$0.30 to \$43,848 per common share, with a weighted average exercise price of \$1.65 per share. Certain of these warrants have a net exercise

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provision under which its holder may, in lieu of payment of the exercise price in cash, surrender the warrant and receive a net amount of shares based on the fair market value of our common stock at the time of exercise of the warrant after deduction of the aggregate exercise price. Certain of these warrants have price protection in the event we sell any common stock or securities convertible into common stock for a price less than the exercise price per share of the warrants then in effect (but in no event lower than \$0.055). Each of these warrants also contains provisions for the adjustment of the exercise price and the aggregate number of shares issuable upon the exercise of the warrant in the event of dividends, share splits, reorganizations and reclassifications and consolidations. Certain of these warrants provide that, subject to limited exceptions, a holder will not have the right to exercise any portion of its warrants if the holder, together with its affiliates, would beneficially own over 4.99% of our then outstanding common stock following such exercise; provided, however, that upon prior notice to us, the warrant holder may increase its ownership, provided that in no event will the ownership exceed 9.99%.

Anti-Takeover Effects of Certain Provisions of Our Certificate of Incorporation and Bylaws and Delaware Law

Delaware Law Certificate of Incorporation and Bylaws

Certain provisions of our certificate of incorporation and bylaws may be considered to have an anti-takeover effect, such as those provisions:

- providing for our board of directors to be divided into three classes with staggered three-year terms, with only one class of directors being elected at each annual meeting of our stockholders and the other classes continuing for the remainder of their respective three-year terms;
- authorizing our board of directors to issue from time to time any series of preferred stock and fix the voting powers, designation, powers, preferences and rights of the shares of such series of preferred stock;
- prohibiting stockholders from acting by written consent in lieu of a meeting;
- requiring advance notice of stockholder intention to put forth director nominees or bring up other business at a stockholders' meeting;
- prohibiting stockholders from calling a special meeting of stockholders;
- requiring a 66 2/3% super-majority stockholder approval in order for stockholders to alter, amend or repeal certain provisions of our certificate of incorporation;
- requiring a 66 2/3% super-majority stockholder approval in order for stockholders to adopt, amend or repeal our bylaws;
- providing that, subject to the rights of the holders of any series of preferred stock to elect additional directors under specified circumstances, neither the board of directors nor any individual director may be removed without cause;
- creating the possibility that our board of directors could prevent a coercive takeover of our Company due to the significant amount of authorized, but unissued shares of our common stock and preferred stock;
- providing that, subject to the rights of the holders of any series of preferred stock, the number of directors shall be fixed from time to time exclusively by our board of directors pursuant to a resolution adopted by a majority of the total number of authorized directors; and
- providing that any vacancies on our board of directors under certain circumstances will be filled only by a majority of our board of directors then in office, even if less than a quorum, and not by the stockholders.

Delaware Law

We are also subject to Section 203 of the Delaware General Corporation Law (“DGCL”), which generally prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years following the date that the stockholder became an interested stockholder, unless:

- prior to that date, our board of directors approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of our voting stock outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (but not the outstanding voting stock owned by the interested stockholder) those shares owned by (i) persons who are directors and also officers and (ii) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or subsequent to that date, the business combination is approved by our board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66²/₃% of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 of the DGCL defines an interested stockholder as an entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by any of these entities or persons.

The above-summarized provisions of our certificate of incorporation and bylaws and the above-summarized provisions of the DGCL could make it more difficult to acquire us by means of a tender offer, a proxy contest or otherwise, or to remove incumbent officers and directors. These provisions are expected to discourage certain types of coercive takeover practices and takeover bids that our board of directors may consider inadequate and to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of increased protection of our ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging takeover or acquisition proposals because, among other things, negotiation of these proposals could result in an improvement of their terms.

Choice of Forum

Our certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the exclusive forum for any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising pursuant to the Delaware General Corporation Law; or any action asserting a claim against us that is governed by the internal affairs doctrine. These provisions would not apply to suits brought to enforce a duty or liability created by the Exchange Act, or any other claim for which the federal courts have exclusive jurisdiction. Our certificate of incorporation will further provide that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, subject to applicable law. Any person or entity purchasing or otherwise acquiring any interest in our securities shall be deemed to have notice of and consented to these provisions. Our exclusive forum provision will not relieve us of our duties to comply with the federal securities laws and the rules and regulations thereunder, and our stockholders will not be deemed to have waived our compliance with these laws, rules and regulations.

The provisions of the Delaware General Corporation Law, our certificate of incorporation, as amended, and our bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Limitation on Liability of Directors and Indemnification

Our certificate of incorporation limits the liability of our directors to the fullest extent permitted by Delaware law. Delaware law provides that directors of a corporation will not be personally liable for monetary damages for breach of their fiduciary duties as directors, except for liability for any:

- breach of their duty of loyalty to us or our stockholders;
- act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payment of dividends or redemption of shares as provided in Section 174 of the DGCL; or
- transaction from which the directors derived an improper personal benefit.

These limitations of liability do not apply to liabilities arising under federal securities laws and do not affect the availability of equitable remedies such as injunctive relief or rescission.

Our bylaws provide that we will indemnify and advance expenses to our directors and officers to the fullest extent permitted by law or, if applicable, pursuant to indemnification agreements. They further provide that we may choose to indemnify our other employees or agents from time to time. Subject to certain exceptions and procedures, our bylaws also require us to advance to any person who was or is a party, or is threatened to be made a party, to any proceeding by reason of the person's service as one of our directors or officers all expenses incurred by the person in connection with such proceeding.

Section 145(g) of the DGCL and our bylaws also permit us to secure insurance on behalf of any officer, director, employee or other agent for any liability arising out of his or her actions in connection with their services to us, regardless of whether our bylaws permit indemnification. We maintain a directors' and officers' liability insurance policy.

We entered into indemnification agreements with each of our directors and executive officers that provide, in general, that we will indemnify them to the fullest extent permitted by law in connection with their service to us or on our behalf and, subject to certain exceptions and procedures, that we will advance to them all expenses that they incur in connection with any proceeding to which they are, or are threatened to be made, a party.

