

**PROSPECTUS SUPPLEMENT**

(To Prospectus Dated December 8, 2023)

**SeaStar Medical Holding Corporation****947,868 Shares of Common Stock**

Pursuant to this prospectus supplement and the accompanying prospectus, we are offering in a registered direct offering to certain purchasers 947,868 shares of our common stock, par value \$0.0001 per share ("Common Stock"). Concurrently in a private placement, we are offering to each purchaser, with each share of Common Stock, an accompanying unregistered common stock purchase warrant (the "Purchase Warrants"). The Purchase Warrants have an exercise price of \$10.55, will be immediately exercisable upon issuance, and will expire five years from the date of issuance. The Purchase Warrants and the shares of our Common Stock issuable upon the exercise of the Purchase Warrants are being offered pursuant to the exemptions provided in Section 4(a)(2) under the Securities Act of 1933, as amended (the "Securities Act"), and Rule 506(b) promulgated thereunder, and they are not being offered pursuant to this prospectus supplement and the accompanying prospectus.

The purchase price of each share of Common Stock is \$10.55.

We have engaged H.C. Wainwright & Co., LLC (the "Placement Agent" or "Wainwright"), as our exclusive placement agent in connection with this offering. The Placement Agent has agreed to use its reasonable best efforts to sell the shares of Common Stock offered by this prospectus supplement and the accompanying prospectus and has no obligation to buy any of the Securities from us or to arrange for the purchase or sale of any specific number or dollar amount of the Securities. We have agreed to pay the Placement Agent the fees set forth in the table below. We have not made any arrangements to place the funds from the investors in an escrow, trust or similar account. See "Plan of Distribution" in this prospectus supplement for more information regarding these arrangements.

	<u>Per Share</u>	<u>Total</u>
Offering price	\$ 10.55	\$10,000,007.40
Placement Agent fees <sup>(1)</sup>	\$ 0.7385	\$ 700,000.52
Proceeds to SeaStar Medical Holding Corporation before expenses	\$ 9.8115	\$ 9,300,006.88

- (1) We have agreed to pay the Placement Agent in connection with this offering (i) a cash fee equal to 7.0% of the aggregate gross proceeds of this offering, other than proceeds from purchasers who were introduced to the us by Maxim Group LLC ("Maxim"), in which case the cash fee will equal 5.0% of the gross proceeds from such purchasers, (ii) a management fee equal to 1.0% of the aggregate gross proceeds of this offering, (iii) a non-accountable expense allowance of \$50,000, and (iv) up to \$25,000 for fees and expenses of the Placement Agent's counsel and other out of pocket expenses. We will also issue to the placement agent unregistered common stock purchase warrants to purchase that number of shares of common stock equal to 7.0% of the aggregate number of shares of Common Stock sold in this offering, or common stock purchase warrants to purchase up to 66,351 shares of our common stock, exercisable at a price per share equal to \$13.1875. We are also required to pay to Maxim a cash tail fee equal to 7.0% of the aggregate gross proceeds in this offering received from purchasers who were introduced to us by Maxim in a previous offering. See the section titled "Plan of Distribution" beginning on page S-12 of this prospectus supplement for more information regarding the compensation to be received by the Placement Agent.

Our Common Stock is traded on The Nasdaq Capital Market ("Nasdaq") under the symbol "ICU." Our 10,550,000 listed warrants (which do not include the Warrants sold in the concurrent private placement) (the "Listed Warrants") are traded on The Nasdaq Capital Market ("Nasdaq") under the symbol "ICUCW." On July 9, 2024, the last reported sale price on Nasdaq of our Common Stock was \$13.00 per share and the closing price of our Listed Warrants was \$0.109 per warrant.

On June 7, 2024, we effected a 1-for-25 reverse stock split of the Common Stock (the "Reverse Split") of our issued and outstanding shares of Common Stock, and the Company's shares of common stock began trading on a split-adjusted basis on Nasdaq on June 10, 2024, under the same symbol "ICU". All stock options and warrants of the Company outstanding immediately prior to the Reverse Split were proportionally adjusted except for the Listed Warrants and the private placement warrants that were issued as part of the SPAC transaction that closed on October 28, 2022, which total 16,788,000 outstanding warrants in the aggregate (the "Unadjusted Warrants"). The Unadjusted Warrants retain an \$11.50 exercise price each and require the exercise of 25 warrants to purchase one share of Common Stock. Unless otherwise indicated, all other share and per share prices in this prospectus have been adjusted to reflect the Reverse Split. However, Common Stock share and per share amounts in certain of the documents incorporated by reference herein have not been adjusted to give effect to the Reverse Split.

On June 14, 2023, we received a letter from the Nasdaq Staff notifying us that the market value of listed securities (“MVLS”) of our Common Stock had been below the minimum \$35,000,000 MVLS Requirement.

The letter also stated that we would be provided 180 calendar days, or until December 11, 2023, to regain compliance with the MVLS Requirement. On December 13, 2023, we received a notification from the Listing Qualification Department of Nasdaq that we had not regained compliance with the MVLS Requirement and that our Common Stock would be subject to delisting unless we timely request a hearing before a Panel. On December 19, 2023, we submitted a hearing request to the Panel to appeal the delisting determination. On the same date, we received a notice from Nasdaq stating that its delisting action had been stayed pending a final written decision by the Panel and that a hearing would be held on March 12, 2024. On February 6, 2024, we received notification from Nasdaq that we had regained compliance with the MVLS Requirement.

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On June 26, 2023, we received a letter from the Listing Qualifications Department of Nasdaq notifying us that the Company was not in compliance with the \$1.00 per share minimum Bid Price Requirement for continued inclusion on Nasdaq pursuant to Nasdaq Listing Rule 5550(a)(2).

This letter had no immediate effect on the listing of the Company's Common Stock on Nasdaq and the Company had 180 calendar days from the date of the notice, or until December 26, 2023, to regain compliance with the Bid Price Requirement. On December 27, 2023, we received notification from Nasdaq that the Company had not regained compliance with the Bid Price Requirement and that the Panel would consider this matter in rendering a determination regarding the Company's continued listing on Nasdaq. Pursuant to Listing Rule 5810(d), the Company should present its views with respect to this deficiency at its Panel hearing to be held on March 12, 2024. If we failed to address the aforementioned issue, the Panel would consider the record as presented at the hearing and would make its determination based upon that information.

On February 21, 2024, the Company made a pre-hearing submission to Nasdaq, outlining its plan to gain compliance with the minimum Bid Price Requirement. On March 6, 2024, we received a letter from the Nasdaq Staff granting the Company a temporary exception until June 24, 2024, subject to certain milestones, to regain compliance with the Bid Price Requirement by evidencing a closing bid price of \$1.00 or more per share for a minimum of ten consecutive trading sessions. On June 7, 2024, as discussed in further detail below, the Company effected a reverse stock split to regain compliance with the Bid Price Requirement. On June 27, 2024, we received a letter from the Nasdaq Staff indicating the Company regained compliance with the minimum Bid Price Requirement for listing on Nasdaq.

On June 24, 2024, we received a letter from the Nasdaq Staff indicating the Company was no longer in compliance with the MLVS of \$35 million required for listing on Nasdaq. The Company has 180 days, or until December 23, 2024, to regain compliance with the MVLS.

On July 3, 2024, the Company provided notice to the Listing Qualifications Department of Nasdaq regarding the Company's possible violation of Nasdaq Listing Rule 5635(d)(2). The notification to Nasdaq related to the issuance of shares of the Company's Common Stock upon conversion of certain convertible notes and upon exercise of certain warrants issued to an institutional investor in connection with a March 15, 2023 securities purchase agreement that may have required additional shareholder approval prior to the issuance of such securities.

The Company believed at the time of these issuances and adjustments that the entire transaction had been approved by shareholders. The Company is requesting that Nasdaq determine whether the issuance of and adjustment to the conversion price of certain of the convertible notes to a price that was lower than the floor price initially agreed to in the subject securities purchase agreement, and the issuance of certain warrants did not violate Nasdaq Listing Rule 5635(d)(2).

The notification to Nasdaq was made in accordance with Nasdaq Listing Rule 5625. Pursuant to the notice, the Company committed to fully comply with all Nasdaq shareholder approval requirements, to involve certain advisers and to notify Nasdaq prior to the issuance of any securities for one year following the date of notice.

We are a "smaller reporting company" and an "emerging growth company" as defined under the federal securities laws and, as such, have elected to comply with certain reduced reporting requirements for this prospectus supplement and may elect to do so in future filings.

**Investing in our Common Stock involves a high degree of risk. See "Risk Factors" beginning on page S-6 of this prospectus supplement, page 3 of the accompanying base prospectus and under similar headings in the documents incorporated by reference into this prospectus supplement and the accompanying base prospectus for a discussion of information that you should consider before investing in our Common Stock.**

**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or the accompanying base prospectus is truthful or complete. Any representation to the contrary is a criminal offense.**

**H.C. Wainwright & Co.**

**The date of this prospectus supplement is July 10, 2024.**

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## ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus are part of a “shelf” registration statement on Form S-3 (File No. 333-275968) that we filed with the Securities and Exchange Commission (the “SEC”), on December 8, 2023, and that was declared effective on December 22, 2023.

This document is in two parts. The first part is this prospectus supplement, which describes the specific terms of this offering and certain other matters. The second part, the accompanying base prospectus, provides more general information about us and our Common Stock. Generally, when we refer to the prospectus, we are referring to both parts of this document combined. To the extent information in this prospectus supplement conflicts with information in the accompanying base prospectus, you should rely on the information in this prospectus supplement. You should rely only on the information contained in, or incorporated by reference into, this prospectus supplement and the accompanying base prospectus and any related “free writing prospectus.” None of the Company or the Placement Agent has authorized anyone to provide information different from that contained in, incorporated or deemed incorporated by reference into this prospectus supplement or the accompanying base prospectus.

We note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference herein were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreement, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

Before you invest, you should read the registration statement of which this document forms a part, this document, the accompanying base prospectus and the documents incorporated by reference herein that are described under the headings “Where You Can Find More Information” and “Incorporation Of Certain Information By Reference.”

The information in this document may only be accurate on the date of the document. You should assume that the information appearing in this prospectus supplement is accurate only as of the date on the front cover of this prospectus supplement. Our business, financial condition, results of operations and prospects may have changed since that date.

We are not making an offer of these securities in any jurisdiction where the offer is not permitted.

