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Registration No. 333-229102
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PROSPECTUS

CHF SOLUTIONS, INC.

146,607 Class A Units consisting of 146,607 shares of common stock and warrants to purchase up to 293,214 shares of common stock and 1,910,536 Class B Units consisting of 1,910,536 shares of Series G convertible preferred stock and warrants to purchase up to 3,821,072 shares of common stock (and 6,024,822 shares of common stock underlying shares of Series G convertible preferred stock and such warrants)

We are offering 146,607 Class A Units, with each Class A Unit consisting of one share of common stock, par value $0.0001 per share, and one warrant that expires on the fifth anniversary of the date of issuance (referred to as the "Series 1 warrants") to purchase one share of our common stock and one warrant that expires on the earlier of the eighteen-month anniversary of the date of issuance, and the 30th trading day following our public announcement of our receipt from the U.S. Food and Drug Administration ("FDA") of clearance or approval of a modification to the product label for the Aquadex FlexFlow system to include pediatric patients ("Pediatric Approval") (referred to as the "Series 2 warrants") to purchase one share of our common stock (together with the shares of common stock underlying such warrants, the "Class A Units") at a public offering price of $5.25 per Class A Unit. Warrants included in the Class A Units have an exercise price of $5.25 per whole share.

We are also offering 1,910,536 Class B Units to purchasers who prefer not to beneficially own more than 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding common stock following the consummation of this offering. Each Class B Unit consists of one share of Series G Convertible Preferred Stock, par value $0.0001 per share (the "Series G Preferred Stock"), convertible at any time at the holder's option into one share of common stock, one Series 1 warrant to purchase one share of common stock and one Series 2 warrant to purchase one share of common stock (together with the shares of common stock underlying such shares of Series G Preferred Stock and such warrants, the "Class B Units" and, together with the Class A Units, the "Units") at a public offering price of $5.25 per Class B Unit. The Warrants included in the Class B Units have an exercise price of $5.25 per share.

The Class A Units and Class B Units have no stand-alone rights and will not be certificated or issued as stand-alone securities and the shares of common stock, Series G Preferred Stock and warrants comprising such Units are immediately separable and will be issued separately in this offering.

Our common stock trades on The Nasdaq Capital Market under the ticker symbol "CHFS". The closing price of our common stock was $7.90 on March 7, 2019. See "Prospectus Summary—Recent Developments" in this prospectus for important information about the listing of our common stock on The Nasdaq Capital Market. We do not intend to list the warrants or preferred stock to be sold in this offering on any stock exchange or other trading market.

Investing in our common stock involves a high degree of risk. Before making any investment in our securities, you should read and carefully consider the risks described in this prospectus under the section of this prospectus entitled "Risk Factors" on page 7 of this prospectus.

	Per Class A Unit	Per Class B Unit(1)	Total
Public offering price	$ 5.25	$ 5.25	$ 10,800,000.75
Underwriting discounts(2)	$ 0.42	$ 0.42	$ 864,000.06
Proceeds, before expenses, to CHF Solutions, Inc.	$ 4.83	$ 4.83	$ 9,936,000.69

(1) The public offering price and underwriting discount corresponds to (x) in respect of the Class A Units (i) a public offering price per share of common stock of $4.8116 and (ii) a public offering price per Series 1 warrant of $0.0092 and per Series 2 warrant of $0.0092 and (y) in respect of the Class B Units (i) a public offering price per share of Series G Preferred Stock of $4.8116 and (ii) a public offering price per Series 1 warrant of $0.0092 and per Series 2 warrant of $0.0092.

(2) We have agreed to pay certain expenses of the underwriters in this offering. We refer you to "Underwriting" on page 59 for additional information regarding underwriting compensation.

Our Chief Executive Officer has indicated an interest in purchasing approximately $50,000 of Class A Units in this offering on the same terms and at the same price as the Class A Units sold to the public in this offering. The underwriter will receive the same underwriting discount on any Class A Units purchased by our Chief Executive Officer as it will on any other Class A Units sold to the public in this offering.

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 underwriter has the option to purchase up to (i) 308,571 additional shares of common stock, (ii) additional Series 1 warrants to purchase up to 308,571 additional shares of common stock and/or (iii) additional Series 2 warrants to purchase up to 308,571 additional shares of common stock solely to cover over-allotments, if any, at the public offering price per share of common stock and the public offering price per warrant set forth above less the underwriting discounts and commissions. The over-allotment option may be used to purchase shares of common stock or warrants, or any combination thereof, as determined by the underwriter, but such purchases cannot exceed an aggregate of 15% of the number of shares of common stock (including the number of shares of common stock issuable upon conversion of shares of Series G Preferred Stock) and 15% of the warrants sold in the primary offering. The over-allotment option is exercisable for 45 days from the date of this prospectus.

The underwriters expect to deliver the securities to purchasers on March 12, 2019.

Sole Book-Running Manager

Ladenburg Thalmann

The date of this prospectus is March 8, 2019.

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You should rely only on the information contained in this prospectus and any free-writing prospectus that we authorize to be distributed to you. We have not, and the underwriters have not, authorized anyone to provide you with information different from or in addition to that contained in this prospectus or any related free-writing prospectus. If anyone provides you with different or inconsistent information, you should not rely on it. We are offering to sell, and are seeking offers to buy, the securities offered by this prospectus only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or of any sale of the securities. Our business, financial conditions, results of operations and prospects may have changed since that date. You should also read and consider the information in the documents to which we have referred you under the caption “Where You Can Find Additional Information” in this prospectus.

We have not, and the underwriter has not, done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to the offering of the securities and distribution of this prospectus outside the United States.

We obtained industry and market data used throughout and incorporated by reference into this prospectus through our research, surveys and studies conducted by third parties and industry and general publications. We have not independently verified market and industry data from third-party sources.

ABOUT THIS PROSPECTUS

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 hereby. 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 propectus 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 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, 2018, filed with the SEC on February 21, 2019;
- our Current Reports on Form 8-K filed with the SEC on January 2, 2019 and January 25, 2019;
- 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. 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 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," including our financial statements and related notes. Unless the context otherwise requires, references in this prospectus to the "Company," "CHFS," "we," "us", and "our" refer to CHF Solutions, Inc. together with its subsidiaries.

Company Overview

We are a medical device company focused on providing solutions for patients suffering from fluid overload. Our commercial product, the Aquadex FlexFlow® system, is indicated for temporary (up to eight hours) ultrafiltration treatment of patients with fluid overload who have failed diuretic therapy and extended (longer than 8 hours) ultrafiltration treatment of patients with fluid overload who have failed diuretic therapy and require hospitalization.

The Aquadex FlexFlow System

The Aquadex FlexFlow 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 FlexFlow system, medical practitioners can specify and control the amount of fluid to be extracted at a safe, predictable, and effective rate. The Aquadex FlexFlow 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 FlexFlow 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 FlexFlow System

The Aquadex FlexFlow 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 restored[3];
- 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 duration[4] resulting in cost savings at 90 days[5].

The Aquadex FlexFlow system consists of:

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

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[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. Poster presented at the ISPOR Meeting, May 23, 2018, Baltimore, MD, USA.

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

Market Opportunity

We are focusing our efforts and resources on the use of the Aquadex FlexFlow system in four therapeutic markets:

- *Heart Failure Inpatients*: Historically, our commercial efforts have been primarily focused on use of the Aquadex FlexFlow system in the inpatient setting in large hospital accounts. We intend to continue to focus our sales efforts on inpatient facilities, leveraging the clinical benefits and economic advantages of using the Aquadex FlexFlow system over diuretic therapy.
- *Heart Failure Outpatients*: We intend to expand the use of the Aquadex FlexFlow system with heart failure patients in the outpatient setting, such as a clinic or hospital outpatient department (e.g. observation unit). While currently not reimbursed by Medicare and private payors, we are supporting the development of new evidence regarding the economic impact of ultrafiltration in the outpatient setting which we plan to use to seek reimbursement and gain broader adoption of the Aquadex FlexFlow system in the outpatient market.
- *Post Cardio Vascular Surgery*: At the end of the third quarter of 2018, we launched a marketing campaign focused on the benefits of the Aquadex FlexFlow system in treating patients suffering from fluid overload following cardiac surgery procedures, such as CABG, valve repairs and replacements procedures, VAD implants and other cardiac surgical procedures. We plan to continue to focus our expanded efforts in this therapeutic area to grow revenue, leveraging the synergies between heart failure cardiologists and cardiovascular surgeons, traditional technology adoption rates of cardiac surgeons, and product purchase cycle of the cardiac surgical centers at large hospitals.
- *Pediatrics*: In 2019, we intend to seek modification of the product label contained in the 510(k) clearance for our Aquadex FlexFlow system to allow commercial promotion in pediatric patients. Currently, our Aquadex FlexFlow system is not recommended for use in pediatric patients. Therefore, we do not devote commercialization resources toward, nor promote, the use of the Aquadex FlexFlow system in pediatric patients. However, we believe that Aquadex FlexFlow system is currently being prescribed by physicians to treat various conditions in pediatric patients, including heart failure, cardiac surgery[6], extracorporeal membrane oxygenation (ECMO) therapy[7], solid organ transplantation[8], and kidney replacement therapy for neonatal patients. If we receive FDA clearance for an update to the product label, we intend to expand our commercialization efforts to include promotion to physicians and hospitals who treat this pediatric population.

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, and will remain, a “smaller reporting company” as long as our public float remains less than $250 million as of the last business day of our most recently-completed second fiscal quarter. A smaller reporting company may take advantage of specified reduced reporting and other requirements that are otherwise applicable

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[6] Hazle M, et al. Pediatr Crit Care Med. 2013 January; 14(1): 44–49. doi:10.1097/PCC.0b013e3182712799.

[7] Selewski DT, et al. Crit Care Med. 2012 September; 40(9): 2694–2699. doi:10.1097/CCM.0b013e318258ff01.

[8] Florescu DF, et al. Pediatr Infect Dis J. 2015 Jan; 34(1):47-51. doi: 10.1097/INF.0000000000000487

generally to U.S. public companies. As long as our public float remains below $75 million as of the last business day of our most recently completed second fiscal quarter, 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

Reverse Stock Split

At a special meeting of our stockholders on December 28, 2018, our stockholders approved a reverse split of our outstanding common stock at a ratio in the range of 1-for-2 to 1-for-14, which was submitted to stockholder approval to reduce the risk that our common stock could be delisted from the Nasdaq Capital Market for non-compliance with the minimum bid price rule. Following such special meeting, our board of directors approved a 1-for-14 reverse split of our issued and outstanding shares of common stock. We filed with the Secretary of State of the State of Delaware a Certificate of Amendment to our Fourth Amended and Restated Certificate of Incorporation to effect the reverse stock split. The reverse stock split was effective as of 5:00 pm Eastern Time on January 2, 2019, and our common stock began trading on a split-adjusted basis on The Nasdaq Capital Market on January 3, 2019. The reverse stock split did not change the par value of our stock or the authorized number of common or preferred shares. 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 and October 12, 2017, and for the reverse stock split effected on January 2, 2019.

The Offering	
Issuer	CHF Solutions, Inc.
Class A Units Offered	We are offering 146,607 Class A Units. Each Class A Unit consists of one share of common stock, a Series 1 warrant to purchase one share of our common stock and a Series 2 warrant to purchase one share of our common stock (together with the shares of common stock underlying such warrants).
Offering Price per Class A Unit	$5.25 combined price for each Class A Unit.
Class B Units Offered	We are also offering 1,910,536 Class B Units to purchasers who prefer not to beneficially own more than 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding common stock following the consummation of this offering. Each Class B Unit consists of one share of Series G Preferred Stock, par value $0.0001 per share, convertible into one share of common stock, a Series 1 warrant to purchase one share of our common stock and a Series 2 warrant to purchase one share of our common stock (together with the shares of common stock underlying such shares of Series G Preferred Stock and such warrants).
Offering Price per Class B Unit	$5.25 combined price for each Class B Unit.
Description of Series 1 warrants	The Series 1 warrants will be exercisable beginning on the closing date and expire on the fifth anniversary of the closing date and have an initial exercise price per share equal to $5.25 per share, subject to appropriate adjustment in the event of recapitalization events, stock dividends, stock splits, stock combinations, reclassifications, reorganizations or similar events affecting our common stock.
Description of Series 2 warrants	The Series 2 warrants will be exercisable beginning on the closing date and expire on the earlier of (1) the eighteen-month anniversary of the closing date and (2) the 30th trading day following public announcement of Pediatric Approval and have an initial exercise price equal to $5.25 per share, subject to appropriate adjustment in the event of recapitalization events, stock dividends, stock splits, stock combinations, reclassifications, reorganizations or similar events affecting our common stock. The Series 1 warrants and the Series 2 warrants are collectively referred to as the “warrants.” The forms of warrant are filed as an exhibit to the registration statement of which this prospectus forms a part.

Description of Series G Preferred Stock	Each share of Series G Preferred Stock is initially convertible at any time and until converted in full at the holder's option into one share of common stock. Notwithstanding the foregoing, we shall not effect any conversion of Series G Preferred Stock, with certain exceptions, to the extent that, after giving effect to an attempted conversion, the holder of shares of Series G Preferred Stock (together with such holder's affiliates, and any persons acting as a group together with such holder or any of such holder's affiliates) would beneficially own a number of shares of our common stock in excess of 4.99% (or, at the election of the purchaser, 9.99%) of the shares of our common stock then outstanding after giving effect to such exercise. For additional information, see "Description of Securities—Description of Capital Stock—Preferred Stock—Series G Convertible Preferred Stock Being Offered Pursuant to this Prospectus" on page 54 of this prospectus.
Shares of common stock underlying the Series 1 warrants	2,057,143 shares.
Shares of common stock underlying the Series 2 warrants	2,057,143 shares.
Shares of common stock underlying the Series G Preferred Stock	1,910,536 shares.
Shares of common stock outstanding before this offering	513,445 shares as of February 15, 2019.
Shares of common stock to be outstanding after this offering	660,052 shares (2,570,588 shares on an as-converted basis, assuming the conversion of all of the Series G Preferred Stock).
Shares of Preferred Stock outstanding before this offering	We have no shares of Series G Preferred Stock outstanding prior to this offering; we have 535 shares of Series F convertible preferred stock (the "Series F Preferred Stock") outstanding prior to this offering as of February 15, 2019.
Shares of Preferred Stock to be outstanding after this offering	1,910,536 shares of Series G Preferred Stock; 535 shares of Series F Preferred Stock.
Over-allotment option	We have granted the underwriter an option to purchase up to 308,571 additional shares of common stock and/or additional Series 1 warrants to purchase up to 308,571 shares of common stock and/or additional Series 2 warrants to purchase up to 308,571 shares of common stock in any combination thereof, at the public offering price per share of common stock and the public offering price per warrant set forth on the cover page hereto less the underwriting discounts and commission. This option is exercisable, in whole or in part, for a period of 45 days from the date of this prospectus.

Market for the common stock	Our common stock is listed on The Nasdaq Capital Market under the symbol "CHFS". See "—Recent Developments" above for important information about the listing of our common stock on The Nasdaq Capital Market.
Use of Proceeds	We intend to use the net proceeds of this offering for general corporate purposes, including for continued investments in our commercialization efforts. See "Use of Proceeds" herein.
No listing of warrants	We do not intend to apply for listing of the warrants on any securities exchange or trading system.
No listing of Series G Preferred Stock	We do not intend to apply for listing of the Series G Preferred Stock on any securities exchange or trading system.
Potential Insider Participation	Our Chief Executive Officer has indicated an interest in purchasing approximately $50,000 of Class A Units in this offering on the same terms and at the same price as the Class A Units sold to the public in this offering. The underwriter will receive the same underwriting discount on any Class A Units purchased by our Chief Executive Officer as it will on any other Class A Units sold to the public in this offering.
Risk Factors	See "Risk Factors" beginning on page 7 and other information included in this prospectus for a discussion of factors that you should consider carefully before deciding to invest in this offering.

Except as otherwise indicated, all information in this prospectus is based on 513,445 shares of common stock outstanding as of February 15, 2019 and excludes the shares of common stock being offered by this prospectus or issuable upon conversion of the Series G Preferred Stock or warrants being offered by this prospectus and also excludes the following:

- 137,504 shares of common stock issuable upon the exercise of outstanding stock options, having a weighted average exercise price of $61.60 per share and 3 shares of common stock issuable upon the vesting of restricted stock units;
- 599,293 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 $50.23 per share;
- 18,190 shares of common stock issuable upon the conversion of the 535 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);
- 83,995 additional shares of common stock that we will be required to issue to the holders of our Series F Preferred Stock upon conversion thereof because the effective price per share of common stock in this offering is lower than $29.68, the current conversion price of the Series F Preferred Stock, as a result of the reduction of such conversion price to $5.25, due to the full ratchet anti-dilution price protection in the certificate of designation for the Series F Preferred Stock;
- 43,651 shares of our common stock reserved for future issuance under our equity incentive plans; and
- 1,997 shares of common stock issuable upon the exercise of stock options granted subsequent to February 15, 2019.

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 and October 12, 2017 and for the reverse stock split effected on January 2, 2019.

RISK FACTORS

An investment in our securities has a high degree of risk. Before you invest you should carefully consider the risks and uncertainties described below and the other information in this prospectus. Any of the risks and uncertainties set forth herein could materially and adversely affect our business, results of operations and financial condition, which in turn could materially and adversely affect the trading price or value of our securities. Additional risks not currently known to us or which we consider immaterial based on information currently available to us may also materially adversely affect us. As a result, you could lose all or part of your investment.

Risks Related to Our Business

We have limited history of operations and limited experience in sales and marketing, and we might be unsuccessful in increasing our sales and cannot assure you that we will ever generate substantial revenue or be profitable.

Prior to our acquisition of the Aquadex FlexFlow system in August 2016, we did not have a product approved for commercial sale and focused our resources on developing and manufacturing our C-Pulse System. On September 29, 2016, we announced a strategic refocus of our strategy that included halting all clinical evaluations of the C-Pulse System to fully focus our resources on commercializing our Aquadex FlexFlow system, taking actions to reduce our cash burn in connection with such strategic refocus and reviewing potential strategic alliances and financing alternatives. In addition, our business strategy depends in part on our ability to grow our business by establishing an effective sales force and selling our products to hospitals and other healthcare facilities while controlling costs. In the third quarter of 2018, we announced our intention to expand our commercialization efforts in post-cardiac surgery, in addition to heart failure. We have limited prior experience with respect to sales or marketing of the Aquadex FlexFlow system in both heart failure and post-cardiac surgery. If we are unsuccessful at marketing and selling our Aquadex FlexFlow system, our operations and potential revenues will be materially adversely affected.

We have incurred operating losses since our inception and anticipate that we will continue to incur operating losses in the near-term. The report of our independent registered public accounting firm issued in connection with its audit of our consolidated financial statements for the fiscal year ended December 31, 2018 expresses substantial doubt about our ability to continue as a going concern.

We are an emerging company with a history of incurring net losses. We have incurred net losses since our inception, including net losses of $17.0 million and $13.4 million for the years ended December 31, 2018 and 2017, respectively. As of December 31, 2018, our accumulated deficit was $199.4 million.

The report of our independent registered public accounting firm issued in connection with its audit of our consolidated financial statements for the fiscal year ended December 31, 2018 expresses substantial doubt about our ability to continue as a going concern. Prior to August 2016, we did not have any products approved for commercialization, generated only limited revenue from our clinical studies and had significant operating losses as we incurred costs associated with the conduct of clinical studies and our research and development programs for our C-Pulse System. We became a revenue generating company only after acquiring the Aquadex FlexFlow business (herein referred to as the “Aquadex Business”) from a subsidiary of Baxter in August 2016. We expect to incur additional losses in the near-term as we grow the Aquadex Business, including investments in expanding our sales and marketing capabilities, manufacturing components, and complying with the requirements related to being a U.S. public company listed on Nasdaq. To become and remain profitable, we must succeed in expanding the adoption and market acceptance of the Aquadex FlexFlow system. This will require us to succeed in a range of challenging activities, including training personnel at hospitals and effectively and efficiently manufacturing, marketing and distributing the Aquadex FlexFlow system and related components. There can be no assurance that we will succeed in these activities, and we may never generate revenues sufficient to achieve profitability. If we do achieve profitability, we may not be able to sustain it.

We believe that we will need to raise additional capital to fund our operations beyond 2019. If additional capital is not available, we will have to delay, reduce or cease operations.

We believe that we will need to raise additional capital to fund our operations beyond 2019. Changing circumstances may cause us to consume capital significantly faster than we currently anticipate and could adversely affect our ability to raise additional capital. Additional financing may not be available when we need it or may not be available on terms that are favorable to us. In addition, the risk that we may not be able to continue as a going

concern may make it more difficult to obtain necessary additional funding on terms favorable to us, or at all. If we raise additional funding through the issuance of equity securities, our stockholders may suffer dilution and our ability to use our net operating losses to offset future income may be limited. If we raise additional funding through debt financing, we may be required to accept terms that restrict our ability to incur additional indebtedness, require us to use our cash to make payments under such indebtedness, force us to maintain specified liquidity or other ratios or restrict our ability to pay dividends or make acquisitions. If we are unable to secure additional funding, our development programs and our commercialization efforts would be delayed, reduced or eliminated, our relationships with our suppliers and manufacturers may be harmed, and we may not be able to continue our operations.

Our near-term prospects are highly dependent on revenues from a single product, the Aquadex FlexFlow system. We face significant challenges in expanding market acceptance of the Aquadex FlexFlow system, which could adversely affect our potential sales.

Our near-term prospects are highly dependent on revenues from a single product, the Aquadex FlexFlow system, and we have no other commercial products or products in active development at this time. The established market or customer base for our Aquadex FlexFlow system is limited and our success depends on our ability to increase adoption and utilization of the Aquadex FlexFlow system. Acceptance of our product in the marketplace by health care providers is uncertain, and our failure to achieve sufficient market acceptance will significantly limit our ability to generate revenue and be profitable. Market acceptance will require substantial marketing efforts and the expenditure of significant funds by us to inform health care providers of the benefits of using the Aquadex FlexFlow system and to provide further training on its use. We may not be able to build key relationships with health care providers to drive further sales in the United States or sell the Aquadex FlexFlow system outside the United States. Product orders may be cancelled, patients or customers currently using our products may cease to do so and patients or customers expected to begin using our products may not. In addition, market acceptance of the Aquadex FlexFlow system may require that we make enhancements to the system or its components. We cannot be sure that we will be able to successfully develop such enhancements, or that if developed they will be viewed favorable by the market. Our ability to achieve acceptance of our Aquadex FlexFlow system depends on our ability to demonstrate the safety, efficacy, ease-of-use and cost-effectiveness of the system. We may not be able to expand the adoption and market acceptance of the Aquadex FlexFlow system to both the inpatient and outpatient markets and our potential sales could be harmed.

We depend on a limited number of customers, the loss of which, or failure of which to order our products in a particular period, could cause our revenues to decline.

Our ten largest customers represented 54.1% and 50.9% of our revenues in the years ended December 31, 2018 and 2017, respectively, with our largest customer representing 10.1% and 14.5% of our revenues, respectively, during such periods. Customer ordering patterns may vary significantly from quarter to quarter, or customers may discontinue providing therapies using our products. If one of our largest customers reduced its purchases in a fiscal period, our revenues for that period may be materially adversely affected. Further, if one of our largest customers discontinued the use of our products, our revenues may be materially adversely affected.

We have limited commercial manufacturing experience and could experience difficulty in producing commercial volumes of the Aquadex FlexFlow system and related components or may need to depend on third parties for manufacturing.