At present, there is no pending litigation or proceeding involving any of our directors or officers as to which indemnification is required or permitted, and we are not aware of any threatened litigation or proceeding that may result in a claim for indemnification.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Company pursuant to the foregoing provisions, or otherwise, the Company has been advised that in the opinion of the SEC this indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Registration Rights

In the Purchase Agreement, we agreed to prepare and file a registration statement to register for resale the shares of common stock underlying certain warrants issued in the private placement transaction. We agreed to use our commercially reasonable efforts to cause such registration to become effective within 60 days following May 1, 2020. We have filed the registration statement of which this prospectus forms a part pursuant to the requirements in the Agreement to register for resale the shares of Common Stock issuable upon conversion of the Warrants that were issued at the closing.

Aquadex Acquisition. On August 5, 2016, upon closing of the acquisition of the Aquadex FlexFlow system, we entered into a registration rights agreement with Baxter International, Inc. ("Baxter"), pursuant to which Baxter or its affiliates has the right to request that we file a registration statement with the SEC to register all or part of the 1,666 shares of common stock that Baxter received in connection with the acquisition. Upon receipt of any such request, we have agreed to use reasonable best efforts to prepare and file a registration statement as expeditiously as possible but in any event within 30 days of such request, to cause the registration statement to become effective in accordance with Baxter's intended method of distribution, and to pay the expenses incurred in connection with any such registration.

PLAN OF DISTRIBUTION

Each Selling Stockholder of the securities and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their securities covered hereby on the principal trading market or any other stock exchange, market or trading facility on which the securities are traded or in private transactions. These sales may be at fixed or at prices then prevailing or related to the then current market price or at negotiated prices. The offering price of the shares from time to time will be determined by the Selling Stockholders and, at the time of the determination, may be higher or lower than the market price of our Common Stock. A Selling Stockholder may use any one or more of the following methods when selling securities:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales;
- in transactions through broker-dealers that agree with the Selling Stockholders to sell a specified number of such securities at a stipulated price per security;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The Selling Stockholders may also sell securities under Rule 144 or any other exemption from registration under the Securities Act, if available, rather than under this prospectus.

Broker-dealers engaged by the Selling Stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the Selling Stockholders (or, if any broker-dealer acts as agent for the purchaser of securities, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440.

In connection with the sale of the securities or interests therein, the Selling Stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the securities in the course of hedging the positions they assume. The Selling Stockholders may also sell securities short and deliver these securities to close out their short positions, or loan or pledge the securities to broker-dealers that in turn may sell these securities. The Selling Stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of securities offered by this prospectus, which securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The Selling Stockholders and any broker-dealers or agents that are involved in selling the securities may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the securities purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Each Selling Stockholder has informed the Company that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the securities.

The Company is required to pay certain fees and expenses incurred by the Company incident to the registration of the securities. The Company has agreed to indemnify the Selling Stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

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We agreed to use our commercially reasonable efforts to keep the registration statement of which this prospectus forms a part effective until no purchaser owns any Warrants or Warrant shares issuable upon exercise of the Warrants. The resale securities will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale securities covered hereby may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale securities may not simultaneously engage in market making activities with respect to the Common Stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the Selling Stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of the Common Stock by the Selling Stockholders or any other person. We will make copies of this prospectus available to the Selling Stockholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

We will not receive any proceeds from the sale of the shares by the Selling Stockholders.

SELLING STOCKHOLDERS

The shares of Common Stock being offered by the Selling Stockholders are those issuable to the Selling Stockholders upon exercise of the Warrants. For additional information regarding the issuances of those Warrants, see “Sale of Securities to Selling Stockholders”. We are registering the shares of Common Stock in order to permit the Selling Stockholders to offer the shares for resale from time to time. Except for the ownership of shares of Common Stock, preferred stock and warrants, the Selling Stockholders have not had any material relationship with us within the past three years.

The percentage of each Selling Stockholder’s ownership is based on 39,407,968 shares of common stock outstanding as of May 26, 2020. In computing the number of shares beneficially owned by a Selling Stockholder and the percentage ownership of that Selling Stockholder, shares of Common Stock underlying the Warrants held by that Selling Stockholder that are exercisable as of May 26, 2020, or exercisable within 60 days after May 26, 2020, are deemed outstanding. Such shares, however, are not deemed outstanding for the purposes of computing the percentage ownership of any other person. The percentage of beneficial ownership after this offering is based on shares outstanding on May 26, 2020 and also includes the shares of our Common Stock registered in this offering.

The registration of the shares of Common Stock issuable to the Selling Stockholders upon exercise of the Warrants does not mean that the Selling Stockholders will sell or otherwise dispose of all or any of those securities. The Selling Stockholders may sell or otherwise dispose of all, a portion or none of such shares from time to time. We do not know the number of shares, if any, that will be offered for sale or other disposition by any of the Selling Stockholders under this prospectus. Furthermore, the Selling Stockholders may have sold, transferred or disposed of the shares of Common Stock covered hereby in transactions exempt from the registration requirements of the Securities Act since the date on which we filed this prospectus.

To our knowledge and except as noted below, none of the Selling Stockholders has, or within the past three years has had, any position, office or other material relationship with us or any of our predecessors or affiliates. None of the Selling Stockholders is a broker-dealer or an affiliate of a broker-dealer, except as noted below. The Selling Stockholders may sell all, some or none of the shares of Common Stock subject to this prospectus. See “Plan of Distribution.”

Selling Stockholder ⁽¹⁾	Beneficial Ownership Before This Offering			Beneficial Ownership After This Offering	
	Number of Shares Owned	Percentage of Outstanding Shares ⁽²⁾	Shares Offered Hereby	Number of Shares Owned	Percentage of Outstanding Shares ⁽²⁾
Anson Investments Master Fund LP ⁽³⁾	9,482,916	4.99%	899,470	7,683,976	4.99%
Empery Asset Master, LTD ⁽⁴⁾	3,998,252 ⁽⁵⁾	4.99%	578,906	3,419,346	4.99%
Empery Tax Efficient, LP ⁽⁶⁾	780,370 ⁽⁷⁾	1.94%	166,289	614,081	1.47%
Empery Tax Efficient III, LP ⁽⁸⁾	154,275 ⁽⁹⁾	*	154,275	0	*
Total:	14,415,813	11.92%	1,798,940	11,717,403	11.45%

* Represents beneficial ownership of less than one percent (1%) of the outstanding shares of our common stock.

