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

FORM 10-Q

QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the quarterly period ended **September 30, 2018**
OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission file number 001-35312

CHF SOLUTIONS, INC.

(Exact Name of Registrant as Specified in its Charter)

Delaware
(State or Other Jurisdiction of Incorporation or Organization)

No. 68-0533453
(I.R.S. Employer Identification No.)

12988 Valley View Road, Eden Prairie, MN 55344
(Address of Principal Executive Offices) (Zip Code)

(952) 345-4200
(Registrant's Telephone Number, Including Area Code)

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

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

Large accelerated filer
Non-accelerated filer
Emerging growth company

Accelerated filer
Smaller reporting company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

The number of outstanding shares of the registrant's common stock, \$0.0001 par value, as of November 5, 2018 was 7,074,407

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PART I—FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

CHF SOLUTIONS, INC. AND SUBSIDIARIES
Condensed Consolidated Balance Sheets

(In thousands, except share and per share amounts)

	September 30, 2018 (unaudited)	December 31, 2017
ASSETS		
Current assets		
Cash and cash equivalents	\$ 8,222	\$ 15,595
Accounts receivable	787	545
Inventory	1,948	1,588
Other current assets	240	136
Total current assets	11,197	17,864
Property, plant and equipment, net	573	570
Other assets	21	21
TOTAL ASSETS	\$ 11,791	\$ 18,455
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities		
Accounts payable and accrued expenses	\$ 617	\$ 862
Accrued compensation	1,315	1,021
Other current liabilities	80	208
Total current liabilities	2,012	2,091
Other liabilities	126	126
Total liabilities	2,138	2,217
Commitments and contingencies	—	—
Stockholders' equity		
Series A junior participating preferred stock as of September 30, 2018 and December 31, 2017, par value \$0.0001 per share; authorized 30,000 shares, none outstanding	—	—
Series F convertible preferred stock as of September 30, 2018 and December 31, 2017, par value \$0.0001 per share; authorized 565 and 3,780 shares, respectively, issued and outstanding 565 and 3,780, respectively	—	—
Preferred stock as of September 30, 2018 and December 31, 2017, par value \$0.0001 per share; authorized 39,969,435 and 39,966,220 shares, none outstanding	—	—
Common stock as of September 30, 2018 and December 31, 2017, par value \$0.0001 per share; authorized 100,000,000 shares, issued and outstanding 7,074,407 and 3,798,929, respectively	1	—
Additional paid-in capital	203,559	197,367
Accumulated other comprehensive income:		
Foreign currency translation adjustment	1,225	1,227
Accumulated deficit	(195,132)	(182,356)
Total stockholders' equity	9,653	16,238
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	\$ 11,791	\$ 18,455

See notes to the condensed consolidated financial statements.

CHF SOLUTIONS, INC. AND SUBSIDIARIES
Condensed Consolidated Statements of Operations and Comprehensive Loss
(Unaudited)

(In thousands, except per share amounts)

	Three months ended September 30,		Nine months ended September 30,	
	2018	2017	2018	2017
Net sales	\$ 1,363	\$ 957	\$ 3,499	\$ 2,722
Costs and expenses:				
Cost of goods sold	915	782	2,686	1,912
Selling, general and administrative	3,713	2,671	11,489	7,478
Research and development	985	367	2,107	1,002
Total costs and expenses	<u>5,613</u>	<u>3,820</u>	<u>16,282</u>	<u>10,392</u>
Loss from operations	<u>(4,250)</u>	<u>(2,863)</u>	<u>(12,783)</u>	<u>(7,670)</u>
Other income (expense):				
Other income, net	10	17	10	28
Warrant valuation expense	-	-	-	(67)
Change in fair value of warrant liability	-	4	-	1,470
Total other income	<u>10</u>	<u>21</u>	<u>10</u>	<u>1,431</u>
Loss before income taxes	<u>(4,240)</u>	<u>(2,842)</u>	<u>(12,773)</u>	<u>(6,239)</u>
Income tax expense, net	<u>(1)</u>	<u>(5)</u>	<u>(3)</u>	<u>(6)</u>
Net loss	<u>\$ (4,241)</u>	<u>\$ (2,847)</u>	<u>\$ (12,776)</u>	<u>\$ (6,245)</u>
Basic and diluted loss per share	<u>\$ (0.61)</u>	<u>\$ (4.55)</u>	<u>\$ (2.47)</u>	<u>\$ (25.36)</u>
Weighted average shares outstanding – basic and diluted	6,987	626	5,171	359
Other comprehensive loss:				
Foreign currency translation adjustments	\$ (1)	\$ (1)	\$ (2)	\$ (7)
Total comprehensive loss	<u>\$ (4,242)</u>	<u>\$ (2,848)</u>	<u>\$ (12,778)</u>	<u>\$ (6,252)</u>

See notes to the condensed consolidated financial statements.

CHF SOLUTIONS, INC. AND SUBSIDIARIES
Condensed Consolidated Statements of Cash Flows
(Unaudited)

(in thousands)

	Nine months ended	
	September 30,	
	2018	2017
Operating Activities:		
Net loss	\$ (12,776)	\$ (6,245)
Adjustments to reconcile net loss to cash flows used in operating activities:		
Depreciation and amortization expense	174	656
Stock-based compensation expense	1,544	391
Change in fair value of warrant liability	-	(1,470)
Warrant valuation expense	-	67
Changes in operating assets and liabilities:		
Accounts receivable	(242)	(498)
Inventory	(360)	(660)
Other current and long-term assets	(104)	28
Accounts payable and accrued expenses	(79)	(1,038)
Net cash used in operations	(11,843)	(8,769)
Investing Activities:		
Purchases of property and equipment	(177)	(206)
Net cash used in investing activities	(177)	(206)
Financing Activities:		
Net proceeds from public stock offering	4,649	8,002
Net proceeds from exercise of warrants	-	1,981
Net proceeds from the sale of common stock, preferred stock, and warrants	-	184
Net cash provided by financing activities	4,649	10,167
Effect of exchange rate changes on cash	(2)	(2)
Net increase (decrease) in cash and cash equivalents	(7,373)	1,190
Cash and cash equivalents - beginning of period	15,595	1,323
Cash and cash equivalents - end of period	\$ 8,222	\$ 2,513
Supplement schedule of non-cash activities		
Warrants issued as inducement to warrant exercise	\$ -	\$ 509
Conversion of temporary equity to permanent equity	\$ -	\$ 485
Supplemental cash flow information		
Cash paid for income taxes	\$ -	\$ 8

See notes to the condensed consolidated financial statements.

CHF SOLUTIONS, INC. AND SUBSIDIARIES
Notes to Condensed Consolidated Financial Statements
(Unaudited)

Note 1 – Nature of Business and Basis of Presentation

Nature of Business: CHF Solutions, Inc. (the “Company”) is a medical device company focused on commercializing the Aquadex FlexFlow® System for aquapheresis therapy. The Aquadex FlexFlow System (“Aquadex”) 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. CHF Solutions, Inc. is a Delaware corporation headquartered in Eden Prairie, Minnesota with wholly owned subsidiaries in Australia, Ireland and Delaware. The Company has been listed on the Nasdaq Capital Market since February 2012.

Prior to July 2016, the Company was focused on developing the C-Pulse® Heart Assist System for treatment of Class III and ambulatory Class IV heart failure. In August 2016, the Company acquired the Aquadex FlexFlow business from a subsidiary of Baxter International, Inc. (“Baxter”), a global leader in the hospital products and dialysis markets (herein referred to as the “Aquadex Business”). On September 29, 2016, the Company announced a strategic refocus of its strategy that included halting all clinical evaluations of its C-Pulse technology to fully focus its resources on its recently acquired Aquadex Business.

On May 23, 2017, the Company announced it was changing its name from Sunshine Heart, Inc. to CHF Solutions, Inc. to more appropriately reflect the direction of its business.

During 2017, the Company’s board of directors and stockholders approved two reverse stock splits (together, the “Reverse Stock Splits”). Neither reverse stock split changed the par value of the Company’s common stock or the number of common or preferred shares authorized by the Company’s Fourth Amended and Restated Certificate of Incorporation. The first reverse stock split was a 1-for-30 reverse split of the Company’s outstanding common stock that became effective after trading on January 12, 2017. The second reverse stock split was a 1-for-20 reverse split of the Company’s outstanding common stock that became effective after trading on October 12, 2017. All share and per-share amounts have been retroactively adjusted to reflect the Reverse Stock Splits for all periods presented.

Principles of Consolidation: The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (“U.S. GAAP”) for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Certain information and note disclosures normally included in the audited annual consolidated financial statements have been condensed or omitted pursuant to those rules and regulations. Accordingly, they do not include all of the information necessary for a fair presentation of results of operations, comprehensive loss, financial condition, and cash flows in conformity with U.S. GAAP. In the opinion of management, the condensed consolidated financial statements reflect all adjustments (consisting of normal recurring adjustments) considered necessary for a fair presentation of the results of the Company for the periods presented. Operating results for interim periods are not necessarily indicative of results that may be expected for the year as a whole. The preparation of the financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, expenses, and the related disclosures at the date of the financial statements and during the reporting period. Actual results could materially differ from these estimates.

For further information, refer to the consolidated financial statements and notes thereto included in the Company’s Annual Report on Form 10-K for the year ended December 31, 2017.

Going Concern: The Company’s consolidated financial statements have been prepared and presented on a basis assuming it continues as a going concern. During the years ended December 31, 2017 and 2016 and through September 30, 2018, the Company incurred losses from operations and net cash outflows from operating activities as disclosed in the consolidated statements of operations and cash flows, respectively. As of September 30, 2018, the Company had an accumulated deficit of \$195.1 million and it expects to incur losses for the immediate future. To date, the Company has been funded by debt and equity financings, and although the Company believes that it will be able to successfully fund its operations, there can be no assurance that it will be able to do so or that it will ever operate profitably. These factors raise substantial doubt about the Company’s ability to continue as a going concern through the next twelve months.

The Company became a revenue generating company after acquiring the Aquadex Business in August 2016. The Company expects to incur additional losses in the near-term as it grows the Aquadex Business, including investments in expanding its sales and marketing capabilities, purchasing inventory, manufacturing components, and complying with the requirements related to being a U.S. public company. To become and remain profitable, the Company must succeed in expanding the adoption and market acceptance of Aquadex. This will require the Company to succeed in training personnel at hospitals and in effectively and efficiently manufacturing, marketing and distributing Aquadex and related components. There can be no assurance that the Company will succeed in these activities, and it may never generate revenues sufficient to achieve profitability.

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On July 3, 2018, April 24, 2017 and on November 27, 2017, the Company closed on underwritten public equity offerings for aggregate net proceeds of approximately \$28.8 million after deducting the underwriting discounts and commissions and other costs associated with the offerings (see Note 4 - Equity). The Company will require additional funding to grow its Aquadex Business, which may not be available on terms favorable to the Company, or at all. The Company may receive those funds from the proceeds from future warrant exercises, issuances of equity securities, or other financing transactions. Should warrant exercises not materialize or future capital raising be unsuccessful, the Company may not be able to continue as a going concern. No adjustments have been made relating to the recoverability and classification of recorded asset amounts and classification of liabilities that might be necessary should the Company not continue as a going concern.

Revenue Recognition: The Company recognizes revenue in accordance with Accounting Standards Codification (“ASC”), Topic 606, *Revenue from Contracts with Customers*, which the Company adopted effective January 1, 2018. Accordingly, the Company recognizes revenue when its customers obtain control of its products or services, in an amount that reflects the consideration that the Company expects to receive in exchange for those goods and services. See Note 2 – Revenue Recognition for additional accounting policies and transition disclosures.