We have limited experience in commercial manufacturing of the Aquadex FlexFlow System. In connection with the acquisition of the Aquadex Business, we entered into a commercial manufacturing and supply agreement with Baxter, which required Baxter to manufacture Aquadex Flex Flow blood sets and Aquadex FlexFlow catheters for a period of 18 months following the acquisition. We notified Baxter that we intended to have it cease the manufacturing Aquadex product effective as of June 30, 2017. We completed the transfer of manufacturing equipment for the Aquadex Business that we purchased from Baxter to our manufacturing facility in July 2017. We began manufacturing Aquadex FlexFlow consoles and blood circuits in-house in the fourth quarter of 2017 and Aquadex FlexFlow catheters in-house in the third quarter of 2018. With the initiation of internal catheter production, we have completed the transfer of all manufacturing activities of the Aquadex FlexFlow system from Baxter. However, because we have limited prior commercial manufacturing experience, we may incur manufacturing inefficiencies, delays or interruptions. We may not be able to achieve low-cost manufacturing capabilities and processes that will enable us to manufacture the Aquadex FlexFlow system or related components in significant

volumes, while meeting the legal, regulatory, quality, price, durability, engineering, design and production standards required to market our products successfully. If we experience difficulties with our manufacturing operations, we may experience delays in providing products and services to our customers, and our business could be harmed.

We depend upon third-party suppliers, including single source suppliers, making us vulnerable to supply problems and price fluctuations.

We will rely on third-party suppliers, including single source suppliers, to provide us with certain components of the Aquadex FlexFlow system. We have no long-term contracts with third-party suppliers that guarantee volume or the continuation of payment terms. We depend on our suppliers to provide us with materials in a timely manner that meet our quality, quantity and cost requirements. The forecasts of demand we use to determine order quantities and lead times for components purchased from outside suppliers may be incorrect. If we do not increase our sales volumes, which drive our demand for our suppliers' products, we may not procure volumes sufficient to receive favorable pricing, which could impact our gross margins if we are unable to pass along price differences to our customers. Our failure to obtain required components or subassemblies when needed and at a reasonable cost would adversely affect our business. These suppliers may encounter problems during manufacturing for a variety of reasons, any of which could delay or impede their ability to meet our demand. Any difficulties in locating and hiring third-party suppliers, or in the ability of third-party suppliers to supply quantities of our products at the times and in the quantities we need, could have a material adverse effect on our business.

If we cannot develop adequate distribution, customer service and technical support networks, then we may not be able to market and distribute the Aquadex FlexFlow system effectively and our sales will suffer.

Our strategy requires us to provide a significant amount of customer service, maintenance, and other technical services to our customers. To provide these services, we have begun, and will need to continue, to develop a network of distribution and a staff of employees and independent contractors in each of the areas in which we intend to operate. We cannot assure that we will be able to organize and manage this network on a cost-effective basis. If we cannot effectively organize and manage this network, then it may be difficult for us to distribute our products and to provide competitive service and support to our customers, in which case customers may be unable, or decide not, to order our products and our sales will suffer.

We compete against many companies, some of which have longer operating histories, more established products and greater resources than we do, which may prevent us from achieving further market penetration or improving operating results.

Competition from medical device companies and medical device divisions of health care companies, pharmaceutical companies and gene- and cell-based therapies is intense and expected to increase. The vast majority of patients with fluid overload receive pharmacological treatment (diuretics) as a standard of care. There are no direct competitors for the Aquadex FlexFlow system in the U.S., other than diuretics. Other systems, such as Baxter's Prismaflex, a filter-based device that is approved for continuous renal replacement therapy for patients weighing 20kg or more with acute renal failure and/or fluid overload, represent indirect competitors, as they can also be used to conduct ultrafiltration.

Our ability to compete effectively depends upon our ability to demonstrate the advantages of ultrafiltration as compared to diuretics, a pharmacological treatment that is currently the standard of care. In addition, we need to distinguish Aquadex FlexFlow system from the indirect competition of other devices that can also be used to conduct ultrafiltration.

The competition for qualified personnel is particularly intense in our industry. If we are unable to retain or hire key personnel, we may not be able to sustain or grow our business.

Our ability to operate successfully and manage our potential future growth depends significantly upon our ability to attract, retain and motivate highly skilled and qualified research, technical, clinical, regulatory, sales, marketing, managerial and financial personnel. We face intense competition for such personnel, and we may not be able to attract, retain and motivate these individuals. We compete for talent with numerous companies, as well as universities and nonprofit research organizations. Our future success also depends on the personal efforts and abilities of the principal members of our senior management and scientific staff to provide strategic direction, manage our operations and maintain a cohesive and stable environment. We do not maintain life insurance on the lives of any of the members of our senior management. The loss of key personnel for any reason or our inability to hire, retain and motivate additional qualified personnel in the future could prevent us from sustaining or growing our business.

Significant additional governmental regulation could subject us to unanticipated delays which would adversely affect our sales.

Our business strategy depends in part on our ability to expand the use of the Aquadex FlexFlow system in the market as quickly as possible. To achieve expanded market use of the Aquadex FlexFlow system, we may develop enhancements to the system or its components. Depending on their nature, such enhancements may be subject to review by the FDA and regulatory authorities outside of the United States under the applicable regulations. Any regulatory delay in our ability to implement enhancements to the Aquadex FlexFlow system or its components could have an adverse effect on our potential sales. In addition to potential enhancements to the system or its components, we plan to begin discussions with the FDA in the first half of 2019 regarding a modification to the product label contained in the 510(k) clearance for our Aquadex FlexFlow system to allow commercial promotion in pediatric patients and believe that we will submit for a modification to our 510(k) clearance by the end of the second quarter of 2019. Currently, our Aquadex FlexFlow system is not recommended for use in pediatric patients. Therefore, we do not devote commercialization resources toward, nor promote, the use of the Aquadex FlexFlow system in pediatric patients. If we submit for such modification by the end of the second quarter, we believe that we will receive 510(k) clearance from the FDA by the end of 2019. If we receive FDA clearance for an update to the product label, we intend to expand our commercialization efforts to include promotion to physicians and hospitals who treat this pediatric population. It is possible that the FDA requires additional testing prior to clearance of the expanded indication for pediatric use or does not clear the expanded indication at all. A failure to obtain the expanded indication could have a negative impact on our potential sales.

Health care laws in the United States and other countries are subject to ongoing changes, including changes to the amount of reimbursement for hospital services. Additional laws and regulations, or changes to existing laws and regulations that are applicable to our business may be enacted or promulgated, and the interpretation, application or enforcement of the existing laws and regulations may change. Legislative proposals can substantially change the way health care is financed by both governmental and private insurers and may negatively impact payment rates for our system. We cannot predict the nature of any future laws, regulations, interpretations, applications or enforcements or the specific effects any of these might have on our business. However, in the United States and international markets, we expect that both government and third-party payers will continue to attempt to contain or reduce the costs of health care by challenging the prices charged, or deny coverage, for health care products and services. Any future laws, regulations, interpretations, applications or enforcements could delay or prevent regulatory approval or clearance of our Aquadex FlexFlow system and our ability to market our Aquadex FlexFlow system. Moreover, changes that result in our failure to comply with the requirements of applicable laws and regulations could result in the types of enforcement actions by the FDA and/or other agencies as described above, all of which could impair our ability to have manufactured and to sell the affected products.

In the United States, the Aquadex FlexFlow products are purchased primarily by customers, such as hospitals or other health care providers. Customers bill various third-party payers for covered Aquadex FlexFlow therapies provided to patients. These payers, which include federal health care programs (e.g., Medicare and Medicaid), state health care programs, private health insurance companies and managed care organizations, then reimburse our customers based on established payment formulas that take into account part or all of the cost associated with these devices and the related procedures performed.

While the agency responsible for administering the Medicare program, the Centers for Medicare and Medicaid Services, has not issued a favorable national coverage determination under its Investigational Device Exception Studies Program for ultrafiltration using the Aquadex FlexFlow system, a number of private insurers have approved reimbursement for Aquadex FlexFlow products for specific indications and points of service. In addition, patients and providers may seek insurance coverage on a case-by-case basis. We are exploring the ability to increase the range of coverage for uses of Aquadex FlexFlow therapies, such as use in the outpatient setting and use for decompensated heart failure and other indicated uses under its approved labeling, although we may not be successful in doing so.

Product defects, resulting in lawsuits for product liability, could harm our business, results of operations and financial condition.

The design, manufacture and marketing of medical devices involve certain inherent risks. Manufacturing or design defects, unanticipated use of a product or inadequate disclosure of risks relating to the use of the product can lead to injury or other adverse events. These events could lead to recalls or safety alerts relating to a product (either voluntary or required by the FDA or similar governmental authorities in other countries), and could result, in certain cases, in the removal of a product from the market. Any recall of our Aquadex FlexFlow system or any related

components could result in significant costs, as well as negative publicity and damage to our reputation that could reduce demand for our products. Personal injuries relating to the use of our products could also result in product liability claims being brought against us. In some circumstances, such adverse events could also cause delays in new product approvals.

We may be held liable if any product we develop or commercialize causes injury or is found otherwise unsuitable during product testing, manufacturing, marketing, sale or consumer use. The safety studies we must perform and the regulatory approvals required to commercialize our products will not protect us from any such liability. We carry product liability insurance with a $6 million aggregate limit. However, if there are product liability claims against us, our insurance may be insufficient to cover the expense of defending against such claims, or may be insufficient to pay or settle such claims. Furthermore, we may be unable to obtain adequate product liability insurance coverage for commercial sales of any approved product. If such insurance is insufficient to protect us, our business, results of operations and financial condition will be harmed. If any product liability claim is made against us, our reputation and future sales will be damaged, even if we have adequate insurance coverage. Even if a product liability claim against us is without merit or if we are not found liable for any damages, a product liability claim could result in decreased interest in our registry studies, decreased demand for our system, if approved for commercialization, injury to our reputation, diversion of management's attention from operating our business, withdrawal of study participants, significant costs of related litigation, loss of revenue or the inability to commercialize our products.

We may face significant risks associated with international operations, which could have a material adverse effect on our business, financial condition and results of operations.

We market our products globally. Our international operations are subject to a number of risks, including the following: fluctuations in exchange rates of the United States dollar could adversely affect our results of operations, we may face difficulties in enforcing and collecting accounts receivable under some countries' legal systems, have our products serviced or conduct other operations, political instability could disrupt our operations, some governments and customers may have longer payment cycles, with resulting adverse effects on our cash flow, and some countries could impose additional taxes or restrict the import of our products. In addition, regulations in individual countries or regions may restrict our ability to sell our products. Most countries, including the countries in the European Union (EU), require approval or registration to import and/or sell our products in the country.

In the EU, we are required to hold a Conformité Européene, or CE, Mark to import our product into the EU. To hold the CE Mark, we must demonstrate compliance with the essential requirements of the European Union Medical Devices Directive (93/42/EEC). Recently, the European Union replaced the Medical Devices Directive with the new European Medical Devices Regulation, or MDR. The MDR will apply after a transitional period of three years ending on May 26, 2020. Manufacturers have the duration of the transition period to update their technical documentation and processes to meet the new requirements in order to obtain a CE Mark or to issue a EC Declaration of Conformity. After May 26, 2020, medical devices can still be placed on the market under the provision of the MDD or the Active Implantable Medical Devices Directive ("AIMDD") 90/385/EEC (hereafter referred to together as "MDD/AIMDD") until May 27, 2024; provided the CE Mark was issued prior to this date, the manufacturer continues to comply with either one of the directives, and that no significant changes are made in the design and intended purpose of the applicable medical device. By May 27, 2024, all medical devices entering the EU will need to have a new CE Mark under the MDR, even if they have been on the market previously under the MDD/AIMDD. The CE Mark for the Aquadex FlexFlow system has expired and, therefore, we currently cannot import new units of the Aquadex FlexFlow system into the EU. We currently are seeking renewal of the CE Mark, which we expect to receive by the latter half of 2019. It is possible that the conformity assessment conducted by our Notified Body (defined below) in connection with this renewal will be under the MDR. We believe that we will be able to meet the requirements of the MDR; however, it is possible that we may not be able to meet all of the requirements of this new regulation without additional testing. While we believe that we currently have sufficient product inventory already available for sale in the EU market and the timing of the receipt of the CE Mark will not have a material impact on our revenue, a delay in receipt of the CE Mark could cause a shortage in product availability in the EU.

Any one or more of these factors associated with international operations could increase our costs, reduce our revenues, or disrupt our operations, which could have a material adverse effect on our business, financial condition and results of operations.

If we are not able to maintain sufficient quality controls, then the approval or clearance of our products by the European Union, the FDA or other relevant authorities could be withdrawn, delayed or denied and our sales will suffer.

Approval or clearance of our products could be withdrawn, delayed or denied by the European Union, the FDA and the relevant authorities of other countries if our manufacturing facilities do not comply with their respective manufacturing requirements. The European Union imposes requirements on quality control systems of manufacturers, which are inspected and certified on a periodic basis and may be subject to additional unannounced inspections. Failure to comply with these requirements could prevent us from marketing our products in the European Community. The FDA also imposes requirements through quality system requirements, or QSR, regulations, which include requirements for good manufacturing practices, or GMP. Failure to comply with these requirements could prevent us from obtaining FDA approval of our products and from marketing such products in the United States. Our manufacturing facilities have not been inspected and certified by a worldwide testing and certification agency (also referred to as a notified body) that performs conformity assessments to European Union requirements for medical devices. A “notified body” is a group accredited and monitored by governmental agencies that inspects manufacturing facilities and quality control systems at regular intervals and is authorized to carry out unannounced inspections. We cannot be sure that our facilities or the processes we use will comply or continue to comply with their respective requirements on a timely basis or at all, which could delay or prevent our obtaining the approvals we need to market our products in the European Community and the United States.

To market our products in the European Community, the United States and other countries, where approved, manufacturers of such products must continue to comply or ensure compliance with the relevant manufacturing requirements. Although we cannot control the manufacturers of our products, if we choose to subcontract manufacturing to a contract manufacturer, we may need to expend time, resources and effort in product manufacturing and quality control to assist with their continued compliance with these requirements. If violations of applicable requirements are noted during periodic inspections of the manufacturing facilities of our manufacturers or we fail to address issues raised by the FDA in these inspections, then we may not be able to continue to market the products manufactured in such facilities and our revenues may be materially adversely affected.

If we violate any provisions of the Federal Food, Drug, and Cosmetic Act (“FDC Act”) or any other statutes or regulations, then we could be subject to enforcement actions by the FDA or other governmental agencies.

We face a significant compliance burden under the FDC Act and other applicable statutes and regulations which govern the testing, labeling, storage, record keeping, distribution, sale, marketing, advertising and promotion of our medically approved products.

If we violate the FDC Act or other regulatory requirements at any time during or after the product development and/or approval process, we could be subject to enforcement actions by the FDA or other agencies, including: fines, injunctions, civil penalties, recalls or seizures of products, total or partial suspension of the production of our products, withdrawal of any existing approvals or pre-market clearances of our products, refusal to approve or clear new applications or notices relating to our products, recommendations that we not be allowed to enter into government contracts and criminal prosecution. Any of the above could have a material adverse effect on our business, financial condition and results of operations.

We cannot assure you that our products will be safe or that there will not be serious injuries or product malfunctions. Further, we are required under applicable law to report any circumstances relating to our medically approved products that could result in deaths or serious injuries. These circumstances could trigger recalls, class action lawsuits and other events that could cause us to incur expenses and may also limit our ability to generate revenues from such products.

We cannot assure you that our products will prove to be safe or that there will not be serious injuries or product malfunctions, which could trigger recalls, class action lawsuits and other events that could cause us to incur significant expenses, limit our ability to market our products and generate revenues from such products or cause us reputational harm.

Under the FDC Act, we are required to submit medical device reports, or MDRs, to the FDA to report device-related deaths, serious injuries and malfunctions of medically approved products that could result in death or serious injury if they were to recur. Depending on their significance, MDRs could trigger events that could cause us to incur expenses and may also limit our ability to generate revenues from such products, such as the following:

information contained in the MDRs could trigger FDA regulatory actions such as inspections, recalls and patient/physician notifications; because the reports are publicly available, MDRs could become the basis for private lawsuits, including class actions; and if we fail to submit a required MDR to the FDA, the FDA could take enforcement action against us.

If any of these events occur, then we could incur significant expenses and it could become more difficult for us to market and sell our products and to generate revenues from sales. Other countries may impose analogous reporting requirements that could cause us to incur expenses and may also limit our ability to generate revenues from sales of our products.

We face significant uncertainty in the industry due to government healthcare reform.

The Patient Protection and Affordable Care Act, as amended, (the "Affordable Care Act") as well as other healthcare reform may have a significant impact on our business. The Affordable Care Act is extremely complex, and, as a result, additional legislation is likely to be considered and enacted over time. The impact of the Affordable Care Act on the health care industry is extensive and includes, among other things, the federal government assuming a larger role in the health care system, expanding healthcare coverage of United States citizens and mandating basic healthcare benefits. The uncertainties regarding the implementation of the Affordable Care Act, including possible repeal of the Affordable Care Act, ongoing legal challenges, and further judicial interpretations, create unpredictability for the health care industry, which itself constitutes a risk.

The Affordable Care Act contains many provisions designed to generate the revenues necessary to fund the coverage expansions and to reduce costs of Medicare and Medicaid, including imposing a 2.3% excise tax on domestic sales of many medical devices by manufacturers that began in 2013. The medical device excise tax has been suspended in 2018 and 2019. If the excise tax is not repealed, we will be subject to this or any future excise tax on our sales of certain medical devices in the U.S. beginning January 1, 2020.

The Affordable Care Act includes a Hospital Readmission Reduction program and is designed to reduce payments to hospitals with excess heart failure readmissions, among other conditions. The penalty to hospitals can be significant, as much as 3% of total Medicare reimbursement. We believe the Aquadex FlexFlow system may offer hospitals an economic benefit for using the device on a regular basis for in-patient or out-patient usage to avoid readmissions for heart failure; however, if the Hospital Readmission Reduction program is repealed, hospitals may not be as inclined to take measures to reduce readmissions.

In addition, any healthcare reforms enacted in the future may, like the Affordable Care Act, be phased in over a number of years, but if enacted, could reduce our revenue, increase our costs, or require us to revise the ways in which we conduct business or put us at risk for loss of business. In addition, our results of operations, financial position and cash flows could be materially adversely affected by changes under the Affordable Care Act and changes under any federal or state legislation adopted in the future.

Moreover, the Physician Payment Sunshine Act (the Sunshine Act), which was enacted as part of the Affordable Care Act, requires applicable medical device companies to track and publicly report, with limited exceptions, all payments and other transfers of value to physicians and teaching hospitals in the U.S. Implementing regulations for these tracking and reporting obligations were finalized in 2013, and companies have been required to track payments made since August 1, 2013. Effective in 2019, payments to certain nurses, who prescribe treatments, has been added to the list of recipients that companies need to track. If we fail to comply with the data collection and reporting obligations imposed by the Sunshine Act, we may be subject to substantial civil monetary penalties.

We are subject, directly or indirectly, to United States federal and state healthcare fraud and abuse and false claims laws and regulations. Prosecutions under such laws have increased in recent years and we may become subject to such litigation. If we are unable to, or have not fully complied with such laws, we could face substantial penalties.

Our operations are directly, or indirectly through customers, subject to various state and federal fraud and abuse laws, including, without limitation, the federal Anti-Kickback Statute, the stark law and federal False Claims Act. These laws may impact, among other things, our sales, marketing and education programs.

The federal Anti-Kickback Statute prohibits persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual, or the furnishing or arranging for a good or service, for which payment may be made under a federal healthcare program

such as the Medicare and Medicaid programs. Several courts have interpreted the statute's intent requirement to mean that if any one purpose of an arrangement involving remuneration is to induce referrals of federal healthcare covered business, the statute has been violated. The Anti-Kickback Statute is broad and, despite a series of narrow safe harbors, prohibits many arrangements and practices that are lawful in businesses outside of the healthcare industry. Penalties for violations of the federal Anti-Kickback Statute include criminal penalties and civil sanctions such as fines, imprisonment and possible exclusion from Medicare, Medicaid and other federal healthcare programs. Many states have also adopted laws similar to the federal Anti-Kickback Statute, some of which apply to the referral of patients for healthcare items or services reimbursed by any source, not only the Medicare and Medicaid programs. The physician self-referral laws, commonly referred to as the Stark law is a strict liability statute that generally prohibits physicians from making referrals for the furnishing of any "designated health services," for which payment may be made under the Medicare or Medicaid programs, of any entity with which the physician (or an immediate family member) has an ownership interest or compensation arrangement, unless an applicable exception applies. Moreover, many states have adopted or are considering adopting similar laws, some of which extend beyond the scope of the Stark law to prohibit the payment or receipt of remuneration for the prohibited referral of patients for designated healthcare services and physician self-referrals, regardless of the source of the payment for the patient's care. If it is determined that any of the relationships we may have with physicians violate the Stark law or similar statutes, we could become subject to civil and criminal penalties. The imposition of any such penalties could harm our business.

The federal False Claims Act prohibits persons from knowingly filing, or causing to be filed, a false claim to, or the knowing use of false statements to obtain payment from the federal government. Suits filed under the False Claims Act, known as "qui tam" actions, can be brought by any individual on behalf of the government and such individuals, commonly known as "whistleblowers," may share in any amounts paid by the entity to the government in fines or settlement. The frequency of filing qui tam actions has increased significantly in recent years, causing greater numbers of medical device, pharmaceutical and healthcare companies to have to defend a False Claim Act action. When an entity is determined to have violated the federal False Claims Act, it may be required to pay up to three times the actual damages sustained by the government, plus civil penalties for each separate false claim. Various states have also enacted laws modeled after the federal False Claims Act.

We are unable to predict whether we could be subject to actions under any of these laws, or the impact of such actions. If we are found to be in violation of any of the laws described above or other applicable state and federal fraud and abuse laws, we may be subject to penalties, including civil and criminal penalties, damages, fines, exclusion from government healthcare reimbursement programs and the curtailment or restructuring of our operations.

Our operating results may fluctuate from quarter to quarter and year to year.

Our sales and operating results may vary significantly from quarter to quarter and from year to year in the future. Our operating results are affected by a number of factors, many of which are beyond our control. Factors contributing to these fluctuations include the following:

- changes in the prices at which we sell our consoles and disposable blood sets and catheters;
- our bulk ordering practices by our customers;
- general economic uncertainties and political concerns;
- introduction of new products, product enhancements and new applications by our competitors;
- the timing of the introduction and market acceptance of new products, product enhancements and new applications;
- changes in demand for our Aquadex FlexFlow system;
- our ability to maintain sales volumes at a level sufficient to cover fixed manufacturing and operating costs;
- the effect of regulatory approvals and changes in domestic and foreign regulatory requirements;
- our highly variable sales cycle;
- changes in customers' or potential customers' budgets as a result of, among other things, reimbursement policies of government programs and private insurers for treatments that use the Aquadex FlexFlow system;

- variances in shipment volumes as a result of product, supply chain and training issues; and
- increased product costs.

Our sales volumes from quarter to quarter may fluctuate significantly as a result of such ordering practices. Furthermore, from time to time, we offer our disposable blood sets and disposable catheters at a discount to the list price, and our agreements with certain customers may contain volume or other discounts from our normal selling prices and other special pricing considerations.

Discounted pricing can impact our operating results through increasing sales volumes, causing our average selling prices and operating margins to decline and, if we are unable to offset discounts by increasing our sales volume, our net sales could decline. As a result of discounted prices and/or bulk sales orders by our customers, our sales volume may significantly fluctuate quarter to quarter and our sales volume for one quarter may not be indicative of our sales volume for future periods.

Our expense levels are based, in part, on expected future sales. If sales levels in a particular quarter do not meet expectations, we may be unable to adjust operating expenses quickly enough to compensate for the shortfall of sales, and our results of operations may be adversely affected. In addition, we have historically made a significant portion of each quarter's product shipments near the end of the quarter. If that pattern continues, any delays in shipment could have a material adverse effect on results of operations for such quarter.