Unless otherwise expressly indicated or the context otherwise requires, we use the terms “SeaStar Medical Holding Corporation,” “Company,” “we,” “us” and “our” or similar references to refer to SeaStar Medical Holding Corporation.

## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement and the accompanying base prospectus, including the documents incorporated by reference herein and therein, contain forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act of 1934, as amended (the “Exchange Act”). These statements are based on our management’s current beliefs, expectations and assumptions about future events, conditions and results and on information currently available to us. Discussions containing these forward-looking statements may be found, among other places, in the sections titled “Business,” “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” incorporated by reference from our most recent Annual Report on Form 10-K and our subsequent Quarterly Reports on Form 10-Q filed with the SEC, as well as any amendments thereto reflected in subsequent filings with the SEC.

Any statements in this prospectus supplement and the accompanying base prospectus, or incorporated by reference herein or therein about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and are forward-looking statements. Within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act, these forward-looking statements may include, but are not limited to, statements regarding:

- the Company’s future capital requirements and sources and uses of cash;
- the Company’s ability to obtain funding or raise capital for its operations and future growth;
- any delays or challenges in obtaining U.S. Food and Drug Administration (“FDA”) approval of the Company’s SCD product candidates;
- economic downturns and the possibility of rapid change in the highly competitive industry in which the Company operates;
- the ability to develop and commercialize its products or services following regulatory approval of the Company’s product candidates;
- the failure of third-party suppliers and manufacturers to fully and timely meet their obligations;
- product liability or regulatory lawsuits or proceedings relating to the Company’s products and services;
- inability to secure or protect its intellectual property;
- dispute or deterioration of relationships with the Company’s major partners and collaborators;

- the ability to maintain the listing of the Company’s Common Stock on Nasdaq;
- the ability to recognize the anticipated benefits of the Business Combination, which may be affected by, among other things, competition, and the ability of the Company to grow and manage growth profitably; and
- other risks and uncertainties indicated in this prospectus supplement, including those under “Risk Factors” herein, and other filings that have been made or will be made with the SEC.

In some cases, you can identify forward-looking statements by terminology such as “anticipate,” “believe,” “continue,” “could,” “estimate,” “expects,” “intend,” “may,” “might,” “plan,” “potential,” “predict,” “project,” “should,” “will,” “would” or the negative or plural of those terms, and similar expressions intended to identify statements about the future, although not all forward-looking statements contain these words. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus supplement, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

You should refer to the risks and uncertainties described in the sections titled “Risk Factors” in this prospectus supplement, and under similar headings in the other documents that are incorporated by reference into this prospectus supplement, for a discussion of important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. Given these risks, uncertainties and other factors, many of which are beyond our control, we cannot assure you that the forward-looking statements in this prospectus supplement will prove to be accurate, and you should not place undue reliance on these forward-looking statements. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all.

Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to revise any forward-looking statements to reflect events or developments occurring after the date of this prospectus supplement, even if new information becomes available in the future.

## PROSPECTUS SUPPLEMENT SUMMARY

*The following summary highlights certain information about us, this offering and selected information contained elsewhere in or incorporated by reference into this prospectus supplement. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our securities. For a more complete understanding of our company and this offering, you should read and consider carefully the more detailed information included or incorporated by reference into this prospectus supplement, including the factors described under the heading “Risk Factors.”*

### **Business Summary**

#### ***Company Overview***

We are a commercial stage medical technology company developing a proprietary platform therapy, our Selective Cytopheretic Device (“SCD”), to reduce the consequences of hyperinflammation on vital organs. We received FDA approval for our pediatric SCD on February 22, 2024 under a Humanitarian Device Exemption, and expect our first commercial shipments during this current calendar quarter. The inflammatory response is critical to fend off infections and repair damaged tissue in the body. Central to inflammation are the cells within blood and lymph circulatory systems, called white blood cells (primarily neutrophils and monocytes), also referred to commonly as “pus” cells.

In a normal inflammatory response, neutrophils are the first immune cells to arrive at the site and are key to the entire immune response that kills pathogens and promotes tissue repair. These inflammatory cells release chemicals (cytokines) that trigger the immune system to eliminate the foreign pathogens or damaged tissue, enhancing the immune response.

If the inflammatory response becomes excessive and dysregulated (referred as proinflammatory), normal neutrophil cells die off (“apoptosis”), allowing the inflammatory cells to continue to produce cytokines, further enhancing the dysregulated immune response, and altering feedback mechanisms that regulate the immune system. This results in damaging hyperinflammation spreading uncontrollably to other parts of the body, often leading to acute chronic solid organ dysfunction or failure, including heart, lung, kidney and liver diseases. This hyperinflammatory response is also known as the “cytokine storm,” referring to the body’s reaction to the category of small-secreted proteins released by hyperinflammatory cells that affect communication between cells. The cytokine storm, when left uncontrolled, can lead to organ damage and even death.

Based on clinical and preclinical studies conducted over the last 15 years, the Company’s technology has shown promise in modulating the degree of activity of proinflammatory cells to help reduce tissue damage and speed the repair and recovery of organ function. We believe this approach, if successful, will transform the ability of clinicians to treat acute organ failure in the intensive care unit (“ICU”) and to improve organ function in hospitalized patients.

Currently, few therapeutics are available to clinicians to address hyperinflammation and for those options that do exist, such options are either immunosuppressive or only target one cytokine. We believe our technology has the potential to overcome limitations in existing anti-inflammatory treatments and address the challenge of selectively targeting activated neutrophils and monocytes.

We are leveraging our patent protected and scalable SCD technology platform to develop proprietary therapies that are organ agnostic and target both acute and chronic indications. Preclinically, our SCD was tested in various animal models, which include acute myocardial infarction, intracranial hemorrhage, chronic heart failure, sepsis, and acute respiratory distress syndrome. The animal models demonstrated the inflammatory response and how it was modified by our SCD. We will continue to explore the application of our SCD technology across a broad range of markets and indications where proinflammatory activated neutrophils and monocytes may contribute to disease progression or severity in both acute and chronic indications.

We are using our SCD to clinically validate several acute and chronic organ injury indications, which include kidneys, heart, liver, brain and lungs. Our investigational SCD for adults is an extracorporeal synthetic membrane device that is currently being evaluated in a pivotal clinical trial in the US for pre-market clearance by the FDA. The SCD for adults is designed to be easily integrated into existing continuous renal replacement therapy (“CRRT”) systems that are commonly installed in hospitals, including in ICUs throughout the United States. Similar to our pediatric SCD, once approved and commercialized, our adult SCD is expected to initially target acute kidney injury adults on CRRT. In addition, we are developing our SCD to address inflammation associated with liver disease, chronic dialysis and chronic heart failure in adult populations.

There is substantial clinical demand for safe and effective control of hyperinflammation. The use of our SCD to reverse the cytokine storm in pediatric and adult patients with acute kidney injury on CRRT in clinical studies with more than 140 patients reduced mortality rates by 50%, and, of those patients who survive 60 days, none have required dialysis.

On October 28, 2022, we completed a business combination with LMAO, pursuant to that certain Agreement and Plan of Merger, dated as of April 21, 2022 (the “Merger Agreement”), by and among LMAO, LMF Merger Sub, Inc., a Delaware corporation and direct wholly owned subsidiary of LMAO (“Merger Sub”), and SeaStar Medical, Inc., a Delaware corporation (“SeaStar Medical, Inc.”). As contemplated by the Merger Agreement, SeaStar Medical, Inc. merged with and into Merger Sub, with SeaStar Medical, Inc. continuing as the surviving entity in the merger as a wholly owned subsidiary of LMAO (the “Business Combination”). In connection with the closing of the Business Combination, LMAO changed its name to “SeaStar Medical Holding Corporation.”

### ***Corporate Information***

Our principal executive offices are located at 3513 Brighton Boulevard, Suite #410, Denver, Colorado 80216, and our phone number is 844-427-8100.

### ***Implications of Being a Smaller Reporting Company***

We are a “smaller reporting company” meaning that the market value of our Common Stock held by non-affiliates is less than \$250.0 million measured on the last business day of our most recent second fiscal quarter or our annual revenue is less than \$100.0 million during the most recent completed fiscal year and the market value of our Common Stock held by non-affiliates is less than \$700.0 million measured on the last business day of our most recent second fiscal quarter. Accordingly, we may provide less public disclosure than larger public companies, including the inclusion of only two years of audited financial statements and only two years of management’s discussion and analysis of financial condition and results of operations disclosure. As a result, the information that we provide to our stockholders may be different than you might receive from other public reporting companies in which you hold equity interests.

### ***Recent Developments***

#### ***Company Update***

The Company obtained a Humanitarian Device Exemption (“HDE”) regulatory approval to commercialize and sell its pediatric SCD product on February 22, 2024. Since the approval date, the United States Food and Drug Administration (the “FDA”), has notified the Company that certain label insert changes will be required prior to a first commercial sale. The Company will incorporate such changes immediately upon receiving final direction from the FDA, which the Company received on June 28, 2024. With agreement on label changes required from the FDA, the Company can now make the changes and follow the Company’s quality management system to release product in the coming weeks. Once the product has been released in the quality management system, the Company can ship product immediately. Under the HDE, the SCD product may be administered only in facilities that have oversight from an Institutional Review Board designated to review and monitor use of innovative medical device technologies.

#### ***Nasdaq Listing***

On June 14, 2023, we received a letter from the Nasdaq Staff notifying us that the MVLS of our Common Stock had been below the minimum \$35,000,000 MVLS Requirement.

The letter also stated that we would be provided 180 calendar days, or until December 11, 2023, to regain compliance with the MVLS Requirement. On December 13, 2023, we received a notification from the Listing Qualification Department of Nasdaq that we had not regained compliance with the MVLS Requirement and that our Common Stock would be subject to delisting unless we timely request a hearing before a Panel. On December 19, 2023, we submitted a hearing request to the Panel to appeal the delisting determination. On the same date, we received a notice from Nasdaq stating that its delisting action had been stayed pending a final written decision by the Panel and that a hearing would be held on March 12, 2024. On February 6, 2024, we received notification from Nasdaq that we had regained compliance with the MVLS Requirement.