Accounts Receivable: Accounts receivable are unsecured, are recorded at net realizable value, and do not bear interest. The Company makes judgments as to its ability to collect outstanding receivables based upon significant patterns of uncollectability, historical experience, and management’s evaluation of specific accounts and will provide an allowance for credit losses when collection becomes doubtful. The Company performs credit evaluations of its customers’ financial condition on an as-needed basis. Payment is generally due 30 days from the invoice date and accounts past 30 days are individually analyzed for collectability. When all collection efforts have been exhausted, the account is written off against the related allowance. The Company’s accounts receivable have terms that require payment in 30 days. To date the Company has not experienced any write-offs or significant deterioration of the aging of its accounts receivable, and therefore, no allowance for doubtful accounts was considered necessary as of September 30, 2018 or December 31, 2017.

Inventories: Inventories represent finished goods purchased from the Company’s supplier and are recorded as the lower of cost or net realizable value using the first-in-first out method. Inventories consisted of the following:

<i>(in thousands)</i>	September 30, 2018	December 31, 2017
Finished Goods	\$ 810	\$ 902
Work in Process	91	217
Raw Materials	1,047	469
Total	<u>\$ 1,948</u>	<u>\$ 1,588</u>

Contingent consideration: In connection with the Company’s purchase of the Aquadex Business, the Company has an obligation to pay additional consideration that is contingent upon the occurrence of certain future events (see Note 8 – Commitment and Contingencies). Contingent consideration was recognized at the acquisition date at the estimated fair value of the contingent milestone payments. The fair value of the contingent consideration is remeasured to its estimated fair value at the end of each reporting period, with changes recorded to earnings.

Loss per share: Basic loss per share is computed based on the net loss allocable to common stockholders for each period divided by the weighted average number of common shares outstanding. The net loss allocable to common stockholders for the nine months ended September 30, 2017, reflects a \$1.0 million increase for the net deemed dividend to preferred stockholders provided in connection with the close of the public offering of Series E Convertible Preferred Stock in April of 2017 (see Note 4 - Equity), representing the intrinsic value of the shares at the time of issuance. In addition, the net loss allocable to common stockholders for the nine months ended September 30, 2017, reflects a \$1.8 million increase for the net deemed dividend to preferred stockholders provided in connection with the shareholder approval of the Series C and D Convertible Preferred Stock offering in January of 2017 (see Note 4 - Equity), representing the intrinsic value of the shares at the time of issuance. Diluted loss per share is computed based on the net loss allocable to common stockholders for each period divided by the weighted average number of common shares outstanding, increased by the number of additional shares that would have been outstanding had the potentially dilutive common shares been issued, and reduced by the number of shares the Company could have repurchased from the proceeds from issuance of the potentially dilutive shares. Potentially dilutive shares of common stock include shares underlying outstanding convertible preferred stock, warrants, stock options and other stock-based awards granted under stock-based compensation plans. These potentially dilutive shares were excluded from the computation of loss per share as their effect was antidilutive due to the Company’s net loss in each of those periods.

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The following table sets forth the potential shares of common stock that are not included in the calculation of diluted net loss per share because to do so would be anti-dilutive as of the end of each period presented:

	September 30	
	2018	2017
Stock options	1,987,502	36,874
Restricted stock units	90	324
Warrants to purchase common stock	8,522,672	496,629
Series F convertible preferred stock	266,680	-
Total	10,776,944	533,827

The following table reconciles reported net loss with reported net loss per share for the periods ended September 30, 2017:

<i>(in thousands, except per share amounts)</i>	Three months	Nine Months
Net loss	\$ (2,847)	\$ (6,245)
Deemed dividend to preferred shareholders (see Note 4)	-	(2,851)
Net loss after deemed dividend	(2,847)	(9,096)
Weighted average shares outstanding	626	359
Basic and diluted loss per share	\$ (4.55)	\$ (25.36)

New Accounting Pronouncements: In May 2014, August 2015, March 2016, April 2016 and May 2016, the Financial Accounting Standards Board (“FASB”) issued amended revenue recognition guidance to clarify the principles for recognizing revenue from contracts with customers. The guidance requires an entity to recognize revenue to depict the transfer of goods or services to customers in an amount that reflects the consideration to which an entity expects to be entitled in exchange for those goods or services. The guidance also requires expanded disclosures relating to the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. Additionally, qualitative and quantitative disclosures are required about customer contracts, significant judgments and changes in judgments, and assets recognized from the costs to obtain or fulfill a contract. The Company adopted this new standard on January 1, 2018, utilizing the modified retrospective approach. There were no impacts to the amount or timing of revenue that the Company had recognized in prior periods. See Note 2 - Revenue Recognition for additional accounting policy and transition disclosures.

In February 2016, the FASB issued updated guidance to improve financial reporting about leasing transactions. This guidance will require organizations that lease assets to recognize on the balance sheet the assets and liabilities for the rights and obligations created by those leases. The original guidance required application on a modified retrospective basis with the earliest period presented. In August 2018, the FASB issued new guidance which includes an option to not restate comparative periods in transition. This guidance is effective for the Company’s annual and quarterly periods beginning January 1, 2019. The Company is in the process of evaluating the impact that the adoption of this standard will have on its consolidated financial statements and is currently assessing its leases. The Company expects that the adoption of this guidance will result in a material increase in the assets and liabilities recorded on its consolidated balance sheets and additional qualitative and quantitative disclosures. The Company expects to use the effective date of this standard as the date of initial application, with no retrospective adjustments to prior comparative periods.

The Securities and Exchange Commission (“SEC”) issued updated guidance which amends various SEC disclosure requirements that it has determined to be redundant, duplicative, overlapping, outdated, or superseded. Issued as part of the SEC’s ongoing disclosure effectiveness initiative, the final rule is expected November 5, 2018. The Company is evaluating the impact of the release will have on its consolidated financial statements and disclosures.

Note 2 – Revenue Recognition

Net Sales

The Company sells its products in the United States primarily through a direct sales force. Customers who purchase the Company’s products include hospitals and clinics throughout the United States. In countries outside the United States, the Company sells its products through a limited number of specialty healthcare distributors in the United Kingdom, Italy, Spain, Germany, and Southeast Asia. The majority of these distributors resell the Company’s products to hospitals and clinics in their respective geographies.

Revenue from product sales are recognized when the customer or distributor obtains control of the product, which occurs at a point in time, most frequently upon shipment of the product or receipt of the product, depending on shipment terms. The Company’s standard shipping terms are FOB shipping point, unless the customer requests that control and title to the inventory transfer upon delivery. Revenue includes shipment and handling fees charged to customers.

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Revenue is measured as the amount of consideration the Company expects to receive, adjusted for any applicable estimates of variable consideration and other factors affecting the transaction price, which is based on the invoiced price, in exchange for transferring products. All revenue is recognized when the Company satisfies its performance obligations under the contract. The majority of the Company's contracts have a single performance obligation and are short term in nature. The Company has entered into extended service plans with customers that are recognized over time. Revenue from extended service plans represents less than 1% of net sales for the both the three- and nine-month periods ended September 30, 2018. The unfulfilled performance obligations related to these extended service plans is included in deferred revenue in the amount of \$41,250 and \$38,000 as of September 30, 2018 and December 31, 2017, respectively. Deferred revenue is included in other current liabilities on the condensed consolidated balance sheets. The majority of the deferred revenue is expected to be recognized within one year.

Sales taxes and value added taxes in foreign jurisdictions that are collected from customers and remitted to governmental authorities are accounted for on a net basis and therefore are excluded from net sales. Revenue includes shipment and handling fees charged to customers. Shipping and handling costs associated with outbound freight after control over a product has transferred to a customer are accounted for as a fulfillment cost and are included in cost of goods sold.

Product Returns: The Company offers customers a limited right of return for its product in case of non-conformity or performance issues. The Company estimates the amount of its product sales that may be returned by its customers and records this estimate as a reduction of revenue in the period the related product revenue is recognized. The Company currently estimates product return liabilities using available industry data and its own historical sales and returns information. The Company has not received any returns to date and believes that future returns of its products will be minimal. Therefore, revenue recognized is not currently impacted by variable consideration related to product returns.

Note 3 – Debt

On August 5, 2016, the Company entered into a loan and security agreement with Silicon Valley Bank (the "Bank") for a \$1.0 million revolving line of credit (the "Revolving Line"). Under the Revolving Line, the Company may borrow the lesser of \$1.0 million or 80% of its 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, accrue interest at a floating annual rate equal to 1.75% or 1.0% above the prime rate, depending on liquidity factors. The loan agreement contains customary representations, as well as customary affirmative and negative covenants. Outstanding borrowings, if any, are collateralized by all of the Company's assets, excluding intellectual property which is subject to a negative pledge. Advances under the Revolving Line are subject to various conditions precedent, including compliance with financial covenants relating to net liquidity relative to monthly cash burn, which the Company may or may not meet depending on its cash position at any given point. The Revolving Line expires March 31, 2020. There were no borrowings outstanding under this facility as of September 30, 2018 or December 31, 2017.

Warrants: In connection with the funding of term loans under prior agreements, the Company issued warrants to purchase 115 shares of common stock at an exercise price of \$3,132 per share and warrants to purchase 55 shares of common stock at an exercise price of \$2,208 per share to the Bank and one of its affiliates. The Company valued these warrants at \$2,316 per share and \$1,626 per share, respectively, utilizing the Black Scholes valuation model and the following assumptions: an expected dividend yield of 0%, an expected stock price volatility of 88.07% and 87.04%, a risk-free interest rate of 1.86% and 2.20%, and an expected life of 6.25 years. The warrants were fully vested on the date of grant and expire on February 2025, and June 2025, respectively.

Note 4 – Equity

Series B/B-1 Convertible Preferred Stock: On July 20, 2016, the Company entered into a securities purchase agreement with an institutional investor for an offering of shares of convertible preferred stock and warrants with gross proceeds of approximately \$3.5 million in a registered direct offering. The Series B issued under the securities purchase agreement was exchanged for Series B-1 Convertible Preferred Stock on October 30, 2016. The Series B-1 Convertible Preferred Stock was non-voting and was convertible into shares of common stock at the holder's election at any time. Approximately \$1.6 million of the proceeds were allocated to the preferred stock, representing the residual proceeds after the warrants were recorded at fair value (see below.) As of September 30, 2018, and December 31, 2017, all Series B/B-1-Convertible Preferred Stock had been converted into common stock and none were outstanding.

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Series C and D Convertible Preferred Stock: On October 30, 2016, the Company entered into a securities purchase agreement with an institutional investor for shares of convertible preferred stock and warrants with an aggregate purchase price of \$3.8 million in a registered direct offering and simultaneous private placement. The first closing of the transaction occurred on November 3, 2016, whereby the Company received \$3.6 million in gross proceeds and the second closing occurred on January 10, 2017, whereby the Company received gross proceeds of \$0.2 million. The Series C and D Convertible Preferred Stock issued in the transaction included a contingent beneficial conversion amount of \$1.3 million and \$0.5 million, respectively, representing the intrinsic value of the shares at the time of issuance. This amount is reflected as an increase to the loss per share allocable to common stockholders in the nine-month period ended September 30, 2017 when the contingency for the conversion was resolved with the shareholder approval allowing for the conversion of the preferred stock into common stock. As of September 30, 2018, and December 31, 2017, all shares of the Series C and D Convertible Preferred Stock had been converted into common stock and none were outstanding.