- (1) This table and the information in the notes below are based upon information supplied by the Selling Stockholders and are based on shares of common stock outstanding as of May 26, 2020. Only those shares issuable upon exercise of the Warrants are being registered for resale pursuant to this registration statement, and not any other securities held by the Selling Stockholders. Beneficial ownership is determined in accordance with Rule 13d-3 under the Securities Act, and includes any shares as to which the Selling Stockholder has sole or shared voting power or investment power, and also any shares which the Selling Stockholder has the right to acquire within 60 days of the date hereof, whether through the exercise or conversion of any stock option, convertible security, warrant or other right. The indication herein that shares are beneficially owned is not an admission on the part of the Selling Stockholder that he, she or it is a direct or indirect beneficial owner of those shares.
- (2) All warrants and convertible securities of the Company held by the Selling Stockholders are subject to beneficial ownership limitations such that the shares issuable upon conversion or exercise of such securities may not be converted or exercised, respectively, if it would result in the holder exceeding the beneficial ownership limitation. The beneficial ownership limitation is either 4.99% or 9.99% for each Selling Stockholder. The numbers set forth in columns (2) and (5) above do not give effect to any such beneficial ownership limitations, but the percentages set forth in columns (3) and (6) above do give effect to such beneficial ownership limitations.
- (3) Includes (i) 339,756 shares of common stock disclosed on a 13G filed by Anson Funds Management LP on February 14, 2020 with the SEC, (ii) 2,080,696 shares of common stock and 2,565,114 share of common stock purchased in the Company’s registered direct offerings on March 23, 2020 and April 1, 2020, respectively, (iii) 1,798,940 shares of common stock purchased in the Company’s registered direct offering on May 5, 2020, (iv) 899,470 warrants to purchase common stock purchased pursuant to the Company’s

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- private placement of shares on May 1, 2020, and (v) 1,282,557 warrants to purchase common stock purchased pursuant to the Company's private placement of shares on April 1, 2020. Excludes (i) 432,398 of warrants that are not currently exercisable due to a beneficial ownership limitation of 4.99% and (ii) 2,080,696 warrants to purchase common stock purchased pursuant to the Company's private placement of shares on March 23, 2020 that are not currently exercisable. The percentages in this table reflect that the reporting persons may not exercise the warrants to the extent such exercise would cause the reporting persons to beneficially own a number of shares of common stock that would exceed 4.99% of our then outstanding common stock following such exercise; provided, however, that upon 61 days prior notice to us, such holder may increase its ownership, provided that in no event will the ownership exceed 9.99%.
- (4) Empery Asset Management LP, the authorized agent of Empery Asset Master Ltd ("EAM"), has discretionary authority to vote and dispose of the shares held by EAM and may be deemed to be the beneficial owner of these shares. Martin Hoe and Ryan Lane, in their capacity as investment managers of Empery Asset Management LP, may also be deemed to have investment discretion and voting power over the shares held by EAM. EAM, Mr. Hoe and Mr. Lane each disclaim any beneficial ownership of these shares.
 - (5) Represents (i) 578,906 shares of common stock issuable upon exercise of warrants to purchase common stock purchased pursuant to the Company's private placement of warrants on May 5, 2020 and (ii) 3,419,346 shares of common stock issuable upon exercise of other warrants to purchase common stock held by the Selling Stockholder. The percentages in this table reflect that the reporting persons may not exercise the warrants to the extent such exercise would cause the reporting persons to beneficially own a number of shares of common stock that would exceed 4.99% of our then outstanding common stock following such exercise; provided, however, that upon 61 days prior notice to us, such holder may increase its ownership, provided that in no event will the ownership exceed 9.99%.
 - (6) Empery Asset Management LP, the authorized agent of Empery Tax Efficient, LP ("ETE"), has discretionary authority to vote and dispose of the shares held by ETE and may be deemed to be the beneficial owner of these shares. Martin Hoe and Ryan Lane, in their capacity as investment managers of Empery Asset Management LP, may also be deemed to have investment discretion and voting power over the shares held by ETE. ETE, Mr. Hoe and Mr. Lane each disclaim any beneficial ownership of these shares.
 - (7) Represents (i) 166,289 shares of common stock issuable upon exercise of warrants to purchase common stock purchased pursuant to the Company's private placement of warrants on May 5, 2020 and (ii) 614,081 shares of common stock issuable upon exercise of other warrants to purchase common stock held by the Selling Stockholder. The percentages in this table reflect that the reporting persons may not exercise the warrants to the extent such exercise would cause the reporting persons to beneficially own a number of shares of common stock that would exceed 4.99% of our then outstanding common stock following such exercise; provided, however, that upon 61 days prior notice to us, such holder may increase its ownership, provided that in no event will the ownership exceed 9.99%.
 - (8) Empery Asset Management LP, the authorized agent of Empery Tax Efficient III, LP ("ETE III"), has discretionary authority to vote and dispose of the shares held by ETE III and may be deemed to be the beneficial owner of these shares. Martin Hoe and Ryan Lane, in their capacity as investment managers of Empery Asset Management LP, may also be deemed to have investment discretion and voting power over the shares held by ETE III. ETE III, Mr. Hoe and Mr. Lane each disclaim any beneficial ownership of these shares.
 - (9) Represents 154,275 shares of common stock issuable upon exercise of warrants to purchase common stock purchased pursuant to the Company's private placement of warrants on May 5, 2020. The percentages in this table reflect that the reporting persons may not exercise the warrants to the extent such exercise would cause the reporting persons to beneficially own a number of shares of common stock that would exceed 4.99% of our then outstanding common stock following such exercise; provided, however, that upon 61 days prior notice to us, such holder may increase its ownership, provided that in no event will the ownership exceed 9.99%.

LEGAL MATTERS

The validity of the securities offered by this prospectus will be passed upon for us by Honigman LLP, Kalamazoo, Michigan.

EXPERTS

The consolidated financial statements of CHF Solutions, Inc. and subsidiaries as of and for the years ended December 31, 2019 and 2018 from the Company's Annual Report on Form 10-K have been audited by Baker Tilly Virchow Krause, LLP, our independent registered public accounting firm, as stated in their report, which is incorporated herein by reference (which report expresses an unqualified opinion on the consolidated financial statements and includes an explanatory paragraph related to the substantial doubt about the Company's ability to continue as a going concern as described in Note 1 to the consolidated financial statements). Such consolidated financial statements have been so incorporated in reliance upon the report of such firm given their authority as experts in accounting and auditing.

PART II**INFORMATION NOT REQUIRED IN PROSPECTUS****Item 13. Other Expenses of Issuance and Distribution.**

The following table sets forth the estimated costs and expenses to be incurred in connection with the issuance and distribution of the securities registered under this Registration Statement. All amounts are estimates except the Securities and Exchange Commission registration fee.