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On February 21, 2024, the Company made a pre-hearing submission to Nasdaq, outlining its plan to gain compliance with the minimum Bid Price Requirement. On March 6, 2024, we received a letter from the Nasdaq Staff granting the Company a temporary exception until June 24, 2024, subject to certain milestones, to regain compliance with the Bid Price Requirement by evidencing a closing bid price of \$1.00 or more per share for a minimum of ten consecutive trading sessions. On June 7, 2024, as discussed in further detail below, the Company effected a reverse stock split to regain compliance with the Bid Price Requirement. On June 27, 2024, we received a letter from the Nasdaq Staff indicating the Company regained compliance with the minimum Bid Price Requirement for listing on Nasdaq.

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On July 3, 2024, the Company provided notice to the Listing Qualifications Department of Nasdaq regarding the Company's possible violation of Nasdaq Listing Rule 5635(d)(2). The notification to Nasdaq related to the issuance of shares of the Company's Common Stock upon conversion of certain convertible notes and upon exercise of certain warrants issued to an institutional investor in connection with a March 15, 2023 securities purchase agreement that may have required additional shareholder approval prior to the issuance of such securities.

The Company believed at the time of these issuances and adjustments that the entire transaction had been approved by shareholders. The Company is requesting that Nasdaq determine whether the issuance of and adjustment to the conversion price of certain of the convertible notes to a price that was lower than the floor price initially agreed to in the subject securities purchase agreement, and the issuance of certain warrants did not violate Nasdaq Listing Rule 5635(d)(2).

The notification to Nasdaq was made in accordance with Nasdaq Listing Rule 5625. Pursuant to the notice, the Company committed to fully comply with all Nasdaq shareholder approval requirements, to involve certain advisers and to notify Nasdaq prior to the issuance of any securities for one year following the date of notice.

### ***Reverse Stock Split***

On June 5, 2024, our Board of Directors approved the Reverse Split. The Company's stockholders duly approved the Reverse Split at a Special Meeting of Stockholders on September 6, 2023. The Reverse Split was effective as of 5:00 p.m. Eastern Standard Time on June 7, 2024, and the Company's shares of common stock began trading on a split-adjusted basis on Nasdaq on June 10, 2024, under the same symbol "ICU". All stock options and warrants of the Company outstanding, except the Unadjusted Warrants, immediately prior to the Reverse Split were proportionally adjusted. While the number of listed warrants actively traded under the symbol ICUCW remains at 10,550,000, holders of listed warrants will be required to exercise 25 warrants for an aggregate exercise price of \$287.50 to purchase one share of Common Stock.

As a result of the Reverse Split, every 25 shares of the Company's issued and outstanding common stock were automatically combined and converted into one issued and outstanding share of common stock, par value \$0.0001 per share reducing our outstanding shares of common stock from 77,740,887 shares outstanding, to 3,221,104 shares as of the effective date. The Company did not issue any fractional shares in connection with the Reverse Split. Instead, the number of shares were rounded up to the next whole number. The Reverse Split did not modify the rights or preferences of the common stock.

## THE OFFERING

<b>Common Stock offered by us</b>	947,868 shares of Common Stock.
<b>Concurrent Private Placement</b>	Concurrently with this offering, we are also issuing in a private placement to the purchasers in this offering Purchase Warrants to purchase up to 947,868 shares of our Common Stock. Each Purchase Warrant will have an initial exercise price per share of \$10.55. The Purchase Warrants are exercisable immediately, are exercisable for one share of our Common Stock, and expire five years from the date of issuance. The Purchase Warrants and shares of Common Stock issuable upon exercise of the Purchase Warrants are not being registered under the Securities Act of 1933, as amended, or the Securities Act, and are not being offered pursuant to this prospectus supplement and the accompanying prospectus, but are being offered pursuant to the exemption provided in Section 4(a)(2) under the Securities Act and Rule 506(b) promulgated thereunder. The closing of the concurrent private placement and the closing of this offering are not contingent upon each other. See “Concurrent Private Placement” beginning on page S-14 of this prospectus supplement.
<b>Common Stock outstanding after this offering</b>	4,168,972 shares of Common Stock. The foregoing excludes the shares underlying the Purchase Warrants issued in the concurrent private placement. See “Concurrent Private Placement” beginning on page S-14 of this prospectus supplement.
<b>Plan of Distribution</b>	We have engaged Wainwright to act as our exclusive Placement Agent, on a reasonable best-efforts basis, in connection with this offering pursuant to this prospectus supplement and accompanying prospectus. See “Plan of Distribution” on page S-12 of this prospectus supplement.
<b>Use of Proceeds</b>	We intend to use the net proceeds of this offering for (i) for the redemption and repayment of certain notes as described in the “Use of Proceeds” section, and (ii) to fund the Company’s development and commercialization activities and for general corporate purposes. See “Use of Proceeds” for a more complete description of the intended use of proceeds from this offering.
<b>Risk Factors</b>	Investing in our securities involves a high degree of risk. You should consider carefully all the information included or incorporated by reference into this prospectus supplement and the section titled “Risk Factors” beginning on page S-6 of this prospectus supplement, the “Risk Factors” section beginning on page 3 of the accompanying base prospectus, the “Risk Factors” section beginning on page 30 of our Annual Report on Form 10-K for the year ended December 31, 2023, and under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus supplement and the accompanying base prospectus before deciding whether to purchase our Common Stock in this offering.
<b>Nasdaq symbol</b>	Our Common Stock and Listed Warrants are listed for trading on Nasdaq under the symbols “ICU” and “ICUCW,” respectively.

The number of shares of Common Stock to be outstanding after this offering as reflected in the table above is based on the actual number of shares outstanding as of March 31, 2024, which was 3,221,104 shares and does not include (vested and unvested):

- 92,857 shares of Common Stock issued subsequent to March 31, 2024;
- 23,580 shares of Common Stock issuable upon the exercise of stock options, with a weighted-average exercise price of \$45.95 per share;
- 12,896 shares of Common Stock issuable upon the settlement of outstanding restricted stock units;
- 1,471,940 shares of Common Stock issuable upon the exercise of outstanding warrants, with a weighted-average exercise price of \$142.19 per share;
- 54,408 additional shares of Common Stock reserved for future issuance under our 2022 Omnibus Equity Incentive Plan; and
- Up to 28,252 shares of Common Stock to be issued to directors of the Company in lieu of cash fees due to the directors for their services.

Except as otherwise indicated, the information in this prospectus supplement does not reflect (i) the exercise of outstanding options and warrants, (ii) the exercise of the Purchase Warrants issued in the concurrent private placement, and (iii) any issuance, exercise, vesting, expiration, or forfeiture of any additional equity awards under our equity incentive plans or stock purchase plans that occurred after March 31, 2024.

Except as otherwise indicated, all information in this prospectus supplement gives effect to a 1-for-25 reverse stock split of our common stock, which became effective as of June 7, 2024. However, common stock share and per share amounts in the accompanying prospectus and certain of the documents incorporated by reference herein have not been adjusted to give effect to the reverse stock split.

## RISK FACTORS

*Investing in our securities involves a high degree of risk. In addition to other information contained in this prospectus supplement and in the accompanying prospectus, before investing in our securities, you should carefully consider the risks described under the heading “Risk Factors” in our most recent Annual Report on Form 10-K and Quarterly Report on Form 10-Q and any subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K and in any other documents incorporated by reference into this prospectus supplement, as updated by our future filings. These risks are not the only ones faced by us. Additional risks not known or that are deemed immaterial could also materially and adversely affect our financial condition, results of operations, our products, business and prospects. Any of these risks might cause you to lose all or a part of your investment.*

### **Risks Related to this Offering**

***The market valuation of our business may fluctuate due to factors beyond our control and the value of the investment of our stockholders may fluctuate correspondingly.***

Our market valuation may fluctuate significantly in response to a number of factors, many of which are beyond our control, including:

- market acceptance and commercialization of our products;
- our being able to timely demonstrate achievement of milestones, including those related to revenue generation, cost control, cost effective source supply and regulatory approvals;
- regulatory developments or enforcements in the United States and non-U.S. countries with respect to our products or our competitors’ products;
- failure to achieve pricing acceptable to the market;
- actual or anticipated fluctuations in our financial condition and operating results, or our continuing to sustain operating losses;
- competition from existing products or new products that may emerge;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, collaborations or capital commitments;
- issuance of new or updated research or reports by securities analysts;
- announcement or expectation of additional financing efforts, particularly if our cash available for operations significantly decreases;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- additions or departures of key management personnel;
- disputes or other developments related to proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our technologies;
- entry by us into any material litigation or other proceedings;

- sales of our Common Stock by us, our insiders, or our other stockholders;
- market conditions for stocks in general; and
- general economic and market conditions unrelated to our performance.

***Since we have broad discretion in how we use the net proceeds from this offering, we may use the net proceeds in ways with which you disagree.***

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

***You may experience future dilution as a result of future equity offerings.***

In order to raise additional capital, we may at any time, including during the pendency of this offering, offer additional shares of our Common Stock or other securities convertible into or exchangeable for our Common Stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our Common Stock, or securities convertible or exchangeable into Common Stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

#### **Risks Related to our Company**

***Our Common Stock may be delisted from Nasdaq if we do not maintain compliance with Nasdaq's continued listing requirements. If our Common Stock is delisted, it could negatively impact the Company.***

Continued listing of a security on Nasdaq is conditioned upon compliance with various continued listing standards. There can be no assurance that we will be able to comply with the applicable listing standards.

On June 14, 2023, we received a letter from the Nasdaq Staff notifying us that the MVLS of our Common Stock had been below the minimum \$35,000,000 MVLS Requirement.

The letter also stated that we would be provided 180 calendar days, or until December 11, 2023, to regain compliance with the MVLS Requirement. On December 13, 2023, we received a notification from the Listing Qualification Department of Nasdaq that we had not regained compliance with the MVLS Requirement and that our Common Stock would be subject to delisting unless we timely request a hearing before a panel (the "Panel"). On December 19, 2023, we submitted a hearing request to the Panel to appeal the delisting determination. On the same date, we received a notice from Nasdaq stating that its delisting action had been stayed pending a final written decision by the Panel and that a hearing would be held on March 12, 2024. On February 6, 2024, we received notification from Nasdaq that we had regained compliance with the MVLS Requirement.

On June 26, 2023, we received a letter from the Listing Qualifications Department of Nasdaq notifying us that the Company was not in compliance with the \$1.00 per share minimum Bid Price Requirement for continued inclusion on Nasdaq pursuant to Nasdaq Listing Rule 5550(a)(2).