Due to these and other factors, we believe that quarter to quarter and year to year comparisons of our past operating results may not be meaningful. You should not rely on our results for any quarter or year as an indication of our future performance. Our operating results in future quarters and years may be below expectations, which would likely cause the price of our common stock to fall.

If we acquire other businesses, products or technologies, we could incur additional impairment charges and will be subject to risks that could hurt our business.

We may pursue acquisitions to obtain complementary businesses, products or technologies. Any such acquisition may not produce the revenues, earnings or business synergies that we anticipate and an acquired business, product or technology might not perform as we expect. Our management could spend a significant amount of time, effort and money in identifying, pursuing and completing the acquisition. If we complete an acquisition, we may encounter significant difficulties and incur substantial expenses in integrating the operations and personnel of the acquired businesses, products or technologies into our operations. In particular, we may lose the services of key employees and we may make changes in management that impair the acquired business's relationships with employees, vendors and customers. Additionally, we may acquire development-stage companies that are not yet profitable and which require continued investment, which could decrease our future earnings or increase our futures losses.

Any of these outcomes could prevent us from realizing the anticipated benefits of an acquisition. To pay for an acquisition, we might use stock or cash. Alternatively, we might borrow money from a bank or other lender. If we use stock, our stockholders would experience dilution of their ownership interests. If we use cash or debt financing, our financial liquidity would be reduced.

As a result of a potential acquisition, we may be required to capitalize a significant amount of intangibles, including goodwill. We would be required to review our definite-lived intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable through the estimated undiscounted future cash flows derived from such assets. In addition, we would be required to evaluate goodwill for impairment annually, or to the extent events or conditions indicate a risk of possible impairment during the interim periods prior to its annual impairment test. In the year ended December 31, 2017, we recognized impairment charges of $4.0 million related to goodwill and intangible assets from our acquisition of the Aquadex Business. If we were required to recognize impairment charges related to future acquisitions, those charges could decrease our future earnings or increase our future losses.

Risks Related to Our Intellectual Property

We may not be able to protect our intellectual property rights effectively, which could have an adverse effect on our business, financial condition or results of operations.

Our success depends in part on our ability to obtain and maintain protection in the United States and other countries of the intellectual property relating to or incorporated into our Aquadex FlexFlow system and related components. On August 5, 2016, upon closing of our acquisition of the Aquadex Business, we entered into a patent

license agreement with Baxter pursuant to which we obtained, for no additional consideration, a world-wide license to 49 exclusively licensed and 9 non-exclusively licensed patents used in connection with the Aquadex FlexFlow system to make, have made, use, sell, offer for sale and import, the Aquadex FlexFlow system in the "field of use" as defined in the license. The license is exclusive, with respect to some patents, and non-exclusive, with respect to other patents. Under the patent license agreement, Baxter has agreed to use commercially reasonable efforts to continue maintenance of seven "required maintenance patents," and we have agreed to reimburse Baxter for all fees, costs, and expenses (internal or external) incurred by Baxter in connection with such continued maintenance. The rights granted to us under the patent license agreement will automatically revert to Baxter in the event we cease operation of the Aquadex Business or we file for, or have filed against us, or otherwise undertake any bankruptcy, reorganization, insolvency, moratorium, or other similar proceeding. For two years following the closing, the patent license agreement is not assignable by us (including in connection with a change of control) without Baxter's prior written consent. We estimate that the patents licensed from Baxter will expire between approximately 2020 and 2025. In December 2018, we filed two patent applications with the United States Patent and Trademark Office. One application is based on our design for a wearable device designed to assist in maintaining peripheral venous blood flow access in the arm during aquapheresis treatment with the Aquadex FlexFlow system. The second application includes multiple potential new features and improvements to the diagnostic capabilities of the Aquadex FlexFlow system, which, if incorporated into the product, would be designed to help patient fluid balance and to improve usability for healthcare providers.

In addition, as of February 15, 2019, we owned 36 issued patents and two pending patent applications in the United States and in foreign jurisdictions related to our C-Pulse System and had one pending application for neuromodulation. We estimate that most of our currently issued U.S. patents will expire between approximately 2021 and 2027. Given the strategic refocus away from C-Pulse and towards the Aquadex FlexFlow system, we have chosen to limit the maintenance of issued C-Pulse related patents to those innovations that are of the highest value. Further, we have elected to emphasize a few of the most critical jurisdictions rather than maintain the earlier approach that involved multiple countries.

Our pending and future patent applications may not issue as patents or, if issued, may not issue in a form that will provide us any financial return. Even if issued, existing or future patents may be challenged, narrowed, invalidated or circumvented, which could limit our ability to obtain commercial benefits from them. Changes in patent laws or their interpretation in the United States and other countries could also diminish the value of our intellectual property or narrow the scope of our patent protection. In addition, the legal systems of certain countries do not favor the aggressive enforcement of patents, and the laws of foreign countries may not protect our rights to the same extent as the laws of the United States. In order to preserve and enforce our patent and other intellectual property rights, we may need to make claims or file lawsuits against third parties. This can entail significant costs to us and divert our management's attention from our business.

Intellectual property litigation could be costly and disruptive to us.

In recent years, there has been significant litigation involving intellectual property rights. From time to time, third parties may assert patent, copyright, trademark and other intellectual property rights to technologies used in our business. Any claims, with or without merit, could be time-consuming, result in costly litigation, divert the efforts of our technical and management personnel or require us to pay substantial damages. If we are unsuccessful in defending ourselves against these types of claims, we may be required to do one or more of the following:

- halt use of our Aquadex FlexFlow products;
- attempt to obtain a license to sell or use the relevant technology or substitute technology, which license may not be available on reasonable terms or at all; or
- redesign our system.

In the event a claim against us were successful and we could not obtain a license to the relevant technology on acceptable terms or license a substitute technology or redesign our system to avoid infringement, our business, results of operations and financial condition would be significantly harmed.

If we were unable to protect the confidentiality of our proprietary information and know-how, the value of our technology and system could be adversely affected.

In addition to patented technology, we rely on our unpatented proprietary technology, trade secrets, processes and know-how. We generally seek to protect this information by confidentiality agreements with our employees,

consultants, scientific advisors and third parties. These agreements may be breached, and we may not have adequate remedies for any such breach. In addition, our trade secrets may otherwise become known or be independently developed by competitors. To the extent that our employees, consultants or contractors use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

Our products could infringe patent rights of others, which may require costly litigation and, if we are not successful, could cause us to pay substantial damages or limit our ability to commercialize our products.

Our commercial success depends on our ability to increase adoption of the Aquadex FlexFlow system without infringing the patents and other proprietary rights of third parties. As our industry expands and more patents are issued, the risk increases that there may be patents issued to third parties that relate to our system and technologies of which we are not aware or that we must challenge to continue our operations as currently contemplated. Our system may infringe or may be alleged to infringe these patents.

In addition, some patent applications in the United States may be maintained in secrecy until the patents are issued because patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, and because publications in the scientific literature often lag behind actual discoveries, we cannot be certain that others have not filed patent applications for technology covered by our issued patents or our pending applications or that we were the first to invent the technology. Another party may have filed, and may in the future file, patent applications covering our system or technology similar to ours. Any such patent application may have priority over our patent applications or patents, which could further require us to obtain rights to issued patents covering such technologies. If another party has filed a U.S. patent application on inventions similar to ours, we may have to participate in an interference or derivation proceeding declared by the U.S. Patent and Trademark Office to determine priority of invention in the United States. The costs of these proceedings could be substantial, and it is possible that such efforts would be unsuccessful if the other party had independently arrived at the same or similar invention prior to our own invention, resulting in a loss of our U.S. patent position with respect to such inventions.

We may be subject to claims that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.

As is common in our industry, we employ individuals who were previously employed at other medical device companies, including our competitors or potential competitors. Although no claims against us are currently pending, we may be subject to claims that these employees, or we, have used or disclosed trade secrets or other proprietary information of their former employers. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management.

Security breaches, loss of data and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and our reputation.

In the ordinary course of our business, we collect and store sensitive data, including legally protected health information, personally identifiable information, intellectual property and proprietary business information owned or controlled by ourselves or others. At times we may have access to limited amounts of protected health information as part of other healthcare providers' provision of treatment to patients with our medical devices. We manage and maintain our applications and data utilizing on-site systems. These applications and data encompass a wide variety of business-critical information including research and development information, commercial information, and business and financial information. We face four primary risks relative to protecting this critical information, including: loss of access risk; inappropriate disclosure risk; inappropriate modification risk; and the risk of our being unable to adequately monitor our controls over the first three risks.

The secure processing, storage, maintenance, and transmission of this critical information is vital to our operations and business strategy. Although we take measures to protect sensitive information from unauthorized access or disclosure, our information technology and infrastructure may be vulnerable to attacks by hackers or viruses or breached due to employee error, malfeasance, or other disruptions. Any such breach or interruption could compromise our networks and the information stored there could be accessed by unauthorized parties, publicly disclosed, lost, or stolen. Any such access, disclosure or other loss of information could result in legal claims or proceedings, liability under laws and regulations that protect the privacy of personal information and regulatory

penalties. To the extent that we may engage in activities regulated by the Health Insurance Portability and Accountability Act (HIPAA) and the Health Information Technology for Clinical and Economic Health Act (HITECH) we may have additional regulatory and reporting obligations. Although we believe we have implemented security measures, there is no guarantee we can protect our systems and data from unauthorized access, loss or dissemination that could also disrupt our operations, including our ability to conduct our analyses, conduct research and development activities, collect, process, and prepare company financial information, provide information about our products and other patient and physician education and outreach efforts through our website, manage the administrative aspects of our business, and damage our reputation, any of which could adversely affect our business.

In addition, the interpretation and application of consumer, health-related, and data protection laws in the United States, Europe and elsewhere are often uncertain, contradictory, and in flux. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our practices. If so, this could result in government- imposed fines or orders requiring that we change our practices, which could adversely affect our business. In addition, these privacy regulations may differ from country to country, and may vary based on whether testing is performed in the United States or in the local country. Complying with these various laws could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business.

Risks Related to Our Common Stock

The reverse split of our common stock effected on January 2, 2019 could decrease our total market capitalization and increase the volatility of our stock price.

At a special meeting of our stockholders on December 28, 2018, our stockholders approved a reverse split of our outstanding common stock at a ratio in the range of 1-for-2 to 1-for-14. Following such special meeting, our board of directors approved a 1-for-14 reverse split of our issued and outstanding shares of common stock. We filed with the Secretary of State of the State of Delaware a Certificate of Amendment to our Fourth Amended and Restated Certificate of Incorporation to effect the reverse stock split. The reverse stock split was effective as of 5:00 pm Eastern Time on January 2, 2019, and our common stock began trading on a split-adjusted basis on The Nasdaq Capital Market on January 3, 2019.

There can be no assurance that the total market capitalization of our common stock after the reverse stock split will be equal to or greater than the total market capitalization before the reverse stock split or that the per share market price of our common stock following the reverse stock split will increase in proportion to the reduction in the number of shares of common stock outstanding before the reverse stock split. Furthermore, a decline in the market price of our common stock after the reverse stock split may result in a greater percentage decline than would occur in the absence of a reverse stock split, and the liquidity of our common stock could be adversely affected following such a reverse stock split.

We previously effected a 1-for-20 reverse split of our issued and outstanding shares of common stock as of October 12, 2017 and a 1-for-30 reverse split of our issued and outstanding shares of common stock as of January 12, 2017. Our total market capitalization following such reverse split was substantially lower than our total market capitalization prior to such split, and the per share market price of our common stock following such reverse stock split, after initially increasing, eventually decreased such that the market price following the split did not increase in proportion to the reduction in the number of shares of common stock outstanding before the reverse stock split.

Our business could be negatively affected as a result of actions of activist stockholders, and such activism could impact the trading value of our securities.

Stockholders may, from time to time, engage in proxy solicitations or advance stockholder proposals, or otherwise attempt to effect changes and assert influence on our board of directors and management. Activist campaigns that contest or conflict with our strategic direction or seek changes in the composition of our board of directors could have an adverse effect on our operating results and financial condition. A proxy contest would require us to incur significant legal and advisory fees, proxy solicitation expenses and administrative and associated costs and require significant time and attention by our board of directors and management, diverting their attention from the pursuit of our business strategy. Any perceived uncertainties as to our future direction and control, our ability to execute on our strategy, or changes to the composition of our board of directors or senior management team arising from a proxy contest could lead to the perception of a change in the direction of our business or instability which may result in the loss of potential business opportunities, make it more difficult to pursue our strategic initiatives, or limit our ability to attract and retain qualified personnel and business partners, any of which could adversely affect

our business and operating results. If individuals are ultimately elected to our board of directors with a specific agenda, it may adversely affect our ability to effectively implement our business strategy and create additional value for our stockholders. We may choose to initiate, or may become subject to, litigation as a result of the proxy contest or matters arising from the proxy contest, which would serve as a further distraction to our board of directors and management and would require us to incur significant additional costs. In addition, actions such as those described above could cause significant fluctuations in our stock price based upon temporary or speculative market perceptions or other factors that do not necessarily reflect the underlying fundamentals and prospects of our business.

Nasdaq may delist our common stock from its exchange which could limit your ability to make transactions in our securities and subject us to additional trading restrictions.

On September 21, 2016, we received notice from the Listing Qualifications Staff (the "Staff") of Nasdaq indicating that the Staff had determined to delist our securities from Nasdaq due to our then non-compliance with the minimum bid price requirement. We timely requested a hearing before the Nasdaq Hearings Panel (the "Panel"), which occurred on November 10, 2016. On November 11, 2016, we received notice from the Staff that we no longer satisfied Nasdaq Listing Rule 5550(b) insofar as we did not expect to report stockholders' equity of at least $2.5 million upon the filing of our Quarterly Report on Form 10-Q for the quarter ended September 30, 2016 and that the deficiency could serve as an additional basis for the delisting of the Company's common stock from Nasdaq. We received confirmation from Nasdaq on February 9, 2017, after implementing a 1-for-30 reverse stock split on January 12, 2017, that we had regained compliance with the minimum bid price rule. On May 4, 2017, we were formally notified by Nasdaq that we had regained compliance with the minimum stockholders' equity requirement and we were in compliance with all other applicable requirements for listing on Nasdaq at such time.

On June 1, 2017, we received a notification from Nasdaq informing us that we were no longer in compliance with the minimum bid price requirement, as the bid price of our shares of common stock closed below the minimum $1.00 per share for the 30 consecutive business days prior to the date of the notice. After implementing a 1-for-20 reverse stock split on October 12, 2017, we received confirmation from Nasdaq on October 27, 2017 that we had regained compliance with the minimum bid price rule.

At a special meeting of our stockholders on December 28, 2018, our stockholders approved a reverse split of our outstanding common stock at a ratio in the range of 1-for-2 to 1-for-14, which was submitted to stockholder approval to reduce the risk that our common stock could be delisted from the Nasdaq Capital Market for non-compliance with the minimum bid price rule. Following such special meeting, our board of directors approved a 1-for-14 reverse split of our issued and outstanding shares of common stock. We filed with the Secretary of State of the State of Delaware a Certificate of Amendment to our Fourth Amended and Restated Certificate of Incorporation to effect the reverse stock split. The reverse stock split was effective as of 5:00 pm Eastern Time on January 2, 2019, and our common stock began trading on a split-adjusted basis on The Nasdaq Capital Market on January 3, 2019.

There can be no assurance that the total market capitalization of our common stock after the reverse stock split will be equal to or greater than the total market capitalization before the reverse stock split or that the per share market price of our common stock following the reverse stock split will increase in proportion to the reduction in the number of shares of common stock outstanding before the reverse stock split.

On March 7, 2019, the closing price of our common stock was $7.90 per share. If the bid price of our common stock closes below the minimum $1.00 per share for 30 consecutive business days in the future, we will likely receive notice that we no longer comply with the minimum bid price rule and, if it appears to the Nasdaq staff that we will not be able to comply with Nasdaq Listing Rule 5550(a)(2) or any other listing standard, our common stock may be subject to delisting. If our common stock is delisted, Baxter, pursuant to the asset purchase agreement for the business relating to the Aquadex FlexFlow system, has the right to require us to repurchase, in cash, all or part of the common stock held by Baxter at a price equal to their fair market value, as determined by a third-party appraiser. In addition, our common stock would likely then trade only in the over-the-counter market. If our common stock were to trade on the over-the-counter market, selling our common stock could be more difficult because smaller quantities of shares would likely be bought and sold, transactions could be delayed, and we could face significant material adverse consequences, including: a limited availability of market quotations for our securities; reduced liquidity with respect to our securities; a determination that our shares are a "penny stock," which will require brokers trading in our securities to adhere to more stringent rules, possibly resulting in a reduced level of trading activity in the secondary trading market for our securities; a reduced amount of news and analyst coverage for our Company; and a decreased ability to issue additional securities or obtain additional financing in the future. These factors could result in lower

prices and larger spreads in the bid and ask prices for our common stock and would substantially impair our ability to raise additional funds and could result in a loss of institutional investor interest and fewer development opportunities for us.

In addition to the foregoing, if our common stock is delisted from Nasdaq and it trades on the over-the-counter market, the application of the "penny stock" rules could adversely affect the market price of our common stock and increase the transaction costs to sell those shares. The SEC has adopted regulations which generally define a "penny stock" as an equity security that has a market price of less than $5.00 per share, subject to specific exemptions. If our common stock is delisted from Nasdaq and it trades on the over-the-counter market at a price of less than $5.00 per share, our common stock would be considered a penny stock. The SEC's penny stock rules require a broker-dealer, before a transaction in a penny stock not otherwise exempt from the rules, to deliver a standardized risk disclosure document that provides information about penny stocks and the risks in the penny stock market. The broker-dealer must also provide the customer with current bid and offer quotations for the penny stock, the compensation of the broker-dealer and the salesperson in the transaction, and monthly account statements showing the market value of each penny stock held in the customer's account. In addition, the penny stock rules generally require that before a transaction in a penny stock occurs, the broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive the purchaser's agreement to the transaction. If applicable in the future, these rules may restrict the ability of brokers-dealers to sell our common stock and may affect the ability of investors to sell their shares, until our common stock no longer is considered a penny stock.

The number of shares of common stock underlying our outstanding warrants and outstanding preferred stock is significant in relation to our currently outstanding common stock. Further, if the effective price per share of common stock in this offering is less than the current conversion price of our Series F Preferred Stock, we will be required to issue additional shares of common stock to the holders of such preferred stock upon conversion thereof. Conversion or exercise of such outstanding convertible securities will cause dilution to holders of our common stock, including investors in this offering, and could cause downward pressure on the market price for our common stock.

The number of shares of common stock issuable upon conversion of our outstanding preferred stock and exercise of outstanding warrants is significant in relation to the number of shares of our common stock currently outstanding.

As of February 15, 2019**,** we have warrants to purchase 599,293 shares of common stock outstanding, with exercise prices ranging from $29.68 to $43,848 with a weighted-average exercise price of $50.23.

Through February 15, 2019, shares of our Series F Preferred Stock have been converted into 279,526 shares of our common stock. As of February 15, 2019 there were 535 shares of Series F Preferred Stock outstanding, convertible into an aggregate of 18,190 shares of common stock. The certificate of designation for our Series F Preferred Stock contains an anti-dilution provision, which provision requires the lowering of the applicable conversion price, as then in effect, to the purchase price per share of common stock or common stock equivalents issued in the future. As a result of this obligation, if the public offering price of our common stock in this offering is less than $29.68, the current conversion price of our Series F Preferred Stock, the conversion price shall be reduced to the effective price per share of common stock in this offering. This reduction in the conversion price will result in a greater number of shares of common stock being issuable upon conversion of the Series F Preferred Stock for no additional consideration, causing greater dilution to our stockholders and investors in this offering. In addition, should we issue any securities following this offering at an effective common stock purchase price that is less than the then effective conversion price of our Series F Preferred Stock, we will be required to further reduce the conversion price of our Series F Preferred Stock, which will result in a greater dilutive effect on our stockholders.

If any security holder determines to sell a substantial number of shares into the market at any given time, there may not be sufficient demand in the market to purchase the shares without a decline in the market price for our common stock. Moreover, continuous sales into the market of a number of shares in excess of the typical trading volume for our common stock could depress the trading market for our common stock over an extended period of time.

In addition, the fact that our stockholders, option holders and warrant holders can sell substantial amounts of our common stock in the public market, whether or not sales have occurred or are occurring, could make it more difficult for us to raise additional financing through the sale of equity or equity-related securities in the future at a time and price that we deem reasonable or appropriate, or at all.

The rights of holders of our capital stock will be subject to, and could be adversely affected by, the rights of holders of our outstanding preferred stock and stock that may be issued in the future.

Our board of directors has authority, without further stockholder approval, to issue additional shares of preferred stock with such rights, preferences and privileges as our board may determine. These rights, preferences and privileges may include dividend rights, conversion rights, voting rights and liquidation rights that may be greater than the rights of our common stock.

Our board of directors has previously approved, pursuant to this authority, the issuance of preferred stock, and we have 535 shares of Series F Preferred Stock outstanding as of February 15, 2019. The rights, preferences and privileges of our Series F Preferred Stock are described under "Description of Securities—Description of Capital Stock—Preferred Stock—Outstanding Series F Convertible Preferred Stock". As described therein, upon liquidation, dissolution or winding-up of the Company, holders of our Series F Preferred Stock have the right to receive, out of the assets, whether capital or surplus, of the Company an amount equal to the par value, plus any accrued and unpaid dividends thereon, for each share of such preferred stock held by such holder before any distribution or payment shall be made to the holders of our common stock, and, following such payment, such holders are entitled to receive the same amount that a holder of common stock would receive if such preferred stock was fully converted, pari passu with all the holders of common stock.

Our board of directors may issue additional series of preferred stock. As a result, the rights of holders of our capital stock will be subject to, and could be adversely affected by, the rights of holders of any stock that may be issued in the future.

We have a large number of authorized but unissued shares of stock, which could negatively impact a potential investor if they purchased our common stock.

At a special meeting of our stockholders on December 28, 2018, our stockholders approved a reverse split of our outstanding common stock at a ratio in the range of 1-for-2 to 1-for-14. Following such special meeting, our board of directors approved a 1-for-14 reverse split of our issued and outstanding shares of common stock. We filed with the Secretary of State of the State of Delaware a Certificate of Amendment to our Fourth Amended and Restated Certificate of Incorporation to effect the reverse stock split. The reverse stock split was effective as of 5:00 pm Eastern Time on January 2, 2019, and our common stock began trading on a split-adjusted basis on The Nasdaq Capital Market on January 3, 2019. Because the number of authorized shares of our common stock will not be reduced proportionately, the reverse stock split will increase our board of directors' ability to issue authorized and unissued shares without further stockholder action. As of February 15, 2019, our certificate of incorporation provides for 100,000,000 shares of authorized common stock and 40,000,000 shares of authorized preferred stock, 30,000 of which are designated Series A Junior Participating Preferred Stock and 535 of which are designated Series F Preferred Stock and we have 513,445 shares of common stock outstanding, 754,990 shares reserved for issuance upon the conversion, exercise or vesting of outstanding preferred stock, warrants, options and restricted stock units, and 43,651 shares of common stock reserved for future grant under the Company's equity incentive plans.

With respect to authorized but unissued and unreserved shares, we could also use such shares to oppose a hostile takeover attempt or delay or prevent changes in control or changes in or removal of management. The issuance of additional shares of common stock or securities convertible into common stock may have a dilutive effect on earnings per share and relative voting power and may cause a decline in the trading price of our common stock. We could use the shares that are available for future issuance in dilutive equity financing transactions, or to oppose a hostile takeover attempt or delay or prevent changes in control or changes in or removal of management, including transactions that are favored by a majority of the stockholders or in which the stockholders might otherwise receive a premium for their shares over then-current market prices or benefit in some other manner.

The price of our common stock may fluctuate significantly, and this may make it difficult for you to resell the common stock you want or at prices you find attractive.