	Amount to be Paid
SEC registration fee	\$ 93.40
Legal fees and expenses	\$ 10,000
Printing expenses	\$ 5,000
Accounting fees and expenses	\$ 4,000
Transfer agent and registrar fees	\$ 7,500
Miscellaneous expenses	\$3,406.60
Total	\$ 30,000

Item 14. Indemnification of Directors and Officers.

Our certificate of incorporation and bylaws provide that each person who was or is made a party or is threatened to be made a party to or is otherwise involved (including, without limitation, as a witness) in any action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he or she is or was a director or an officer of CHF Solutions, Inc. or is or was serving at our request as a director, officer, or trustee of another corporation, or of a partnership, joint venture, trust or other enterprise, including service with respect to an employee benefit plan, whether the basis of such proceeding is alleged action in an official capacity as a director, officer or trustee or in any other capacity while serving as a director, officer or trustee, shall be indemnified and held harmless by us to the fullest extent authorized by the Delaware General Corporation Law, as amended (the "DGCL"), against all expense, liability and loss (including attorneys' fees, judgments, fines, ERISA excise taxes or penalties and amounts paid in settlement) reasonably incurred or suffered by such.

Section 145 of the DGCL permits a corporation to indemnify any director or officer of the corporation against expenses (including attorney's fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with any action, suit or proceeding brought by reason of the fact that such person is or was a director or officer of the corporation, if such person acted in good faith and in a manner that he or she reasonably believed to be in, or not opposed to, the best interests of the corporation, and, with respect to any criminal action or proceeding, if he or she had no reason to believe his or her conduct was unlawful. In a derivative action, (i.e., one brought by or on behalf of the corporation), indemnification may be provided only for expenses actually and reasonably incurred by any director or officer in connection with the defense or settlement of such an action or suit if such person acted in good faith and in a manner that he or she reasonably believed to be in, or not opposed to, the best interests of the corporation, except that no indemnification shall be provided if such person shall have been adjudged to be liable to the corporation, unless and only to the extent that the court in which the action or suit was brought shall determine that the defendant is fairly and reasonably entitled to indemnity for such expenses despite such adjudication of liability.

Pursuant to Section 102(b)(7) of the DGCL, our certificate of incorporation eliminates the liability of a director to us or our stockholders for monetary damages for such a breach of fiduciary duty as a director, except for liabilities arising:

- from any breach of the director's duty of loyalty to us or our stockholders;
- from acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law;
- under Section 174 of the DGCL; and
- from any transaction from which the director derived an improper personal benefit.

We carry insurance policies insuring our directors and officers against certain liabilities that they may incur in their capacities as directors and officers.

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The Company has entered into indemnification agreements with each of its directors and executive officers. Pursuant to the indemnification agreements, the Company agrees to hold harmless and indemnify its directors and executive officers to the fullest extent authorized or permitted by the provisions of the Company's certificate of incorporation and bylaws and the DGCL, including for any amounts that such director or officer becomes obligated to pay because of any claim to which such director or officer is made or threatened to be made a party, witness or participant, by reason of such director's or officer's service as a director, officer, employee or other agent of the Company.

There are certain exceptions from the Company's obligation to indemnify its directors and executive officers pursuant to the indemnification agreements, including for "short-swing" profit claims under Section 16(b) of the Exchange Act, losses that result from conduct that is established by a final judgment as knowingly fraudulent or deliberately dishonest or that constituted willful misconduct, or that constituted a breach of the duty of loyalty to the Company or resulted in any improper personal profit or advantage, where payment is actually made to a director or officer under an insurance policy, indemnity clause, bylaw or agreement, except in respect of any excess beyond payment under such insurance, clause, bylaw or agreement, for indemnification which is not lawful, or in connection with any proceeding initiated by such director or officer, or any proceeding against the Company or its directors, officers, employees or other agents, unless (i) such indemnification is expressly required to be made by law, (ii) the proceeding was authorized by the board of directors of the Company, (iii) such indemnification is provided by the Company, in its sole discretion, pursuant to the powers vested in the Company under the DGCL, or (iv) the proceeding is initiated to enforce a claim for indemnification pursuant to the indemnification agreement.

All agreements and obligations of the Company contained in the indemnification agreements shall continue during the period when the director or officer who is a party to an indemnification agreement is a director, officer, employee or other agent of the Company (or is or is serving at the request of the Company as a director, officer, employee or other agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise) and shall continue thereafter so long as such director or officer shall be subject to any possible claim or threatened, pending or completed action, suit or proceeding, whether civil, criminal, arbitrational, administrative or investigative. In addition, the indemnification agreements provide for partial indemnification and advance of expenses.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to our directors, officers or controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that in the opinion of the Securities and Exchange Commission this indemnification is against public policy as expressed in the Securities Act, and is, therefore, unenforceable.

Item 15. Recent Sales of Unregistered Securities.

The following sets forth information regarding all unregistered securities sold by the registrant in the three years preceding the date of this registration statement. This information has been retroactively adjusted to reflect the reverse stock splits for all periods presented.

- On February 15, 2017, the registrant entered into a letter agreement with Sabby Volatility Warrant Master Fund, Ltd. and Sabby Healthcare Master Fund, Ltd. (collectively, "Sabby"), to incent the cash exercise of the warrants held by Sabby on or before March 31, 2017 (the "Exercise Period"). In exchange for any such exercise, the registrant agreed to provide Sabby replacement warrants (the "Replacement Warrants") to purchase the same number of shares of common stock as were issued upon exercise of the exercised warrants, with an exercise price equal to the consolidated closing bid price of the registrant's common stock on the date of issuance. The agreement also (i) amends the definition of "Beneficial Ownership" in the existing warrants to mean, solely for purposes of any exercises of warrants that occur during the Exercise Period, "9.99%" and (ii) amends the Initial Exercise Date of the existing warrants issued on November 3, 2016 and January 11, 2017 so that such warrants are exercisable on or after the receipt of stockholder approval. Since such stockholder approval was received on January 9, 2017, such warrants were immediately exercisable as of the date of the agreement. The Replacement Warrants will be in the same form as the exercised warrants except the exercise price will not be subject to reduction for subsequent equity issuances and (ii) the Replacement Warrants will not allow Sabby to demand that the registrant purchase the Replacement Warrants in the event of a fundamental transaction involving the registrant. Concurrent with the signing

of the agreement, Sabby exercised warrants to purchase 373 shares of common stock for cash proceeds of approximately \$564,000, and the registrant issued Replacement Warrants to purchase 373 shares of common stock at an exercise price of \$1,397.20 per share. From March 10, 2017 to March 28, 2017, Sabby exercised warrants to purchase 2,727 shares of common stock for cash proceeds of approximately \$1.4 million, and the registrant issued Replacement Warrants to purchase 2,727 shares of common stock with exercise prices equal to the closing consolidated bid price of its common stock available on the date of issuance (ranging from \$484.40 to \$1,055.60 per share). The Replacement Warrants were issued pursuant to an exemption from the registration requirement of the Securities Act provided in Section 4(a)(2) of the Securities Act and/or Regulation D.