Series E Convertible Preferred Stock: On April 24, 2017, the Company closed on an underwritten public offering of a total of 2.8 million shares of common stock, 6,400 shares of Series E Convertible Preferred Stock convertible into 6.4 million shares of common stock, and warrants to purchase 9.2 million shares of common stock for gross proceeds of \$9.2 million, which included the full exercise of the underwriter's over-allotment option to purchase additional shares and warrants. Net proceeds totaled approximately \$8.0 million after deducting the underwriting discounts and commissions and other costs associated with the offering.

The Series E Convertible Preferred Stock included a beneficial conversion amount of \$1.0 million, representing the intrinsic value of the shares at the time of issuance. This amount is reflected as an increase to the loss per share allocable to common stockholders in the nine months ended September 30, 2017. As of September 30, 2018, and December 31, 2017, all shares of the Series E Convertible Preferred Stock had been converted into common stock and none were outstanding.

Series F Convertible Preferred Stock: On November 27, 2017, the Company closed on an underwritten public offering of Series F Convertible Preferred Stock ("Series F preferred stock") and warrants to purchase shares of common stock for gross proceeds of \$18.0 million. Net proceeds totaled approximately \$16.2 million after deducting the underwriting discounts and commissions and other costs associated with the offering.

The offering was comprised of Series F preferred stock, convertible into shares of the Company's common stock at a conversion price of \$4.50 per share. Each share of Series F preferred stock was accompanied by a Series 1 warrant, which expires on the first anniversary of its issuance, to purchase 223 shares of the Company's common stock at an exercise price of \$4.50 per share, and a Series 2 warrant, which expires on the seventh anniversary of its issuance, to purchase 223 shares of the Company's common stock at an exercise price of \$4.50 per share. The Series F preferred stock and the warrants were immediately separable and were issued separately. The conversion price of the Series F preferred stock will be adjusted in the event of a stock split, combination, reclassification or stock dividend or if the Company consummates a fundamental transaction. The Series F preferred stock also 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 (which protection will expire if, during any 20 of 30 consecutive trading days, the volume weighted average price of the Company's 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 exercise price of the warrants is fixed and does not contain any variable pricing features, nor any price based anti-dilutive features, apart from customary adjustments for stock splits, combinations, reclassifications, stock dividends or fundamental transactions. A total of 18,000 shares of Series F Convertible Preferred Stock convertible into approximately 4.0 million shares of common stock and warrants to purchase approximately 8.0 million shares of common stock were issued in the offering. The Series F Convertible Preferred Stock included a beneficial conversion amount of \$8.7 million, representing the intrinsic value of the shares at the time of issuance. As noted below, effective July 3, 2018, the conversion price of the Series F preferred stock was reduced from \$4.50 to \$2.12, the per share price to public in the July 2018 Offering described below, and now each share of the remaining Series F preferred stock is convertible into 472 shares of the Company's common stock. As of September 30, 2018, and December 31, 2017, 17,435 and 14,220 shares of the Series F Convertible Preferred Stock had been converted into an aggregate of 3,899,210 and 3,171,060 shares of common stock and 565 and 3,780 remained outstanding, respectively.

July 2018 Offering: On July 3, 2018, the Company closed on an underwritten public offering of 2,547,169 shares of its common stock at a public offering price of \$2.12 per share, for gross proceeds of \$5.4 million, including the full exercise of the underwriters' over-allotment option to purchase additional shares of the Company's common stock, prior to deducting underwriting discounts and commissions and offering expenses (the "July 2018 Offering").

In connection with the July 2018 Offering, and to induce certain institutional investors who hold warrants issued by the Company in November 2017 ("November 2017 Warrants") to participate in the July 2018 Offering, the Company entered into letter agreements with such institutional investors (collectively, the "Warrant Reprice Agreements"). Pursuant to the terms of the Warrant Reprice Agreements, the Company agreed, effective July 3, 2018, to (a) reduce the per share exercise price of the November 2017 Warrants held by such institutional investors (the "Repriced Warrants") to \$2.12 and (b) extend the expiration date of the Repriced Warrants that were to expire on November 27, 2018 to November 27, 2019. The number of shares underlying the Repriced Warrants after the price reduction did not change. The Repriced Warrants are exercisable for 7,760,400 shares of common stock in the aggregate, of which, following such amendment, half expire on November 27, 2019 and half expire on November 27, 2024. The repricing of the warrants was accounted as an equity financing cost, with no impact to net proceeds from the offering.

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As noted above, the Company's outstanding Series F preferred stock is subject to full-ratchet anti-dilution protection in the event the Company sells any common stock at a price lower than the then-conversion price of the Series F preferred stock. As a result of the July 2018 Offering, effective July 3, 2018, the conversion price of the Series F preferred stock was reduced from \$4.50 to \$2.12, the per share price to public in the July 2018 Offering.

Placement Agent Fees: In connection with the issuance of the Series B, C and D Convertible Preferred Shares, the Company paid the placement agent an aggregate cash placement fee equal to 6% of the aggregate gross proceeds raised in the offering and issued warrants as described below. In connection with the issuance of the Series E and F Convertible Preferred Shares and the July 2018 Offering, the Company provided underwriting discounts and commissions of 9%, 8% and 8%, respectively, of the aggregate gross proceeds raised in the offering to the underwriters and issued no warrants to the underwriters in such transactions.

Investor Warrants: In connection with the issuance of the Series B Convertible Preferred Stock in July 2016, the Company issued the investor, at no additional cost, warrants to purchase 6,149 shares of common stock at an exercise price of \$564 per share. The warrants were exercisable for 36 months commencing six months from the closing date and were subject to a reduction of the exercise price if the Company subsequently issued common stock or equivalents at an effective price less than the current exercise price of such warrants. Concurrently with the closing of the Series C and D Convertible Preferred Stock and warrant financing on November 3, 2016, the exercise price for these warrants was adjusted to \$102 per share.

In connection with the issuance of the Series C and D Convertible Preferred Stock in November 2016, the Company issued the investor, at no additional cost, warrants to purchase 35,295 shares of common stock at an exercise price of \$108 per share. In connection with the issuance of the Series D Convertible Preferred Stock at the second closing in January 2017, the Company issued the investor, at no additional cost, warrants to purchase 1,961 shares of common stock at an exercise price of \$108 per share. The warrants were exercisable for 60 months commencing on the earlier of the day of the receipt of approval of the Company's stockholders of a proposal to approve the issuance of the shares of common stock underlying the warrants, or the six-month anniversary of the date of issuance. These warrants were subject to a reduction of the exercise price if the Company subsequently issued common stock or equivalents at an effective price less than the current exercise price of such warrants.

Warrant Exercise Agreement: On February 15, 2017, the Company entered into a letter agreement with the institutional investors that held the majority of its outstanding warrants (the "Original Warrants"), to incent the cash exercise of the investor warrants described above on or before March 31, 2017. In exchange for any such exercise, the Company agreed to provide the investors a replacement warrant (the "Replacement Warrants") to purchase the same number of shares of common stock as were issued upon exercise of the Original Warrants, with an exercise price equal to the consolidated closing bid price of its common stock on the date of issuance. The Replacement Warrants were issued in the same form as the Original Warrants except the exercise prices are not subject to reduction for subsequent equity issuances and the Replacement Warrants do not allow the investor to demand that the Company purchase the Replacement Warrants in the event of a fundamental transaction involving the Company. In connection with this agreement, between February and March 2017, the investors exercised all of the Original Warrants for gross cash proceeds to the Company of \$2.0 million, and the Company issued 43,396 Replacement Warrants with exercise prices ranging from \$34.6 per share to \$99.8 per share.

The Company entered into the letter agreement with the investors to incent the exercise of the Original Warrants in order to receive the cash proceeds from the exercise of the Original Warrants and because the exercise of the Original Warrants would allow the Company to remove the warrant liability from its consolidated balance sheet and avoid future fair value adjustments and associated volatility in its consolidated financial statements, as the Replacement Warrants are not accounted for as liabilities based on their terms. As of September 30, 2018, and December 31, 2017, there were no Original Warrants outstanding and all Replacement Warrants under the letter agreement had been issued.

Placement Agent Warrant: In connection with the issuance of the Series B, C and D Convertible Preferred Stock, the Company issued warrants to the placement agent to purchase an aggregate of 2,605 shares of common stock at exercise prices ranging from \$126.0 per share to \$810.0 per share. These warrants were issued at no additional cost, were exercisable immediately, and expire five years from the closing of each offering. These warrants do not contain repricing provisions.

Warrant Valuation: Both the Original Warrants and placement agent warrants were accounted for as liabilities and were recorded at fair value on the date of issuance. These warrants must be measured and recorded at fair value for each subsequent reporting period that the warrants remain outstanding, and any changes in fair value must be recognized in the consolidated statement of operations. In connection with the warrant exchange agreement described above, the Company remeasured each Original Warrant as of the date of exercise and recorded \$1.4 million for the change in fair value of these warrants as an unrealized gain in the accompanying consolidated statement of operations for the nine-month period ended September 30, 2017.

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The Replacement Warrants were valued at \$0.5 million using the Black Scholes valuation model with the following assumptions: an expected dividend yield of 0%, expected stock price volatility of 49.65%-50.38%, risk-free interest rates of 1.95%-1.97% and an expected life of 5 years. The warrants have a five-year life and were fully vested at the date of grant. The terms of these warrants do not require them to be accounted for as liabilities and are therefore recorded in equity. As an incentive to early exercise the Original Warrants, the fair value provided to investors through the Replacement Warrants exceeded the fair value of the Original Warrants that was relinquished by the warrant holders by approximately \$0.1 million, which has been reflected as an expense in the statement of operations for the nine-month period ending September 30, 2017.

Note 5 - Stock-Based Compensation

Under the fair value recognition provisions of U.S. GAAP for accounting for stock-based compensation, the Company measures stock-based compensation expense at the grant date based on the fair value of the award and recognizes the compensation expense over the requisite service period, which is generally the vesting period.

The following table presents the classification of stock-based compensation expense recognized for the periods below:

(in thousands)	Three months ended September 30,		Nine months ended September 30,	
	2018	2017	2018	2017
Selling, general and administrative expense	\$ 440	\$ 106	\$ 1,446	\$ 351
Research and development expense	(3)	5	98	43
Total stock-based compensation expense	\$ 437	\$ 111	\$ 1,544	\$ 394

Note 6 - Fair Value of Financial Instruments

The Company's financial instruments consist of cash and cash equivalents, warrants, and contingent consideration.

Pursuant to the requirements of ASC Topic 820 *Fair Value Measurement*, the Company's financial assets and liabilities measured at fair value on a recurring basis are classified and disclosed in one of the following three categories:

- *Level 1* - Financial instruments with unadjusted quoted prices listed on active market exchanges.
- *Level 2* - Financial instruments lacking unadjusted, quoted prices from active market exchanges, including over the counter traded financial instruments. The prices for the financial instruments are determined using prices for recently traded financial instruments with similar underlying terms as well as directly or indirectly observable inputs, such as interest rates and yield curves that are observable at commonly quoted intervals.
- *Level 3* - Financial instruments that are not actively traded on a market exchange. This category includes situations where there is little, if any, market activity for the financial instrument. The prices are determined using significant unobservable inputs or valuation techniques.