This letter had no immediate effect on the listing of the Company's Common Stock on Nasdaq and the Company had 180 calendar days from the date of the notice, or until December 26, 2023, to regain compliance with the Bid Price Requirement. On December 27, 2023, we received notification from Nasdaq that the Company had not regained compliance with the Bid Price Requirement and that the Panel would consider this matter in rendering a determination regarding the Company's continued listing on Nasdaq. Pursuant to Listing Rule 5810(d), the Company should present its views with respect to this deficiency at its Panel hearing to be held on March 12, 2024. If we failed to address the aforementioned issue, the Panel would consider the record as presented at the hearing and would make its determination based upon that information.

On February 21, 2024, the Company made a pre-hearing submission to Nasdaq, outlining its plan to gain compliance with the minimum Bid Price Requirement. On March 6, 2024, we received a letter from the Nasdaq Staff granting the Company a temporary exception until June 24, 2024, subject to certain milestones, to regain compliance with the Bid Price Requirement by evidencing a closing bid price of \$1.00 or more per share for a minimum of ten consecutive trading sessions. On June 7, 2024, the Company effected a reverse stock split to regain compliance with the Bid Price Requirement. On June 27, 2024, we received a letter from the Nasdaq Staff indicating the Company regained compliance with the minimum Bid Price Requirement for listing on Nasdaq.

On June 24, 2024, we received a letter from the Nasdaq Staff indicating the Company was no longer in compliance with the MLVS of \$35 million required for listing on Nasdaq. The Company has 180 days, or until December 23, 2024, to regain compliance with the MVLS.

On July 3, 2024, the Company provided notice to the Listing Qualifications Department of Nasdaq regarding the Company's possible violation of Nasdaq Listing Rule 5635(d)(2). The notification to Nasdaq related to the issuance of shares of the Company's Common Stock upon conversion of certain convertible notes and upon exercise of certain warrants issued to an institutional investor in connection with a March 15, 2023 securities purchase agreement that may have required additional shareholder approval prior to the issuance of such securities.

The Company believed at the time of these issuances and adjustments that the entire transaction had been approved by shareholders. The Company is requesting that Nasdaq determine whether the issuance of and adjustment to the conversion price of certain of the convertible notes to a price that was lower than the floor price initially agreed to in the subject securities purchase agreement, and the issuance of certain warrants did not violate Nasdaq Listing Rule 5635(d)(2).

The notification to Nasdaq was made in accordance with Nasdaq Listing Rule 5625. Pursuant to the notice, the Company committed to fully comply with all Nasdaq shareholder approval requirements, to involve certain advisers and to notify Nasdaq prior to the issuance of any securities for one year following the date of notice.

If the Company's Common Stock ultimately were to be delisted for any reason, it could negatively impact the Company by (i) reducing the liquidity and market price of the Company's Common Stock; (ii) reducing the number of investors willing to hold or acquire the Company's Common Stock, which could negatively impact the Company's ability to raise equity financing; (iii) limiting the Company's ability to use a registration statement to offer and sell freely tradable securities, thereby preventing the Company from accessing the public capital markets; and (iv) impairing the Company's ability to provide equity incentives to its employees.

***We may become a defendant in one or more stockholder derivative, class-action, and other litigation, and any such lawsuits may adversely affect our business, financial condition, results of operations and cash flows.***

We may in the future become defendants in one or more stockholder derivative actions or other class-action lawsuits. For example, certain former directors of the Company have threatened litigation for purported harm to the Company in connection with certain allegations made by the former directors against other members of our Board of Directors and management of the Company. The former directors have also made demands in connection with certain alleged contractual rights and purported agreements with the Company. The Company and the Board of Directors dispute these allegations and believe they are unfounded.

In addition, on July 5, 2024, Forrest A K Wells (the "Plaintiff"), a purported stockholder of the Company, filed a putative class action complaint in the United States District Court for the State of Colorado (the "Class Action"), alleging that the Company and its management members made material misstatements or omissions regarding the Company's business and operations, including disclosures relating to FDA approval of product candidates of the Company, allegedly culminating in the restatement of the Company's consolidated financial statements as disclosed in the Form 8-K filed on March 27, 2024. The Class Action asserts claims under Section 10(b) of the Exchange Act against the Company, its Chief Executive Officer and former Chief Financial Officer (collectively, the Defendants), as well as claims under Section 20(a) of the Exchange Act against the Defendants. Among other remedies, the Class Action seeks to recover compensatory and other damages. The Company intends to vigorously defend the action.

Any such lawsuit could divert our management's attention and resources from our ordinary business operations, and we would likely incur significant expenses associated with their defense (including, without limitation, substantial attorneys' fees and other fees of professional advisors and potential obligations to indemnify current and former officers and directors who are or may become parties to such actions). In connection with these lawsuits, we may be required to pay material damages, consent to injunctions on future conduct and/or suffer other penalties, remedies or sanctions, or issue additional shares upon the exercise of certain warrants, which may cause additional dilution. In addition, any such future lawsuits could adversely impact our reputation and/or ability to launch and commercialize our products, thereby harming our ability to generate revenue. Accordingly, the ultimate resolution of these matters and any future matters could have a material adverse effect on our business, financial condition, results of operation and cash flow and, consequently, could negatively impact the trading price of our common stock.



## USE OF PROCEEDS

We expect to receive approximately \$9.1 million in net proceeds from this offering, after deducting the Placement Agent fees and estimated offering expenses payable by us.

We intend to use the proceeds of this offering (i) for the redemption and repayment of certain notes as described below, and (ii) to fund the Company's development and commercialization activities and for general corporate purposes.

### *Maxim Promissory Note*

On October 28, 2022, the Company issued to Maxim an unsecured promissory note for an aggregate principal amount of \$4,182,353 (the "Maxim Note"). The promissory note relates to fees owed to Maxim in connection with three engagement letters: (i) an engagement letter for M&A advisory services between SeaStar Medical, Inc. and Maxim dated August 2021, (ii) a letter of engagement for a private placement transaction dated June 2022, and (iii) the deferred underwriter discount for the LMF Acquisition Opportunities, Inc. ("LMFAO") initial public offering. A portion of the amount due to Maxim was offset by expenses and a partial cash fee payment. The parties agreed that the remainder due, \$4,182,353, would be paid in the form of a promissory note. Accordingly, on October 28, 2022, the Company issued the Maxim Note for an aggregate principal amount of \$4,182,353. As of the date of this prospectus supplement, the Maxim Note has a maturity date of September 27, 2024 and an interest rate of 7.0% per annum, and a balance due of \$2,922,000 as of March 31, 2024. The Maxim Note provides for a mandatory prepayment in connection with any subsequent financing of the Company, in an amount equal to 25% of the gross proceeds from such subsequent financing.

In connection with this offering, the Company may pay gross proceeds to Maxim in accordance with the terms of the Maxim Note.

We will otherwise retain broad discretion over the use of the net proceeds from the sale of the securities offered hereby. Accordingly, we reserve the right to use these proceeds for different purposes or uses which we have not listed above. See "Risk Factors – Since we have broad discretion in how we use the net proceeds from this offering, we may use the net proceeds in ways with which you disagree."

Until we use the net proceeds of this offering, we intend to invest the funds in investment grade, interest-bearing securities or hold such proceeds in deposit accounts.

### *Institutional Investor Balance Due*

On June 28, 2024, we redeemed certain warrants from an institutional investor for total consideration of \$449,735. The Company agreed to pay \$100,000 on the transaction date and the remaining balance sixty days later. The outstanding balance accrues interest at 7% annually.

In connection with this offering, the Company may pay gross proceeds to the institutional investor in accordance with the terms of its obligation.

The Company has past due accounts payable that are anticipated to be extinguished in connection with the offering.

## DILUTION

Net tangible book value per share is total tangible assets, reduced by total liabilities, divided by the total number of outstanding shares of Common Stock. Our net tangible book value as of March 31, 2024, was approximately (\$4.47) million, or approximately (\$1.43) per outstanding share of Common Stock.

After giving effect to the sale of 947,868 shares of our Common Stock at a price of \$10.55 per share for aggregate gross proceeds of approximately \$10 million and after deducting estimated offering commissions and estimated offering expenses payable by us, our as adjusted net tangible book value as of March 31, 2024 would have been approximately \$4.46 million, or \$1.09 per share. This represents an immediate increase in net tangible book value of \$2.52 per share to existing stockholders and immediate dilution of \$9.46 per share to purchasers purchasing our Common Stock in this offering at the offering price. The following table illustrates this calculation on a per share basis, assuming that we sell all of the securities we are offering:

Offering price per share		\$	10.55
Net tangible book value per share as of March 31, 2024		\$	(1.43)
Increase in net tangible book value per share after this offering		\$	<u>2.52</u>
As adjusted net tangible book value per share as of March 31, 2024, after this offering		\$	<u>1.09</u>
Dilution in as adjusted net tangible book value per share to new investors		\$	<u><u>9.46</u></u>

The number of shares of Common Stock to be outstanding immediately after this offering is based on 3,127,247 shares of our Common Stock outstanding as of March 31, 2024, and excludes (in each case as of March 31, 2024):

- 92,857 shares of Common Stock issued subsequent to March 31, 2024;
- 23,580 shares of Common Stock issuable upon the exercise of stock options, with a weighted-average exercise price of \$45.95 per share;
- 12,108 shares of Common Stock issuable upon the settlement of outstanding restricted stock units;
- 1,471,940 shares of Common Stock issuable upon the exercise of outstanding warrants, with a weighted-average exercise price of \$142.19 per share;
- 54,408 additional shares of Common Stock reserved for future issuance under our 2022 Omnibus Equity Incentive Plan; and
- Up to 28,252 shares of Common Stock to be issued to directors of the Company in lieu of cash fees due to the directors for their services.

## DESCRIPTION OF SECURITIES WE ARE OFFERING

*The following is a summary of the material terms and provisions of the common stock that is being offered hereby.*

We are offering 947,868 shares of our Common Stock.

### **Common Stock**

As of the date of this prospectus supplement, the Third Amended and Restated Certificate of Incorporation of SeaStar Medical Holding Corporation, as amended (the “Charter”) authorizes the issuance of 510,000,000 shares, consisting of (a) 500,000,000 shares of Common Stock and (b) 10,000,000 shares of preferred stock (the “Preferred Stock”). For more information, see “Description of Common Stock” in the accompanying prospectus. Our common stock is listed on the Nasdaq Capital Market under the symbol “ICU”.