The price of our common stock constantly changes. The price of our common stock could fluctuate significantly for many reasons, including the following:

- future announcements concerning us, including our clinical and product development strategy, or our competitors;
- regulatory developments, disclosure regarding completed, ongoing or future clinical studies and enforcement actions bearing on advertising, marketing or sales;

- reports and recommendations of analysts and whether or not we meet the milestones and metrics set forth in such reports;
- introduction of new products;
- acquisition or loss of significant manufacturers, distributors or suppliers or an inability to obtain sufficient quantities of materials needed to manufacture our system;
- quarterly variations in operating results, which we have experienced in the past and expect to experience in the future;
- business acquisitions or divestitures;
- changes in governmental or third-party reimbursement practices;
- fluctuations of investor interest in the medical device sector; and
- fluctuations in the economy, world political events or general market conditions.

In addition, stock markets in general, and the market for shares of health care stocks in particular, have experienced extreme price and volume fluctuations in recent years, fluctuations that frequently have been unrelated to the operating performance of the affected companies. These broad market fluctuations may adversely affect the market price of our common stock. The market price of our common stock could decline below its current price and the market price of our shares may fluctuate significantly in the future. These fluctuations may be unrelated to our performance. We expect that the market price of our common stock will continue to fluctuate.

Our loan agreement subjects us to operating restrictions and financial covenants and may restrict our business and financing activities.

On August 5, 2016, we entered into a loan agreement with Silicon Valley Bank for proceeds of up to $5.0 million, including a $1.0 million revolving line of credit and a $4.0 million term loan. The term loan expired unused on November 30, 2016 and the term loan is no longer available to be drawn. Under the revolving line, we may borrow the lesser of $1 million or 80% of our eligible accounts (subject to customary exclusions), minus the outstanding principal balance of any advances under the revolving line. Advances under the revolving line, if any, will accrue interest at a floating per annum rate equal to 1.75% or 1.0% above the prime rate, depending on liquidity factors. The revolving line of credit expires on March 31, 2020. Advances under the revolving line, if any, are subject to various conditions precedent, including our compliance with financial covenants relating to net liquidity relative to monthly cash burn. We have not made borrowings under the Silicon Valley Bank facility since its inception.

Our obligations under the loan agreement are secured by a security interest in our assets, excluding intellectual property and certain other exceptions. We are subject to a negative pledge covenant with respect to our intellectual property. The loan agreement contains customary representations, as well as customary affirmative and negative covenants. Among other restrictions, the negative covenants, subject to exceptions, prohibit or limit our ability to: declare dividends or redeem or purchase equity interests; incur additional liens; make loans and investments; incur additional indebtedness; engage in mergers, acquisitions, and asset sales; transact with affiliates; undergo a change in control; add or change business locations; and engage in businesses that are not related to its existing business. These covenants may restrict our ability to finance our operations and to pursue our business activities and strategies. Our ability to comply with these covenants may be affected by events beyond our control.

Our ability to use U.S. net operating loss carryforwards or Australian tax losses might be limited.

As of December 31, 2018, we had U.S. net operating loss (“NOL”) carryforwards of approximately $135.2 million for U.S. income tax purposes. Approximately $120.1 million of NOL carryforwards will expire from 2024 through 2037. Pursuant to the Tax Cuts and Jobs Act of 2017, the NOL that was generated in 2018 of approximately $15.1 million does not expire. To the extent these NOL carryforwards are available, we intend to use them to reduce any corporate income tax liability associated with our operations that we might have in the future. Section 382 of the U.S. Internal Revenue Code of 1986, as amended, generally imposes an annual limitation on the amount of NOL carryforwards that might be used to offset taxable income when a corporation has undergone significant changes in stock ownership. During 2017 and 2018, we believed we experienced ownership changes as defined in Section 382 of the Internal Revenue Code which will limit our ability to utilize the our NOLs.

We may have experienced additional ownership changes in earlier years further limiting the NOL carryforwards that may be utilized. We have not yet completed a formal Section 382 analysis. As a result, prior or future changes

in ownership, including due to this offering, could put limitations on the availability of our NOL carryforwards. In addition, our ability to utilize the current NOL carryforwards might be further limited by future issuances of our common stock.

As of December 31, 2018, we had tax losses in the Commonwealth of Australia of approximately AU$49.0 million. Continuing utilization of carryforward tax losses in Australia may also be affected by the issuance of our common stock. This is because one test for carrying forward tax losses in Australia from year to year requires continuity of ultimate ownership (subject to the relevant tests in Australian tax law) of more than 50% between the loss year and the income year in which the loss is claimed.

To the extent use of our NOL carryforwards or tax losses is limited, our income could be subject to corporate income tax earlier than it would if we were able to use NOL carryforwards and tax losses, which could result in lower profits.

We do not intend to pay cash dividends on our common stock in the foreseeable future.

We have never declared or paid any cash dividends on our common stock, and we currently do not anticipate paying any cash dividends in the foreseeable future. We intend to retain any earnings to finance the development and expansion of our products and business. Accordingly, our stockholders will not realize a return on their investments unless the trading price of our common stock appreciates.

We will continue to incur increased costs as a result of being a U.S. reporting company.

In connection with the effectiveness of our registration statement on Form 10, as of February 14, 2012, we became subject to the periodic reporting requirements of the Exchange Act. Although we were previously listed on the Australian Securities Exchange and had been required to file financial information and make certain other filings with the Australian Securities Exchange, our status as a U.S. reporting company under the Exchange Act has caused us, and will continue to cause us, to incur additional legal, accounting and other expenses that we did not previously incur, including costs related to compliance with the requirements of SOX and the listing requirements of The Nasdaq Capital Market. We expect these rules and regulations will continue to increase our legal and financial compliance costs and make some activities more time-consuming and costly, and these activities may increase general and administrative expenses and divert management's time and attention away from revenue-generating activities. Furthermore, now that we are a revenue-generating company following the acquisition of the Aquadex Business in August 2016, our costs to comply with regulations applicable to U.S. reporting companies may further increase. We also expect these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified individuals to serve on our board of directors or as executive officers.

Investors could lose confidence in our financial reports, and the value of our common stock may be adversely affected, if our internal controls over financial reporting are found not to be effective by management or by an independent registered public accounting firm or if we make disclosure of existing or potential material weaknesses in those controls.

As long as our public float remains below $75 million as of the last business day of our most recently completed second fiscal quarter, 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.

We continue to evaluate our existing internal controls over financial reporting. During the course of our ongoing evaluation of the internal controls, we may identify areas requiring improvement and may have to design enhanced processes and controls to address issues identified through this review. Remediating any deficiencies, significant deficiencies or material weaknesses that we or our independent registered public accounting firm may identify may require us to incur significant costs and expend significant time and management resources. We cannot assure you that any of the measures we implement to remedy any such deficiencies will effectively mitigate or remedy such deficiencies. The existence of one or more material weaknesses could affect the accuracy and timing of our financial reporting. It may be more difficult for us to manage our internal control over financial reporting following our acquisition of the Aquadex Business now that we are a revenue generating company. Investors could lose confidence

in our financial reports, and the value of our common stock may be harmed, if our internal controls over financial reporting are found not to be effective by management or by our independent registered public accounting firm or if we make disclosure of existing or potential material weaknesses in those controls.

Our certificate of incorporation designates the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain litigation that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with the Company.

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 sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, as amended (the "DGCL"), or (iv) any other action asserting a claim governed by the internal affairs doctrine. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and to have consented to the provisions described above. This forum selection provision may limit our stockholders' ability to obtain a judicial forum that they find favorable for disputes with us or our directors, officers or other employees.

Our certificate of incorporation and bylaws, as well as certain provisions of the DGCL, may delay or deter a change in control transaction.

Certain provisions of our certificate of incorporation and bylaws may have the effect of deterring takeovers, such as those provisions authorizing our board of directors to issue, from time to time, any series of preferred stock and fix the 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% majority stockholder approval in order for stockholders to amend certain provisions of our certificate of incorporation or bylaws or adopt new bylaws; providing that, subject to the rights of preferred shares, the directors will be divided into three classes and the number of directors is to be fixed exclusively by our board of directors; and providing that none of our directors may be removed without cause. Section 203 of the DGCL, from which we did not elect to opt out, provides that if a holder acquires 15% or more of our stock without prior approval of our board of directors, that holder will be subject to certain restrictions on its ability to acquire us within three years. These provisions may delay or deter a change in control of us, and could limit the price that investors might be willing to pay in the future for shares of our common stock.

We are a "smaller reporting company" under federal securities laws and we cannot be certain whether the reduced reporting requirements applicable to such companies will make our common stock less attractive to investors.

We are a "smaller reporting company" under federal securities laws. For as long as we continue to be a smaller reporting company, we may take advantage of exemptions from various reporting requirements that are applicable to other public companies, including reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements. We will remain a smaller reporting company so long as our public float remains less than $250 million as of the last business day of our most recently-completed second fiscal quarter. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may decline or be more volatile.

Stockholder litigation could divert the attention of management from the day-to-day operation of our business or result in us incurring substantial costs and liabilities.

We cannot be sure that our stockholders will not initiate securities litigation against us in the future. If securities or stockholder derivative litigation were to be commenced against us, our defense of such litigation could divert the attention of management from the day-to-day operation of our business or result in us incurring substantial costs and liabilities, irrespective of the merits of the litigation.

Risks Relating to this Offering

Because our management will have broad discretion and flexibility in how the net proceeds from this offering are used, our management may use the net proceeds in ways with which you disagree or which may not prove effective.

We currently intend to use the net proceeds from this offering as discussed under "Use of Proceeds" in this prospectus. We have not allocated specific amounts of the net proceeds from this offering for any of the foregoing purposes. Accordingly, our management will have significant discretion and flexibility in applying the net proceeds of this offering. You will be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the net proceeds are being used appropriately. It is possible that the net proceeds will be invested in a way that does not yield a favorable, or any, return for us. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flow.

The Series G Preferred Stock and the warrants are unlisted securities and there is no public market for them.

There is no established public trading market for the Series G Preferred Stock or the warrants, and we do not expect a market to develop. In addition, neither the Series G Preferred Stock nor the warrants are listed, and we do not intend to apply for listing of the Series G Preferred Stock or the warrants on any securities exchange or trading system. Without an active market, the liquidity of the Series G Preferred Stock and the warrants is limited, and investors may be unable to liquidate their investments in the Series G Preferred Stock or the warrants.

The value of our Series G Preferred Stock is directly tied to the value of our common stock, and any change in the value of our common stock will be reflected in the value of our Series G Preferred Stock.

There is no established public trading market for the Series G Preferred Stock, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the Series G Preferred Stock on any national securities exchange or other nationally recognized trading system. As a result, because each share of Series G Preferred Stock is initially convertible into a number of shares of our common stock equal to the stated value ($5.25) divided by the conversion price ($5.25), subject to certain beneficial ownership limitations, we expect the value of the Series G Preferred Stock to have a value directly tied to the value of our common stock. Accordingly, any change in the trading price of our common stock will be reflected in the value of our Series G Preferred Stock, and the price of our common stock may be volatile as described above.

The warrants may not have any value.

The Series 1 warrants will be exercisable for five years from the closing date at an initial exercise price of $5.25 per share, and the Series 2 warrants will be exercisable beginning on the closing date until the earlier of (1) the eighteen-month anniversary of the closing date and (2) the 30th trading day following our public announcement of Pediatric Approval at an initial exercise price of $5.25 per share. In the event that the price of a share of our common stock does not exceed the exercise price of the warrants during the period when the warrants are exercisable, the warrants may not have any value.

The warrants purchased in this offering do not entitle the holder to any rights as common stockholders until the holder exercises the warrant for shares of our common stock.

Until you acquire shares of our common stock upon exercise of your warrants purchased in this offering, such warrants will not provide you any rights as a common stockholder, except as set forth in the warrants. Upon exercise of your warrants purchased in this offering, you will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs on or after the exercise date.

Purchasers in this offering may experience additional dilution of their investment in the future.

Subject to lock-up provisions described under "Underwriting," we are generally not restricted from issuing additional securities, including shares of common stock, securities that are convertible into or exchangeable for, or that represent the right to receive, common stock or substantially similar securities. The issuance of securities may cause further dilution to our stockholders, including investors in this offering. In order to raise additional capital, such securities may be at prices that are not the same as the price per share in this offering. We cannot assure you that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than

the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders, including investors who purchase securities in this offering. The price per share at which we sell additional shares of our common stock or securities convertible into common stock in future transactions may be higher or lower than the price per share in this offering. The exercise of outstanding stock options or warrants and the vesting of outstanding restricted stock units may also result in further dilution of your investment.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents that we incorporate by reference, 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, together with the information incorporated herein or therein by reference as described under the section titled "Information Incorporated by Reference," 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.

USE OF PROCEEDS

We estimate that the net proceeds to us from the sale of the securities offered by this prospectus in this offering will be approximately $9.6 million (or $11.0 million if the underwriters fully exercise their overallotment option) after deducting commissions and estimated offering expenses payable by us. We will only receive additional proceeds from the exercise of the warrants issuable in connection with this offering if the warrants are exercised and the holders of such warrants pay the exercise price in cash upon such exercise and do not utilize the cashless exercise provision of the warrants.

We currently intend to use the net proceeds from this offering for general corporate purposes, including for continued investments in our commercialization efforts. We may use a portion of the net proceeds for the acquisitions of businesses, products, technologies or licenses that are complementary to our business, although we have no present commitments or agreements to do so.

The allocation of the net proceeds of the offering set forth above represents our estimates based upon our current plans and assumptions regarding industry and general economic conditions, our future revenues and expenditures.

The amounts and timing of our actual expenditures may vary significantly and will depend on numerous factors, including market conditions, cash generated or used by our operations, business developments and opportunities that may arise and related rate of growth. We may find it necessary or advisable to use portions of the proceeds from this offering for other purposes.

Circumstances that may give rise to a change in the use of proceeds and the alternate purposes for which the proceeds may be used include:

- the existence of other opportunities or the need to take advantage of changes in timing of our existing activities;
- the need or desire on our part to accelerate, increase or eliminate existing initiatives due to, among other things, changing market conditions and competitive developments; and/or

- if strategic opportunities present themselves (including acquisitions, joint ventures, licensing and other similar transactions).

From time to time, we evaluate these and other factors and we anticipate continuing to make such evaluations to determine if the existing allocation of resources, including the proceeds of this offering, is being optimized.

Pending the application of the net proceeds as described above, we will hold the net proceeds from this offering in short-term, interest-bearing, securities.

We believe that the net proceeds of this offering, together with cash on hand, will be sufficient to fund our operations through 2019, and we believe that we will need to raise additional capital to fund our operations thereafter if warrant exercises for cash do not materialize. Additional capital may not be available on terms favorable to us, or at all. If we raise additional funds by issuing equity securities, our stockholders may experience dilution. Debt financing, if available, may involve restrictive covenants or additional security interests in our assets. Any additional debt or equity financing that we complete may contain terms that are not favorable to us or our stockholders. If we raise additional funds through collaboration and licensing arrangements with third parties, it may be necessary to relinquish some rights to our technologies or products, or grant licenses on terms that are not favorable to us. If we are unable to raise adequate funds, we may have to delay, reduce the scope of, or eliminate some or all of, our development programs or liquidate some or all of our assets.

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. Neither the Series G Preferred Stock nor the warrants will be traded on a national securities exchange.

As of March 7, 2019, the last reported sale price of our common stock on The Nasdaq Capital Market was $7.90.

As of February 15, 2019, there were approximately 20 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. In addition, pursuant to our loan agreement with Silicon Valley Bank, we are prohibited from paying cash dividends without the prior consent of Silicon Valley Bank. 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.

The following table sets forth certain information as of December 31, 2018 concerning our equity compensation plans:

Plan category	Number of securities to be issued upon exercise of outstanding options and rights (a)	Weighted-average exercise price of outstanding options and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	33,552(1)	$ 64.14(2)	35,698(3)
Equity compensation plans not approved by security holders	106,994(4)	$ 52.02	4,911(5)
Total	**140,546**	**$ 61.25**	**40,609**

(1) Consists of shares of our common stock that may be issued pursuant to outstanding stock options and RSUs under the 2011 Equity Incentive Plan, the 2017 Equity Incentive Plan and the 2013 Directors' Plan.

(2) Excludes RSUs because they convert into shares of our common stock on a one-for-one basis upon vesting at no additional cost.

(3) Consists of 35,460 shares of our common stock remaining available for future issuance under the 2017 Equity Incentive Plan (the "2017 Plan") and 238 shares of our common stock remaining available for future issuance under the 2013 Directors' Plan. No additional awards may be issued under the 2002 Stock Plan or the 2011 Equity Incentive Plan.

Each of the 2017 Equity Incentive Plan and the 2013 Directors' Plan contains an "evergreen" provision, pursuant to which the number of shares available for issuance under the plan automatically adjusts by a percentage of the number of fully diluted shares outstanding. Specifically, pursuant to the 2017 Equity Incentive Plan, the share reserve under the plan will automatically increase on January 1st of each year, for a period of not more than ten years, commencing on January 1, 2018 and ending on (and including) January 1, 2027, to an amount equal to 13% of the fully diluted shares outstanding on December 31st of the preceding calendar year; provided that the board of directors may act prior to January 1st of a given year to provide that there will be no January 1st increase in the share reserve for such year or that the increase in the share reserve for such year will be a lesser number of shares than would otherwise occur. Pursuant to the 2013 Directors' Plan, the share reserve under the plan will automatically increase on January 1st of each year, for a period of not more than ten years, commencing on January 1, 2014 and ending on (and including) January 1, 2023, by an amount equal to 2% of the fully diluted shares outstanding on December 31st of the preceding calendar year; provided that the board of directors may act prior to January 1st of a given year to provide that there will be no January 1st increase in the share reserve for such year or that the increase in the share reserve for such year will be a lesser number of shares than would otherwise occur.

(4) Consists of shares of our common stock that may be issued pursuant to outstanding stock options under the New-Hire Plan. The board of directors approved the New-Hire Plan in July 2013. The New-Hire Plan provides for the grant of the following awards: options not intended to qualify as incentive stock options under Section 422 of the Internal Revenue Code, restricted stock awards, RSU awards, stock appreciation rights and other stock awards. Eligible award recipients are individuals entering into employment with the Company who were not previously employees or directors of the Company or following a bona fide period of non-employment. All awards must constitute inducements material to such individuals' entering into employment with the Company within the meaning of the Nasdaq listing rules, and all awards must be granted either by the Compensation Committee or a majority of the Company's independent directors. Promptly following the grant of an award under the New-Hire Plan, the Company must (i) issue a press release disclosing the material terms of the award and (ii) notify Nasdaq that it granted such award in reliance on the "inducement grant exemption" from Nasdaq's stockholder approval requirements for equity compensation plans.

(5) Consists of 4,911 shares remaining available for future issuance under the New-Hire Plan.

CAPITALIZATION

The following table sets forth our actual cash and cash equivalents and our capitalization as of December 31, 2018 and on an adjusted basis to give effect to the sale of the securities offered hereby and the use of proceeds, as described in the section entitled "Use of Proceeds."

You should read this information in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and related notes appearing in our Annual Report on Form 10-K for the year ended December 31, 2018, which is incorporated by reference in this prospectus. The information provided below has been adjusted to reflect our 1-for-14 reverse stock split that was effected after trading on January 2, 2019.

	As of December 31, 2018 (in thousands, except share and per share data)	
	Actual	Pro Forma As Adjusted
Cash and cash equivalents	$ 5,480	$ 15,034
Stockholders' equity:		
Series A junior participating preferred stock, par value $0.0001 per share; authorized 30,000 shares, none outstanding	—	—
Series F convertible preferred stock, par value $0.0001 per share; authorized 535 shares, issued and outstanding 535 shares	—	—
Series G convertible preferred stock, par value $0.0001 per share; authorized none and 1,910,536 shares, respectively, issued and outstanding none and 1,910,536 shares, respectively	—	—
Preferred stock, par value $0.0001 per share; authorized 39,969,465 and 38,058,929 shares, respectively, none outstanding		
Common stock, par value $0.0001 per share; authorized 100,000,000 shares, issued and outstanding 513,445 and 660,052 shares, respectively	—	—
Additional paid-in capital	204,101	213,655
Accumulated other comprehensive income:		
Foreign currency translation adjustment	1,223	1,223
Accumulated deficit	(199,388)	(199,388)
Total stockholders' equity	5,936	15,490

The as adjusted column above reflects our sale of securities in this offering and assumes no conversion or exercise of the Series G Preferred Stock or warrants offered hereby. The above discussion and table are based on 513,445 shares of common stock outstanding as of December 31, 2018 and excludes:

- 140,546 shares of common stock issuable upon the exercise of outstanding stock options, having a weighted average exercise price of $61.25 per share and 3 shares of common stock issuable upon the vesting of restricted stock units;
- 599,293 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 $50.23 per share;
- 18,190 shares of common stock issuable upon the conversion of the 535 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);
- 83,995 additional shares of common stock that we will be required to issue to the holders of our Series F Preferred Stock upon conversion thereof because the effective price per share of common stock in this offering is lower than $29.68, the current conversion price of the Series F Preferred Stock, as a result of the reduction of such conversion price to $5.25, due to the full ratchet anti-dilution price protection in the certificate of designation for the Series F Preferred Stock; and
- 43,651 shares of our common stock reserved for future issuance under our equity incentive plans.

MANAGEMENT

Directors and Executive Officers

The following table sets forth certain information regarding our directors and executive officers as of December 31, 2018:

Name	Age	Position(s)	Director Class – Term Ending
John L. Erb	70	Chairman of the board of directors, Chief Executive Officer and President	Class III – 2019
Steve Brandt	63	Director	Class I – 2020
Matthew E. Likens	66	Director	Class II – 2021
Jon W. Salveson	54	Director	Class II – 2021
Gregory D. Waller	69	Director	Class III – 2019
Warren S. Watson	66	Lead Independent Director	Class I – 2020
Claudia Drayton	51	Chief Financial Officer	N/A

Our board of directors is currently composed of six members. Our directors are elected for three-year staggered terms. The two Class III directors will hold office until the 2019 annual meeting of stockholders. The two Class I directors will hold office until the 2020 annual meeting of stockholders. The two Class II directors will hold office until the 2021 annual meeting of stockholders.

Our executive officers are elected by our board of directors and hold office until removed by the board of directors, and until their successors have been duly elected and qualified or until their earlier resignation, retirement, removal, or death.

Background and Qualifications

John L. Erb has served as chief executive officer and president of the Company since November 2015, as a director of the Company since September 2012 and as Chairman of our board of directors since October 2012. Previously, Mr. Erb served as chief executive officer (from 2007 to 2018) of NuAx, Inc. (formerly Cardia Access, Inc.), a medical device company involved in developing new devices for the treatment of heart disease; he was executive chairman of the board (during 2007) and chief executive officer (from 2001 to 2006) of the previous owner of the Aquadex FlexFlow System, which was also known as CHF Solutions, Inc., a medical device company involved in the development, manufacturing and distribution of devices to treat congestive heart failure; as president and chief executive officer of IntraTherapeutics, Inc., a medical device company involved in the development, manufacturing and distribution of peripheral vascular stents, from 1997 to 2001; and in various positions, including as vice president of worldwide operations at Schneider, a division of Pfizer, Inc., from 1991 to 1997. Mr. Erb's prior board experience includes service as a director of SenoRx, Inc., (a NASDAQ listed company), from December 2001 to July 2010; service as a director of CryoCath Technologies Inc., a publicly traded Canadian company, from October 2000 to December 2008; and service as chairman of the board of Vascular Solutions, Inc., (a NASDAQ listed company), where he also served as chairman of the compensation and nominating and corporate governance committees). Mr. Erb currently serves as chairman of the board of Osprey Medical, Inc., (listed on the Australian Securities Exchange), where he also serves as a member of the compensation committee and a member of the audit committee, and as a director of Micromatrix. Mr. Erb received a B.A. in business administration, with a concentration in finance from California State University, Fullerton.