- On November 15, 2018, the registrant entered into a letter agreement with Maxim Group LLC (“Maxim”), under which Maxim would provide general financial advisory and investment banking services to the registrant on a non-exclusive basis. In exchange for such services, the registrant agreed to issue to Maxim, 7,143 shares of its common stock. The shares were issued pursuant to an exemption from the registration requirement of the Securities Act provided in Section 4(a)(2) of the Securities Act and/or Regulation D.
- On May 30, 2019, the registrant granted a market-based warrant to a consultant in exchange for investor relations services. The warrant represents the right to acquire up to 100,000 shares of the registrant’s common stock at an exercise price \$3.18 per share, the closing stock price of the registrant’s common shares on May 30, 2019. The warrant is subject to a vesting schedule based on the registrant achieving certain market stock prices within a specified period of time. The warrant expires on May 30, 2024. This issuance was made pursuant to the exemption from registration contained in Section 4(a)(2) of the Securities Act.
- On October 25, 2019, the registrant closed on a registered direct offering of its common stock and in a concurrent private placement, the registrant agreed to issue to the investors in the registered direct offering unregistered warrants to purchase up to 575,830 shares of the registrant’s common stock at an exercise price of \$1.41 per share, which will be exercisable six months from the date of issuance, and will expire five years from the initial exercise date. This issuance was made pursuant to the exemption from registration contained in Section 4(a)(2) of the Securities Act.
- On November 6, 2019, the registrant closed on a registered direct offering of its common stock, or common equivalents, and in a concurrent private placement, the registrant agreed to issue to the investors in the registered direct offering unregistered warrants to purchase up to 1,219,076 shares of the registrant’s common stock at an exercise price of \$0.9942 per share, which will be exercisable upon the date of issuance, and will expire five years from the initial exercise date. This issuance was made pursuant to the exemption from registration contained in Section 4(a)(2) of the Securities Act.
- On March 23, 2020, the registrant closed on a registered direct offering of its common stock, or common equivalents, and in a concurrent private placement, the registrant agreed to issue to the investors in the registered direct offering unregistered warrants to purchase up to 4,161,392 shares of the registrant’s common stock at an exercise price of \$0.3726 per share, which will be exercisable on the six-month anniversary of the date of issuance, and will expire five years from the date of issuance. This issuance was made pursuant to the exemption from registration contained in Section 4(a)(2) of the Securities Act.
- On April 1, 2020, the registrant closed on a registered direct offering of its common stock, or common equivalents, and in a concurrent private placement, the registrant agreed to issue to the investors in the registered direct offering unregistered warrants to purchase up to 2,565,114 shares of the registrant’s common stock at an exercise price of \$0.3715 per share, which will be exercisable upon the date of issuance, and will expire five and a half years from the initial exercise date. This issuance was made pursuant to the exemption from registration contained in Section 4(a)(2) of the Securities Act.
- On May 5, 2020, the registrant closed on a registered direct offering of its common stock, or common equivalents, and in a concurrent private placement, the registrant agreed to issue to the investors in the registered direct offering unregistered warrants to purchase up to 1,798,940 shares of the registrant’s

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common stock at an exercise price of \$0.41 per share, which will be exercisable upon the date of issuance, and will expire five and a half years from the initial exercise date. This issuance was made pursuant to the exemption from registration contained in Section 4(a)(2) of the Securities Act

Item 16. Exhibits and Financial Statement Schedules.

The following exhibits are filed as part of this registration statement.

Exhibit Number	Exhibit Description	Incorporated By Reference			Exhibit Number	Filed Herewith
		Form	File Number	Date of First Filing		
2.1	Asset Purchase Agreement between Sunshine Heart, Inc. and Gambro UF Solutions, Inc. dated August 5, 2016	8-K	001-35312	August 8, 2016	2.1	
3.1	Fourth Amended and Restated Certificate of Incorporation	10	001-35312	February 1, 2012	3.1	
3.2	Certificate of Amendment to the Fourth Amended and Restated Certificate of Incorporation	8-K	001-35312	January 13, 2017	3.1	
3.3	Certificate of Amendment to Fourth Amended and Restated Certificate of Incorporation	8-K	001-35312	May 23, 2017	3.1	
3.4	Certificate of Amendment to Fourth Amended and Restated Certificate of Incorporation	8-K	001-35312	October 12, 2017	3.1	
3.5	Certificate of Amendment to Fourth Amended and Restated Certificate of Incorporation	8-K	001-35312	January 2, 2019	3.1	
3.6	Second Amended and Restated Bylaws	8-K	001-35312	May 23, 2017	3.2	
3.7	Form of Certificate of Designation of Series A Junior Participating Preferred Stock	8-K	001-35312	June 14, 2013	3.1	
3.8	Form of Certificate of Designation of Preferences, Rights and Limitations of Series F Convertible Preferred Stock	S-1/A	333-221010	November 17, 2017	3.7	
3.9	Certificate of Designation of Preferences, Rights and Limitations of Series G Convertible Preferred Stock	8-K	001-35312	March 13, 2019	3.1	