## PLAN OF DISTRIBUTION

We have engaged H.C. Wainwright & Co., LLC, to act as our exclusive placement agent, on a reasonable best-efforts basis, in connection with this offering pursuant to this prospectus supplement and accompanying prospectus. The terms of this offering are subject to market conditions and negotiations between us, the Placement Agent, and prospective investors. The engagement agreement does not give rise to any commitment by Placement Agent to purchase any of the securities, and the Placement Agent will have no authority to bind us by virtue of the engagement agreement. The Placement Agent has no commitment to buy any of the securities offered pursuant to this prospectus supplement and accompanying prospectus. The Placement Agent is not purchasing the securities offered by us in this offering and is not required to sell any specific number or dollar amount of securities, but will assist us in this offering on a reasonable best-efforts basis. Further, the Placement Agent does not guarantee that it will be able to raise new capital in any prospective offering. The Placement Agent may engage sub-agents or selected dealers to assist with the offering. We have entered into a securities purchase agreement directly with the investors in connection with this offering, and we will only sell to investors who have entered into the securities purchase agreement. We may not sell the entire amount of securities offered pursuant to this prospectus supplement.

We expect to deliver the securities being offered pursuant to this prospectus supplement on or about July 11, 2024, subject to satisfaction of customary closing conditions.

### Fees and Expenses

The following table shows, on a per share and total basis, the offering price, Placement Agent fees and proceeds, before expenses to us.

	<b>Per Share and Accompanying Purchase Warrant</b>		<b>Total</b>
Offering price	\$	10.55	\$10,000,007.40
Placement Agent's fees	\$	0.7385	\$ 700,000.52
Proceeds to us, before expenses	\$	9.8115	\$ 9,300,006.88

We have agreed to pay the Placement Agent in connection with this offering (i) a cash fee equal to 7.0% of the aggregate gross proceeds of this offering, other than proceeds from purchasers who were introduced to us by Maxim, in which case the cash fee will equal 5.0% of the gross proceeds from such purchasers, (ii) a management fee equal to 1.0% of the aggregate gross proceeds of this offering, (iii) a non-accountable expense allowance of \$50,000, and (iv) up to \$25,000 for fees and expenses of the Placement Agent's counsel and other out of pocket expenses.

We are also required to pay to Maxim a cash tail fee of \$210,000.60, equal to 7% of the aggregate gross proceeds of this offering received from purchasers who were introduced to us by Maxim in a previous offering.

We estimate that the total expenses payable by us in connection with this offering, excluding the Placement Agent fees and expenses referred to above, will be approximately \$0.2 million.

### Placement Agent Warrants

We have agreed to issue to the Placement Agent (or its designees) unregistered warrants to purchase up to 66,351 shares of our common stock, which represent 7.0% of the number of shares of Common Stock being sold in this offering. Such warrants will have substantially the same terms as the Purchase Warrants being issued in the concurrent private placement, except that the placement agent warrants will have a term of five years from the commencement of the sales pursuant to this offering and an exercise price equal to \$13.1875 per share, which represents 125% of the offering price per share of common stock sold in this offering.

### Right of First Refusal

In addition, we have granted a right of first refusal to the Placement Agent, subject to certain exceptions, pursuant to which it has the right to act as the joint book-running manager or joint placement agent, as applicable, if we or our subsidiaries raise capital through certain public or private offerings of equity or debt securities at any time prior to the 12-month anniversary of the consummation of this offering.

## **Lock-up Agreements**

We have agreed to be subject to a lock-up for a period of thirty (30) days following the date of closing of the offering pursuant to this prospectus supplement and accompanying prospectus. This means that, during the applicable lock-up period, we may not issue, enter into any agreement to issue or announce the issuance or proposed issuance of any of our common stock or any securities convertible or exercisable or exchangeable for, common stock, subject to certain exceptions.

We have also agreed, subject to certain exceptions, until the six (6) month anniversary following the date of closing of the offering, not to (i) issue or sell any debt or equity securities that are convertible into, exchangeable or exercisable for, or include the right to receive, additional shares of common stock either (A) at a conversion price, exercise price or exchange rate or other price that is based upon, and/or varies with, the trading prices of or quotations for the shares of common stock at any time after the initial issuance of such debt or equity securities, or (B) with a conversion, exercise or exchange price that is subject to being reset at some future date after the initial issuance of such debt or equity security or upon the occurrence of specified or contingent events directly or indirectly related to our business or the market for our common stock, or (ii) enter into, or effect a transaction under, any agreement, including, but not limited to, an equity line of credit or an “at-the-market” facility, subject to certain exceptions.

## **Regulation M**

The Placement Agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the resale of the shares sold by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, the Placement Agent would be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 415(a)(4) under the Securities Act and Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of shares by the Placement Agent acting as principal. Under these rules and regulations, the Placement Agent:

- may not engage in any stabilization activity in connection with our securities; and
- may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until they have completed their participation in the distribution.

## **Indemnification**

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

## **Nasdaq Listing**

Our common stock is listed on The Nasdaq Capital Market under the symbol “ICU.” On July 9, 2024, the last reported sale price of our common stock on The Nasdaq Capital Market was \$13.00 per share.

## **Other Relationships**

From time to time, the Placement Agent may provide in the future, various advisory, investment and commercial banking and other services to us in the ordinary course of business, for which it may receive customary fees and commissions. Except as disclosed in this prospectus supplement, we have no present arrangements with the Placement Agent for any services.

## CONCURRENT PRIVATE PLACEMENT

Concurrently with the offer of the Common Stock we are conducting a private placement of Purchase Warrants to purchase up to 947,868 shares of Common Stock. Each share of Common Stock sold in the offering described in this prospectus supplement will be accompanied by one Purchase Warrant exercisable for one share of Common Stock.

The Purchase Warrants and shares of common stock issuable upon the exercise of the Purchase Warrants are being offered pursuant to the exemptions provided in Section 4(a)(2) under the Securities Act of 1933, as amended, or the Securities Act, and Rule 506(b) promulgated thereunder, and they are not being offered pursuant to this prospectus supplement and the accompanying prospectus. None of the securities issued in the concurrent private placement are or will be listed for trading on any national securities exchange. In connection with the offer and sale of the Purchase Warrants issued in the private placements described above, we agreed to file a registration statement within 30 calendar days after signing the Securities Purchase Agreement. If we fail to meet the filing deadlines and other requirements set forth in the Securities Purchase Agreement we may be subject to certain liquidated damages.

Accordingly, the investors in the concurrent private placement may exercise each of the Purchase Warrants and sell the shares of Common Stock issuable upon the exercise of such security only pursuant to an effective registration statement under the Securities Act covering the resale of those shares, an exemption under Rule 144 under the Securities Act, or another applicable exemption under the Securities Act.

All purchasers are required to be “accredited investors” as such term is defined in Rule 501(a) under the Securities Act.

The following is a summary of the material terms of the Purchase Warrants being issued in the concurrent private placement. This summary is subject to and qualified in its entirety by the form of Purchase Warrant, which will be filed with the SEC as an exhibit to a Current Report on Form 8-K in connection with this offering and incorporated by reference into the registration statement of which this prospectus supplement and the accompanying prospectus form a part.

### **Purchase Warrants**

*Duration and Exercise Price.* Each Purchase Warrant will have an initial exercise price per share equal to \$10.55 per share. The Purchase Warrants are immediately exercisable and will expire at 5:00 p.m. (New York City time) 5 years following the issuance date. The exercise price and number of shares of our common stock issuable upon exercise is subject to appropriate adjustment in the event of stock dividends, stock splits, recapitalization, reorganizations or similar events affecting our Common Stock and the exercise price.

*Exercisability.* The Purchase Warrants are exercisable, at the option of each holder, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of our Common Stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). A holder (together with its affiliates) may not exercise any portion of the purchase warrant to the extent that the holder would own more than 4.99% (or, upon election of the holder, 9.99%) of the outstanding Common Stock immediately after exercise, except that upon at least 61 days’ prior notice from the holder to us, the holder may increase the amount of ownership of outstanding stock after exercising the holder’s Purchase Warrants up to 9.99% of the number of shares of our Common Stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the purchase warrants. No fractional shares of our Common Stock will be issued in connection with the exercise of a Purchase Warrant. In lieu of fractional shares, we will round to the next whole share.

*Cashless Exercise.* If at the time of exercise of a Purchase Warrant there is no effective registration statement registering, or the prospectus contained therein is not available for the issuance of the shares to be issued upon exercise of the purchase warrant, then, in lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise the net number of shares of our Common Stock determined according to a formula set forth in the purchase warrants.

*Transferability.* Subject to applicable laws, a Purchase Warrant may be transferred upon notice to us in writing and surrender of the Purchase Warrant to us together with the appropriate instruments of transfer.

*Exchange Listing.* There is no established public trading market for the Purchase Warrants, and we do not expect a market to develop. In addition, we do not intend to list the Purchase Warrants on any securities exchange or nationally recognized trading system. Without an active trading market, the liquidity of the purchase warrants will be limited.

*Right as a Stockholder.* Except as otherwise provided in the Purchase Warrants or by virtue of such holder's ownership of shares of our Common Stock, the holders of the Purchase Warrants do not have the rights or privileges of holders of our Common Stock, including any voting rights, until they exercise their Purchase Warrants.

*Fundamental Transaction.* In the event of a fundamental transaction, as described in the form of Purchase Warrant, and generally including any reorganization, recapitalization or reclassification of our Common Stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of greater than 50% of our outstanding Common Stock, or any person or group becoming the beneficial owner of greater than 50% of the voting power represented by our outstanding common stock, the holders of the Purchase Warrants will be entitled to receive upon exercise of the purchase warrants the kind and amount of securities, cash or other property that the holders would have received had they exercised the purchase warrants immediately prior to such fundamental transaction. Notwithstanding the foregoing, within 30 days after the consummation of a fundamental transaction, we may repurchase any Purchase Warrants from the holder of such warrant pursuant to the terms and conditions described in the form of Purchase Warrant by paying to the holder an amount equal to the Black Scholes Value (as defined in each purchase warrant) of the remaining unexercised portion of the Purchase Warrant on the date of the fundamental transaction.

## **LEGAL MATTERS**

Certain legal matters in connection with the offering and the validity of the securities offered by this prospectus supplement will be passed upon for us by Dorsey & Whitney LLP, Salt Lake City, Utah. The Placement Agent is being represented in connection with this offering by Lucosky Brookman LLP.