With over 40 years of experience in the medical device industry, including 20 years of experience serving as chief executive officer of medical device companies, Mr. Erb brings to our board of directors valuable business, management and leadership experience, as well as a deep understanding of the challenges presented in growing a medical device company. In addition, his role on the boards of Osprey Medical, Vascular Solutions, SenoRx and CryoCath Technologies has provided him with other public company board experience. Having managed significant operations of a multi-national medical device company, Mr. Erb also contributes valuable private company operational experience.

Steve Brandt has served as a director of the Company since February 2017. Mr. Brandt is a senior executive with over 35 years of experience in the healthcare industry. Mr. Brandt was employed by Thoratec Corporation, a medical device company, from November 2004 to October 2015, serving as vice president global sales and marketing, vice

president of global sales and vice president international sales. Prior to Thoratec, Mr. Brandt was vice president sales & marketing for the previous owner of the Aquadex FlexFlow System, which was also known as CHF Solutions, Inc. from October 2002 to November 2004 and vice president global marketing, Cardiovascular Surgery Division for St. Jude Medical from November 2000 to October 2002. Mr. Brandt received a B.S. from Franklin Pierce College.

Mr. Brandt's qualifications to serve on our board of directors include his extensive experience in the management of medical device companies.

Matthew E. Likens has served as a director of the Company since February 2017. Mr. Likens is a principal at Likens Healthcare and Management Consulting, LLC. Since October 1st, 2017, he also has served as president and chief executive officer of GT Medical Technologies, an Arizona-based start-up company with an innovative medical device for the treatment of brain tumors. He has been a director of Luma Therapeutics , a start-up medical device company developing a treatment for psoriasis, since September, 2016. He was the president and chief executive officer of Ulthera, Inc., a privately held company that sells an ultrasound device used for non-invasive brow lifts, from 2006 to 2016. Prior to Ulthera, Mr. Likens was employed at GMP Companies, Inc. as president of GMP Wireless Medicine from 2001 to 2006 and executive vice president, operations from 2001 to 2004. Mr. Likens previously served in various capacities at Baxter Healthcare Corporation from 1978 to 2001, and was president of Baxter's Renal U.S. business upon his departure in January, 2001. Mr. Likens received a B.B.A. in marketing from Kent State University.

Mr. Likens' qualifications to serve on our board of directors include his years of management experience, including his experiences as president and chief executive officer of Ulthera, Inc. At Ulthera and at Baxter Healthcare Corporation, Mr. Likens was responsible for medical device businesses that combined capital equipment with disposables products.

Jon W. Salveson has served as a director of the Company since March 2013. Mr. Salveson is vice chairman, investment banking and chairman of the healthcare investment banking group at Piper Jaffray Companies. He also serves on the board of CryoLife, Inc. a leading medical device company focused on cardiac and vascular surgery.

Mr. Salveson joined Piper Jaffray in 1993 as an associate, was elected managing director in 1999, and was named group head of Piper Jaffray's international healthcare investment banking group in 2001. Mr. Salveson was appointed global head of investment banking and a member of the executive committee of Piper Jaffray in 2004 and has served in his present position as vice chairman, investment banking since July 2010. Mr. Salveson started his career as a market manager at Bio-Metrics Systems (now part of Surmodics, Inc.), an innovator in medical device surface modification, where he gained experience working in cardiology and interventional medicine. Mr. Salveson received his undergraduate degree from St. Olaf College and an M.M.M. in finance from the Kellogg Graduate School of Management at Northwestern University.

Mr. Salveson's qualifications to serve on our board of directors include his 20-plus years of experience in healthcare investment banking, advising clients on hundreds of merger and acquisition and financing transactions.

Gregory D. Waller has served as a director of the Company since August 2011. Mr. Waller also serves on the boards of directors of Endologix Corporation and Arcadia Bioscience, Inc., both publicly traded companies (and as chairman of the audit committee and a member of the nominating and governance committee for both companies). Until April 2015 Mr. Waller was chief financial officer of Ulthera Corporation, a privately held company that sells an ultrasound device used for non-invasive brow lifts, which was sold to Merz North America in July 2014. From March 2006 to April 2011, Mr. Waller was chief financial officer of Universal Building Products, Inc., a manufacturer of concrete construction accessories. Mr. Waller served as vice president of finance, chief financial officer, and treasurer of Sybron Dental Specialties, Inc., a manufacturer and marketer of consumable dental products, from August 1993 until his retirement in May 2005, and was formerly vice president and treasurer of Kerr, Ormco Corporation, and Metrex. Mr. Waller joined Ormco in December 1980 as vice president and controller and served as vice president of Kerr European Operations from July 1989 to August 1993. Mr. Waller received an M.B.A. with a concentration in accounting from California State University, Fullerton. His prior board service includes service as a director for the following companies: Alsius Corporation, a publicly traded company (chairman of the audit committee and a member of the compensation committee), from June 2007 until its acquisition by Zoll Medical Corporation in September 2009; Biolase Technology, Inc., a publicly traded company (chairman of the audit committee), from October 2009 to August 2010; Cardiogenesis Corporation, a publicly traded company (chairman of the audit committee), from April, 2007 until its acquisition by Cryolife, in May 2011; Clarient, Inc., a publicly traded company which was acquired by General Electric Company in December 2010 (chairman of the audit

committee and a member of the compensation and corporate governance committees), from December 2006 to December 2010; and SenoRx, a publicly traded company which was acquired by C.R. Bard, Inc. in July 2010 (chairman of the audit committee), from May 2006 to July 2010.

Mr. Waller's qualifications to serve on our board of directors include his 45 years of financial and management experience, including his experiences as chief financial officer of Universal Building Products, Sybron Dental Specialties, and Ulthera Inc. as well as his familiarity with public company board functions from his service on the boards of other public companies.

As described above, Mr. Waller served as chief financial officer of Universal Building Products from 2006 to 2011. Universal Building Products filed a voluntary petition for bankruptcy on August 4, 2010. Except as described in the preceding sentence, no other event has occurred during the past 10 years requiring disclosure pursuant to Item 401(f) of Regulation S-K.

Warren S. Watson has served as a director of the Company since January 2013. Mr. Watson is an executive with over 40 years of experience in the field of medical devices. Since 2010, Mr. Watson has served on the board of directors for Gillette Children's Specialty Healthcare including as chair of the board (2015-2017). From 1982 to 2014, Mr. Watson served on the board of directors of Citizens Independent Bank of St. Louis Park, Minnesota, a community bank with four branches and $300 million in assets. From 2010 to 2012, he served as executive chairman of Cameron Health Inc., a medical technology company focused on subcutaneous implantable cardioverter and defibrillator devices. From 2004 to 2009, Mr. Watson served as a director for CardioMems, Inc., a start-up company focused on pulmonary artery pressure monitoring for patients with heart failure. From 2002 to 2009, Mr. Watson served as vice president of Cardiac Rhythm Management Research and Development, an organization leading over 1,800 professionals worldwide; he also served as chair of the Medtronic Corporate Research and Development Council during his tenure with that organization. From 2002 to 2007, Mr. Watson served as vice president and general manager of the San Jose-based CardioRhythm cardiac ablation business.

Mr. Watson's qualifications to serve on our board of directors include his executive leadership in the field of medical devices, his 40 years of experience in the medical technology field, his successful development of multiple emerging therapies and his general business experience due to his board service for other medical technology companies such as Bardy Diagnostics (since 2017), Mardil, Inc. (2013-2016), Cardialen, Inc. (since 2012), NuAx (2011-2016) and Closys (2013-2016).

Claudia Drayton has served as our chief financial officer and secretary since January 2015. Prior to joining the Company, Ms. Drayton spent 15 years at Medtronic, Inc., a $17 billion global leader in the medical device industry. During her tenure at Medtronic, Ms. Drayton held multiple senior managerial finance positions, culminating with an assignment in Europe serving as chief financial officer of the peripheral vascular business (2010-2012) and most recently, as chief financial person and senior finance director of the integrated health solutions business (2012-2014). In these capacities, her responsibilities and experiences included profitability management, strategic planning, mergers and acquisitions, planning and forecasting, and implementation of financial best practices. Before joining Medtronic, Ms. Drayton was an audit and business advisory manager at Arthur Andersen for seven years. Ms. Drayton received an M.B.A. from the University of Minnesota's Carlson School of Management, a B.S. from the University of Mary Hardin-Baylor and is a Certified Public Accountant (inactive).

Director Independence

Our board of directors believes that there should be at least a majority of independent directors on our board of directors. Our board of directors undertakes a review of director independence in accordance with Nasdaq listing rules at least once annually. The independence rules include a series of objective tests, including that the director is not employed by us and has not engaged in various types of business dealings with us. In addition, our board of directors is required to make a subjective determination as to each independent director that no relationships exist which, in the opinion of the our board of directors, would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. In making these determinations, our board of directors reviewed and discussed information provided by the directors and us with regard to each director's business and personal activities as they may relate to us and our management. In particular, our board of directors considered (i) that Mr. Watson, in his capacity as Chairman of the Nominating and Corporate Governance Committee, received $25,000 from the Company in fiscal 2015 as compensation for duties as such committee chairman in connection with the amendment and restatement, implementation and administration of the Company's Code of Business Conduct and Ethics, (ii) that Mr. Salveson is an executive officer of Piper Jaffray Companies, the parent company of Piper Jaffray & Co., which

served as joint book-running manager for the Company's confidentially marketed public offering that closed on September 24, 2013 and (iii) that Mr Brandt is providing consulting services to the Company on an interim basis pursuant to a consulting agreement beginning in January 2019. Our board of directors determined that Mr. Watson continued to satisfy the objective independence tests and that his independence was not otherwise impaired under the subjective criteria, because, among other things, such payment was made to him in his capacity as Chairman of the Nominating and Corporate Governance Committee for services related to such role and the dollar amounts at issue were immaterial. In prior years, our board of directors determined that Mr. Salveson was not an independent director, but in the first quarter of fiscal 2016, our board of directors reassessed Mr. Salveson's independence and determined that he satisfies the objective independence tests and that his independence was not otherwise impaired under the subjective criteria because, among other reasons, the fees paid to Piper Jaffray in connection with the confidentially marketed public offering were well below the threshold dollar amount for payments made to affiliated entities set forth in the objective independence tests and due to the amount of time that has passed since such fees were paid. Our board of directors derermined that Mr. Brandt continued to satisfy the objective independence tests and that his independence was not otherwise impaired under the subjective criteria because Mr. Brandt is serving as a consultant only on a short-term, interim basis for a period of only six months and his total compensation shall not exceed $120,000.

Our board of directors has affirmatively determined, after considering all of the relevant facts and circumstances, that all of our directors are independent directors under the applicable rules of Nasdaq, except for Mr. Erb, our current Chief Executive Officer and President. Mr. Watson serves as our lead independent director. Each member of the Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee is independent under Nasdaq rules. In addition, our board of directors has affirmatively determined that the members of the Audit Committee and Compensation Committee qualify as independent in accordance with the additional independence rules established by the SEC and Nasdaq.

BOARD MATTERS

General

Our board of directors has general oversight responsibility for our affairs and, in exercising its fiduciary duties, our board of directors represents and acts on behalf of the stockholders. Although our board of directors does not have responsibility for our day-to-day management, it stays regularly informed about our business and provides oversight and guidance to our management through periodic meetings and other communications. Our board of directors provides critical oversight in our strategic planning process, as well as other functions carried out through our board of directors' committees as described below.

Board Leadership Structure

Mr. Erb, our Chief Executive Officer and President, serves as Chairman of the board of directors, and Mr. Watson, a non-employee independent director, serves as Lead Independent Director. Our board of directors believes that having the Chief Executive Officer also serve as Chairman of the board of directors provides efficiencies and permits a unified strategic vision and clear leadership for the Company as it transitions from a research and development entity to a commercial organization. Our board of directors further believes that the Lead Independent Director role provides independence from management in the operation and governance of the board of directors.

Board Involvement in Risk Oversight

It is the responsibility of management to identify, assess and manage our exposure to risks. Our board of directors plays an important role in overseeing management's performance of these duties as well as the processes and systems we use to identify, prioritize, source, manage and monitor our critical risks. To this end, our board of directors receives regular reports from members of management regarding risks associated with our operations and strategic plans. These reports typically take the form of discussions incorporated into presentations made to our board of directors at regular and special meetings where risks are identified in the context of the matter being discussed. Additionally, at least annually, our board of directors reviews a report presented by management regarding the material risks faced by us, our risk management processes and systems and the adequacy of our policies and procedures designed to respond to and mitigate these risks.

Our board of directors has generally retained the primary risk oversight function and has an active role in overseeing management of our material risks. The oversight of risk is also conducted at the committee level. The Audit Committee oversees the management of financial and internal control risks as well as risks associated with litigation and related party transactions. The Compensation Committee oversees the management of risks relating to our executive compensation plans and arrangements. The Nominating and Corporate Governance Committee oversees the management of risks associated with the composition and independence of the board of directors, compliance with various regulatory and listing standards requirements and succession planning. While each committee is responsible for evaluating and overseeing the management of risks relevant to that particular committee, the full board of directors is regularly informed of the committees' risk oversight activities through committee reports presented at board of directors' meetings.

Meetings

Our board of directors and its committees meet throughout the year on a set schedule, and also hold special meetings and act by written consent from time to time as appropriate. The non-employee directors hold regularly scheduled executive sessions to meet without management present. These executive sessions generally occur around regularly scheduled meetings of the board of directors.

All directors are expected to attend all meetings of our board of directors and of the board of directors' committees on which they serve, as well as the annual meeting of stockholders. Our board of directors met seven times during 2018. In 2018, each director attended at least 75% of the aggregate of all meetings of the board of directors and the committees of which he was a member. All directors attended the 2018 annual meeting of stockholders.

Board Committees

Our board of directors has delegated various responsibilities and authority to our board of directors' committees. Each committee has regularly scheduled meetings and reports on its activities to the full board of directors. Each committee operates under a written charter approved by our board of directors, which is reviewed annually by the

respective committee and the board of directors. Each committee's charter is posted on our website, www.chf-solutions.com, under the "Investors – Corporate Governance" tab. The table below sets forth the current membership for the three board of directors' committees and the number of meetings held for each in 2018.

Director	Audit	Compensation	Nominating and Corporate Governance
Steve Brandt			
John L. Erb			
Matthew E. Likens	X		X
Jon W. Salveson		Chair	
Gregory D. Waller	Chair		X
Warren S. Watson	X	X	Chair
Meetings	4	3	1

Audit Committee

The primary purpose of the Audit Committee is to act on behalf of the board of directors in fulfilling the board of directors' oversight responsibilities with respect to the Company's corporate accounting and financial reporting processes; the Company's systems of internal control over financial reporting, including financial disclosure controls and procedures; audits of the Company's consolidated financial statements; the quality and integrity of the Company's consolidated financial statements and reports provided to the Company's stockholders, the SEC and other persons; and the qualifications, independence and performance of the Company's independent registered public accounting firm. To implement this purpose, the committee is charged with the following responsibilities, among others:

- to evaluate the qualifications, performance and independence of our independent registered public accounting firm and to assess the permissibility of and pre-approve all audit and permissible audit-related and non-audit services to be provided by the independent registered public accounting firm;
- to discuss with management and our independent registered public accounting firm any major issues as to the adequacy of our internal control over financial reporting, any actions to be taken in light of significant or material control deficiencies and the adequacy of our disclosures about changes in internal control over financial reporting;
- to establish procedures for the receipt, retention and treatment of complaints regarding accounting, internal control over financial reporting or auditing matters, including the confidential, anonymous submission by employees of concerns regarding questionable accounting or auditing matters;
- to review the consolidated financial statements proposed to be included in our annual report on Form 10-K and recommend to the board of directors whether or not such consolidated financial statements should be so included;
- to prepare the Audit Committee Report required by SEC rules to be included in our annual proxy statement; and
- to review the Company's disclosures in its periodic reports on Form 10-K and Form 10-Q to be filed with the SEC and approve the filing of each such report.

The responsibilities and activities of the committee are described in greater detail in its charter.

Our board of directors has determined that each Audit Committee member has sufficient knowledge in reading and understanding financial statements to serve on the committee. Our board of directors has further determined that Mr. Waller qualifies as an "audit committee financial expert" in accordance with SEC rules. The designation of an "audit committee financial expert" does not impose upon such person any duties, obligations or liabilities that are greater than those which are generally imposed on him as a member of the committee and the board of directors, and such designation does not affect the duties, obligations or liabilities of any other member of the committee or the board of directors.

Compensation Committee

The primary purpose of the Compensation Committee is to act on behalf of the board of directors in fulfilling the board of directors' responsibilities to oversee our compensation policies, plans and programs, and to review and determine the compensation to be paid to our executive officers. To implement this purpose, the Compensation Committee is charged with the following responsibilities, among others:

- to recommend the compensation and other terms of employment of our Chief Executive Officer to the board of directors for approval and to evaluate the Chief Executive Officer's performance in light of relevant individual and corporate performance goals and objectives;
- to review and approve the individual and corporate performance goals and objectives of the Company's other executive officers, and to determine and approve the compensation and other terms of employment of such executive officers, considering, among other things, the recommendations of our Chief Executive Officer;
- to review the compensation paid to non-employee directors for their service on the Board and its committees and recommend any appropriate changes to the board of directors for approval;
- to recommend to the board of directors the adoption, amendment and termination of the Company's equity compensation plans and to administer such plans and approve grants and awards as permitted or required under such plans; and
- to evaluate risks associated with and potential consequences of our compensation policies and practices, as applicable to all of our.

The Compensation Committee may form and delegate authority to subcommittees as appropriate. The responsibilities and activities of the Compensation Committee are described in greater detail in its charter.

Role of Compensation Consultant

During the fourth quarter of fiscal 2017, the Compensation Committee engaged Compensia to conduct an assessment of executive officer and non-employee director compensation for fiscal 2018. In connection with such engagement, Compensia evaluated our executive officers' base salaries, incentive compensation, and total compensation relative to a peer group consisting of 16 companies similar to ours based on industry, market capitalization and revenue, reporting directly to the Compensation Committee.

The Compensation Committee concluded that the advice it received from the compensation consultant in 2017 did not raise any conflict of interest, considering the following six factors: (i) the provision of other services to the Company by the consultant; (ii) the amount of fees received from us by the consultant, as a percentage of the total revenue of such consultant; (iii) the policies and procedures of the consultant that are designed to prevent conflicts of interest; (iv) any business or personal relationship of the consultant with a member of the Compensation Committee; (v) any stock of the Company owned by the consultant; and (vi) any business or personal relationship of the consultant with an executive officer of our company.

See "Director Compensation" and "Executive Compensation—Narrative Discussion of Summary Compensation Table for 2018" below for additional information regarding our processes and procedures for consideration and determination of director and executive officer compensation.

Nominating and Corporate Governance Committee

The primary purpose of the Nominating and Corporate Governance Committee is to review the composition and performance of the board of directors and its committees and to oversee all aspects of our corporate governance functions. To implement this purpose, the committee is charged with the following responsibilities, among others:

- to identify, review and evaluate candidates to serve on the board of directors, to review and evaluate incumbent directors, and to recommend to the board of directors nominees for election to the board of directors;
- to monitor the size of the board of directors;
- to review, discuss and assess, on an annual basis, the performance of management and the board of directors, including its committees;

- to recommend to the board of directors, on an annual basis, the chairmanship and membership of each committee, considering the interests, independence and experience of individual directors and the independence and experience requirements of the SEC and Nasdaq; and
- to exercise our general oversight over corporate governance policy matters of the Company, including developing, reviewing and assessing the Corporate Governance Guidelines and recommending appropriate changes to the board of directors for consideration.

The responsibilities and activities of the committee are described in greater detail in its charter.

The Nominating and Corporate Governance Committee reviews and makes recommendations to the board of directors, from time to time, regarding the appropriate skills and characteristics required of our board of directors' members in the context of the current make-up of the board of directors, the operations of the Company and the long-term interests of stockholders. The committee does not have a specific diversity policy underlying its nomination process, although it seeks to ensure the board of directors includes directors with diverse backgrounds, qualifications, skills and experience relevant to our business.

In the case of an incumbent director whose term of office is set to expire, the Nominating and Corporate Governance Committee will generally re-nominate incumbent directors who continue to satisfy the committee's criteria for membership on the board of directors, continue to make important contributions to the board of directors and consent to continue their service on the board of directors.

If a vacancy on the board of directors occurs or the board of directors increases in size, the Nominating and Corporate Governance Committee will actively seek individuals that satisfy the committee's criteria for membership on the board of directors and the committee may rely on multiple sources for identifying and evaluating potential nominees, including referrals from our current directors and management. In 2018, the committee did not employ a search firm or pay fees to other third parties in connection with identifying or evaluating board of director nominee candidates.

The Nominating and Corporate Governance Committee will consider recommendations of director nominees by stockholders so long as such recommendations are sent on a timely basis and are otherwise in accordance with our Amended and Restated Bylaws and applicable law.

Director Compensation

Our non-employee directors receive a mix of cash and share-based compensation. The compensation mix is intended to encourage non-employee directors to continue board of director service, further align the interests of the board of directors and stockholders, and attract new non-employee directors with outstanding qualifications. Directors who are our employees or officers of do not receive any additional compensation for board of director service.

2018 Compensation Table

The table below sets forth the compensation of each non-employee director in 2018. As a named executive officer of the Company, compensation paid to Mr. Erb for the 2017 and 2018 fiscal years is fully reflected under "Named Executive Officer Compensation Tables—Summary Compensation Table for 2018".

Name	Fees Earned or Paid in Cash ($)[1]	Option Awards ($)[2]	Total ($)
Steve Brandt	61,556	124,859	187,367
Matthew E. Likens	61,556	124,859	187,367
Jon W. Salveson	61,556	164,608	226,164
Gregory D. Waller	61,556	184,482	246,038
Warren S. Watson	61,556	164,608	226,164
Total	**307,780**	**763,416**	**1,073,100**

(1) Includes $6,556 provided to each director in lieu of equity due to share limitations under the 2013 Non-Employee Directors' Equity Incentive Plan (the "2013 Directors' Plan").

(2) This amount reflects stock options granted under the 2013 Directors' Plan on January 17, 2018 and on May 25, 2018. The amounts reported represent the grant date fair value of the stock options. Valuation assumptions used in determining the grant date fair value are included in Note 7 to the consolidated financial statements for the year ended December 31, 2018 included in our Annual Report on Form 10-K for the year ended December 31, 2018, which is incorporated by reference in this prospectus. The grant date fair value per share of the stock options granted on January 17, 2018 was approximately $42.14 per share and on May 25, 2018 was approximately $35.70 per share.

Our Non-Employee Director Compensation Policy provides for (i) an annual cash retainer of $55,000 payable in equal quarterly installments in arrears on the last day of each quarter in which the service occurs and (ii) an annual equity award with an aggregate value on the date of grant of $35,000, granted on the date of the annual meeting of stockholders, one-third in the form of a stock option and two-thirds in the form of restricted stock units, with 1/12th of the shares underlying the awards vesting monthly so that all of the underlying shares are vested on the one-year anniversary of the grant date. We do not provide any perquisites to directors.

During the fourth quarter of fiscal 2017, the Compensation Committee engaged Compensia to conduct an assessment of executive officer and non-employee director compensation for fiscal 2018. In connection with such engagement, Compensia evaluated our non-employee director compensation program including cash compensation and equity compensation, reporting directly to the Compensation Committee.

We did not make any changes to our Non-Employee Director Compensation Policy as a result of such assessment; however, in January 2018, considering the advice of Compensia, to restore a meaningful equity interest in the Company by our non-employee directors following the reverse stock splits and public offerings consummated in 2017 and following the increase in the number of shares reserved for issuance under the 2013 Directors' Plan on January 1, 2018 pursuant to the "evergreen" provision in such plan, the board of directors made a one-time grant of an option to purchase shares of our common stock to each of our non-employee directors on January 17, 2018, reflected in the table above.