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Exhibit Number	Exhibit Description	Incorporated By Reference			Exhibit Number	Filed Herewith
		Form	File Number	Date of First Filing		
3.10	<u>Certificate of Designation of Preferences, Rights and Limitations of Series H Convertible Preferred Stock</u>	8-K	001-35312	January 29, 2020	3.1	
4.1	<u>Warrant to Purchase Stock, dated February 18, 2015, issued to Silicon Valley Bank</u>	8-K	001-35312	February 19, 2015	4.1	
4.2	<u>Warrant to Purchase Stock, dated February 18, 2015, issued to Life Science Loans, LLC</u>	8-K	001-35312	February 19, 2015	4.2	
4.3	<u>Form of common stock Purchase Warrant issued pursuant to the Securities Purchase Agreement, dated July 20, 2016, among the Company and the purchasers signatory thereto</u>	8-K	001-35312	July 22, 2016	4.2	
4.4	<u>Form of common stock Purchase Warrant issued to Northland Securities, Inc.</u>	8-K	001-35312	July 22, 2016	4.3	
4.5	<u>Registration Rights Agreement between Sunshine Heart, Inc. and Gambro UF Solutions, Inc. dated August 5, 2016</u>	8-K	001-35312	August 8, 2016	4.1	
4.6	<u>Form of common stock Purchase Warrant issued pursuant to the Securities Purchase Agreement, dated October 30, 2016, among the Company and the purchasers signatory thereto</u>	8-K	001-35312	October 31, 2016	4.1	
4.7	<u>Form of common stock Purchase Warrant issued pursuant to the Letter Agreement between the Company and the purchasers signatory thereto, dated February 15, 2017</u>	8-K	001-35312	February 16, 2017	4.1	
4.8	<u>Form of common stock Purchase Warrant issued pursuant to the Underwriting Agreement between the Company and Ladenburg Thalmann & Co. Inc., dated April 19, 2017</u>	S-1/A	333-216841	April 5, 2017	4.8	

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Exhibit Number	Exhibit Description	Incorporated By Reference			Exhibit Number	Filed Herewith
		Form	File Number	Date of First Filing		
4.9	Form of Warrant to purchase shares of common stock	S-1/A	333-221010	November 17, 2017	4.9	
4.10	Form of Series 1 and Series 2 Warrant to Purchase Shares of Common Stock	S-1/A	333-209102	February 25, 2019	4.10	
4.11	Common Stock Purchase Warrant, dated May 30, 2019, between the Company and Redington, Inc.	10-Q	001-35312	August 8, 2019	4.1	
4.12	Form of common stock Purchase Warrant issued pursuant to the Securities Purchase Agreement, dated October 23, 2019, among the Company and the purchasers signatory thereto	8-K	001-35312	October 23, 2019	4.1	
4.13	Form of common stock Purchase Warrant issued pursuant to the Securities Purchase Agreement, dated November 4, 2019, among the Company and the purchasers signatory thereto	8-K	001-35312	November 4, 2019	4.1	
4.14	Form of common stock Pre-Funded Purchase Warrant issued pursuant to the Securities Purchase Agreement, dated November 4, 2019, among the Company and the purchasers signatory thereto	8-K	001-35312	November 4, 2019	4.2	
4.15	Form of Common Stock Purchase Warrant	S-1/A	333-235385	January 23, 2020	4.15	
4.16	Form of common stock Purchase Warrant issued pursuant to the Securities Purchase Agreement, dated March 19, 2020, among the Company and the purchasers identified on the signature pages thereto	8-K	001-35312	March 20, 2020	4.1	
4.17	Form of common stock Purchase Warrant issued pursuant to the Securities Purchase Agreement, dated March 30, 2020, among the Company and the purchasers identified on the signature pages thereto	8-K	001-35312	March 30, 2020	4.1	

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Exhibit Number	Exhibit Description	Incorporated By Reference			Exhibit Number	Filed Herewith
		Form	File Number	Date of First Filing		
4.18	Form of common stock Purchase Warrant issued pursuant to the Securities Purchase Agreement, dated May 1, 2020, among the Company and the purchasers identified on the signature pages thereto	8-K	001-35312	May 4, 2020	4.1	
5.1	Opinion of Honigman LLP					X
10.1	Patent License Agreement between Sunshine Heart, Inc. and Gambro UF Solutions, Inc. dated August 5, 2016	8-K	001-35312	August 8, 2016	10.1	
10.2	Loan and Security Agreement between Sunshine Heart, Inc. and Silicon Valley Bank dated August 5, 2016	8-K	001-35312	August 8, 2016	10.2	
10.3	Amended and Restated 2002 Stock Plan†	10	001-35312	December 16, 2011	10.2	
10.4	Form of Notice of Stock Option Grant and Option Agreement for Amended and Restated 2002 Stock Plan†	10	001-35312	September 30, 2011	10.3	
10.5	Second Amended and Restated 2011 Equity Incentive Plan, as amended†	14A	001-35312	July 27, 2012	App. A	
10.6	Form of Stock Option Grant Notice and Option Agreement for 2011 Equity Incentive Plan†	10	001-35312	September 30, 2011	10.5	
10.7	Form of Stock Option Grant Notice and Option Agreement (Senior Management) for 2011 Equity Incentive Plan†	10	001-35312	September 30, 2011	10.6	
10.8	Form of Stock Option Grant Notice and Option Agreement (Director) for 2011 Equity Incentive Plan†	8-K	001-35312	September 18, 2012	10.1	
10.9	Form of Stock Grant Notice and Award Agreement for 2011 Equity Incentive Plan†	8-K	001-35312	September 10, 2013	10.1	

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Exhibit Number	Exhibit Description	Incorporated By Reference			Exhibit Number	Filed Herewith
		Form	File Number	Date of First Filing		
10.10	Form of Restricted Stock Unit Grant Notice and Agreement for 2011 Equity Incentive Plan†	8-K	001-35312	September 10, 2013	10.2	
10.11	2013 Non-Employee Directors' Equity Incentive Plan†	14A	001-35312	April 5, 2013	App. A	
10.12	Form of Stock Option Grant Notice and Option Agreement for 2013 Non-Employee Directors' Equity Incentive Plan†	10-K	001-35312	May 29, 2013	10.2	
10.13	Form of Restricted Stock Unit Award Grant Notice and Agreement for 2013 Non-Employee Directors' Equity Incentive Plan†	10-K	001-35312	March 20, 2015	10.11	
10.14	New-Hire Equity Incentive Plan†	10-Q	001-35312	August 8, 2013	10.1	
10.15	First Amendment to New-Hire Equity Incentive Plan†	10-Q	001-35312	November 12, 2013	10.1	
10.16	Second Amendment to New-Hire Equity Incentive Plan†	S-8	333-202904	March 20, 2015	99.12	
10.17	Third Amendment to New-Hire Equity Incentive Plan†	S-8	333-210215	March 15, 2016	99.13	
10.18	Fourth Amendment to New-Hire Equity Incentive Plan†	8-K	001-35312	May 30, 2017	10.4	
10.19	Fifth Amendment to New-Hire Equity Incentive Plan†	8-K	001-35312	January 18, 2018	10.1	
10.20	Form of Stock Option Grant Notice and Option Agreement for New-Hire Equity Incentive Plan†	10-Q	001-35312	November 12, 2013	10.2	
10.21	2017 Equity Incentive Plan†	8-K	001-35312	May 30, 2017	10.1	
10.22	Form of Stock Option Grant Notice and Option Agreement for 2017 Equity Incentive Plan†	8-K	001-35312	May 30, 2017	10.2	
10.23	Form of Restricted Stock Unit Grant Notice and Restricted Stock Unit Agreement for 2017 Equity Incentive Plan†	8-K	001-35312	May 30, 2017	10.3	