## **EXPERTS**

The consolidated financial statements as of December 31, 2023, and for the year then ended incorporated by reference into this prospectus supplement have been so incorporated in reliance on the report of WithumSmith+Brown, PC, an independent registered public accounting firm, and given on the authority of said firm as experts in auditing and accounting. The report on the consolidated financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern.

The consolidated financial statements as of December 31, 2022, and for the year then ended incorporated by reference into this prospectus supplement have been so incorporated in reliance on the report of Armanino LLP, an independent registered public accounting firm, and given on the authority of said firm as experts in auditing and accounting. The report on the consolidated financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern.

## **WHERE YOU CAN FIND MORE INFORMATION**

We are a reporting company and file annual, quarterly and current reports, proxy statements and other information with the SEC. We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the securities we are offering under this prospectus supplement and the accompanying base prospectus. This prospectus supplement and the accompanying base prospectus do not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the securities we are offering under this prospectus supplement and the accompanying base prospectus, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. The SEC maintains an internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, where our SEC filings are also available. The address of the SEC's website is <http://www.sec.gov>.

We maintain a website at [www.seastarmedical.com](http://www.seastarmedical.com). Information contained in or accessible through our website does not constitute a part of this prospectus supplement.

## INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” into this prospectus supplement and the accompanying prospectus the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus supplement and the accompanying prospectus. Any statement contained herein or in a document incorporated or deemed to be incorporated by reference into this document will be deemed to be modified or superseded for purposes of the document to the extent that a statement contained in this document or any other subsequently filed document that is deemed to be incorporated by reference into this document modifies or supersedes the statement. We incorporate by reference into this prospectus supplement and the accompanying prospectus the following information (other than, in each case, documents or information deemed to have been furnished and not filed in accordance with SEC rules):

- our Annual Report on Form 10-K for the year ended December 31, 2023, filed with the SEC on [April 16, 2024](#), and as amended on Forms 10-K/A, filed with the SEC on [April 26, 2024](#) and [July 3, 2024](#);
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2024, filed with the SEC on [May 14, 2024](#);
- our Current Reports on Form 8-K filed with the SEC on [January 11, 2024](#) (with respect to Item 5.02 only), [January 12, 2024](#), [January 24, 2024](#), [January 30, 2024](#), [February 9, 2024](#), [February 16, 2024](#), [February 22, 2024](#), [March 8, 2024](#), [March 27, 2024](#) (as amended on [March 27, 2024](#)), [March 27, 2024](#), [April 18, 2024](#), [June 4, 2024](#), [June 7, 2024](#), [June 10, 2024](#), [June 11, 2024](#), [June 28, 2024](#), [July 2, 2024](#), [July 5, 2024](#), and [July 9, 2024](#); and
- the description of our Common Stock which is registered under Section 12 of the Exchange Act, in our registration statement on [Form 8-A](#), filed on January 22, 2021, including any amendments or reports filed for the purposes of updating this description.

We also incorporate by reference into this prospectus supplement all documents (other than Current Reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items) that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made after the date of the initial filing of the registration statement of which this prospectus supplement is a part and prior to effectiveness of such registration statement, as well as after the date of this prospectus supplement until we file a post-effective amendment that indicates the termination of the offering of the shares of our Common Stock made by this prospectus supplement and will become a part of this prospectus supplement from the date that such documents are filed with the SEC. These documents include periodic reports, such as Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K, as well as proxy statements.

We will provide to each person, including any beneficial owner, to whom a prospectus supplement is delivered, without charge upon written or oral request, a copy of any or all of the documents that are incorporated by reference into this prospectus supplement but not delivered with this prospectus supplement, including exhibits which are specifically incorporated by reference into such documents. You should direct any requests for documents to SeaStar Medical Holding Corporation, 3513 Brighton Blvd., Suite 410, Denver, CO 80216; telephone: (844) 427-8100.

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference into this document will be deemed to be modified or superseded for purposes of the document to the extent that a statement contained in this document or any other subsequently filed document that is deemed to be incorporated by reference into this document modifies or supersedes the statement.

## PROSPECTUS



**\$100,000,000**

**Common Stock  
Preferred Stock  
Warrants  
Debt Securities  
Rights  
Units**

From time to time, we may offer and sell up to \$100,000,000 in aggregate of the securities described in this prospectus separately or together in any combination, in one or more classes or series, in amounts, at prices and on terms that we will determine at the time of the offering.

This prospectus provides a general description of the securities we may offer. We may provide specific terms of securities to be offered in one or more supplements to this prospectus. We may also provide a specific plan of distribution for any securities to be offered in a prospectus supplement. Prospectus supplements may also add, update or change information in this prospectus. You should carefully read this prospectus and the applicable prospectus supplement, together with any document incorporated by reference herein, before you invest in our securities. The applicable prospectus supplement will contain information, where applicable, as to the listing of any other securities covered by the prospectus supplement other than our common stock, par value \$0.0001 per share (the "Common Stock") on The Nasdaq Capital Market (the "Nasdaq") or any other securities exchange.

Our Common Stock, and publicly traded warrants exercisable for one share of Common Stock for \$11.50 per share (the "Listed Warrants") are traded on Nasdaq under the symbols "ICU" and "ICUCW," respectively. On December 7, 2023, the last reported sale price on Nasdaq of our Common Stock was \$0.48 per share and the closing price of our Listed Warrants was \$0.0342 per warrant. We are a "smaller reporting company" and an "emerging growth company" as defined under the federal securities laws and, as such, have elected to comply with certain reduced reporting requirements for this prospectus and may elect to do so in future filings.

We will sell these securities directly to investors, through agents designated from time to time or to or through underwriters or dealers, on a continuous or delayed basis. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution" in this prospectus. If any agents or underwriters are involved in the sale of any securities with respect to which this prospectus is being delivered, the names of such agents or underwriters and any applicable fees, commissions, discounts or over-allotment options will be set forth in a prospectus supplement. The price to the public of such securities and the net proceeds we expect to receive from such sale will also be set forth in a prospectus supplement.

As of December 7, 2023, our public float, which is equal to the aggregate market value of our outstanding voting and non-voting common stock held by non-affiliates, was approximately \$16.5 million, based on 44.5 million shares of outstanding common stock, of which approximately 34.5 million shares were held by non-affiliates, and a closing sale price of our Common Stock of \$0.48 on that date. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities in a public primary offering with a value exceeding more than one-third of our public float in any 12-month period so long as our public float remains below \$75.0 million.

***Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading "Risk Factors" on page 3 of this prospectus as well as those contained in the applicable prospectus supplement and any related free writing prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus.***

**Neither the Securities Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.**

**The date of this prospectus is December 22, 2023.**

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## ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 (the “Registration Statement”) that we filed with the Securities and Exchange Commission (the “SEC”) using the “shelf” registration or continuous offering process. Under this shelf registration process, we may, from time to time, sell any combination of the securities described in this prospectus in one or more offerings up to a total aggregate offering price of \$100,000,000.

This prospectus provides a general description of the securities we may offer. We may provide specific terms of securities to be offered in one or more supplements to this prospectus. We may also provide a specific plan of distribution for any securities to be offered in a prospectus supplement. Prospectus supplements may also add, update or change information in this prospectus. If the information varies between this prospectus and the accompanying prospectus supplement, you should rely on the information in the accompanying prospectus supplement.

Before purchasing any securities, you should carefully read both this prospectus and any prospectus supplement, together with the additional information described under the heading “Incorporation Of Certain Information By Reference.” You should rely only on the information contained or incorporated by reference in this prospectus, any prospectus supplement and any free underwriting prospectus prepared by or on behalf of us or to which we have referred you. Neither we nor any underwriters have authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. You should assume that the information contained in this prospectus, any prospectus supplement or any free writing prospectus is accurate only as of the date on its respective cover, and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, unless we indicate otherwise. Our business, financial condition, results of operations and prospects may have changed since those dates. This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below under the heading “Where You Can Find More Information.”

This prospectus and any applicable prospectus supplement do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate. We are not making offers to sell common stock or any other securities described in this prospectus in any jurisdiction in which an offer or solicitation is not authorized or in which we are not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation.

Unless otherwise expressly indicated or the context otherwise requires, we use the terms “SeaStar Medical Holding Corporation,” “Company,” “we,” “us” and “our” or similar references to refer to SeaStar Medical Holding Corporation.

## PROSPECTUS SUMMARY

*The following summary highlights certain information about us, this offering and selected information contained elsewhere in or incorporated by reference into this prospectus. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our securities. For a more complete understanding of our company and this offering, you should read and consider carefully the more detailed information included or incorporated by reference in this prospectus, including the factors described under the heading “Risk Factors.”*

### **Business Summary**

#### **Company Overview**

We are a medical technology company focused primarily on developing and commercializing our lead product candidate, the Selective Cytopheretic Device (“SCD”), for pediatric and adult acute kidney injury (“AKI”) indications. We submitted an application for a Humanitarian Device Exemption (“HDE”) for SCD in June 2022 for the treatment of pediatric patients with AKI on continuous renal replacement therapy (“CRRT”). On September 29, 2023, we received a correspondence from the U.S. Food and Drug Administration (“FDA”) indicating that this HDE is approvable for use in children weighing 10 kilograms or more with AKI and sepsis or a septic condition requiring CRRT in the hospital intensive care unit (“ICU”). On October 30, 2023, we announced that we received the approvable letter from the FDA. Following the receipt of this approvable letter, we intend to work diligently and expeditiously to respond to these requests for additional information and address these concerns for approval of our HDE application. We anticipate receiving the HDE approval letter between December 2023 and January 2024. We believe the approval of our HDE will confirm SCD and our technology as an effective tool to treat hyperinflammation related diseases, which will enable us to successfully execute our business and growth strategies.

In addition, we have enrolled the first patient in the pivotal trial of SCD for adult patients with AKI on CRRT based on a previously approved investigative device exemption (“IDE”) protocol. The SCD received a Breakthrough Device Designation from the FDA on April 29, 2022, for the proposed use in the treatment of immunomodulatory dysregulation in adult patients who are 18 years and older with AKI. We began enrollment of adult patients in June 2023 and expect to generate interim study results by mid-2024 and topline study results and submission of a Pre-market Approval (“PMA”) application by the end of 2024, and we are targeting FDA approval by the end of 2025. There is no guarantee that we will complete the AKI adult trial in a timely manner, or at all, nor will there be any assurance that positive data will be generated from such a trial. Even if we can generate positive results from this trial, the FDA and other regulatory agencies may require us to conduct additional trials to support the study or disagree with the design of the trial and request changes or improvements to such design. To date, we have not obtained regulatory approval to commercialize or sell any of our products candidates.