On the date of the 2018 annual meeting of stockholders, there were insufficient shares available under the 2013 Directors' Plan to issue an equity award with an aggregate value on the date of grant of $35,000 to each of our non-employee directors. Therefore, each non-employee director received an option to purchase 714 shares of our common stock with a grant date fair value of $26,259 and a cash payment in the amount of $2,186 per quarter for the next twelve months, in lieu of the remaining equity award contemplated by our Non-Employee Director Compensation Policy. Our board of directors determined that the full equity award would be issued in the form of a stock option to simplify the grant in light of the limited number of shares available.

As of December 31, 2018, each non-employee director had the following number of shares underlying outstanding options (both vested and unvested): Mr. Brandt 3,102; Mr. Likens 3,102; Mr. Salveson 4,047; Mr. Waller 4,515 and Mr. Watson, 4,047. As of December 31, 2018, no RSUs were held by the non-employee directors.

SECTION 16(a) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Exchange Act requires that our executive officers and directors, and persons who own more than 10% of a registered class of our equity securities, file reports of ownership and changes in ownership (Forms 3, 4, and 5) with the SEC. Executive officers, directors, and greater than 10% beneficial owners are required to furnish us with copies of all of the forms that they file.

Based solely on our review of these reports or written representations from certain reporting persons, we believe that during the fiscal year ended December 31, 2018, our officers, directors, greater than 10% beneficial owners, and other persons subject to Section 16(a) of the Exchange Act filed on a timely basis all reports required of them under Section 16(a) so that there were no late filings of any Form 3 or Form 5 reports or late Form 4 filings with respect to transactions relating to our common stock.

EXECUTIVE COMPENSATION

Summary Compensation Table for 2018

The following table sets forth certain information, for the years ended December 31, 2018 and December 31, 2017, regarding compensation of our named executive officers.

Name Principal Position	Year	Salary ($)	Bonus ($)	Option Awards ($)[1]	Nonequity Incentive Plan Compensation ($)	All Other Compensation ($)[2]	Total ($)
John L. Erb	2018	424,754	—	2,043,696	159,283	11,436	2,639,169
Chief Executive Officer & President; Chairman of the Board	2017	412,000	—	—	164,800	12,120	588,920
Claudia Drayton	2018	283,250	—	604,015	80,549	9,852	977,666
Chief Financial Officer	2017	272,000	50,000[3]	—	80,920	8,551	411,471
Jim Breidenstein	2018	214,200	—	553,072[6]	33,702[7]	171,594[9]	972,568
Former Chief Commercial Officer[4]	2017	246,923	—	155,835[5] [6]	104,839[8]	9,969	517,566

(1) Except as noted below, amounts in the Option Awards column relate to stock options granted under the 2017 Plan. The amounts reported reflect the grant date fair value of the stock options. Valuation assumptions used in determining the grant date fair value are included in Note 7 to the consolidated financial statements for the year ended December 31, 2018 included in our Annual Report on Form 10-K for the year ended December 31, 2018, which is incorporated by reference in this prospectus.

(2) For each named executive officer, includes employer matching contributions made on the officer's behalf to the Company's 401(k) Plan, contributions to the officer's health savings account and Company payments for life insurance premiums.

(3) Consists of a retention bonus that was paid in 2017.

(4) Mr. Breidenstein commenced employment with the Company effective April 24, 2017 and ended employment with the Company effective July 31, 2018.

(5) Reflects a stock option granted under the Company's New-Hire Equity Incentive Plan (the "***New-Hire Plan***") in connection with such officer's hiring.

(6) Such officer surrendered his options in connection with his departure from the Company.

(7) Represents a cash payment of 1.6% of the Company's net sales from January to July 2018, as discussed below. Because he departed the Company in July 2018, such officer did not receive a bonus for 2018.

(8) Consists of (i) a bonus equal to $69,138, as discussed below, and (ii) a payment of approximately $35,701 under such officer's offer letter, representing 1.6% of the Company's net sales from May to December 2017, as discussed below.

(9) Also includes salary continuation ($137,700), reimbursement of monthly COBRA premiums and payment for accrued paid time off, in each case paid pursuant to the Separation and Release Agreement between the Company and such officer.

Narrative Discussion of Summary Compensation Table for 2018

Employment Agreements and Other Arrangements. Mr. Erb has a written employment agreement. We signed offer letters with each of our other named executive officers upon the commencement of their employment with us. All of the named executive officers have change in control agreements, which entitle them to payments from the Company upon the happening of specified termination events. See "— Potential Payments Upon Termination or Change in Control".

Base Salaries. The initial annual base salaries of our executive officers are negotiated in connection with their hiring. The Compensation Committee reviews the base salaries of the executive officers on an annual basis and generally grants salary increases following such reviews. Base salary increases are typically between 3-5% and represent a combination of a cost of living and inflation adjustment and a merit raise.

As discussed above under "Board Matters—Committees of the Board—Compensation Committee—Role of Compensation Consultant," the Compensation Committee engaged Compensia in the fourth quarter of 2017 to conduct a comprehensive review of our executive compensation program and to consider year-end merit increases for our officers for fiscal 2018. Based on the advice and information from Compensia and taking into account information from publicly available industry surveys, the Compensation Committee approved base salary increases ranging from 2% to 4% for our officers and, specifically, a 3% increase for each of Mr. Erb, Ms. Drayton and Mr. Breidenstein.

Equity Compensation. Pursuant to the terms of his offer letter, Mr. Breidenstein was granted on June 2, 2017, an option to purchase 1,211 shares of our common stock with a grant date fair value of $128.66.

To restore a meaningful equity interest in the Company by our executive officers following the reverse stock splits and public offerings consummated in 2017, in January 2018, following the increase in the number of shares reserved for issuance under the 2017 Plan on January 1, 2018 pursuant to the "evergreen" provision in such plan, and considering the advice of Compensia, the board of directors and Compensation Committee granted options to purchase shares of our common stock to our named executive officers as follows:

Name	Option Awards (#)[1]	Exercise Price ($)	Option Awards ($)[2]
John L. Erb	47,085	$ 49.70	2,043,696
Claudia Drayton	14,124	$ 49.00	604,015
Jim Breidenstein[3]	12,933	$ 49.00	553,072
Total	**74,142**	**—**	**3,200,783**

(1) 25% will vest on the one-year anniversary of the date of grant, with the remaining shares vesting in 36 equal consecutive monthly installments.

(2) The amounts reported represent the grant date fair value of the stock options. General valuation assumptions used in determining grant date fair values are included in Note 7 to the consolidated financial statements for the year ended December 31, 2018 included in our Annual Report on Form 10-K for the year ended December 31, 2018, which is incorporated by reference in this prospectus.

(3) Such officer surrendered his options in connection with his departure from the Company effective July 31, 2018.

Nonequity Incentive Plan Compensation. In 2018, the Compensation Committee made no change to the target bonuses, set forth as a percentage of annual base salary, for either Mr. Erb or Ms. Drayton, which were 50% and 35% of base salary, respectively. The earned bonus was based on the achievement of corporate performance objectives defined and weighted by the Compensation Committee, in consultation with our Chief Executive Officer, and primarily related to our 2018 revenue, performance of the Aquadex FlexFlow System, regulatory milestones, market adoption of Aquadex FlexFlow System and adoption of a new sales structure for new markets. The Compensation Committee assessed our achievement of the corporate objectives at 2018 year end, and calculated a total weighted average performance to corporate objectives of 75%. While Mr. Erb's bonus was based solely on the achievement of corporate objectives, Ms. Drayton was also compensated based on the achievement of personal objectives, which accounted for 25% of her overall bonus. Because he departed the Company in July 2018, Mr. Breidenstein did not receive a bonus for 2018.

The following table sets forth target and earned non-equity incentive plan compensation for 2017 and 2018.

	2017			2018		
	Target		Earned	Target		Earned
Name	% of Base Salary	$	$	% of Base Salary	$	$
John L. Erb	50	206,000	164,800	50	212,377	159,283
Claudia Drayton	35	92,500	80,920	35	99,137	80,549
Jim Breidenstein[1]	35	86,423	69,138	35	145,068	—[2]

(1) Amounts reflect that such officer commenced employment with the Company effective April 24, 2017.

(2) Because he departed the Company in July 31, 2018, such officer did not receive a bonus for 2018.

Pursuant to his offer letter, during 2017, Mr. Breidenstein was also entitled to receive 1.6% of the Company's total net sales during each month of his employment. The Compensation Committee, taking into account the assessment of Compensia, who was engaged in the fourth quarter of 2017 to provide an assessment of executive officer and non-employee director compensation for 2018, elected to continue this payment for fiscal 2018, reflected as non-equity incentive compensation in the "Summary Compensation Table for 2018" above.

Retention Bonus. The Compensation Committee further awarded a retention bonus of $50,000 to Ms. Drayton in December 2016, payable on July 15, 2017, so long as Ms. Drayton remained with the Company through June 30, 2017 and we received a minimum of $5 million in equity financing by such date.

Outstanding Equity Awards at Fiscal Year-End

The following table sets forth certain information concerning equity awards held by our named executive officers that were outstanding as of December 31, 2018.

	Option Awards				Stock Awards	
Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested ($)	Market Value of Shares or Units of Stock That Have Not Vested ($)[5]
John L. Erb	6[1]	—	69,468	09/11/2022		
	—[8]	—	3,342.00	05/28/2024		
	—[8]	—	2,574.00	05/20/2025		
	43[2]	20[2]	7,812.00	03/16/2026		
		47,085[3]	49.70	01/17/2028		
					225[4]	778.50
Claudia Drayton	12[6]	1[6]	37,632.00	01/05/2025		
	5	1[2]	8,736.00	01/15/2026	—	—
		14,124[3]	49.00	01/3/2028		
					—	—
Jim Breidenstein[7]	—	—	—	—	—	—

(1) Consists of stock options granted under the 2013 Directors' Plan. 1/12th of the shares underlying the awards vests monthly, commencing on the one-month anniversary of the grant date, so that all of the shares are vested on the one-year anniversary of the grant date.

(2) Consists of stock options granted under the Second Amended and Restated 2011 Equity Incentive Plan (the "2011 Plan"). The underlying shares generally vest as follows: 25% of the shares vest on the one-year anniversary of the grant date; the remaining shares vest in 36 equal consecutive monthly increments thereafter, so that all of the shares will be vested on the four-year anniversary of the grant date.

(3) Consists of stock options granted under the 2017 Plan. The underlying shares generally vest as follows: 25% of the shares vest on the one-year anniversary of the grant date; the remaining shares vest in 36 equal consecutive monthly increments thereafter, so that all of the shares will be vested on the four-year anniversary of the grant date.

(4) Consists of RSUs granted under the 2011 Plan. The RSUs vest in 36 consecutive monthly increments, commencing on the one-month anniversary of the grant date, so that all of the underlying shares will be vested on the three-year anniversary of the grant date.

(5) Based on the closing price of our common stock on Nasdaq on December 31, 2018, the last trading day in 2018, which was $6.86.

(6) Consists of stock options granted under the New-Hire Plan. The underlying shares generally vest as follows: 25% of the shares vest on the one-year anniversary of the grant date; the remaining shares vest in 36 equal consecutive monthly increments thereafter, so that all of the shares will be vested on the four-year anniversary of the grant date.

(7) Such officer surrendered his options in connection with his departure from the Company effective July 31, 2018.

(8) There are no shares underlying these options following application of the reverse stock split.

Potential Payments Upon Termination or Change of Control

Equity Compensation Plans

Equity awards have been issued to the named executive officers under the 2017 Plan, 2011 Plan and the New-Hire Plan. A termination or change in control may affect the vesting and/or exercisability of awards issued under the equity compensation plans, as further discussed below.

2017 Plan and 2011 Plan

Under the 2017 Plan and the 2011 Plan, the board of directors or the Compensation Committee may accelerate the exercisability or vesting of an award at any time, including immediately prior to a participant's termination or change of control.

Stock Options. Generally, if a participant's continuous service terminates:

- other than for cause or upon the participant's death or disability, the participant may exercise his or her option (to the extent the option was vested as of the date of termination) within such period of time ending on the earlier of (i) the date three months following the termination or (ii) the expiration of the term of the option. If the option is not exercised within such period, it will terminate.
- upon the participant's disability, the participant may exercise his or her option (to the extent the option was vested as of the date of termination) within such period of time ending on the earlier of (i) the date 12 months following the termination or (ii) the expiration of the term of the option. If the option is not exercised within such period, it will terminate.
- as a result of the participant's death, or if the participant dies within the period during which the option may be exercised after the termination of the participant's continuous service for a reason other than death, the option may be exercised (to the extent the option was vested as of the date of death) by the participant's estate within the period ending on the earlier of (i) the date 18 months following the date of death or (ii) the expiration of the term of the option. If the option is not exercised within such period, it will terminate.
- for cause, the option will terminate upon the date of termination, and the participant will be prohibited from exercising his or her option from and after such time.

RSUs.

Upon termination of a participant's continuous service for any reason, any unvested RSUs will be immediately canceled and forfeited, provided that the Compensation Committee may accelerate the vesting of all or a portion of the award in connection with such termination.

New-Hire Plan

Under the New-Hire Plan, the board of directors or the Compensation Committee may accelerate the exercisability or vesting of an award at any time, including immediately prior to a participant's termination or change of control.

Stock Options. Generally, if a participant's continuous service terminates:

- for any reason other than the participant's death or disability, the participant may exercise his or her option (to the extent the option was vested as of the date of termination) within such period of time ending on the earlier of (i) the date three months following the termination or (ii) the expiration of the term of the option. If the option is not exercised within such period, it will terminate.
- upon the participant's disability, the participant may exercise his or her option (to the extent the option was vested as of the date of termination) within such period of time ending on the earlier of (i) the date 12 months following the termination or (ii) the expiration of the term of the option. If the option is not exercised within such period, it will terminate.
- as a result of the participant's death, or if the participant dies within the period (if any) specified in the award agreement during which the option may be exercised after the termination of the participant's continuous service for a reason other than death, the option may be exercised (to the extent the option was vested as of the date of death) by the participant's estate within the period ending on the earlier of (i) the date 18 months following the date of death or (ii) the expiration of the term of the option. If the option is not exercised within such period, it will terminate.

Change in Control Agreements

We have entered into change in control agreements with the named executive officers who are currently executive officers of the Company that require us to provide compensation to the officer in the event of a change in control. Each agreement has a term that runs from its effective date through the later of: (i) the five-year anniversary of the effective date, subject to automatic extension for successive two-year periods until notice of non-renewal is given by either party at least 60 days prior to the end of the then-effective term; or (ii) if a change in control occurs on or prior to the end of the then-effective term, then the one-year anniversary of the effective date of such change in control.

The change in control agreements provide that, if: (x) a change in control occurs during the term of the officer's agreement; and (y) the officer's employment terminates anytime during the one-year period after the effective date of the change in control; and (z) such termination is involuntary at the Company's initiative without cause or is due to the officer's voluntary resignation for good reason, then the Company will: (i) pay in a lump sum the officer's salary for 12 months and any other earned but unpaid compensation; (ii) pay in a lump sum an amount equal to the incentive bonus payment received by the officer for the fiscal year immediately preceding the fiscal year in which the termination occurs; and (iii) provide healthcare benefits to the officer and the officer's family until the earlier of (A) the date 12 months after the officer's termination and (B) the date the officer is, and/or the officer's covered dependents are, eligible to receive group medical and/or dental insurance coverage by a subsequent employer.

We are also obligated to make the foregoing payments and to provide the foregoing healthcare benefits in the event (i) the officer's employment terminates (A) due to a voluntary resignation for good reason or (B) due to an involuntary termination by the Company without cause, and (ii) a change in control occurs within 90 days after the termination date and during the term of the agreement.

In addition to the payments described above, each change in control agreement provides that if a change in control occurs while the officer is actively employed by the Company and during the term of the agreement, such change in control will cause the immediate acceleration of the vesting of 100% of any unvested portion of any stock option awards held by the officer on the effective date of such change in control.

We are not obligated to make the payments described above unless: (i) the officer signs a full release of any and all claims in favor of the Company; (ii) all applicable consideration periods and rescission periods have expired; and (iii) as of the dates we provide any payments to the named executive officer, the officer is in strict compliance with the terms of the applicable change in control agreement and any proprietary information agreement the officer has entered into with the Company.

Employment Agreement – Mr. Erb

On March 1, 2016, we entered into an executive employment agreement with Mr. Erb regarding his employment as our Chief Executive Officer and President.

The agreement has an initial term (the "Initial Term") of twelve (12) months beginning on March 1, 2016 and automatically renews for an additional twelve (12) month period at the end of the Initial Term and each anniversary thereafter provided that at least ninety (90) days prior to the expiration of the Initial Term or any renewal term the board of directors does not notify Mr. Erb of its intention not to renew the employment period.

The agreement entitles Mr. Erb to, among other benefits, the following compensation:

- an annual base salary of at least $400,000, reviewed at least annually;
- initial equity grants of an option to purchase 63 shares of common stock and 42 restricted stock units, in each case, granted in accordance with the terms and conditions of the Company's Second Amended and Restated 2011 Equity Incentive Plan;
- an opportunity to receive additional annual equity awards as determined by the Compensation Committee based on Mr. Erb's performance and commensurate with grants made to chief executive officers in the Company's compensation peer group;
- an opportunity for Mr. Erb to receive an annual performance bonus in an amount of up to 50% of Mr. Erb's annual base salary for such fiscal year based upon achievement of certain performance goals to be established by the board of directors;
- participation in welfare benefit plans, practices, policies and programs provided by the Company and its affiliated companies (including, without limitation, medical, prescription, dental, disability, employee life, group life, accidental death and travel accident insurance plans and programs) to the extent available generally or to other senior executive officers of the Company;
- prompt reimbursement for all reasonable expenses incurred by Mr. Erb in accordance with the plans, practices, policies and programs of the Company; and
- 22 days paid time off, to accrue and to be used in accordance with our policies and practices in effect from time to time, as well as all recognized Company holidays.

In connection with the equity grant contemplated by the agreement, Mr. Erb received an option to purchase 63 shares of our common stock at an exercise price of $7,812.00 per share and an award of 42 restricted stock units, both of which were issued on March 16, 2016.

The agreement also includes a "claw-back" provision providing for the recoupment of unearned incentive compensation if the board of directors, or an appropriate committee thereof, determines that Mr. Erb engaged in any fraud, negligence, or intentional misconduct that caused or significantly contributed to the Company having to restate all or a portion of its financial statements, or if we are required to seek reimbursement by applicable laws or regulations, the board of directors or committee may require reimbursement of any bonus or incentive compensation paid to Mr. Erb.

Upon termination of Mr. Erb's employment, Mr. Erb may be entitled to certain payments and benefits, depending on the reason for his termination. In the event Mr. Erb resigns his employment without good reason, the Company terminates Mr. Erb's employment for cause, or Mr. Erb's employment terminates as a result of his death or disability, Mr. Erb is entitled to receive the Unconditional Entitlements, but not the Conditional Benefits (each as defined below). In the event Mr. Erb resigns with good reason or the Company terminates Mr. Erb's employment for reason other than cause, Mr. Erb is entitled to receive the Unconditional Entitlements, as well as the Conditional Benefits, provided that Mr. Erb signs and delivers to the Company, and does not revoke, a general release of claims in favor of the Company and certain related parties.

The "***Unconditional Entitlements***" include the following: (i) any annual base salary earned, but unpaid, for services rendered to the Company on or prior to the date on which the employment period ends; (ii) in the event Mr. Erb's employment terminates after the end of a fiscal year but before payment of the annual bonus payable for his services rendered in that fiscal year, the annual bonus that would have been payable to Mr. Erb for such completed fiscal year, provided that such termination is not due to the Company's termination of Mr. Erb for cause or Mr. Erb's resignation without good reason; and (iii) certain other benefits contemplated by the agreement.

The "***Conditional Benefits***" include the following: (i) a lump sum amount equal to one times Mr. Erb's annual base salary as of the termination date; (ii) continued medical coverage for 12 months following the termination date; (iii) continued vesting of equity awards for 12 months following the termination date; and (iv) a pro-rata annual bonus for the year in which the termination date occurs, determined on the basis of an assumed full-year target bonus and the number of days in the applicable fiscal year occurring on or before the termination date.

Offer Letter – Mr. Breidenstein

On April 12, 2017, we entered into an offer letter with Mr. Breidenstein regarding his employment as our Chief Commercial Officer effective April 24, 2017. In addition to the compensation described above under "—Narrative Discussion of Summary Compensation Table for 2018," Mr. Breidenstein was also entitled to salary continuation and reimbursement of monthly COBRA premiums paid by him, in each case, for the 9-month period following the termination date, if the Company terminates his employment without cause; provided that Mr. Breidenstein signs and delivers to the Company, and does not revoke, a general release of claims. On July 31, 2018, Mr. Breidenstein ended employment with the Company and received the salary continuation and other benefits under the offer letter.

CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

We give careful attention to related person transactions because they may present the potential for conflicts of interest. Under SEC rules, a related person transaction is any transaction or series of transactions in which: the Company or a subsidiary is a participant; the amount involved exceeds the lesser of $120,000 or 1% of the average of the Company's total assets at year-end for the last two completed fiscal years; and a related person has a direct or indirect material interest. A "related person" is a director, executive officer, nominee for director or a more than 5% stockholder, and any immediate family member of the foregoing.

To identify related person transactions in advance, we rely on information supplied by our executive officers, directors and certain significant stockholders. We maintain a written policy for the review, approval or ratification of related person transactions, and our Audit Committee reviews all related person transactions identified by us. The committee approves or ratifies only those related person transactions that are determined by it to be, under all of the circumstances, in the best interests of the Company and its stockholders.

Scott Erb, who served as our Senior Manager of Operations and Director of Marketing during 2016 and 2017, is the son of John Erb, our Chief Executive Officer, President and Chairman of the Board. Scott Erb was paid $78,974 in 2017 and paid $88,028 and received an option to purchase shares of our common stock with a grant date fair value of $1,740 in 2016 as an employee of the Company. Following Scott Erb's departure from the Company, the Company paid $15,010 in 2017 to Infinitum Analytics, LLC, of which Scott Erb is Owner/Principal, for consulting services.

In January 2019, we entered into a consulting agreement with Steven Brandt, one of our non-employee directors pursuant to which Mr. Brandt provides services, on an interim basis, for a period of six months ending July 27, 2019, to support our commercial strategy under the direction of our Chief Executive Officer. Mr. Brandt will be paid a fee of $19,000 per month of service and be provided with the use of an automobile to assist in performance of such services, with the total amount of payments under the agreement expected to be $115,000.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth information regarding the beneficial ownership (as defined in Rule 13d-3 of the Securities Exchange Act of 1934, as amended (the "Exchange Act")) of our common stock as of February 15, 2019 by (i) each of the directors and named executive officers, (ii) all of the directors and executive officers as a group, and (iii) to our knowledge, beneficial owners of more than 5% of our common stock. As of February 15, 2019, there were 513,445 shares of our common stock outstanding. Unless otherwise indicated and subject to applicable community property laws, each owner has sole voting and investment powers with respect to the securities listed below.

Name of Beneficial Owner	Number of Shares	Right to Acquire[1]	Total	Aggregate Percent of Class[2]
John L. Erb	2,092	19,138[3]	21,230	4.0%
Steve Brandt	5	2,983	2,988	*
Matthew E. Likens	5	2,983	2,988	*
Jon W. Salveson	3	3,928	3,931	*
Gregory D. Waller	—	4,397	4,397	*
Warren S. Watson	3	3,928	3,931	*
Claudia Drayton	2	4,433	4,435	*
All directors and executive officers as a group (7 persons)	2,110	41,790	43,900	7.9%

* Less than one percent.