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Exhibit Number	Exhibit Description	Incorporated By Reference			Exhibit Number	Filed Herewith
		Form	File Number	Date of First Filing		
10.24	<u>Form of Indemnity Agreement for the Company's executive officers and directors†</u>	10	001-35312	September 30, 2011	10.1	
10.25	<u>Form of Change in Control Agreement for the Company's executive officers†</u>	10-K	001-35312	March 20, 2015	10.16	
10.26	<u>Non-Employee Director Compensation Policy†</u>	10-Q	001-35312	November 8, 2019	10.1	
10.27	<u>Lease Agreement dated October 21, 2011 by and between the Company and Silver Prairie Crossroads, LLC</u>	10	001-35312	December 16, 2011	10.18	
10.28	<u>Second Amendment to Lease, dated as of April 20, 2015, by and between the Company and Capital Partners Industrial Fund I, LLLP dba Prairie Crossroads Business Center</u>	8-K	001-35312	April 23, 2015	10.1	
10.29	<u>Third Amendment to Lease, dated as of August 3, 2018, by and between the Company and Capital Partners Industrial Fund I, LLLP</u>	10-Q	001-35312	November 7, 2018	10.2	
10.30	<u>Executive Employment Agreement between Sunshine Heart, Inc. and John L. Erb, dated March 1, 2016†</u>	8-K	001-35312	March 2, 2016	10.1	
10.31	<u>Claudia Drayton Retention Bonus Letter, dated as of December 12, 2016†</u>	8-K	001-35312	December 16, 2016	10.1	
10.32	<u>Letter Agreement dated February 15, 2017 among the Company, Sabby Volatility Warrant Master Fund, Ltd. and Sabby Healthcare Master Fund, Ltd.</u>	8-K	003-35312	February 16, 2017	10.1	
10.33	<u>Warrant Agency Agreement between the Company and American Stock Transfer & Trust Company, LLC dated April 24, 2017</u>	8-K	001-35312	April 25, 2017	10.1	

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Exhibit Number	Exhibit Description	Incorporated By Reference			Exhibit Number	Filed Herewith
		Form	File Number	Date of First Filing		
10.34	<u>Warrant Agency Agreement, by and between CHF Solutions, Inc. and American Stock Transfer & Trust Company, LLC dated November 27, 2017</u>	8-K	001-35312	November 28, 2017	10.1	
10.35	<u>Form of Warrant Reprice Agreement</u>	8-K	001-35312	June 29, 2018	10.1	
10.36	<u>Consulting Agreement, dated as of January 28, 2019, between CHF Solutions, Inc. and Steve Brandt†</u>	10-K	001-35312	February 21, 2019	10.44	
10.38	<u>Warrant Agency Agreement, dated as of March 12, 2019, between the Company and American Stock Transfer & Trust Company, LLC</u>	8-K	001-35312	March 13, 2019	4.2	
10.39	<u>Underwriting Agreement, dated as of March 8, 2019, by and between the Company and Ladenburg Thalmann & Co. Inc.</u>	8-K	001-35312	March 13, 2019	1.1	
10.40	<u>Form of Employee Proprietary Information, Inventions Assignment and Non-Competition Agreement for the Company's employees, including executive officers†</u>	10-Q	001-35312	May, 9, 2019	10.3	
10.41	<u>Offer Letter, by and between the Company and Claudia Drayton, dated December 9, 2014†</u>	10-Q	001-35312	May 9, 2019	10.4	
10.42	<u>Offer Letter, by and between the Company and Nestor Jaramillo, dated May 7, 2019†</u>	10-Q	001-35312	May 9, 2019	10.5	
10.43	<u>Sixth Amendment to New-Hire Equity Incentive Plan†</u>	10-Q	001-35312	August 8, 2019	10.2	
10.44	<u>Placement Agency Agreement, dated as of October 23, 2019, by and between the Company and Ladenburg Thalmann & Co. Inc.</u>	8-K	001-35312	October 23, 2019	1.1	

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Exhibit Number	Exhibit Description	Incorporated By Reference			Exhibit Number	Filed Herewith
		Form	File Number	Date of First Filing		
10.45	Form of Securities Purchase Agreement, dated as of October 23, 2019, by and among the Company and the purchasers identified on the signature pages thereto	8-K	001-35312	October 23, 2019	10.1	
10.46	Placement Agency Agreement, dated as of November 4, 2019, by and between the Company and Ladenburg Thalmann & Co. Inc.	8-K	001-35312	November 4, 2019	1.1	
10.47	Form of Securities Purchase Agreement, dated as of November 4, 2019, by and among the Company and the purchasers identified on the signature pages thereto	8-K	001-35312	November 4, 2019	10.1	
10.48	Non-Employee Director Compensation Policy†	10-Q	001-35312	November 8, 2019	10.1	
10.49	Seventh Amendment to New-Hire Equity Incentive Plan†	8-K	001-35312	December 6, 2019	10.1	
10.50	Underwriting Agreement dated as of January 24, 2020, by and between the Company and Ladenburg Thalmann & Co. Inc.	8-K	001-35312	January 29, 2020	1.1	
10.51	Warrant Agency Agreement, dated as of January 28, 2020, between the Company and American Stock Transfer & Trust Company, LLC	8-K	001-35312	January 29, 2020	4.2	
10.52	Placement Agency Agreement, dated as of March 19, 2020, by and between the Company and Ladenburg Thalmann & Co. Inc.	8-K	001-35312	March 20, 2020	1.1	
10.53	Form of Securities Purchase Agreement, dated as of March 19, 2020, by and among the Company and the purchasers identified on the signature pages thereto	8-K	001-35312	March 20, 2020	10.1	
10.54	Placement Agency Agreement, dated as of March 30, 2020, by and between the Company and Ladenburg Thalmann & Co. Inc.	8-K	001-35312	March 30, 2020	1.1	