On September 28, 2023, we received Breakthrough Device Designation for our patented and cell-directed SCD for use with patients in the hospital ICU with acute or chronic systolic heart failure and worsening renal function due to cardiorenal syndrome or right ventricular dysfunction awaiting implantation of a left ventricular assist device.

On October 18, 2023, we received Breakthrough Device Designation for our patented and cell-directed SCD for use with patients in the hospital ICU with AKI and acute on chronic liver failure. We have been granted three Breakthrough Device Designations from the FDA for the SCD device, each of which is expected to expedite the clinical development and regulatory review of the SCD for use in the designated patient population.

We believe that our novel therapeutic device is readily applicable for use in other indications, which will require additional clinical studies and FDA approval. As we continue our work to expand indications, we believe we would have the ability to take advantage of economies of scale to reduce costs of production. We believe our scalable manufacturing process demonstrates a significant competitive advantage in the hyperinflammatory market.

On October 23, 2022, we completed a business combination with LMAO, pursuant to that certain Agreement and Plan of Merger, dated as of April 21, 2022 (the “Merger Agreement”), by and among LMAO, LMF Merger Sub, Inc., a Delaware corporation and direct wholly owned subsidiary of LMAO (“Merger Sub”), and SeaStar Medical, Inc., a Delaware corporation (“SeaStar Medical, Inc.”). As contemplated by the Merger Agreement, SeaStar Medical, Inc. merged with and into Merger Sub, with SeaStar Medical, Inc. continuing as the surviving entity in the merger as a wholly owned subsidiary of LMAO (the “Business Combination”). In connection with the closing of the Business Combination (the “Closing”), LMAO changed its name to “SeaStar Medical Holding Corporation.”

***Corporate Information***

Our principal executive offices are located at 3513 Brighton Boulevard, Suite #410, Denver, Colorado 80216, and our phone number is 844-427-8100.

***Implications of Being a Smaller Reporting Company***

We are a “smaller reporting company” meaning that the market value of our Common Stock held by non-affiliates is less than \$250.0 million measured on the last business day of our second fiscal quarter or our annual revenue is less than \$100.0 million during the most recent completed fiscal year and the market value of our Common Stock held by non-affiliates is less than \$700.0 million measured on the last business day of our second fiscal quarter. Accordingly, we may provide less public disclosure than larger public companies, including the inclusion of only two years of audited financial statements and only two years of management’s discussion and analysis of financial condition and results of operations disclosure. As a result, the information that we provide to our stockholders may be different than you might receive from other public reporting companies in which you hold equity interests.

## **RISK FACTORS**

Investing in our securities involves a high degree of risk. Before deciding whether to invest in our securities, you should carefully consider the risk factors we describe in any prospectus supplement and in any related free writing prospectus for a specific offering of securities, as well as those incorporated by reference into this prospectus and any prospectus supplement, including those risk factors included in our most recent Annual Report on Form 10-K, any subsequent Quarterly Reports on Form 10-Q, Current Reports on Form 8-K or any amendment or update thereto reflected in our subsequent SEC filings, in evaluating an investment in our securities. The risks and uncertainties described in the applicable prospectus supplement and our other filings with the SEC incorporated by reference herein are not the only ones we face. Additional risks and uncertainties not presently known to us for that we currently consider immaterial may also adversely affect us. If any of the described risks occur, our business, financial condition, or results of operations could be materially harmed. In such case, the value of our securities could decline and you may lose all or part of your investment.

## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents incorporated by reference herein and therein, contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”) and Section 21E of the Exchange Act of 1934, as amended (the “Exchange Act”). These statements are based on our management’s current beliefs, expectations and assumptions about future events, conditions and results and on information currently available to us. Discussions containing these forward-looking statements may be found, among other places, in the sections titled “Business,” “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” incorporated by reference from our most recent Annual Report on Form 10-K and our subsequent Quarterly Reports on Form 10-Q filed with the SEC, as well as any amendments thereto reflected in subsequent filings with the SEC.

Any statements in this prospectus or incorporated by reference herein or therein about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and are forward-looking statements. Within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act, these forward-looking statements may include, but are not limited to, statements regarding:

- the Company’s future capital requirements and sources and uses of cash;
- the Company’s ability to obtain funding or raise capital for its operations and future growth;
- any delays or challenges in obtaining FDA approval of the Company’s SCD product candidates;
- economic downturns and the possibility of rapid change in the highly competitive industry in which the Company operates;
- the ability to develop and commercialize its products or services following regulatory approval of the Company’s product candidates;
- the failure of third-party suppliers and manufacturers to fully and timely meet their obligations;
- product liability or regulatory lawsuits or proceedings relating to the Company’s products and services;
- inability to secure or protect its intellectual property;
- dispute or deterioration of relationship with the Company’s major partners and collaborators;
- the ability to maintain the listing of the Company’s Common Stock on Nasdaq;
- the ability to recognize the anticipated benefits of the Business Combination, which may be affected by, among other things, competition, and the ability of the Company to grow and manage growth profitably; and
- other risks and uncertainties indicated in this prospectus, including those under “Risk Factors” herein, and other filings that have been made or will be made with the SEC.

In some cases, you can identify forward-looking statements by terminology such as “anticipate,” “believe,” “continue,” “could,” “estimate,” “expects,” “intend,” “may,” “might,” “plan,” “potential,” “predict,” “project,” “should,” “will,” “would” or the negative or plural of those terms, and similar expressions intended to identify statements about the future, although not all forward-looking statements contain these words. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

You should refer to the risks and uncertainties described in the sections titled “Risk Factors” in this prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus, for a discussion of important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. Given these risks, uncertainties and other factors, many of which are beyond our control, we cannot assure you that the forward-looking statements in this prospectus will prove to be accurate, and you should not place undue reliance on these forward-looking statements. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all.

Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to revise any forward-looking statements to reflect events or developments occurring after the date of this prospectus, even if new information becomes available in the future.

## **USE OF PROCEEDS**

We will retain broad discretion over the use of the net proceeds from the sale of the securities offered hereby. Unless otherwise specified in any prospectus supplement, we currently intend to use the net proceeds from the sale of our securities offered under this prospectus for working capital and general corporate purposes including, but not limited to, capital expenditures, working capital, repayment of indebtedness and other business opportunities.

## DESCRIPTION OF COMMON STOCK

*The following summary of the material terms of our securities is not intended to be a complete summary of the rights and preferences of such securities. The descriptions below are qualified by reference to the actual text of the Third Amended and Restated Certificate of Incorporation of SeaStar Medical Holding Corporation, as amended (the "Charter"). We urge you to read the Charter in its entirety for a complete description of the rights and preferences of our securities.*

### **Authorized and Outstanding Stock**

The Charter authorizes the issuance of 510,000,000 shares, consisting of (a) 500,000,000 shares of Common Stock and (b) 10,000,000 shares of preferred stock (the "Preferred Stock").

The outstanding shares of Common Stock issued in the Business Combination are duly authorized, validly issued, fully paid and non-assessable. All outstanding shares of LMAO Class B Common Stock following the Business Combination were converted into shares of LMAO Class A Common Stock on a one-to-one basis. Immediately following the conversion of such Class B Common Stock into shares of Class A Common Stock, each share of Class A Common Stock issued and outstanding was reclassified, redesignated and changed into one validly issued, fully paid and non-assessable share of Common Stock.

As of December 7, 2023, there were 44,500,000 shares of Common Stock issued and outstanding and no shares of Preferred Stock issued and outstanding.

### **Common Stock**

The Charter provides the following with respect to the rights, powers, preferences and privileges of the Common Stock:

#### ***Voting Power***

Except as otherwise required by law or as otherwise provided in any certificate of designation for any series of Preferred Stock, the holders of Common Stock possess all voting power for the election of the Company's directors and all other matters requiring stockholder action. Holders of Common Stock are entitled to one vote per share on matters to be voted on by stockholders. The Charter does not provide for cumulative voting rights.

#### ***Dividends***

Subject to the rights, if any, of the holders of any outstanding shares of Preferred Stock, under the Charter, holders of Common Stock will be entitled to receive such dividends, if any, as may be declared from time to time by the Board in its discretion out of funds legally available therefor.

#### ***Liquidation, Dissolution and Winding Up***

In the event of the Company's voluntary or involuntary liquidation, dissolution, distribution of assets or winding-up, the holders of the Common Stock will be entitled to receive an equal amount per share of all of the Company's assets of whatever kind available for distribution to stockholders, after the rights of the holders of the Preferred Stock have been satisfied and after payment or provision for payment of the Company's debts.

#### ***Preemptive or Other Rights***

There are no preemptive rights or sinking fund provisions applicable to the shares of the Company's Common Stock.

#### ***Listing***

Our Common Stock and Listed Warrants are traded on the Nasdaq Capital Market under the symbols "ICU" and "ICUCW," respectively.

## DESCRIPTION OF PREFERRED STOCK

The Charter provides that shares of Preferred Stock may be issued from time to time in one or more series. Our Board is authorized to fix the voting rights, if any, designations, powers, preferences, the relative, participating, optional, or other special rights and any qualifications, limitations, and restrictions thereof, applicable to the shares of each series. Our Board will be able to, without stockholder approval, issue Preferred Stock with voting and other rights that could adversely affect the voting power and other rights of the holders of the Common Stock and could have anti-takeover effects. The ability of our Board to issue Preferred Stock without stockholder approval could have the effect of delaying, deferring, or preventing a change of control of us or the removal of existing management. We have no Preferred Stock outstanding at the date hereof. Although we do not currently intend to issue any shares of Preferred Stock, we cannot assure you that we will not do so in the future.

While we have no current plans to issue Preferred Stock, circumstances in which we might issue Preferred Stock in the future could include, among others, offerings of Preferred Stock undertaken for capital raising purposes (whether before or in connection with our initial business combination or thereafter), issuances in connection with acquisitions we might make in the future, or issuances in connection with potential change of control or strategic transactions involving us. Any determination by us to issue shares of Preferred Stock in the future will be dependent on the facts and circumstances at the time.