The fair value of the Company's common stock warrant liability related to the Original Warrants was calculated using a Monte Carlo valuation model and was classified as Level 3 in the fair value hierarchy. All Original Warrants were exercised during the nine months ended September 30, 2017. The fair value of the Company's warrant liability related to the placement agent warrants was calculated using a Black Scholes valuation model and is classified as Level 3 in the fair value hierarchy. The following is a rollforward of the fair value of Level 3 warrants:

Nine months ended September 30, 2017 (in thousands)

Balance December 31, 2016	\$ 1,843
Change in fair value	(1,469)
Exercise of warrants	(368)
Ending balance as of September 30, 2017	<u>\$ 6</u>

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Fair values were calculated using the following assumptions:

	<u>As of Dec. 31,</u> <u>2016</u>	<u>As of date of</u> <u>exercise</u>
Risk-free interest rates, adjusted for continuous compounding	1.47/1.96%	1.45-1.99%
Term (years)	3.1/5.3	2.84-5.50
Expected volatility	55.3/49.8%	49.9-58.5%
Dates and probability of future equity raises	various	various

The fair value of the Company's contingent consideration related to the acquisition of the Aquadex Business from Baxter in August 2016 (see Note 8 – Commitments and Contingencies), was \$126,000 as of both September 30, 2018 and December 31, 2017. The fair value was initially measured based on the consideration expected to be transferred (probability-weighted), discounted back to present value, and it is considered a Level 3 instrument. The discount rate used was determined at the time of measurement in accordance with accepted valuation methods. The Company measures the liability on a recurring basis using Level 3 inputs including probabilities of payment and projected payment dates. Changes to any of the inputs may result in significantly higher or lower fair value measurements. There were no changes in the fair value of the contingent consideration subsequent to the initial measurement.

All cash equivalents are considered Level 1 measurements for all periods presented. The Company does not have any financial instruments classified as Level 2 or any other classified as Level 3 and there were no movements between these categories during the periods ended September 30, 2018 and December 31, 2017. The Company believes that the carrying amounts of all remaining financial instruments approximate their fair value due to their relatively short maturities.

Note 7 – Income Taxes

The Company provides for a valuation allowance when it is more likely than not that it will not realize a portion of the deferred tax assets. The Company has established a full valuation allowance for U.S. and foreign deferred tax assets due to the uncertainty that enough taxable income will be generated in those taxing jurisdictions to utilize the assets. Therefore, the Company has not reflected any benefit of such deferred tax assets in the accompanying consolidated financial statements.

As of September 30, 2018, there were no material changes to what the Company disclosed regarding tax uncertainties or penalties in its Annual Report on Form 10-K for the year ended December 31, 2017.

Note 8 - Commitments and Contingencies

Leases: The Company leases office space under a non-cancelable operating lease with Capital Partners Industrial Fund I, LLLP that expires in March 2022. In August 2018, the Company entered into a Third Amendment to the lease, extending the term of the lease from March 31, 2019 to March 31, 2022. Beginning on April 1, 2019, the annual base rent shall be \$9.00 per square foot, subject to annual increases of \$0.25 per square foot. Rent expense is recognized using the straight-line method over the term of the lease.

Employee Retirement Plan: The Company has a 401(k)-profit sharing plan that provides retirement benefit to substantially all full-time U.S. employees. Eligible employees may contribute a percentage of their annual compensation, subject to Internal Revenue Service limitations, with the Company matching a portion of the employee's contributions at the discretion of the Company.

Contingent Consideration: As part of the acquisition of the Aquadex Business from Baxter in August 2016, the Company agreed that if it disposes of any of the Aquadex assets for a price that exceeds \$4.0 million within three years of the closing, it will pay Baxter 40% of the amount of such excess. In addition, it also agreed that if shares of its common stock cease to be publicly traded on the Nasdaq Capital Market, Baxter has the option to require the Company to repurchase, in cash, all or any part of the common shares held by Baxter at a price equal to their fair market value, as determined by a third-party appraiser.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our interim condensed consolidated financial statements and related notes included in Part I, Item 1 of this Quarterly Report and the audited consolidated financial statements and related notes and Management's Discussion and Analysis of Financial Condition and Results of Operations contained in our Annual Report on Form 10-K for the year ended December 31, 2017. This discussion contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of a variety of factors, including those discussed in Part I, Item 1A "Risk Factors," in our Annual Report on Form 10-K for the year ended December 31, 2017, in Part II, Item 1A, "Risk Factors" of our Quarterly Report on Form 10-Q for the quarter ended March 31, 2018 and of this Quarterly Report and in our other filings with the SEC. See "—Forward-Looking Statements" below.

Unless otherwise specified or indicated by the context, CHF Solutions, Company, we, us and our, refer to CHF Solutions, Inc. and its subsidiaries.

OVERVIEW

About CHF Solutions

We are a medical device company focused on commercializing the Aquadex FlexFlow® System. The Aquadex FlexFlow System (“Aquadex”) 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. In the United States, we hold 501(k) clearance from the FDA to market and sell Aquadex. In the European Union, we are required to hold a CE Mark to import our product into the EU. The CE Mark for Aquadex has expired; however, we expect to receive renewal by the latter half of 2019, which would allow us to import additional inventory into the EU. We believe that we currently have sufficient 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.

Prior to July 2016, we were focused on developing the C-Pulse® Heart Assist System for treatment of Class III and ambulatory Class IV heart failure. In August 2016, we acquired the Aquadex Business from a subsidiary of Baxter International, Inc. (“Baxter”), a global leader in the hospital products and dialysis markets. On September 29, 2016, we announced a strategic refocus of our strategy that included halting all clinical evaluations of our C-Pulse technology to fully focus our resources on our recently acquired Aquadex Business.

On May 23, 2017, we announced that we were changing our name from Sunshine Heart, Inc. to CHF Solutions, Inc. to more appropriately reflect the direction of our business.

During 2017, our board of directors and stockholders approved two reverse stock splits. Neither reverse stock split changed the par value of our common stock or the number of common or preferred shares authorized by the Company’s Fourth Amended and Restated Certificate of Incorporation. The first reverse stock split was a 1-for-30 reverse split of our outstanding common stock that became effective after trading on January 12, 2017. The second reverse stock split was a 1-for-20 reverse split of our outstanding common stock that became effective after trading on October 12, 2017. All share and per share amounts in this Quarterly Report have been retroactively adjusted to reflect the reverse stock split for all periods presented.

Recent Developments

On September 13, 2018, we announced that we were expanding our commercial focus from fluid overloaded patients suffering from congestive heart failure to post-cardiovascular surgery where, like in heart failure, patients often need treatment for fluid overload and have failed diuretic therapy.

On July 3, 2018, we closed on an underwritten public offering of approximately 2.5 million shares of common stock, which included the full exercise of the underwriter’s over-allotment option to purchase additional shares and warrants, for gross proceeds of \$5.4 million. Net proceeds totaled approximately \$4.6 million after deducting the underwriting discounts and commissions and other costs associated with the offering. See Note 4 – Equity, to the condensed consolidated financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q.

In connection with the July 2018 Offering, and to induce certain institutional investors who held November 2017 Warrants to participate in the July 2018 Offering, we entered into Warrant Reprice Agreements with such institutional investors. Pursuant to the terms of the Warrant Reprice Agreements, we agreed, effective July 3, 2018, to (a) reduce the per share exercise price of the November 2017 Warrants held by such institutional investors to \$2.12 and (b) extend the expiration date of the Repriced Warrants that were to expire on November 27, 2018 to November 27, 2019. The number of shares underlying the Repriced Warrants after the price reduction did not change. The Repriced Warrants are exercisable for 7,760,400 shares of common stock in the aggregate, of which, following such amendment, half expire on November 27, 2019 and half expire on November 27, 2024.

Additionally, our outstanding Series F preferred stock is subject to full-ratchet anti-dilution protection in the event that we sell any common stock at a price lower than the then-conversion price of the Series F preferred stock. As a result of the July 2018 Offering, effective July 3, 2018, the conversion price of the Series F preferred stock was reduced from \$4.50 to \$2.12, the per share price to public in the July 2018 Offering.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

We have adopted various accounting policies to prepare the condensed consolidated financial statements in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"). Our most significant accounting policies are disclosed in Note 1 to the consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2017.

The preparation of the condensed consolidated financial statements, in conformity with U.S. GAAP, requires us to make estimates and assumptions that affect the amounts reported in the condensed consolidated financial statements and accompanying notes. Our estimates and assumptions, including those related to stock-based compensation, valuation of equity instruments, inventory and accounts receivable reserves, and income tax reserves are updated as appropriate, which in most cases is quarterly. We base our estimates on historical experience, valuations, or various assumptions that are believed to be reasonable under the circumstances. Other than the adoption of Accounting Standards Codification ("ASC"), Topic 606, *Revenue from Contracts with Customers*, as described below, there have been no material changes to our critical accounting policies and estimates from the information provided in Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations* included in our Annual Report on Form 10-K for the year ended December 31, 2017.

Revenue Recognition: We recognize revenue in accordance with ASC 606, which we adopted effective January 1, 2018. Accordingly, we recognize revenue when our customers obtain control of their products or services, in an amount that reflects the consideration that we expect to receive in exchange for those goods and services. See Note 2 to the condensed consolidated financial statements included in Part I, Item 1 of this Quarterly Report, for additional adoption and transition disclosures.

Accounts Receivable: Our accounts receivable have terms that require payment in 30 days. We did not establish an allowance for doubtful accounts at September 30, 2018 as we have not experienced any write offs or a deterioration in the aging of our receivables to date and do not expect to experience in the future.

Inventories: Inventories represent finished goods purchased from our supplier and are recorded as the lower of cost or net realizable value using the first-in-first out method.

Contingent consideration: In connection with the purchase of the Aquadex Business, we have an obligation to pay additional consideration that is contingent upon the occurrence of certain future events (see Note 8 to the condensed consolidated financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q). Contingent consideration was recognized at the acquisition date at the estimated fair value of the contingent milestone payments. The fair value of the contingent consideration is remeasured to its estimated fair value at the end of each reporting period, with changes recorded to earnings.

Common stock warrant liability: We recorded the common stock warrant liability at fair value at the date of issuance using primarily a Monte Carlo valuation model (see Note 6 – Fair Value of Financial Instruments to the condensed consolidated financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q). The fair value is remeasured to its estimated fair value at the end of each reporting period with changes recorded to earnings.

Stock-Based Compensation: We recognize all share-based payments to employees and directors, including grants of stock options, restricted stock units (RSUs), warrants and common stock awards in the consolidated statement of operations as an operating expense based on their fair values over the requisite service period.

We compute the estimated fair values of stock options and warrants using the Black-Scholes option pricing model. Market price at the date of grant is used to calculate the fair value of restricted stock units and common stock awards.

Stock-based compensation expense is based on awards ultimately expected to vest and is reduced for estimated forfeitures. Forfeitures are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

Equity instruments issued to non-employees include RSUs, warrants or options to purchase shares of our common stock. These RSUs, warrants or options are either fully-vested and exercisable at the date of grant or vest over a certain period during which services are provided. We expense the fair market value of fully vested awards at the time of grant, and of unvested awards over the period in which the related services are received. Unvested awards are remeasured to fair value until they vest.

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Loss per share: We compute basic loss per share based on the net loss allocable to common stockholders for each period divided by the weighted average number of common shares outstanding. The net loss allocable to common stockholders for the nine months ended September 30, 2017, reflects a \$1.0 million increase for the net deemed dividend to preferred stockholders provided in connection with the close of the public offering of Series E Convertible Preferred Stock in April of 2017, representing the intrinsic value of the shares at the time of issuance. In addition, the net loss allocable to common stockholders for the nine months ended September 30, 2017 reflects an increase for net deemed dividends of \$1.8 million to preferred stockholders provided in connection with the shareholder approval of the Series C and D Convertible Preferred Stock transactions in January of 2017, representing the intrinsic value of the shares at the time of issuance. Diluted loss per share is computed based on the net loss allocable to common stockholders for each period divided by the weighted average number of common shares outstanding, increased by the number of additional shares that would have been outstanding had the potentially dilutive common shares been issued, and reduced by the number of shares the Company could have repurchased from the proceeds from issuance of the potentially dilutive shares. Potentially dilutive shares of common stock include shares underlying outstanding convertible preferred stock, warrants, stock options and other stock-based awards granted under stock-based compensation plans. These potentially dilutive shares were excluded from the computation of loss per share as their effect was antidilutive due to our net loss in each of those periods.