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Exhibit Number	Exhibit Description	Incorporated By Reference			Exhibit Number	Filed Herewith
		Form	File Number	Date of First Filing		
10.55	Form of Securities Purchase Agreement, dated as of March 30, 2020, by and among the Company and the purchasers identified on the signature pages thereto	8-K	001-35312	March 30, 2020	10.1	
10.56	Placement Agency Agreement, dated as of May 1, 2020, by and between the Company and Ladenburg Thalmann & Co. Inc.	8-K	001-35312	May 4, 2020	1.1	
10.57	Form of Securities Purchase Agreement, dated as of May 1, 2020, by and among the Company and the purchasers identified on the signature pages thereto	8-K	001-35312	May 4, 2020	10.1	
21	List of Subsidiaries	10-K	001-35312	March 5, 2020		
23.1	Consent of Baker Tilly Virchow Krause, LLP					X
23.2	Consent of Honigman LLP					Included in Exhibit 5.1
24	Power of Attorney (included on signature page)					X

† Indicates management compensatory plan, contract or arrangement.

Item 17. Undertakings.

1. The undersigned registrant hereby undertakes that, for the purpose of determining any liability under the Securities Act of 1933, as amended, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
2. The undersigned registrant hereby undertakes to remove from registration by means of a post-effective amendment any of the securities being registered that remain unsold at the termination of the offering.
3. The undersigned registrant hereby undertakes that, for the purposes of determining liability to any purchaser:

If the registrant is subject to Rule 430C, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

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4. Insofar as indemnification for liabilities arising under the Securities Act of 1933, as amended, may be permitted to directors, officers and controlling persons of the undersigned registrant according the foregoing provisions, or otherwise, the undersigned registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933, as amended, and will be governed by the final adjudication of such issue.

The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized in the City of Eden Prairie, State of Minnesota, on this this 29th day of May 2020.

CHF SOLUTIONS, INC.

By: /s/ John L. Erb

John L. Erb

*Chief Executive Officer and
Chairman of the Board*

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below, hereby constitutes and appoints John L. Erb and Claudia Drayton, or either of them, his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to the registration statement, including post-effective amendments, and registration statements filed pursuant to Rule 462 under the Securities Act of 1933, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, and does hereby grant unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the foregoing, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ John L. Erb</u> John L. Erb	Principal Executive Officer and Chairman of the Board	May 29, 2020
<u>/s/ Claudia Drayton</u> Claudia Drayton	Principal Financial Officer and Principal Accounting Officer	May 29, 2020
<u>/s/ Steve Brandt</u> Steve Brandt	Director	May 29, 2020
<u>/s/ Maria Rosa Costanzo</u> Maria Rosa Costanzo	Director	May 29, 2020
<u>/s/ Jon W. Salveson</u> Jon W. Salveson	Director	May 29, 2020
<u>/s/ Gregory Waller</u> Gregory Waller	Director	May 29, 2020
<u>/s/ Warren Watson</u> Warren Watson	Director	May 29, 2020

May 29, 2020

CHF Solutions, Inc.
12988 Valley View Road
Eden Prairie, Minnesota 55344

Re: Registration Statement on Form S-1

Ladies and Gentlemen:

We have acted as counsel to CHF Solutions, Inc., a Delaware corporation (the “*Company*”), in connection with preparing and filing with the Securities and Exchange Commission (the “*Commission*”) pursuant to the Securities Act of 1933, as amended (the “*Securities Act*”), a Registration Statement on Form S-1 (such registration statement as amended or supplemented from time to time, the “*Registration Statement*”), in connection with the registration under the Securities Act of an aggregate of 1,798,940 shares (the “*Registration Shares*”) of the Company’s common stock, par value \$0.0001 per share (“*Common Stock*”), of which all Registration Shares are issuable upon the exercise of certain common stock purchase warrants (the “*Warrants*”). The Warrants were issued pursuant to a Securities Purchase Agreement dated May 1, 2020, by and among the Company, Anson Investments Master Fund LP, Empery Asset Master, LTD, Empery Tax Efficient, LP, and Empery Tax Efficient III, LP.

For the purpose of rendering this opinion, we examined originals or copies of such documents as we deemed relevant. In conducting our examination, we assumed, without investigation, the genuineness of all signatures, the correctness of all certificates, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted as certified or photostatic copies, and the authenticity of the originals of such copies, and the accuracy and completeness of all records made available to us by the Company. As to certain factual matters, we have relied upon a certificate of officers of the Company and have not independently sought to verify such matters. In addition, in rendering this opinion, we have assumed that the Registration Shares will be issued in the manner and on the terms identified or referred to in the Registration Statement, including all supplements and amendments thereto.

Our opinion is limited solely to matters set forth herein. The law covered by the opinions expressed herein is limited to the federal law of the United States, New York law applicable to contracts and Delaware corporate law.

Based upon our examination of such documents and other matters as we deem relevant, we are of the opinion that the Registration Shares have been duly authorized by the Company and when issued upon the exercise of the Warrants in accordance with their terms, the Registration Shares will be validly issued, fully paid and non-assessable.

We hereby consent to the filing of this opinion with the Commission as Exhibit 5.1 to the Registration Statement and to the reference to our firm under the caption “Legal Matters” in the Registration Statement. In giving such consent, we do not admit that we are within the category of persons whose consent is required by Section 7 of the Securities Act or the rules and regulations promulgated thereunder by the Commission. This opinion is expressed as of the date hereof, and we disclaim any undertaking to advise you of any subsequent changes in the facts stated or assumed herein or of any subsequent changes in applicable law.

Very truly yours,

/s/ Honigman LLP

Honigman LLP

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in this Registration Statement on Form S-1 of CHF Solutions, Inc. and subsidiaries of our report dated March 5, 2020, relating to the consolidated financial statements of CHF Solutions, Inc. and subsidiaries (the “Company”), (which report expresses an unqualified opinion on the consolidated financial statements for the year ended December 31, 2019 and includes an explanatory paragraph relating to the substantial doubt about the Company’s ability to continue as a going concern as described in Note 1 to the consolidated financial statements), appearing in the Annual Report on Form 10-K of CHF Solutions, Inc. and subsidiaries for the year ended December 31, 2019, and to the reference to us under the heading “Experts” in the Prospectus, which is part of this Registration Statement.

/s/ Baker Tilly Virchow Krause, LLP

Minneapolis, Minnesota

May 29, 2020