(1) Except as otherwise described below, amounts reflect the number of shares that such holder could acquire through (i) the exercise of outstanding stock options, (ii) the vesting/settlement of outstanding RSUs, (iii) the exercise of outstanding warrants to purchase common stock and (iv) the conversion of outstanding Series F Preferred Stock, in each case within 60 days after February 15, 2019.

(2) Based on 513,445 shares outstanding as of February 15, 2019.

(3) Consists of (i) 11,822 shares issuable upon the exercise of outstanding stock options, (ii) 3 shares subject to the vesting/settlement of outstanding RSUs, (iii) 1,950 shares issuable upon the exercise of outstanding warrants to purchase common stock and (iv) 3,400 shares issuable upon conversion of outstanding shares of Series F Preferred Stock (assuming all 100 shares of Series F Preferred Stock held by Mr. Erb are converted at once and rounded up to the nearest whole share and not including any additional shares of common stock issuable thereunder as a result of the reduction of the conversion price thereof to the per share price in this offering).

DESCRIPTION OF SECURITIES

Description of Units

We are offering up to 146,607 Class A Units, with each Class A Unit consisting of one share of common stock, a Series 1 warrant to purchase one share of our common stock and a Series 2 warrant to purchase one share of our common stock (together with the shares of common stock underlying such warrants) at a public offering price of $5.25 per Class A Unit. Each warrant included in the Class A Units entitles its holder to purchase one share of Common Stock at an exercise price of $5.25.

We are also offering 1,910,536 Class B Units to purchasers who prefer not to beneficially own more than 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding common stock following the consummation of this offering with each Class B Unit consisting of one share of Series G Preferred Stock, par value $0.0001 per share, convertible into one share of common stock , a Series 1 warrant to purchase one share of common stock and a Series 2 warrant to purchase one share of common stock (together with the shares of common stock underlying such warrants) at a public offering price of $5.25 per Class B Unit. Each warrant included in the Class B Units entitles its holder to purchase a number of shares of Common Stock equal to 100% of the shares of Common Stock issuable upon conversion of the Series G Preferred Stock included in such units at an exercise price of $5.25 per share.

The securities of which the units are composed (the “underlying securities”) are being sold in this offering only as part of the units. However, the Class A Units and Class B Units will not be certificated and the underlying securities comprising such units are immediately separable. Each underlying security purchased in this offering will be issued independent of each other underlying security and not as part of a unit. Upon issuance, each underlying security may be transferred independent of any other underlying security, subject to applicable law and transfer restrictions.

Description of Warrants Included in the Units

The material terms and provisions of the warrants being offered pursuant to this prospectus are summarized below. This summary of some provisions of the warrants is not complete. For the complete terms of the warrants, you should refer to the form of warrant filed as an exhibit to the registration statement of which this prospectus is a part.

Pursuant to a warrant agency agreement between us and American Stock Transfer & Trust Company LLC, as warrant agent, the warrants will be issued in book-entry form and shall initially be represented only by one or more global warrants deposited with the warrant agent, as custodian on behalf of The Depository Trust Company, or DTC, and registered in the name of Cede & Co., a nominee of DTC, or as otherwise directed by DTC.

Each Unit includes a Series 1 warrant and a Series 2 warrant, each to purchase one share of our common stock at an exercise price of $5.25 per share. The Series 1 warrants will be immediately exercisable and expire on the fifth anniversary of the date of issuance. The Series 2 warrants will be immediately exercisable and expire on the earlier of (1) the eighteen-month anniversary of the closing date and (2) the 30th trading day following our public announcement of Pediatric Approval. The warrants issued in this offering will be governed by the terms of a global warrant held in book-entry form. The holder of a warrant will not be deemed a holder of our underlying common stock until the warrant is exercised, except as set forth in the warrants.

Subject to limited exceptions, a holder of warrants will not have the right to exercise any portion of its warrants if the holder (together with such holder’s affiliates, and any persons acting as a group together with such holder or any of such holder’s affiliates) would beneficially own a number of shares of common stock in excess of 4.99% (or, upon election by a holder prior to the issuance of any warrants, 9.99%) of the shares of our common stock then outstanding after giving effect to such exercise (the “Beneficial Ownership Limitation”); provided, however, that upon notice to the Company, the holder may increase or decrease the Beneficial Ownership Limitation, provided that in no event shall the Beneficial Ownership Limitation exceed 9.99% and any increase in the Beneficial Ownership Limitation will not be effective until 61 days following notice of such increase from the holder to us.

The exercise price and the number of shares issuable upon exercise of the warrants is subject to appropriate adjustment in the event of recapitalization events, stock dividends, stock splits, stock combinations, reclassifications, reorganizations or similar events affecting our common stock. The warrant holders must pay the exercise price in cash upon exercise of the warrants, unless such warrant holders are utilizing the cashless exercise provision of the warrants, which is only available in certain circumstances such as if the underlying shares are not registered with the SEC pursuant to an effective registration statement. We intend to use commercially reasonable efforts to have the registration statement of which this prospectus forms a part, effective when the warrants are exercised.

In addition, in the event we consummate a merger or consolidation with or into another person or other reorganization event in which our common shares are converted or exchanged for securities, cash or other property, or we sell, lease, license, assign, transfer, convey or otherwise dispose of all or substantially all of our assets or we or another person acquire 50% or more of our outstanding shares of common stock, then following such event, the holders of the warrants will be entitled to receive upon exercise of the warrants the same kind and amount of securities, cash or property which the holders would have received had they exercised the warrants immediately prior to such fundamental transaction. Any successor to us or surviving entity shall assume the obligations under the warrants. Further, as more fully described in the warrants, in the event of certain fundamental transactions, the holders of the warrants will be entitled to receive consideration in an amount equal to the Black-Scholes value of the warrants as of the date of consummation of such transaction.

Upon the holder's exercise of a warrant, we will issue the shares of common stock issuable upon exercise of the warrant within the earlier of three trading days following our receipt of a notice of exercise or the standard settlement period for the market on which the common stock is then listed, provided that payment of the exercise price has been made (unless exercised via the "cashless" exercise provision).

Prior to the exercise of any warrants to purchase common stock, holders of the warrants will not have any of the rights of holders of the common stock purchasable upon exercise, including the right to vote, except as set forth therein.

Warrant holders may exercise warrants only if the issuance of the shares of common stock upon exercise of the warrants is covered by an effective registration statement, or an exemption from registration is available under the Securities Act and the securities laws of the state in which the holder resides. We intend to use commercially reasonable efforts to have the registration statement of which this prospectus forms a part effective when the warrants are exercised. The warrant holders must pay the exercise price in cash upon exercise of the warrants unless there is not an effective registration statement or, if required, there is not an effective state law registration or exemption covering the issuance of the shares underlying the warrants (in which case, the warrants may only be exercised via a "cashless" exercise provision).

The warrants are callable by us in certain circumstances. Subject to certain exceptions, in the event that the warrants are outstanding, following the date that is 180 days after the closing date, (i) the volume weighted average price of our common stock for each of 30 consecutive trading days (the "Measurement Period"), which Measurement Period commences after the date that is 180 days after the closing date, exceeds 300% of the initial exercise price (subject to adjustment for forward and reverse stock splits, recapitalizations, stock dividends and similar transactions), (ii) the average daily trading volume for such Measurement Period exceeds $500,000 per trading day and (iii) the holder is not in possession of any information that constitutes or might constitute, material non-public information which was provided by the Company, and subject to the Beneficial Ownership Limitation, then we may, within one trading day of the end of such Measurement Period, upon notice (a "Call Notice"), call for cancellation of all or any portion of the warrants for which a notice of exercise has not yet been delivered (a "Call") for consideration equal to $0.0001 per share. Any portion of a warrant subject to such Call Notice for which a notice of exercise shall not have been received by the Call Date (as hereinafter defined) will be canceled at 6:30 p.m. (New York City time) on the tenth trading day after the date the Call Notice is received by the Holder (such date and time, the "Call Date"). Our right to call the warrants shall be exercised ratably among the holders based on the outstanding warrants.

We do not intend to apply for listing of the warrants on any securities exchange or other trading system.

Description of Capital Stock

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, 30,000 of which are designated as Series A Junior Participating Preferred Stock and 535 of which are designated Series F Convertible Preferred Stock (the "Series F Preferred Stock") as of February 15, 2019. 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 February 15, 2019, we had (i) 513,445 outstanding shares of common stock, (ii) 535 outstanding shares of Series F Preferred Stock, which, at the currently applicable conversion price, would convert into 18,190 shares of common stock, subject to future adjustment, (iii) outstanding options to acquire 137,504 shares of our common stock,

(iv) 3 outstanding restricted stock units and (v) outstanding warrants to purchase 599,293 shares of our common stock. At a special meeting of our stockholders on December 28, 2018, our stockholders approved a reverse stock split at a ratio in the range of 1-for-2 to 1-for-14. Following such special meeting, our board of directors approved a 1-for-14 reverse split of our issued and outstanding shares of common stock. We filed with the Secretary of State of the State of Delaware a Certificate of Amendment to our Fourth Amended and Restated Certificate of Incorporation to effect the reverse stock split. The reverse stock split was effective as of 5:00 pm Eastern Time on January 2, 2019, and our common stock began trading on a split-adjusted basis on The Nasdaq Capital Market on January 3, 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 66⅔% 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;"
- 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 and the Series G Preferred Stock being offered hereby.

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.

Outstanding Series F Convertible Preferred Stock. Our Board designated 18,000 shares of preferred stock as Series F convertible preferred stock, $0.0001 par value. As of February 15, 2019, there were 535 shares of Series F Preferred Stock outstanding with a conversion price of $29.68 (subject to adjustment described below, including in connection with this offering).

Liquidation. Upon any dissolution, liquidation or winding up, whether voluntary or involuntary, holders of Series F Preferred Stock will be entitled to receive distributions out of our assets, whether capital or surplus, of an amount equal to $0.0001 per share of Series F Preferred Stock before any distributions shall be made on the common stock or any series of preferred stock ranked junior to the Series F Preferred Stock.

Dividends. Holders of the Series F Preferred Stock are entitled to receive dividends equal (on an "as converted to common stock" basis) to and in the same form as dividends actually paid on shares of our common stock when, as and if such dividends are paid on shares of our common stock. No other dividends will be paid on shares of Series F Preferred Stock.

Conversion. Each share of Series F Preferred Stock is convertible, at any time and from time to time at the option of the holder thereof, into that number of shares of common stock determined by dividing $1,000 by the conversion price of $29.68 (subject to adjustment described below, including in connection with this offering). This right to convert is limited by the beneficial ownership limitation described below.

Forced Conversion. Subject to certain ownership limitations as described below and certain equity conditions being met, until such time that during any 20 of 30 consecutive trading days, the volume weighted average price of

our common stock exceeds 300% of the conversion price and the daily dollar trading volume during such period exceeds $200,000 per trading day, we have the right to force the conversion of the Series F Preferred Stock into common stock.

Beneficial Ownership Limitation. A holder shall have no right to convert any portion of Series F Preferred Stock, to the extent that, after giving effect to such conversion, such holder, together with such holder's affiliates, and any persons acting as a group together with such holder or any such affiliate, would beneficially own in excess of 4.99% of the number of shares of common stock outstanding immediately after giving effect to the issuance of shares of common stock upon such conversion (subject to the right of the holder to increase such beneficial ownership limitation upon not less than 61 days prior notice provided that such limitation can never exceed 9.99% and such 61 day period cannot be waived). Beneficial ownership of the holder and its affiliates will be determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder. Holders of Series F Preferred Stock who are subject to such beneficial ownership limitation are and will remain responsible for ensuring their own compliance with Regulation 13D-G promulgated under the Securities Exchange Act of 1934, as amended, consistent with their individual facts and circumstances. In addition, pursuant to Rule 13d-3(d)(1)(i) promulgated under the Securities Exchange Act of 1934, as amended, any person who acquires Series F Preferred Stock with the purpose or effect of changing or influencing the control of our company, or in connection with or as a participant in any transaction having such purpose or effect, immediately upon such acquisition will be deemed to be the beneficial owner of the underlying common stock.

Optional Redemption. Subject to the terms of the certificate of designation, the Company holds an option to redeem some or all the Series F Preferred Stock six months after its issuance date at a 200% premium to the stated value of the Series F Preferred Stock subject to the redemption, upon 30 days prior written notice to the holder of the Series F Preferred Stock. The Series F Preferred Stock would be redeemed by the Company for cash.

Conversion Price Adjustment

Subsequent Equity Sales. The Series F Preferred Stock has full ratchet price based anti-dilution protection, subject to customary carve outs, in the event of a down-round financing at a price per share below the conversion price of the Series F Preferred Stock, including in this offering. If during any 20 of 30 consecutive trading days the volume weighted average price of our common stock exceeds 300% of the then-effective conversion price of the Series F Preferred Stock and the daily dollar trading volume for each trading day during such period exceeds $200,000, the anti-dilution protection in the Series F Preferred Stock will expire and cease to apply.

Stock Dividends and Stock Splits. If we pay a stock dividend or otherwise make a distribution payable in shares of common stock on shares of common stock or any other common stock equivalents, subdivide or combine outstanding common stock, or reclassify common stock, the conversion price will be adjusted by multiplying the then conversion price by a fraction, the numerator of which shall be the number of shares of common stock outstanding immediately before such event, and the denominator of which shall be the number of shares outstanding immediately after such event.

Fundamental Transaction. If we effect a fundamental transaction in which we are the surviving entity, then upon any subsequent conversion of Series F Preferred Stock, the holder thereof shall have the right to receive, for each share of common stock that would have been issuable upon such conversion immediately prior to the occurrence of such fundamental transaction, the number of shares of our common stock and any additional consideration receivable as a result of such fundamental transaction by a holder of the number of shares of common stock into which Series F Preferred Stock is convertible immediately prior to such fundamental transaction. If we effect a fundamental transaction in which we are not the surviving entity or a reverse merger in which we are the surviving entity, then the surviving entity shall purchase the outstanding Series F Preferred Stock by paying and issuing, in the event that such consideration given to common stockholders is non-cash consideration, as the case may be, to such holder (or canceling such holder's outstanding Series F Preferred Stock and converting it into the right to receive) an amount equal to the greater of (i) the cash consideration plus the non-cash consideration (in the form issuable to the holders of common stock) per share of the common stock in the fundamental transaction multiplied by the number of conversion shares underlying the shares of Series F Preferred Stock held by the holder on the date of the consummation of the fundamental transaction or (ii) 130% of the stated value of the Series F Preferred Stock then outstanding on the date immediately prior to the consummation of the fundamental transaction. Such amount shall be paid in the same form and mix (be it securities, cash or property, or any combination of the foregoing) as the consideration received by the common stock in such fundamental transaction. A fundamental transaction means:

(i) our merger or consolidation with or into another entity, (ii) any sale or other disposition of all or substantially all of our assets in one transaction or a series of related transactions, (iii) any tender offer or exchange offer allowing holders of our common stock to tender or exchange their shares for cash, property or securities, and has been accepted by the holders of 50% or more of the outstanding common stock (iv) any reclassification of our common stock or any compulsory share exchange by which common stock is effectively converted into or exchanged for other securities, cash or property, or (v) consummation of a stock or share purchase agreement or other business combination with another person whereby such other person acquires more than 50% of the outstanding shares of common stock.

Voting Rights, etc. Except as otherwise provided in the Series F Preferred Stock certificate of designation or required by law, the Series F Preferred Stock has no voting rights. However, as long as any shares of Series F Preferred Stock are outstanding, we may not, without the affirmative vote of the holders of a majority of the then outstanding shares of the Series F Preferred Stock, alter or change adversely the powers, preferences or rights given to the Series F Preferred Stock, amend its certificate of designation, amend our certificate of incorporation or other charter documents in any manner that adversely affects any rights of the holders, increase the number of authorized shares of Series F Preferred Stock, or enter into any agreement with respect to any of the foregoing. The Series F Preferred Stock certificate of designation provides that if any party commences an action or proceeding to enforce any provisions of the certificate of designation, then the prevailing party in such action or proceeding shall be reimbursed by the other party for its attorneys' fees and other costs and expenses incurred in the investigation, preparation and prosecution of such action or proceeding. This provision may, under certain circumstances, be inconsistent with federal securities laws and Delaware general corporation law.

Fractional Shares. No fractional shares of common stock will be issued upon conversion of Series F Preferred Stock. Rather, we shall, at our election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the conversion price or round up to the next whole share.

The Series F Preferred Stock was issued in book-entry form under a preferred stock agent agreement between American Stock Transfer & Trust as preferred stock agent, and us, and shall initially be represented by one or more book-entry certificates deposited with The Depository Trust Company, or DTC, and registered in the name of Cede & Co., a nominee of DTC, or as otherwise directed by DTC. There is no established public trading market for the Series F Preferred Stock, and the Series F Preferred Stock is not listed on The Nasdaq Capital Market, any other national securities exchange or any other nationally recognized trading system.

Series G Convertible Preferred Stock Being Offered Pursuant to this Prospectus. Our Board has designated 1,910,536 shares of preferred stock as Series G convertible preferred stock, $0.0001 par value ("Series G Preferred Stock"), none of which are issued and outstanding prior to this offering. Although there is no current intent to do so, our Board may, without stockholder approval, issue shares of an additional class or series of preferred stock with voting and conversion rights which could adversely affect the voting power of the holders of the common stock or the convertible preferred stock, except as prohibited by the certificate of designation of preferences, rights and limitations of Series G Preferred Stock.

The following is a summary of the material terms of our Series G Preferred Stock. For more information, please refer to the certificate of designation of preferences, rights and limitations of Series G Preferred Stock filed as an exhibit to the registration statement of which this prospectus is a part.

Liquidation. Upon any dissolution, liquidation or winding up, whether voluntary or involuntary, holders of Series G Preferred Stock will be entitled to participate in a distribution of the Company's assets on an as-converted-to-common stock basis with the holders of the common stock, which amounts shall be paid pari passu with all holders of Common Stock.

Dividends. Holders of the Series G Preferred Stock will be entitled to receive dividends equal (on an "as converted to common stock" basis) to and in the same form as dividends actually paid on shares of our common stock when, as and if such dividends are paid on shares of our common stock. No other dividends will be paid on shares of Series G Preferred Stock.

Conversion. Each share of Series G Preferred Stock is convertible, at any time and from time to time on or after the original issue date, at the option of the holder thereof, into that number of shares of common stock determined by dividing the stated value of $5.25 by the conversion price of $5.25 (subject to adjustment described below) until converted in full. This right to convert is limited by the beneficial ownership limitation described below.

Forced Conversion. Subject to certain ownership limitations as described below and certain equity conditions being met, until such time that during any 20 of 30 consecutive trading days, the volume weighted average price of our common stock exceeds 300% of the conversion price and the daily dollar trading volume during such period exceeds $200,000 per trading day, we shall have the right to force the conversion of the Series G Preferred Stock into common stock.

Beneficial Ownership Limitation. A holder shall have no right to convert any portion of Series G Preferred Stock, to the extent that, after giving effect to such conversion, such holder, together with such holder's affiliates, and any persons acting as a group together with such holder or any such affiliate, would beneficially own in excess of 4.99% (or, upon the election by a holder prior to the issuance of any shares of Series G Preferred Stock, 9.99%) of the number of shares of common stock outstanding immediately after giving effect to the issuance of shares of common stock upon such conversion (subject to the right of the holder to increase such beneficial ownership limitation upon not less than 61 days prior notice provided that such limitation can never exceed 9.99% and such 61 day period cannot be waived). Beneficial ownership of the holder and its affiliates will be determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder. Holders of Series G Preferred Stock who are subject to such beneficial ownership limitation are and will remain responsible for ensuring their own compliance with Regulation 13D-G promulgated under the Securities Exchange Act of 1934, as amended, consistent with their individual facts and circumstances. In addition, pursuant to Rule 13d-3(d)(1)(i) promulgated under the Securities Exchange Act of 1934, as amended, any person who acquires Series G Preferred Stock with the purpose or effect of changing or influencing the control of our company, or in connection with or as a participant in any transaction having such purpose or effect, immediately upon such acquisition will be deemed to be the beneficial owner of the underlying common stock.

Conversion Price Adjustment

Stock Dividends and Stock Splits. If we pay a stock dividend or otherwise make a distribution payable in shares of common stock on shares of common stock or any other common stock equivalents, subdivide or combine outstanding common stock, or reclassify common stock, the conversion price will be adjusted by multiplying the then conversion price by a fraction, the numerator of which shall be the number of shares of common stock outstanding immediately before such event, and the denominator of which shall be the number of shares outstanding immediately after such event.

Fundamental Transaction. If we effect a fundamental transaction in which we are the surviving entity, then upon any subsequent conversion of Series G Preferred Stock, the holder thereof shall have the right to receive, for each share of common stock that would have been issuable upon such conversion immediately prior to the occurrence of such fundamental transaction, the number of shares of our common stock and any additional consideration receivable as a result of such fundamental transaction by a holder of the number of shares of common stock into which Series G Preferred Stock is convertible immediately prior to such fundamental transaction. A fundamental transaction means: (i) our merger or consolidation with or into another entity, (ii) any sale or other disposition of all or substantially all of our assets in one transaction or a series of related transactions, (iii) any tender offer or exchange offer allowing holders of our common stock to tender or exchange their shares for cash, property or securities, and has been accepted by the holders of 50% or more of the outstanding common stock (iv) any reclassification of our common stock or any compulsory share exchange by which common stock is effectively converted into or exchanged for other securities, cash or property, or (v) consummation of a stock or share purchase agreement or other business combination with another person whereby such other person acquires more than 50% of the outstanding shares of common stock.

Voting Rights, etc. Except as otherwise provided in the Series G Preferred Stock certificate of designation or required by law, the Series G Preferred Stock has no voting rights. However, as long as any shares of Series G Preferred Stock are outstanding, we may not, without the affirmative vote of the holders of a majority of the then outstanding shares of the Series G Preferred Stock, alter or change adversely the powers, preferences or rights given to the Series G Preferred Stock, amend its certificate of designation, amend our certificate of incorporation or other charter documents in any manner that adversely affects any rights of the holders, increase the number of authorized shares of Series G Preferred Stock, or enter into any agreement with respect to any of the foregoing. The Series G Preferred Stock certificate of designation provides that if any party commences an action or proceeding to enforce any provisions of the certificate of designation, then the prevailing party in such action or proceeding shall be

reimbursed by the other party for its attorneys' fees and other costs and expenses incurred in the investigation, preparation and prosecution of such action or proceeding. This provision may, under certain circumstances, be inconsistent with federal securities laws and Delaware general corporation law.

Fractional Shares. No fractional shares of common stock will be issued upon conversion of Series G Preferred Stock. Rather, we shall, at our election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the conversion price or round up to the next whole share.

The Series G Preferred Stock will be issued in book-entry form under a preferred stock agent agreement between American Stock Transfer & Trust as preferred stock agent, and us, and shall initially be represented by one or more book-entry certificates deposited with The Depository Trust Company, or DTC, and registered in the name of Cede & Co., a nominee of DTC, or as otherwise directed by DTC. There is no established public trading market for the Series G Preferred Stock and we do not expect a market to develop. We do not plan on applying to list the Series G Preferred Stock on The Nasdaq Capital Market, any other national securities exchange or any other nationally recognized trading system.

Description of Outstanding Warrants

As of February 15, 2019, there were warrants outstanding to purchase a total of 599,293 shares of our common stock, which expire between 2019 and 2025. Each of these warrants entitles the holder to purchase one share of common stock at prices ranging from $29.68 to $43,848 per common share, with a weighted average exercise price of $50.23 per share. Certain of these warrants have a net exercise 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. 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

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 66⅔% super-majority stockholder approval in order for stockholders to alter, amend or repeal certain provisions of our certificate of incorporation;
- requiring a 66⅔% 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 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 66⅔% 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 otherwise, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for any (i) derivative action or proceeding brought on our behalf; (ii) action asserting a breach of fiduciary duty owed by any of our directors, officers or other employees to us or any of our stockholders; (iii) action asserting a claim pursuant to the DGCL; or (iv) action asserting a claim that is governed by the internal affairs doctrine.