Going Concern: Our consolidated financial statements have been prepared and presented on a basis assuming we continue as a going concern. During the years ended December 31, 2017 and 2016, and through September 30, 2018, we incurred losses from operations and net cash outflows from operating activities as disclosed in the consolidated statements of operations and cash flows, respectively. As of September 30, 2018, we had an accumulated deficit of \$195.1 million and we expect to incur losses for the immediate future. To date, we have been funded primarily by various debt and equity financings, and although we believe that we will be able to successfully fund our operations, there can be no assurance that we will be able to do so or that we will ever operate profitably. These factors raise substantial doubt about our ability to continue as a going concern through the next twelve months.

We became a revenue generating company only after acquiring the Aquadex Business 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, purchasing inventory, manufacturing components, and complying with the requirements related to being a U.S. public company. To become and remain profitable, we must succeed in expanding the adoption and market acceptance of Aquadex. This will require us to succeed in training personnel at hospitals and in effectively and efficiently manufacturing, marketing and distributing Aquadex 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.

During 2017, we closed on two underwritten public equity offerings for net proceeds of approximately \$24.2 million in the aggregate after deducting the underwriting discounts and commissions and other costs associated with the offerings. On July 3, 2018, we closed on an additional underwritten public offering for net proceeds of approximately \$4.6 million after deducting the underwriting discounts and commissions and other costs associated with the offering. We will be required to seek additional funding to grow our Aquadex Business, which may not be available on terms favorable to us, or at all. We may receive those funds from the proceeds from future warrant exercises, issuances of equity securities, or other financing transactions. Should future capital raising be unsuccessful, we may not be able to continue as a going concern. We have made no adjustments relating to the recoverability and classification of recorded asset amounts and classification of liabilities that might be necessary should we not continue as a going concern.

NEW ACCOUNTING PRONOUNCEMENTS

Information regarding new accounting pronouncements is included in Note 1 to the condensed consolidated financial statements included in this Quarterly Report.

FINANCIAL OVERVIEW

We are a medical device company focused on commercializing the Aquadex system for ultrafiltration treatment of patients with fluid overload who have failed diuretic therapy. Activities since inception have consisted principally of raising capital, performing research and development and conducting preclinical and clinical studies. In 2016, we acquired the Aquadex Business and announced that we were halting all clinical evaluations of our prior technology, the C-Pulse System. Since then, our activities have consisted mainly of expanding our sales and marketing capabilities and transferring manufacturing capabilities from Baxter to our facilities in Eden Prairie, Minnesota. As of September 30, 2018, we had an accumulated deficit of \$195.1 million and we expect to incur losses for the near future while we continue to ramp up sales of Aquadex. To date, we have been funded primarily by various equity and debt financings. Although we believe that we will be able to successfully fund our operations, there can be no assurance that we will be able to do so or that we will ever operate profitably.

Results of Operations

Comparison of Three Months Ended September 30, 2018 to Three Months Ended September 30, 2017

Net Sales

(dollars in thousands)

	Three Months Ended September 30, 2018		Three Months Ended September 30, 2017		Increase		% Change
\$	1,363	\$	957	\$	406		42.4%

Revenue is generated mainly from the sale of disposable blood filters and catheters used in conjunction with the console included in the Aquadex FlexFlow System. We sell primarily in the United States to hospitals and clinics through our direct salesforce. We sell outside of the United States to independent specialty distributors who in turn sell to hospitals and clinics in their geographic regions. The change in net sales compared to the same period of 2017 is driven by the execution of our commercialization strategy which includes continued expansion of our commercial footprint by the hiring of new sales representatives, clinical specialists, and marketing personnel.

Costs and Expenses

Our costs and expenses were as follows:

(dollars in thousands)

	Three Months Ended September 30, 2018		Three Months Ended September 30, 2017		Increase		% Change
Cost of goods sold	\$ 915	\$	782	\$	133		17.0%
Selling, general and administrative	\$ 3,713	\$	2,671	\$	1,042		39.0%
Research and development	\$ 985	\$	367	\$	618		168.4%

Cost of Goods Sold

In connection with the acquisition of the Aquadex Business, we entered into a manufacturing and supply agreement with Baxter. Cost of sales reflects the agreed-upon price paid to Baxter for the manufacturing of the disposables and consoles, as well as startup costs associated with the transfer of manufacturing activities to our facilities in Eden Prairie, Minnesota.

We provided notice to Baxter to cease the manufacturing of the Aquadex product line as of June 30, 2017, and we began transitioning activities in house. As part of the manufacturing transition, we agreed to continue to purchase inventory from Baxter through February 1, 2018. We began manufacturing our products in house in the fourth quarter of 2017, and in August 2018, we announced that the transfer of all manufacturing activities was complete.

We expect our gross margins will improve in future quarters as we transition to selling internally manufactured inventory, and as volumes increase and we achieve larger efficiencies of scale.

Selling, General and Administrative

The increase in selling, general and administrative expense reflects primarily on-going investments in our commercial organization as we continue to expand our outreach in the field with incremental sales specialists, clinical specialists and marketing support. Our general and administrative costs have remained consistent with the prior year. The increase also reflects incremental non-cash stock option expense totaling \$0.3 million.

As we continue to increase our distribution footprint, we expect that our selling expenses will continue to increase in future quarters, and that general and administrative expenses will remain consistent.

Research and Development

The increase in research and development expenses relate to investments we are making to improve the functionality of our Aquadex system, including console software updates and catheter improvements. We expect that our research and development expenditures will increase slightly in future quarters as we continue to make improvements to our product offerings.

Other Income (Expense)

The following is a summary of other income (expense):

(dollars in thousands)

	Three Months Ended September 30, 2018		Three Months Ended September 30, 2017		Decrease		% Change
Other income, net	\$ 10	\$	-17	\$	(7)		(41.2)%
Change in fair value of warrant liability	\$ -	\$	4	\$	(4)		(100.0)%

Comparison of Nine Months Ended September 30, 2018 to Nine Months Ended September 30, 2017

Net Sales

(dollars in thousands)

	Nine Months Ended September 30, 2018		Nine Months Ended September 30, 2017		Increase		% Change
\$	3,499	\$	2,722	\$	777		28.5%

Revenue is generated mainly from the sale of disposable blood filters and catheters used in conjunction with the console included in the Aquadex FlexFlow System. We sell primarily in the United States to hospitals and clinics through our direct salesforce. We sell outside of the United States to independent specialty distributors who in turn sell to hospitals and clinics in their geographic regions. The change in net sales compared to the same period of 2017 is driven by the execution of our commercialization strategy which includes continued expansion of our commercial footprint by the hiring of new sales representatives, clinical specialists, and marketing personnel.

Costs and Expenses

Our costs and expenses were as follows:

(dollars in thousands)

	Nine Months Ended September 30, 2018		Nine Months Ended September 30, 2017		Increase		% Change
Cost of goods sold	\$ 2,686	\$	1,912	\$	774		40.5%
Selling, general and administrative	\$ 11,489	\$	7,478	\$	4,011		53.6%
Research and development	\$ 2,107	\$	1,002	\$	1,105		110.3%

Cost of Goods Sold

In connection with the acquisition of the Aquadex Business, we entered into a manufacturing and supply agreement with Baxter. Cost of sales reflects the agreed-upon price paid to Baxter for the manufacturing of the disposables and consoles, as well as startup costs associated with the transfer of manufacturing activities to our facilities in Eden Prairie, Minnesota.

We provided notice to Baxter to cease the manufacturing of the Aquadex product line as of June 30, 2017, and we began transitioning activities in house. As part of the manufacturing transition, we agreed to continue to purchase inventory from Baxter through February 1, 2018. We began manufacturing our products in house in the fourth quarter of 2017, and in August 2018, we announced that the transfer of all manufacturing activities was complete.

We expect our gross margins will improve in future quarters as we transition to selling internally manufactured inventory, and as volumes increase and we achieve larger efficiencies of scale.

Selling, General and Administrative

The increase in selling, general and administrative expense reflect primarily on-going investment in our commercial organization as we continue to expand our outreach in the field with incremental sales specialists, clinical specialists and marketing support. Our general and administrative costs have remained consistent to the prior year. The increase also reflects incremental non-cash stock option expense totaling \$1.1 million.

As we continue to increase our distribution footprint, we expect that our selling expenses will continue to increase in future quarters, and that general and administrative expenses will remain consistent to the current quarter.

Research and Development

The increase in research and development expenses relate to investments we are making to improve the functionality of our Aquadex system, including console software updates and catheter improvements. We expect that our research and development expenditures will increase in future quarters as we continue to make improvements to our offerings.

Other Income (Expense)

The following is a summary of other income (expense)

(dollars in thousands)

	Nine Months Ended September 30, 2018		Nine Months Ended September 30, 2017		Decrease		% Change
Change in fair value of warrant liability	\$ -	\$	1,470	\$	(1,470)		(100.0)%
Warrant valuation expense	\$ -	\$	(67)	\$	(67)		(100.0)%
Other income, net	\$ 10	\$	28	\$	(18)		(64.3)%

Change in Fair Value of Warrant Liability

The gain recognized for the change in fair value of warrant liability relates to the decrease in value of the warrants issued in connection with financings completed on July 26, 2016, November 3, 2016 and January 10, 2017. These warrants were classified as liabilities on our consolidated balance sheet as of December 31, 2016 and required to be marked to market at each reporting period, with the changes in fair value recorded on our consolidated statement of operations. All of these warrants were exercised during the nine-month period ended September 30, 2017 pursuant to a warrant exercise agreement described in Note 4 – Equity, to the condensed consolidated financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q. Accordingly, we remeasured each of these warrants as of the date of exercise and recorded \$1.4 million as an unrealized gain on our consolidated statement of operations. Although we issued replacement warrants during the nine months ended September 30, 2017 under the warrant exercise agreement, the replacement warrants are not accounted for as liabilities based on their terms.

Liquidity and Capital Resources

Sources of Liquidity

We have funded our operations primarily through cash on hand and a series of equity and debt financings.

On July 26, 2016, pursuant to a Securities Purchase Agreement dated July 20, 2016, we completed an equity financing with an institutional investor of shares of Series B Convertible Preferred Stock and warrants for gross cash proceeds of approximately \$3.5 million in a registered direct offering and simultaneous private placement. The Series B issued under the securities purchase agreement was exchanged for Series B-1 Convertible Preferred Stock on October 30, 2016. Also, on October 30, 2016, we entered into securities purchase agreement with an institutional investor pursuant to which we agreed to issue shares of Series C Convertible Preferred Stock, Series D Convertible Preferred Stock and warrants with an aggregate purchase price of \$3.8 million in a registered direct offering and simultaneous private placement. The first closing occurred on November 3, 2016, whereby we received \$3.6 million in gross proceeds and issued and sold shares of Series C Convertible Preferred Stock, shares of Series D Convertible Preferred Stock and warrants. At the second closing in January 2017, which was subject to receipt of shareholder approval of the transactions, we received \$0.2 million in gross proceeds and issued and sold shares of Series D Convertible Preferred Stock and warrants.

In February 2017, we entered into an agreement with the holder of the majority of our outstanding warrants to incent their exercise of warrants for cash on or before March 31, 2017. In exchange for any such exercise, we agreed to provide the investors a replacement warrant to purchase the same number of shares of common stock as were issued upon exercise of each exercised warrants with an exercise price equal to the consolidated closing bid price of our common stock on the date of issuance. In connection with this agreement, the investors exercised all of the original warrants for gross cash proceeds to us of \$2.0 million, and we issued 43,396 replacement warrants with exercise prices ranging from \$34.6 per share to \$99.8 per share.

On April 24, 2017, we closed on an underwritten public offering for net proceeds of approximately \$8.0 million after deducting the underwriting discounts and commissions and other costs associated with the offering, which included the full exercise of the underwriter's over-allotment option to purchase additional shares and warrants. In connection with this offering, we issued a total of 140,000 shares of common stock, 6,400 shares of Series E Convertible Preferred Stock (which were convertible into 320,000 shares of common stock) and warrants to purchase 460,000 shares of common stock.

On November 27, 2017, we closed on another underwritten public offering for net proceeds of approximately \$16.2 million after deducting the underwriting discounts and commissions and other costs associated with the offering. In connection with this offering we issued 18,000 shares of Series F Convertible Preferred stock (which were convertible into approximately 4.0 million shares of common stock) and warrants to purchase approximately 8.0 million shares of common stock. See Note 4—Equity to the condensed consolidated financial statements included in Part I, Item 1 of this Quarterly Report.

On July 3, 2018, we closed on an underwritten public offering of approximately 2.5 million shares of common stock, for gross proceeds of \$5.4 million. Net proceeds totaled approximately \$4.6 million after deducting the underwriting discounts and commissions and other costs associated with the offering. See Note 4 – Equity, to the condensed consolidated financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q for information regarding the Warrant Reprice Agreements and adjustment of the conversion price of the Series F preferred stock in connection with the July 2018 offering.

On August 5, 2016, we entered into a loan agreement with Silicon Valley Bank for a \$1.0 million revolving line of credit. Under the revolving line, we may borrow the lesser of \$1.0 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 loan agreement contains customary representations, as well as customary affirmative and negative covenants. Our obligations under the new 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. Advances under the revolving line are subject to various conditions precedent, including our compliance with financial covenants relating to net liquidity relative to monthly cash burn. The revolving line of credit expires on March 31, 2020. We had no borrowings outstanding under the Silicon Valley Bank facility as of September 30, 2018 or December 31, 2017.

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As of September 30, 2018, and December 31, 2017, cash and cash equivalents were \$8.2 million and \$15.6 million, respectively. Prior to our acquisition of the Aquadex Business in August 2016, we did not have a product approved for commercial sale and focused our resources on developing, manufacturing, and commercializing our C-Pulse System. In September 2016, we announced a strategic refocus that included halting all clinical evaluations to fully focus our resources on our recently acquired Aquadex Business. Our business strategy and ability to fund our operations in the future depends in part on our ability to grow our Aquadex Business by establishing a sales force, selling our products to hospitals and other healthcare facilities and controlling costs. We believe we will need additional funds to finance our operations in the future.

Cash Flows from Operating Activities

Net cash used in operating activities was \$11.8 million and \$8.8 million for the nine months ended September 30, 2018 and 2017, respectively. The net cash used in each of these periods primarily reflects the net loss for those periods, offset in part by stock-based compensation, depreciation and amortization, the decrease of the fair value of the warrant liability and the effects of changes in operating assets and liabilities.

Cash Flows from Investing Activities

Net cash used in investing activities was \$0.2 million for each of the nine-month periods ended September 30, 2018 and 2017, respectively. The majority of cash used in investing activities was for the purchase of manufacturing, laboratory and office equipment.

Cash Flows from Financing Activities

Net cash provided by financing activities was \$4.6 million and \$10.2 million for the nine months ended September 30, 2018 and 2017, respectively. Net cash provided by financing activities in 2018 was attributable to proceeds of the public offering of common stock completed on July 3, 2018. Net cash provided by financing activities in 2017 was attributable to proceeds from the public stock offering completed in April 2017, net proceeds from the exercise of warrants, and from the second closing of the Series D Convertible Preferred Stock.

Capital Resource Requirements

As of September 30, 2018, we did not have any material commitments for capital expenditures.

Off-Balance Sheet Arrangements

In August 2018, we amended our lease agreement for our office space in Eden Prairie, Minnesota extending the term of the lease from March 31, 2019 to March 31, 2022.

On August 5, 2016, we entered into an asset purchase agreement for the Aquadex Business with Baxter, whereby we agreed that if we dispose of any of the acquired assets for a price that exceeds \$4.0 million within three years of the closing, we will pay Baxter 40% of the amount of such excess; and if shares of our common stock cease to be publicly traded on the Nasdaq Capital Market, Baxter has the option to require us to repurchase, in cash, all or any part of the common shares held by Baxter at a price equal to their fair market value, as determined by a third-party appraiser.

Except as disclosed above, we have no off-balance sheet transactions, arrangements, obligations (including contingent obligations), or other relationships with unconsolidated entities or other persons that have, or may have, a material effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources.

Forward-Looking Statements

Certain statements in this Quarterly Report on Form 10-Q are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, that are based on management's beliefs, assumptions and expectations and information currently available to management. All statements that address future operating performance, events or developments that we expect or anticipate will occur in the future are forward-looking statements, including without limitation, statements about our commercialization strategy, our post-market clinical data collection activities, benefits of our products to patients, our expectations with respect to product development and commercialization efforts, our expectations regarding our future expenses and gross margins, our ability to achieve larger efficiencies of scale, our ability to increase market and physician acceptance of our products, potentially competitive product offerings, intellectual property protection, our ability to fund our operations, our ability to integrate acquired businesses and our expectations regarding anticipated synergies with and benefits from acquired businesses. In some cases, you can identify forward-looking statements by terms such as "anticipate," "believe," "could," "estimate," "expect," "forecast," "intend," "looking ahead," "may," "plan," "possible," "potential," "project," "should," "may," "will," and similar words or expressions. Management believes that these forward-looking statements are reasonable as and when made. However, you should not place undue reliance on forward-looking statements because they speak only as of the date when made. Forward-looking statements are subject to a number of risks and uncertainties that could cause actual events to adversely differ from the expectations indicated in these forward-looking statements, including without limitation, the risks and uncertainties described in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017, our Quarterly Report on Form 10-Q for the quarter ended March 31, 2018, this Quarterly Report and in other reports filed thereafter with the SEC, which risk factors we may update from time to time. We operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for us to predict all risk factors and uncertainties. We may not actually achieve the plans, projections or expectations disclosed in forward-looking statements, and actual results, developments or events could differ materially from those disclosed in the forward-looking statements. Except as required by applicable law, we do not assume any obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events, changed circumstances or otherwise.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Not applicable.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in our Exchange Act reports is recorded, processed, summarized and reported within the time periods specified in the SEC rules and forms and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer (together, the “*Certifying Officers*”), as appropriate, to allow for timely decisions regarding required disclosure.

In designing and evaluating disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable, not absolute, assurance of achieving the desired objectives. Also, the design of a control system must reflect the fact that there are resource constraints and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns can occur because of simple error or mistake. The design of any system of controls is based, in part, upon certain assumptions about the likelihood of future events and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

As of September 30, 2018, the end of the period covered by this report, we conducted an evaluation, under the supervision and with the participation of management, including the Certifying Officers, of the effectiveness of the design and operation of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934, as amended (the “*Exchange Act*”). Our disclosure controls and procedures are designed to provide reasonable assurance of achieving their stated objectives. Based on their evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective at a reasonable assurance level as of September 30, 2018.

Changes in Internal Controls over Financial Reporting

There was no change in our internal control over financial reporting during our most recently completed fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

We are not currently subject to any material legal proceedings.

ITEM 1A. RISK FACTORS

You should carefully consider the risks and uncertainties we describe in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017, our Quarterly Report on Form 10-Q for the quarter ended March 31, 2018 and in our other filings with the SEC, before deciding to invest in or retain shares of our common stock. We do not believe there are any material changes to the risk factors discussed in Item 1A. “Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017, our Quarterly Report on Form 10-Q for the quarter ended March 31, 2018 and in other reports filed thereafter with the SEC, except as set forth below.

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, require approval or registration to import and/or sell our products in the country. In the EU, we are required to hold a CE Mark to import our product into the EU. The CE Mark for the Aquadex FlexFlow System has expired. We expect to receive renewal by the latter half of 2019, which would allow us to import additional inventory into the EU. 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, depending on the timing of receipt of the CE Mark. 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.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

Not applicable

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

Not applicable.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. OTHER INFORMATION

In August 2018, the Company entered into a Third Amendment to its lease with Capital Partners Industrial Fund I, LLLP relating to office space in Eden Prairie, Minnesota, extending the expiration date of the lease from March 31, 2019 to March 31, 2022. Beginning on April 1, 2019, the annual base rent shall be \$9.00 per square foot, subject to annual increases of \$0.25 per square foot. This description of the lease amendment is qualified in its entirety by reference to the text of the Third Amendment, a copy of which is attached as Exhibit 10.2 to this Quarterly Report on Form 10-Q and incorporated herein by reference.

ITEM 6. EXHIBITS

Exhibit Index
CHF Solutions, Inc.
Form 10-Q for the Quarterly Period Ended September 30, 2018

Exhibit Number	Exhibit Description	Incorporated By Reference			Filed Herewith	Furnished Herewith
		Form	File Number	Date of First Filing		
3.1	Fourth Amended and Restated Certificate of Incorporation	10	001-35312	February 1, 2012		
3.2	Certificate of Amendment to the Fourth Amended and Restated Certificate of Incorporation	8-K	001-35312	January 13, 2017		
3.3	Certificate of Amendment to the Fourth Amended and Restated Certificate of Incorporation	8-K	001-35312	May 23, 2017		
3.4	Certificate of Amendment to the Fourth Amended and Restated Certificate of Incorporation	8-K	001-35312	October 12, 2017		
3.5	Second Amended and Restated Bylaws	8-K	001-35312	May 23, 2017		
4.1	Form of Common Stock Purchase Warrant issued pursuant to the Letter Agreement dated February 15, 2017	8-K	001-35312	February 16, 2017		
4.2	Form of Warrant to purchase shares of common stock	S-1/A	333-216841	April 4, 2017		
10.1	Separation and Release Agreement, dated as of August 6, 2018, between the Company and James Breidenstein					X
10.2	Third Amendment to Lease, dated as of August 3, 2018, by and between the Company and Capital Partners Industrial Fund I, LLLP					X
31.1	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
31.2	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
32.1	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					X

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Exhibit Number	Exhibit Description	Incorporated By Reference				Filed Herewith	Furnished Herewith
		Form	File Number	Date of First Filing	Exhibit Number		
32.2	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002						X
101.INS	XBRL Instance Document					X	
101.SCH	XBRL Taxonomy Extension Schema Document					X	
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document					X	
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document					X	
101.LAB	XBRL Taxonomy Extension Label Linkbase Document					X	
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document					X	

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

CHF Solutions, Inc.

Date: November 7, 2018

By: /s/ John L. Erb

John L. Erb
Chief Executive Officer and Chairman of the Board
(principal executive officer)

Date: November 7, 2018

By: /s/ Claudia Drayton

Claudia Drayton
Chief Financial Officer
(principal financial officer)

SEPARATION AND RELEASE AGREEMENT

THIS SEPARATION AND RELEASE AGREEMENT (this "*Agreement*") is made by and between **CHF Solutions, Inc.**, a Delaware corporation, whose address is 12988 Valley View Road, Eden Prairie, Minnesota 55344 (the "*Company*") and James Breidenstein ("*Employee*"). The Parties agree as follows:

**ARTICLE 1
EMPLOYMENT TERMINATION AND PAYMENTS**

1.1 Termination of Employment. Employee's employment with the Company shall terminate as of July 31, 2018 (the "*Termination Date*"). Until the Termination Date, the Company shall continue to pay Employee his salary and other amounts required by law in accordance with its standard payroll procedures, less deductions required or authorized by law.