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

Outstanding Warrants. We intend to register for resale the shares of common stock underlying certain replacement warrants issued to investors under a letter agreement dated February 15, 2017 that was entered into between us and such affiliates to encourage such affiliates to exercise their then-outstanding warrants for cash on or before March 31, 2017. See our Current Reports on Form 8-K filed with the SEC on February 16, 2017 and March 29, 2017 for additional information about the letter agreement and replacement warrants.

Aquadex Acquisition. On August 5, 2016, upon closing of the acquisition of the Aquadex Business, we entered into a registration rights agreement with 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 120 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.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company LLC.

Listing

Our common stock trades 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.

UNDERWRITING

We are offering the securities described in this prospectus through the underwriters named below. Ladenburg Thalmann & Co. Inc. is acting as book-running manager of the offering. Subject to the terms and conditions of the underwriting agreement, the underwriters have agreed to purchase the number of our securities set forth opposite its name below.

Underwriters	Class A Units	Class B Units
Ladenburg Thalmann & Co. Inc.	146,607	1,910,536
Total	146,607	1,910,536

A copy of the underwriting agreement is filed as an exhibit to the registration statement of which this prospectus is part.

We have been advised by the underwriters that they propose to offer the Units directly to the public at the public offering price set forth on the cover page of this prospectus. The underwriters may sell Class A Units or Class B Units separately to purchasers or may sell a combination of Class A Units and Class B Units to purchasers in any proportion. Any securities sold by the underwriters to securities dealers will be sold at the public offering price less a selling concession not in excess of $0.25104 per share and $0.00048 per warrant.

The underwriting agreement provides that the underwriters' obligation to purchase the securities we are offering is subject to conditions contained in the underwriting agreement.

No action has been taken by us or the underwriters that would permit a public offering of the Units, or the shares of common stock, shares of preferred stock and warrants included in the Units in any jurisdiction outside the United States where action for that purpose is required. None of our securities included in this offering may be offered or sold, directly or indirectly, nor may this prospectus or any other offering material or advertisements in connection with the offer and sales of any of the securities offering hereby be distributed or published in any jurisdiction except under circumstances that will result in compliance with the applicable rules and regulations of that jurisdiction. Persons who receive this prospectus are advised to inform themselves about and to observe any restrictions relating to this offering of securities and the distribution of this prospectus. This prospectus is neither an offer to sell nor a solicitation of any offer to buy the securities in any jurisdiction where that would not be permitted or legal.

The underwriters have advised us that they do not intend to confirm sales to any account over which they exercise discretionary authority.

Underwriting Discount and Expenses

The following table summarizes the underwriting discount and commission to be paid to the underwriters by us.

	Per Class A Unit[1]	Per Class B Unit[1]	Total	Total with Full Exercise of Overallotment
Public offering price	$ 5.25	$ 5.25	$ 10,800,000.75	$ 12,419,998.50
Underwriting discount to be paid to the underwriters by us (8%)[2][3]	$ 0.42	$ 0.42	$ 864,000.06	$ 993,599.88
Proceeds to us (before expenses)	$ 4.83	$ 4.83	$ 9,936,000.69	$ 11,426,398.62

(1) The public offering price and underwriting discount corresponds to (x) in respect of the Class A Units (i) a public offering price per share of common stock of $4.8116 and (ii) a public offering price per Series 1 warrant of $0.0092 and per Series 2 warrant of $0.0092 and (y) in respect of the Class B Units (i) a public offering price per share of Series G Preferred Stock of $4.8116 and (ii) a public offering price per Series 1 warrant of $0.0092 and per Series 2 warrant of $0.0092.

(2) We have also agreed to reimburse the accountable expenses of the underwriter, including legal fees, in this offering, up to a maximum of $85,000.

(3) We have granted a 45 day option to the underwriter to purchase up to 308,571 additional shares of common stock (up to 15% of the shares of common stock plus the number of shares of common stock issuable upon conversion of shares of Series G Preferred Stock) and/or additional Series 1 warrants exercisable for up to an additional 308,571 shares of common stock and/or additional Series 2 warrants exercisable for up to an additional 308,571 shares of common stock (up to 15% of the Series 1 of Series 2 warrants sold in this offering) at the public offering price per share of common stock and the public offering price per warrant set forth above less the underwriting discounts and commissions solely to cover over-allotments, if any.

We estimate the total expenses payable by us for this offering to be approximately $1.2 million, which amount includes (i) the underwriting discount of $864,000, (ii) reimbursement of the accountable expenses of the

underwriters, including the legal fees of the underwriter up to $85,000 and (iii) other estimated company expenses of approximately $295,000 which includes legal, accounting, and printing costs and various fees associated with the registration and listing of our shares.

The securities we are offering are being offered by the underwriters subject to certain conditions specified in the underwriting agreement.

Over-allotment Option

We have granted to the underwriters an option exercisable not later than 45 days after the date of this prospectus to purchase up to a number of additional shares of common stock and/or Series 1 and/or Series 2 warrants equal to 15% of the number of shares of common stock sold in the primary offering (including the number of shares of common stock issuable upon conversion of shares of Series G Preferred Stock but excluding any shares of common stock underlying the warrants issued in this offering and any shares of common stock issued upon any exercise of the underwriters' over-allotment option) and/or 15% of the Series 1 or Series 2 warrants sold in the primary offering at the public offering price per share of common stock and the public offering price per warrant set forth on the cover page hereto less the underwriting discounts and commissions. The underwriters may exercise the option solely to cover overallotments, if any, made in connection with this offering. If any additional shares of common stock and/or warrants are purchased, the underwriters will offer these shares of common stock and/or warrants on the same terms as those on which the other securities are being offered.

Other Relationships

Upon completion of this offering, we have granted the underwriter a right of first refusal to act as lead bookrunner or lead placement agent in connection with any subsequent public or private offering of equity securities or other capital markets financing by us. This right of first refusal extends for 12 months from the closing date of this offering. The terms of any such engagement of the underwriter will be determined by separate agreement.

Determination of Offering Price

Our common stock is currently traded on The Nasdaq Capital Market under the symbol "CHFS." See "Prospectus Summary—Recent Developments" for important information about the listing of our common stock on The Nasdaq Capital Market. On March 7, 2019, the closing price of our common stock was $7.90 per share. We do not intend to apply for listing of the Series G Preferred Stock or the warrants on any securities exchange or other trading system.

The public offering price of the securities offered by this prospectus was determined by negotiation between us and the underwriters. Among the factors considered in determining the public offering price of the shares were;

- our history and our prospects;
- the industry in which we operate;
- our past and present operating results;
- the previous experience of our executive officers; and
- the general condition of the securities markets at the time of this offering, including discussions between the underwriters and prospective investors.

The offering price stated on the cover page of this prospectus should not be considered an indication of the actual value of the securities sold in this offering. That price is subject to change as a result of market conditions and other factors and we cannot assure you that the securities sold in this offering can be resold at or above the public offering price.

Lock-up Agreements

Our officers, directors and each of their respective affiliates and associated partners have agreed with the underwriters to be subject to a lock-up period of 90 days following the date of this prospectus. This means that, during the applicable lock-up period, such persons may not offer for sale, contract to sell, sell, distribute, grant any option, right or warrant to purchase, pledge, hypothecate or otherwise dispose of, directly or indirectly, any shares of our common stock or any securities convertible into, or exercisable or exchangeable for, shares of our common stock.

Certain limited transfers are permitted during the lock-up period if the transferee agrees to these lock-up restrictions. We have also agreed, in the underwriting agreement, to similar lock-up restrictions on the issuance and sale of our securities for 90 days following the closing of this offering, although we will be permitted to issue stock options or stock awards to directors, officers and employees under our existing plans. The underwriter may, in their sole discretion and without notice, waive the terms of any of these lock-up agreements.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company LLC.

Stabilization, Short Positions and Penalty Bids

The underwriters may engage in syndicate covering transactions stabilizing transactions and penalty bids or purchases for the purpose of pegging, fixing or maintaining the price of our common stock;

- Syndicate covering transactions involve purchases of securities in the open market after the distribution has been completed in order to cover syndicate short positions. Such a naked short position would be closed out by buying securities in the open market. A naked short position is more likely to be created if the underwriters are concerned that there could be downward pressure on the price of the securities in the open market after pricing that could adversely affect investors who purchase in the offering.
- Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specific maximum.
- Penalty bids permit the underwriters to reclaim a selling concession from a syndicate member when the securities originally sold by the syndicate member are purchased in a stabilizing or syndicate covering transaction to cover syndicate short positions.

These syndicate covering transactions, stabilizing transactions, and penalty bids may have the effect of raising or maintaining the market prices of our securities or preventing or retarding a decline in the market prices of our securities. As a result the price of our common stock may be higher than the price that might otherwise exist in the open market. Neither we nor the underwriters make any representation or prediction as to the effect that the transactions described above may have on the price of our common stock. These transactions may be effected on the Nasdaq Capital Market, in the over-the-counter market or on any other trading market and, if commenced, may be discontinued at any time.

In connection with this offering, the underwriters also may engage in passive market making transactions in our common stock in accordance with Regulation M during a period before the commencement of offers or sales of shares of our common stock in this offering and extending through the completion of the distribution. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for that security. However, if all independent bids are lowered below the passive market maker’s bid that bid must then be lowered when specific purchase limits are exceeded. Passive market making may stabilize the market price of the securities at a level above that which might otherwise prevail in the open market and, if commenced, may be discontinued at any time.

Neither we, nor the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the prices of our securities. In addition, neither we nor the underwriters make any representation that the underwriters will engage in these transactions or that any transactions, once commenced will not be discontinued without notice.

Indemnification

We have agreed to indemnify the underwriters against certain liabilities, including certain liabilities arising under the Securities Act or to contribute to payments that the underwriters may be required to make for these liabilities.

MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS

The following is a general discussion of material U.S. federal income considerations relating to the purchase, ownership and disposition of our common stock, Series G Preferred Stock or warrants. This discussion is based on current provisions of the Internal Revenue Code of 1986, as amended, (the "Internal Revenue Code"), existing and proposed U.S. Treasury Regulations promulgated or proposed thereunder and current administrative and judicial interpretations thereof, all as in effect as of the date of this prospectus and all of which are subject to change or to differing interpretation, possibly with retroactive effect. We have not sought and will not seek any rulings from the Internal Revenue Service (the "IRS") regarding the matters discussed below. There can be no assurance that the IRS or a court will not take a contrary position.

This discussion is limited to U.S. holders and non-U.S. holders who hold our common stock, Series G Preferred Stock or warrants as capital assets within the meaning of Section 1221 of the Internal Revenue Code (generally, as property held for investment). This discussion does not address all aspects of U.S. federal income taxation, such as the U.S. alternative minimum income tax and the additional tax on net investment income, nor does it address any aspect of state, local or non-U.S. taxes, or U.S. federal taxes other than income taxes, such as federal estate taxes. This discussion does not consider any specific facts or circumstances that may apply to a holder and does not address the special tax considerations that may be applicable to particular holders, such as:

- insurance companies;
- tax-exempt organizations;
- financial institutions;
- brokers or dealers in securities;
- regulated investment companies;
- pension plans;
- controlled foreign corporations;
- passive foreign investment companies;
- corporations that accumulate earnings to avoid U.S. federal income tax;
- certain U.S. expatriates;
- U.S. persons that have a "functional currency" other than the U.S. dollar;
- persons that acquire our common stock as compensation for services;
- owners that hold our common stock, Series G Preferred Stock or warrants as part of a straddle, hedge, conversion transaction, synthetic security or other integrated investment;
- entities that are treated as disregarded entities for U.S. federal income tax purposes (regardless of their places of organization or formation) and their investors; and
- partnerships or other entities treated as partnerships for U.S. federal income tax purposes and their investors.

If any entity taxable as a partnership for U.S. federal income tax purposes holds our common stock, Series G Preferred Stock or warrants, the U.S. federal income tax treatment of a partner in the partnership generally will depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. An investor in a partnership or entity treated as disregarded for U.S. federal income tax purposes should consult his, her or its own tax advisor regarding the applicable tax consequences relating to the purchase, ownership and disposition of our common stock, Series G Preferred Stock or warrants.

For purposes of this discussion, the term "U.S. holder" means a beneficial owner of our common stock, Series G Preferred Stock or warrants that is, for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation created or organized in or under the laws of the United States or of any political subdivision of the United States;

- an estate the income of which is subject to U.S. federal income taxation regardless of its source; or
- a trust, if (i) a U.S. court is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have authority to control all substantial decisions of the trust or (ii) the trust has a valid election to be treated as a U.S. person under applicable U.S. Treasury Regulations.

A "non-U.S. holder" is a beneficial owner of our common stock, Series G Preferred Stock or warrants that is, for U.S. federal income tax purposes, an individual, corporation, estate or trust that is not a U.S. holder.

Prospective investors should consult their own tax advisors regarding the U.S. federal, state, local and non-U.S. income and other tax considerations of purchasing, holding and disposing of our common stock, Series G Preferred Stock or warrants.

U.S. Holders

Purchase of Units

For U.S. federal income tax purposes, the purchase of a Class A Unit will be treated as the purchase of three components: a component consisting of one share of our common stock, a component consisting of one Series 1 warrant to purchase one share of our common stock and a component consisting of one Series 2 warrant to purchase one share of our common stock. The purchase of a Class B Unit will be treated as the purchase of three components: a component consisting of one share of our Series G Preferred Stock, a component consisting of one Series 1 warrant to purchase one share of our common stock and a component consisting of one Series 2 warrant to purchase one share of our common stock. The purchase price for each Unit will be allocated between its components in proportion to the relative fair market value of each at the time the Unit is purchased by the holder. This allocation of the purchase price for each Unit will establish a holder's initial tax basis for U.S. federal income tax purposes in the shares and warrants that compose each Unit.

Exercise of Warrants

A U.S. holder generally will not recognize gain or loss on the exercise of a warrant and related receipt of shares of our common stock (unless cash is received in lieu of the issuance of a fractional share of our common stock). A U.S. holder's initial tax basis in the shares of our common stock received upon the exercise of a warrant will be equal to the sum of (a) such U.S. holder's tax basis in such warrant plus (b) the exercise price paid by such U.S. holder on the exercise of such warrant. A U.S. holder's holding period for the shares of our common stock received upon the exercise of a warrant will begin on the day after the date that the warrant is exercised.

In certain limited circumstances, a U.S. holder may be permitted to undertake a cashless exercise of warrants into shares of our common stock. The U.S. federal income tax treatment of a cashless exercise of warrants into shares of common stock is unclear, and the tax consequences of a cashless exercise could differ from the consequences upon the exercise of a warrant described in the preceding paragraph. U.S. holders should consult their own tax advisors regarding the U.S. federal income tax consequences of a cashless exercise of warrants.

Certain Adjustments to the Warrants or Series G Preferred Stock

An adjustment to the number of shares of our common stock that will be issued upon the exercise of a warrant or conversion of a share of Series G Preferred Stock, or an adjustment to the exercise price of a warrant, may be treated as a constructive distribution to a U.S. holder of the warrant or share depending on the circumstances of such adjustment (for example, if such adjustment is to compensate for a distribution of cash or other property to our shareholders). Adjustments to the exercise price of warrants or conversion price of Series G Preferred Stock made pursuant to a bona fide reasonable adjustment formula that has the effect of preventing dilution of the interest of the holders thereof generally should not be considered to result in a constructive distribution. Any such constructive distribution would be taxable whether or not there is an actual distribution of cash or other property. See the more detailed discussion of the rules applicable to distributions made by us under the heading "Distributions on Common Stock or Series G Preferred Stock" below.

Expiration of the Warrants without Exercise

Upon the lapse or expiration of a warrant, a U.S. holder will recognize a loss in an amount equal to such U.S. holder's tax basis in the warrant. Any such loss generally will be a capital loss and will be long-term capital loss if the warrant is held for more than one year. Deductions for capital losses are subject to certain limitations.

Conversion of Series G Preferred Stock

A U.S. holder generally will not recognize gain or loss upon the conversion of a share of Series G Preferred Stock into common stock. A U.S. holder's initial tax basis in the shares of our common stock received upon the conversion of a share of Series G Preferred Stock will be equal to such U.S. holder's tax basis in the share of Series G Preferred Stock. A U.S. holder's holding period for the shares of our common stock received upon the conversion of a share of Series G Preferred Stock will include the U.S. holder's holding period in such share of Series G Preferred Stock.

Distributions on Common Stock or Series G Preferred Stock

If we pay distributions of cash or property with respect to our common stock or Series G Preferred Stock (including constructive distributions as described above under the heading "Certain Adjustments to the Warrants or Series G Preferred Stock"), those distributions generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the U.S. holder's investment, up to such holder's tax basis in its shares of our common stock or Series G Preferred Stock. Any remaining excess will be treated as capital gain, subject to the tax treatment described below under the heading "—Gain on Sale, Exchange or Other Taxable Disposition."

Gain on Sale, Exchange or Other Taxable Disposition

Upon the sale or other taxable disposition of common shares, Series G Preferred Stock or warrants, a U.S. holder generally will recognize capital gain or loss in an amount equal to the difference between (a) the amount of cash plus the fair market value of any property received and (b) such U.S. holder's tax basis in such common shares, Series G Preferred Stock or warrants sold or otherwise disposed of. Such gain or loss generally will be long-term capital gain or loss if, at the time of the sale or other disposition, the common shares, Series G Preferred Stock or warrants have been held by the U.S. holder for more than one year. Preferential tax rates may apply to long-term capital gain of a U.S. holder that is an individual, estate, or trust. Deductions for capital losses are subject to certain limitations.

Non-U.S. Holders

Distributions on Common Stock or Series G Preferred Stock

If we pay distributions of cash or property with respect to our common stock or Series G Preferred Stock (including constructive distributions as described above under the heading "Certain Adjustments to the Warrants or Series G Preferred Stock"), those distributions generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder's investment, up to such holder's tax basis in its shares of our common stock or Series G Preferred Stock. Any remaining excess will be treated as capital gain, subject to the tax treatment described below under the heading "—Gain on Sale, Exchange or Other Taxable Disposition." Dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence. In the case of any constructive distribution, it is possible that this tax would be withheld from any amount owed to the non-U.S. holder, including, but not limited to, distributions of cash, common stock or sales proceeds subsequently paid or credited to that holder. If we are unable to determine, at the time of payment of a distribution, whether the distribution will constitute a dividend, we may nonetheless choose to withhold any U.S. federal income tax on the distribution as permitted by U.S. Treasury Regulations.

Distributions that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States are generally not subject to the 30% withholding tax if the non-U.S. holder provides a properly executed IRS Form W-8ECI stating that the distributions are not subject to withholding because they are effectively connected with the non-U.S. holder's conduct of a trade or business in the United States. If a non-U.S. holder is engaged in a trade or business in the United States and the distribution is effectively connected with the conduct of that trade or business, the distribution will generally have the consequences described above for a U.S. holder (subject to any modification provided under an applicable income tax treaty). Any U.S. effectively connected income received by a non-U.S. holder that is treated as a corporation for U.S. federal income tax purposes may also, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate (or such lower rate as may be specified by an applicable income tax treaty).

A non-U.S. holder who claims the benefit of an applicable income tax treaty between the United States and such holder's country of residence generally will be required to provide a properly executed IRS Form W-8BEN or W-8BEN-E, as applicable, and satisfy applicable certification and other requirements. A non-U.S. holder that is eligible for a reduced rate of U.S. withholding tax under an income tax treaty generally may obtain a refund or credit of any excess amounts withheld by timely filing an appropriate claim with the IRS. Non-U.S. holders should consult their own tax advisors regarding their entitlement to benefits under a relevant income tax treaty.

Gain on Sale, Exchange or Other Taxable Disposition

Subject to the discussion below in "—Information Reporting and Backup Withholding" and "—Foreign Account Tax Compliance Act," a non-U.S. holder generally will not be subject to U.S. federal income tax on gain recognized on a sale, exchange or other taxable disposition of our common stock, Series G Preferred Stock or warrants unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a trade or business in the United States and, if an applicable income tax treaty so provides, the gain is attributable to a permanent establishment maintained by the non-U.S. holder in the United States; in these cases, the non-U.S. holder will be taxed on a net income basis at the regular graduated rates and in the manner applicable to a U.S. holder, and, if the non-U.S. holder is a corporation, an additional branch profits tax at a rate of 30%, or a lower rate as may be specified by an applicable income tax treaty, may also apply;
- the non-U.S. holder is an individual present in the United States for 183 days or more in the taxable year of the disposition and certain other conditions are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty) on the amount by which such non-U.S. holder's capital gains allocable to U.S. sources exceed capital losses allocable to U.S. sources during the taxable year of the disposition; or
- we are or were a "U.S. real property holding corporation" during the shorter of the five-year period ending on the date of the disposition or the period that the non-U.S. holder held our common stock. Generally, a corporation is a "U.S. real property holding corporation" if the fair market value of its "U.S. real property interests" (within the meaning of the Internal Revenue Code) equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. We believe that we are not currently, and we do not anticipate becoming, a "U.S. real property holding corporation" for U.S. federal income tax purposes.

Information Reporting and Backup Withholding

Distributions on, and the payment of the proceeds of a disposition of, our common stock, Series G Preferred Stock or warrants generally will be subject to information reporting if made within the United States or through certain U.S.-related financial intermediaries. Information returns are required to be filed with the IRS and copies of information returns may be made available to the tax authorities of the country in which a holder resides or is incorporated under the provisions of a specific treaty or agreement.

Backup withholding may also apply if the holder fails to provide certification of exempt status or a correct U.S. taxpayer identification number and otherwise comply with the applicable backup withholding requirements. Generally, a holder will not be subject to backup withholding if it provides a properly completed and executed IRS Form W-9 or appropriate IRS Form W-8, as applicable. Backup withholding is not an additional tax. Amounts withheld under the backup withholding rules may be refunded or credited against the holder's U.S. federal income tax liability, if any, provided certain information is timely filed with the IRS.

Foreign Account Tax Compliance Act

Legislation commonly referred to as the Foreign Account Tax Compliance Act, or FATCA, generally imposes a U.S. federal withholding tax of 30% on certain payments to certain non-U.S. entities (including certain intermediaries) unless such persons comply with FATCA's information reporting and withholding regime. This regime and its requirements are different from, and in addition to, the certification requirements described elsewhere in this discussion. The FATCA withholding rules apply to dividend payments.

The United States has entered into, and continues to negotiate, intergovernmental agreements (each, an "IGA") with a number of other jurisdictions to facilitate the implementation of FATCA. An IGA may significantly alter the

application of FATCA and its information reporting and withholding requirements with respect to any particular investor. FATCA is particularly complex and its application remains uncertain. Prospective investors should consult their own tax advisors regarding how these rules may apply in their particular circumstances.

LEGAL MATTERS

Honigman LLP, Kalamazoo, Michigan, will issue a legal opinion as to the validity of the securities offered by this prospectus. Ellenoff Grossman & Schole LLP, New York, New York, is acting as counsel for the underwriters in connection with certain legal matters in connection with this offering.

EXPERTS

The consolidated financial statements of CHF Solutions, Inc. and subsidiaries as of December 31, 2018 and 2017 and for the years then ended, incorporated by reference in this Registration Statement have been audited by Baker Tilly Virchow Krause, LLP, our independent registered public accounting firm, as set forth in their report in the Form 10-K (which contains an explanatory paragraph describing conditions that raise substantial doubt about the company's ability to continue as a going concern as described in Note 1 to the consolidated financial statements), and are included in reliance upon such report given on the authority of such firm as experts in accounting and auditing.