1.2 Separation Consideration. As consideration for Employee's agreements and releases set forth herein, following the execution of this Agreement and expiration of the Revocation Period (as defined below), and recognizing that without execution of this Agreement, Employee would not be entitled to any additional compensation beyond wages due, the Company agrees to provide Employee with the severance amounts and benefits specified in, and subject to the conditions stated in, the employment letter agreement between Employee and the Company dated April 12, 2017 (the "*Employment Terms Letter*"). The salary continuation payments will be paid in accordance with the Company's standard payroll procedures and less all required deductions.

1.3 Expense Reimbursement. Employee will submit his final documented employee expense reimbursement statement reflecting all business expenses incurred by Employee through the Termination Date, if any, to the Company within thirty (30) days of the Termination Date. The Company will reimburse Employee for these expenses pursuant to its regular business practice.

1.4 Conflict with Other Agreements. In the event of any conflict of the provisions between this Agreement and the Employment Terms Letter, the provisions set forth in this Agreement shall control. In the event of any conflict between this Agreement and the provisions of that certain Employee Proprietary Information, Inventions Assignment and Non-Competition Agreement between the Company and Employee (the "*Invention Assignment Agreement*"), the terms and conditions of the Invention Assignment Agreement shall control over the terms of this Agreement.

1.5 Acknowledgement. Except as provided in this Article 1, the Parties acknowledge and agree that Employee is not, and shall not after the Termination Date, be eligible for any additional payment by the Company of any bonus, salary, vacation pay, retirement pension, severance pay, back pay, or other remuneration or compensation of any kind in respect of employment by the Company, provided that nothing in this Agreement alters Employee's rights with respect to any existing stock options, which will continue to be governed by the applicable plan and any agreements specifically related thereto. Employee hereby confirms to the Company that Exhibit 1 to the Invention Assignment Agreement contains a complete list of all Inventions (as defined in the Invention Assignment Agreement) or improvements to which Employee claims ownership and desires to remove from the operation of the Inventions Assignment Agreement. Employee further agrees that the Invention Assignment Agreement remains in full force and effect and Employee hereby reaffirms his obligations arising under the terms of the Invention Assignment Agreement. Employee agrees to return to the Company all Company Documents and Materials (as defined in the Invention Assignment Agreement and without retaining copies thereof), apparatus, equipment and other physical property in Employee's possession within two (2) days of the Termination Date and in the manner directed by the Company.

1.6 Cooperation and Assistance. Following the Termination Date, Employee agrees to furnish such information and assistance to the Company as may be reasonably required by the Company in connection with any issues or matters of which Employee had knowledge during his employment with the Company. In addition, Employee shall make himself reasonably available to assist the Company in matters relating to the transition of his prior duties to other employees of the Company, as may be reasonably requested by the Company.

1.7 Claims Against the Company. Employee agrees to cooperate with the Company in any internal investigation, any administrative, regulatory or judicial proceeding or any dispute with a third party. Further, to the fullest extent permitted by law, Employee will not cooperate with or assist any person or entity asserting or investigating a claim against the Company unless required to do so by a lawfully issued subpoena, by court order or as expressly provided by regulation or statute. If Employee is served with a subpoena or is required by court order or otherwise to testify or produce documents in any type of proceeding involving the Company, he shall immediately advise the Company of same and cooperate with the Company in objecting to such request and/or seeking confidentiality protections.

**ARTICLE 2
RELEASE AND NON-DISPARAGEMENT**

2.1 Employee Release of Claims. In consideration for the separation consideration set forth in this Agreement, Employee, on behalf of himself, his heirs, executors, legal representatives, spouse and assigns ("***Employee Releasing Parties***"), hereby fully and forever releases the Company and its respective past and present officers, directors, employees, investors, stockholders, administrators, subsidiaries, affiliates, predecessor and successor corporations and assigns, attorneys and insurers (the "***Company's Released Parties***") of and from any claim, duty, obligation or cause of action relating to any matters of any kind, whether presently known or unknown, suspected or unsuspected, that any of them may possess arising from any omissions, acts or facts that have occurred up until and including the date he signs this Agreement, including, without limitation, any and all claims:

A. which arise out of, result from, or occurred in connection with Employee's employment by the Company or any of its affiliated entities, the termination of that employment, any events occurring in the course of that employment, or any events occurring prior to the execution of this Agreement;

B. for breach of contract, both express and implied; breach of a covenant of good faith and fair dealing, both express and implied; negligent or intentional infliction of emotional distress; negligent or intentional misrepresentation; negligent or intentional interference with contract or prospective economic advantage; termination in violation of public policy; defamation; misrepresentation; invasion of privacy; negligence; and any other tort;

C. relating to the violation of any federal, state or municipal statute pertaining to discrimination, harassment, retaliation, wrongful discharge and/or employment terms and conditions, including, without limitation, Title VII of the Civil Rights Act of 1964, the Civil Rights Act of 1866, the Employee Retirement and Income Security Act of 1974, the Age Discrimination in Employment Act of 1967 (the "**ADEA**"), the Older Workers' Benefit Protection Act ("**OWBPA**"), the Family Medical Leave Act, the Worker Adjustment and Retraining Notification Act, the Americans with Disabilities Act of 1990, the Minnesota Human Rights Act (the "**MHRA**"), the Minnesota Equal Pay for Equal Work Law, the Minnesota healthcare worker whistleblower protection laws, the Minnesota family leave law, and the Minnesota personnel record access statutes; and

D. for back pay or other unpaid compensation and/or for attorneys' fees and costs.

Employee represents that he has not filed any lawsuit, arbitration, or other claim against any of the Company's Released Parties. Employee states that he knows of no violation of state, federal, or municipal law or regulation by any of the Company's Released Parties and knows of no ongoing or pending investigation, charge, or complaint by any agency charged with enforcement of state, federal, or municipal law or regulation. Nothing in this Agreement limits state or federal agencies from investigating and enforcing laws within their jurisdiction, but (except as to possible whistleblower awards from the Securities and Exchange Commission) Employee agrees he will not receive any individual monetary damages, recovery and/or relief of any type related to any Released Claim(s), whether pursued by Employee or any governmental agency, other person or group.

2.2 Acknowledgment of Waiver of Claims under ADEA and MHRA. Employee acknowledges that he is waiving and releasing any rights he may have under the OWBPA, the ADEA, and the MHRA, and that this waiver and release is knowing and voluntary. Employee acknowledges that the consideration given for this waiver and release is in addition to anything of value to which Employee was already entitled. Employee further acknowledges that he has been advised by this writing that: (a) he should consult with an attorney of his choice concerning the terms of this Agreement prior to executing this Agreement; (b) he has at least twenty-one (21) days within which to consider this Agreement and that if he signs this Agreement before expiration of that review period, he does so knowingly and voluntarily and with the intent of waiving his right to utilize the full review period; (c) he has the right to revoke his release of claims, insofar as it extends to potential claims arising under the ADEA, by informing the Company of such revocation within seven (7) calendar days following his execution of this Agreement; and (d) he has the right to rescind his release of claims, insofar as it extends to potential claims arising under the MHRA, by informing the Company of such rescission within fifteen (15) calendar days following Employee's execution of this Agreement. Employee further understands that these revocation and rescission periods shall run concurrently, and that this Agreement is not effective until the fifteen (15) day rescission period (the "**Revocation Period**") has expired without any revocation being communicated. Communication of any such revocation by Employee to the Company shall be provided in writing and mailed by certified or registered mail with return receipt requested and addressed to the Company at its principal corporate offices to the attention of its Vice President of Human Resources.

2.3 No Admission of Liability. Neither this Agreement nor any statement contained herein shall be deemed to constitute an admission of liability on the part of the parties herein released. This Agreement's execution and implementation may not be used as evidence, and shall not be admissible in a subsequent proceeding of any kind, except one alleging a breach of this Agreement or the Invention Assignment Agreement.

2.4 Non-Disparagement. Employee covenants and agrees that he shall not make or cause to be made any statements, observations, or opinions, or communicate any information (whether in written or oral form), that defame, slander or are likely in any way to harm the reputation of the Company's Released Parties or tortuously interfere with any of the Company's respective business relationships. Employee acknowledges and agrees that any violation of the covenant contained in this Section will result in irreparable damage to the Company and that the Company shall be entitled to injunctive and other equitable relief. Employee understands and agrees that the Company's Released Parties could not be reasonably or adequately compensated in damages in an action at law for breach of Employee's obligations under this Section. Accordingly, Employee specifically agrees that the Company's Released Parties shall be entitled to temporary and permanent injunctive relief, specific performance, and other equitable relief to enforce the provisions of this Section. This provision with respect to injunctive relief shall not, however, diminish the right of the Company's Released Parties to claim and recover damages or other remedies in addition to equitable relief.

**ARTICLE 3
REPRESENTATIONS AND WARRANTIES**

3.1 Representations and Warranties of Employee. Employee warrants and represents to the Company that he:

- A. has been advised to consult with legal counsel in entering into this Agreement;
- B. has entirely read this Agreement;
- C. has voluntarily executed this Agreement without any duress or undue influence and with the full intent of releasing all claims;
- D. has received no promise, inducement or agreement not herein expressed with respect to this Agreement or the terms of this Agreement;
- E. understands and agrees that in the event any injury, loss, or damage has been sustained by him which is not now known or suspected, or in the event that the losses or damage now known or suspected have present or future consequences not now known or suspected, this Agreement shall nevertheless constitute a full and final release as to the parties herein released, and that this Agreement shall apply to all such unknown or unsuspected injuries, losses, damages or consequences; and

F. expressly acknowledges that his entry into this Agreement is in exchange for consideration in addition to anything of value to which he is already entitled.

3.2 Authority. Employee represents and warrants that he has the capacity to act on his own behalf and on behalf of all who might claim through him to bind them to the terms and conditions of this Agreement. Each Party warrants and represents that he/it has not assigned any claim released under this Agreement, and there are no liens or claims of lien or assignments in law or equity or otherwise of or against any of the claims or causes of action released herein.

ARTICLE 4 MISCELLANEOUS

4.1 Confidentiality. Employee agrees to maintain in confidence the existence of this Agreement, the contents and terms of this Agreement and the consideration for this Agreement (collectively, the "*Separation Information*"), provided that Employee may share the Separation Information with his spouse, his accountant or financial advisor to the limited extent needed for that person to prepare his tax returns, and his attorney. In addition, Employee may reveal to potential employers only those Sections of this Agreement that would restrict his activities or ability to disclose information with respect to any such future employer.

4.2 Remedies. In addition to any other legal, contractual and/or equitable remedies, the Company's obligation to provide the payments identified in Article 1 shall immediately cease if the Company, in good faith, believes Employee has breached one or more of this Agreement, the Invention Assignment Agreement, and/or any other contractual or legal obligation Employee owes to the Company. Further, in the event of a breach of one or more of the foregoing, in addition to any other available remedies, Employee shall be required to repay to the Company any amounts paid under Article 1, provided that Employee may retain, and is not required to repay, up to \$1,000.00. The discontinuance and/or repayment of the severance benefits shall not affect the validity of the release and other obligations of Employee as set forth in this Agreement or otherwise.

4.3 Severability. Should any provision of this Agreement be declared or be determined by any arbitrator or court of competent jurisdiction to be illegal or invalid, the validity of the remaining parts, terms or provisions shall not be affected thereby and said illegal or invalid part, term, or provision shall be deemed not to be a part of this Agreement.

4.4 Entire Agreement. This Agreement represents the entire agreement and understanding between the Company and Employee concerning Employee's separation from the Company and supersedes and replaces any and all prior agreements and understandings concerning Employee's relationship with the Company and his compensation by the Company; provided, however, that this Agreement does not supersede or modify the Invention Assignment Agreement, which shall remain in full force and effect. This Agreement may only be amended by a writing signed by Employee and the Company.

4.5 Assignment. This Agreement may not be assigned by Employee without the prior written consent of the Company. The Company may assign this Agreement without Employee's consent in connection with a merger or sale of its assets and/or to a corporation controlling, controlled by or under common control with the Company. This Agreement shall inure to the benefit of, and be binding upon, each Party's respective heirs, legal representatives, successors and assigns.

4.6 Governing Law; Consent to Jurisdiction, Waiver of Jury Trial. This Agreement shall be governed by and construed in accordance with the laws of the State of Minnesota, without regard to its principles of conflicts of laws. Each of the Parties hereto irrevocably submits to the exclusive jurisdiction of the state and federal courts of the State of Minnesota for the purpose of any suit, action, proceeding or judgment relating to or arising out of this Agreement, and consents to the laying of venue in such courts. EACH OF THE PARTIES KNOWINGLY AND VOLUNTARILY WAIVES ANY RIGHT TO REQUEST A TRIAL BY JURY IN ANY LITIGATION WITH RESPECT TO THIS AGREEMENT AND REPRESENTS THAT COUNSEL HAS BEEN CONSULTED SPECIFICALLY AS TO THIS WAIVER. In addition, should the Company prevail (in whole or in part) in enforcing any of the terms of this Agreement, Employee shall reimburse the Company for its reasonable fees and expenses (legal costs, attorney's fees and otherwise) related thereto.

4.7 Counterparts/ Facsimile Signature. This Agreement may be executed in one or more counterparts and by facsimile, each of which shall constitute an original and all of which together shall constitute one and the same instrument. Signatures of the parties transmitted by facsimile or via .pdf format shall be deemed to be their original signatures for all purposes.

The Parties have executed this Separation and Release Agreement as of the date set forth below.

CHF Solutions, Inc.

By: /s/ John Erb

John Erb
CEO and Chairman of the Board

/s/ James Breidenstein

James Breidenstein

Date: 8/6/2018

THIRD AMENDMENT TO LEASE

This THIRD AMENDMENT TO LEASE (the "Amendment") is dated this 3rd day of August, 2018 by and between Capital Partners Industrial Fund I, LLLP, a Minnesota limited liability limited partnership ("Landlord") and CHF Solutions, Inc., a Delaware corporation ("Tenant").

- A. Landlord, as successor in interest to Silver Prairie Crossroads, LLC, and Tenant are the current parties to that certain Office/Industrial Flex Lease dated October 21, 2011, as amended by that certain First Amendment to Lease Agreement dated August 16, 2013, as further amended by that certain Second Amendment to Lease dated April 20, 2015 (collectively, the "Lease"), for the lease by Tenant of approximately 23,211 rentable square feet in the building located at 12988 Valley View Road, Eden Prairie, MN 55344, consisting, as more particularly described in the Lease (the "Premises").
- B. Effective May 24, 2017, Tenant changed its name from Sunshine Heart, Inc. to CHF Solutions, Inc.
- C. Tenant and Landlord desire to amend the Lease to extend the term of the Lease, and to make certain other specific modifications to the Lease, upon the terms and conditions hereinafter set forth.

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants hereinafter contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

- 1.0 Capitalized Terms. All capitalized terms referred to in this Amendment shall have the same meaning defined in the Lease, except where expressly defined to the contrary in this Amendment.
- 2.0 Confirmation. Tenant acknowledges and agrees that: (a) Tenant is in sole possession of the Premises demised under the Lease; (b) all work, improvements and furnishings required by Landlord under the Lease have been completed and accepted by Tenant; (c) Tenant has no offset, claim, recoupment or defense against the payment of rent and other sums and the performance of all obligations of Tenant under the Lease and the Lease is binding on Tenant and is in full force and effect, and Tenant has no defenses to the enforcement of the Lease; (d) Tenant has not assigned the Lease, or sublet the Premises, and (e) Tenant is not in default of the Lease and Tenant acknowledges that Landlord is not in default of the Lease. Landlord acknowledges and agrees that Landlord is not in default of the Lease and Tenant is not in default of the Lease.
- 3.0 Term. The Term of the Lease shall be extended for an additional three (3) consecutive years commencing April 1, 2019 such that it will expire on March 31, 2022 (the "Extension Term").

4.0 Rent. The monthly Base Rent from and after April 1, 2019 shall be as follows:

<u>Time Period</u>	<u>Monthly Base Rent</u>	<u>Annual Base Rent</u>	<u>Rate (PSF)</u>
4/1/19-3/31/20	\$17,408.25	\$208,899.00	\$9.00
4/1/20-3/31/21	\$17,891.81	\$214,701.75	\$9.25
4/1/21-3/31/22	\$18,375.38	\$220,504.50	\$9.50

5.0 Condition of Premises. Tenant shall accept the Premises in its as-is condition as of the commencement of the Extension Term, and landlord shall have no obligation to make or pay for any alterations, additions, improvement or renovations in or to the premises to prepare the same for Tenant's occupancy during the Extension Term, except to fund the Allowance as defined below.

6.0 Improvements By Tenant and Tenant Improvement Allowance. Tenant shall pay all costs it incurs in constructing or installing improvements to the Premises. Landlord shall contribute to such improvements a cash allowance to Tenant in an amount not to exceed \$30,000.00 ("Allowance"). Tenant shall pay all costs of the improvements to the Premises that are in excess of the Allowance. The Allowance shall be used by Tenant for improvements to the Premises, such as replacing a toilet, the hot water heater, and certain HVAC systems, moving the Mitsubishi air conditioning unit to the roof of the Building, and replacing lighting with LED lights, and all improvements shall be made subject to the terms and conditions of Article 15 of the Lease. The parties acknowledge that the foregoing are examples and not a complete list of possible improvements and Tenant may make other improvements in its reasonable discretion and in accordance with the Lease. Any costs related to such improvements of Tenant for which Tenant requests reimbursement from the Allowance, must be supported by reasonable documentation, such as (i) supporting invoices, (ii) receipt of purchase, information, and data as may be requested by Landlord from all general contractors, subcontractors and mater ilmen performing work on the Premises; and (iii) a full and final sworn construction statement, together with final lien waivers from all contractors and subcontractors for all work performed at the Premises by Tenant or at the request of Tenant. Provided Tenant is not in default under the Lease, as amended, Landlord agrees to reimburse Tenant for the improvement costs submitted with documentation required above, not to exceed the amount of the Allowance, within thirty (30) days following receipt of Tenant's request.

7.0 Real Estate Brokers. Notwithstanding anything to the contrary contained in the Lease, Landlord and Tenant each represents and warrants to the other party that it has not authorized or employed, or acted by implication to authorize or employ, any real estate broker or salesman to act for it in connection with this Amendment, except for Jason Simek of Colliers International on behalf of Landlord, who shall be paid a commission by Landlord pursuant to a separate written agreement. Landlord and Tenant shall each indemnify, defend and hold the other party harmless from and against any and all claims by any other real estate broker or salesman whom the indemnifying party authorized or employed, or acted by implication to authorize or employ, to act for the indemnifying party in connection with this Amendment.

8.0 Landlord's Notice Address. Effective immediately, Landlord's notice address under the Lease is hereby amended and restated as follows: c/o Capital Partners, 900 2nd Avenue South, #1575, Minneapolis, MN 55402.

9.0 General Provisions.

- 9.1 Option Rights. All option rights, if any, contained in the Lease, including, without limitation, options to extend or renew the term of the Lease or to expand the Premises, are hereby deleted and are of no force and effect.
- 9.2 Further Assurances. Landlord and Tenant each agree to execute any and all documents and agreements reasonably requested by the other party to further evidence or effectuate this Amendment.
- 9.3 Successors and Assigns. This Amendment shall be binding upon and inure to the benefit of the parties hereto and their successors and assigns.
- 9.4 Reaffirmation. As amended hereby, the Lease shall remain in full force and effect.
- 9.5 Conflicts. In case of any conflict between any term or provision of this Amendment and the Lease, the term or provision of this Amendment shall govern.
- 9.6 .pdf Signatures. In order to expedite the transaction contemplated herein, signatures sent by .pdf via e-mail may be used in place of original signatures on this Amendment or any other document or agreement in this transaction, other than those to be recorded in the public records. Landlord and Tenant intend to be bound by the signatures on each .pdf document, are aware that the other party will rely on the .pdf signatures, and hereby waive any defenses to the enforcement of the terms of this Amendment or any other such document based on the form of signature. In the event .pdf signatures are used in any instance, ink-signed originals of such document shall also promptly be exchanged by the parties.
- 9.7 Counterparts. This Amendment may be executed in one or more counterparts, each of which shall be deemed an original, but all of which when taken together shall constitute one agreement.
- 10.0 Effectiveness. The parties agree that the submission of a draft or copy of this Amendment for review or signature by a party is not intended, nor shall it constitute or be deemed, by either party to be an offer to enter into a legally binding agreement with respect to the subject matter hereof and may not be relied on for any legal or equitable rights or obligations. Any draft or document submitted by Landlord or its agents to Tenant shall not constitute a reservation of or option or offer in favor of Tenant. The parties shall be legally bound with respect to the subject matter hereof pursuant to the terms of this Amendment only if, as and when all the parties have executed and delivered this Amendment to each other. Prior to the complete execution and delivery of this Amendment by all parties, each party shall be free to negotiate the form and terms of this Amendment in a manner acceptable to each party in its sole and absolute discretion. The parties acknowledge and agree that the execution and delivery by one party prior to the execution and delivery of this Amendment by the other party shall be of no force and effect and shall in no way prejudice the party so executing this Amendment or the party that has not executed this Amendment.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of the day and year first above written,

LANDLORD;

Capital Partners Industrial Fund I, LLLP

By: /s/ Jason Simek
Name: Jason Simek
Its: Managing Patner

TENANT:

CHF Solutions, Inc.

By: /s/ Vitaliy Epshteyn
Name: Vitaliy Epshteyn
Its: VP of Operations

Exhibit 31.1

CHIEF EXECUTIVE OFFICER'S 302 CERTIFICATION

I, John L. Erb, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of CHF Solutions, Inc. for the quarterly period ended September 30, 2018;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 7, 2018

/s/ John L. Erb

John L. Erb
Chief Executive Officer

CHIEF FINANCIAL OFFICER'S 302 CERTIFICATION

I, Claudia Drayton, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of CHF Solutions, Inc. for the quarterly period ended September 30, 2018;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 7, 2018

/s/ Claudia Drayton

Claudia Drayton
Chief Financial Officer

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of CHF Solutions, Inc. (the "*Company*") on Form 10-Q for the quarterly period ended September 30, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "*Report*"), I, John L. Erb, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 7, 2018

/s/ John L. Erb

John L. Erb
Chief Executive Officer

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of CHF Solutions, Inc. (the "*Company*") on Form 10-Q for the quarterly period ended September 30, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "*Report*"), I, Claudia Drayton, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 7, 2018

/s/ Claudia Drayton

Claudia Drayton
Chief Financial Officer