## DESCRIPTION OF WARRANTS

The following summarizes the general terms of stock and debt warrants that we may offer. The particular terms of any stock and debt warrants will be described in an accompanying prospectus supplement. The description below and in any accompanying prospectus supplement is not complete. You should read the form of warrant agreement and any warrant certificate that we will file with the SEC.

### Warrants to Purchase Capital Stock

If we offer stock warrants, the prospectus supplement will describe the terms of the stock warrants, including:

- The offering price, if any;
- If applicable, the designation and terms of any Preferred Stock purchasable upon exercise of Preferred Stock warrants;
- The number of shares of Common Stock or Preferred Stock purchasable upon exercise of one stock warrant and the initial price at which the shares may be purchased upon exercise;
- The dates on which the right to exercise the stock warrants begins and expires;
- U.S. federal income tax consequences;
- Call provisions, if any;
- The currencies in which the offering price and exercise price are payable; and
- If applicable, the antidilution provisions of the stock warrants.

The shares of Common Stock or Preferred Stock we issue upon exercise of the stock warrants will, when issued in accordance with the stock warrant agreement, be validly issued, fully paid and nonassessable.

### Exercise of Warrants to Purchase Capital Stock

You may exercise stock warrants by surrendering to the stock warrant agent the stock warrant certificate, which indicates your election to exercise all or a portion of the stock warrants evidenced by the certificate. Surrendered stock warrant certificates must be accompanied by payment of the exercise price in the form of cash or check. The stock warrant agent will deliver certificates evidencing duly exercised stock warrants to the transfer agent. Upon receipt of the certificates, the transfer agent will deliver a certificate representing the number of shares of Common Stock or Preferred Stock purchased. If you exercise fewer than all the stock warrants evidenced by any certificate, the stock warrant agent will deliver a new stock warrant certificate representing the unexercised stock warrants.

### No Rights as Stockholders

Holders of stock warrants are not entitled to vote, to consent, to receive dividends or to receive notice as stockholders with respect to any meeting of stockholders or to exercise any rights whatsoever as our stockholders.

## **Warrants to Purchase Debt Securities**

If we offer debt warrants, the accompanying prospectus supplement will describe the terms of the warrants, including:

- The offering price, if any;
- The designation, aggregate principal amount and terms of the debt securities purchasable upon exercise of the warrants and the terms of the indenture under which the debt securities will be issued;
- If applicable, the designation and terms of the debt securities with which the debt warrants are issued and the number of debt warrants issued with each debt security;
- If applicable, the date on and after which the debt warrants and the related securities will be separately transferable;
- The principal amount of debt securities purchasable upon exercise of one debt warrant, and the price at which the principal amount of debt securities may be purchased upon exercise;
- The dates on which the right to exercise the debt warrants begins and expires;
- U.S. federal income tax consequences;
- Whether the warrants represented by the debt warrant certificates will be issued in registered or bearer form;
- The currencies in which the offering price and exercise price are payable; and
- If applicable, any antidilution provisions.

You may exchange debt warrant certificates for new debt warrant certificates of different denominations and may present debt warrant certificates for registration of transfer at the corporate trust office of the debt warrant agent, which will be listed in an accompanying prospectus supplement.

## **Exercise of Warrants to Purchase Debt Securities**

You may exercise debt warrants by surrendering the debt warrant certificate at the corporate trust office of the debt warrant agent, with payment in full of the exercise price. Upon the exercise of debt warrants, the debt warrant agent will, as soon as practicable, deliver the debt securities in authorized denominations in accordance with your instructions and at your sole cost and risk. If less than all the debt warrants evidenced by the debt warrant certificate are exercised, the agent will issue a new debt warrant certificate for the remaining amount of debt warrants.

## **No Rights as Holders of Debt Securities**

Warrant holders do not have any of the rights of holders of debt securities, except to the extent that the consent of warrant holders may be required for certain modifications of the terms of an indenture or form of the debt security, as the case may be, and the series of debt securities issuable upon exercise of the debt warrants. In addition, warrant holders are not entitled to payments of principal of and interest, if any, on the debt securities.

## DESCRIPTION OF DEBT SECURITIES

### General

We may issue debt securities either separately, or together with, or upon the conversion or exercise of or in exchange for, other securities described in this prospectus. Debt securities may be our senior, senior subordinated or subordinated obligations and may be issued in one or more series. Unless otherwise expressly stated in an accompanying prospectus supplement, the debt securities will represent our general, unsecured obligations and will rank equally with all of our other unsecured indebtedness.

Any debt securities that we issue will be issued under an indenture that will be entered into between us and a bank or trust company, or other trustee that is qualified to act under the Trust Indenture Act of 1939 (the “TIA”), which we select to act as trustee. A copy of the indenture (the “Indenture”) will be filed as an exhibit to a prospectus supplement to the registration statement of which this prospectus forms a part. The Indenture may be modified by one or more supplemental indentures, which we will incorporate by reference as an exhibit to the registration statement of which this prospectus is a part. Any debt securities that we issue will include those stated in the Indenture (including any supplemental indentures that specify the terms of a particular series of debt securities) as well as those made part of the Indenture by reference to the TIA, as in effect on the date of the Indenture. The Indenture will be subject to and governed by the terms of the TIA.

The following description and any description in an accompanying prospectus supplement is a summary only and is subject to, and qualified in its entirety by reference to the terms and provisions of the indentures and any supplemental indentures that we file with the SEC in connection with an issuance of any series of debt securities. You should read all of the provisions of the Indentures, including the definitions of certain terms, as well as any supplemental indentures that we file with the SEC in connection with the issuance of any series of debt securities. These summaries set forth certain general terms and provisions of the securities to which any accompanying prospectus supplement may relate. The specific terms and provisions of a series of debt securities and the extent to which the general terms and provisions may also apply to a particular series of debt securities will be described in the accompanying prospectus supplement. Copies of the Indenture may be obtained from us or the Trustee.

Please read the accompanying prospectus supplement relating to the series of debt securities being offered for specific terms including, when applicable:

- the title of the debt securities of the series;
- the price or prices (expressed as a percentage of the principal amount thereof) at which debt securities of the series will be issued;
- any limit on the aggregate principal amount of that series of debt securities;
- whether such securities rank as senior debt securities, senior subordinated debt securities or subordinated debt securities;
- the terms and conditions, if any, upon which the debt securities of the series shall be exchanged for or converted into other of our securities or securities of another person;
- if the debt securities of there will be secured by any collateral and, if so, a general description of the collateral and the terms and provisions of such collateral security, pledge or other agreements;
- the date or dates on which we will pay the principal of the debt securities of the series;
- the rate or rates, which may be fixed or variable, at which debt securities of the series will bear interest, if any, or the method or methods, if applicable, used to determine those rates, the date or dates, if any, from which interest on the debt securities of the series will begin to accrue, or the method or methods, if any, used to determine those dates, the dates on which the interest, if any, on the debt securities of the series will be payable and the record dates for the payment of interest;

- the manner in which the amounts of payment of principal of or interest, if any, of the debt securities of the series will be determined, if such amounts may be determined by reference to an index based on a currency or currencies or by reference to a currency exchange rate, commodity, commodity index, stock exchange index or financial index;
- if other than the corporate trust office of the Trustee, the place or places where amounts due on the debt securities of the series will be payable and where the debt securities of the series may be surrendered for registration of transfer and exchange and where notices and demands to or upon us in respect of the debt securities of the series may be served, and the method of such payment, if by wire transfer, mail or other means;
- if applicable, the period or periods within which, and the terms and conditions upon which, we may, at our option, redeem debt securities of the series;
- the terms and conditions, if applicable, upon which the holders of debt securities may require us to repurchase or redeem debt securities of the series at the option of the holders of debt securities of the series;
- the provisions, terms and conditions, if any, with respect to any sinking fund or analogous provision;
- the authorized denominations in which the debt securities of the series will be issued, if other than denominations of \$1,000 and any integral multiples of \$1,000 in excess thereof;
- whether the debt securities of the series are to be issuable, in whole or in part, in bearer form;
- whether any fully regulated debt securities of the series will be issued in temporary or permanent global form (“global debt securities”) and, if so, the identity of the depository for the global debt securities if other than The Depository Trust Company;
- any depositories, interest rate calculation agents, exchange rate calculation agents or other agents;
- the trustee for the debt securities;
- the portion of the principal amount of the debt securities of the series which will be payable upon acceleration of maturity, if other than the full principal amount;
- any addition to, or modification or deletion of, any covenant described in this prospectus or in the Indenture;

- any events of default, if not otherwise described below under “—Events of Default” and any change to the right of the holders to declare the principal of any debt securities due and payable;
- if other than U.S. dollars, the currency, currencies or currency units of denomination of the debt securities of the series, which may be any foreign currency, and if such currency denomination is a composite currency, the agency or organization, if any, responsible for overseeing such composite currency;
- if other than U.S. dollars, the currency, currencies or currency units in which the purchase price for the debt securities of the series will be payable, in which payments of principal and, if applicable, premium or interest on the debt securities of the series will be payable, and, if necessary, the manner in which the exchange rate with respect to such payments will be determined;
- any listing of the debt securities on any securities exchange;
- any additions or deletions to the defeasance or the satisfaction and discharge provisions set forth herein;
- if and under what circumstances we will pay additional amounts (“Additional Amounts”) on the debt securities of the series in respect of specified taxes, assessments or other governmental charges and, if so, whether we will have the option to redeem the debt securities of the series rather than pay the Additional Amounts;
- the priority and kind of any lien securing the debt securities and a brief identification of the principal properties subject to such lien;
- additions or deletions to or changes in the provisions relating to modification of any Indenture; and
- any other terms of the debt securities of the series (whether or not such other terms are consistent or inconsistent with any other terms of the Indenture).

As used in this prospectus and any accompanying prospectus supplement relating to the offering of debt securities of any series, references to the principal of and premium, if any, and interest, if any, on the debt securities of the series include the payment of Additional Amounts, if any, required by the debt securities of the series to be paid in that context.

Debt securities may be issued as original issue discount securities to be sold at a substantial discount below their principal amount. In the event of an acceleration of the maturity of any original issue discount security, the amount payable to the holder upon acceleration will be determined in the manner described in the accompanying prospectus supplement. Certain U.S. federal income tax considerations applicable to original issue discount securities will be described in any accompanying prospectus supplement.

If the purchase price of any debt securities is payable in a foreign currency or if the principal of, or premium, if any, or interest, if any, on any debt securities is payable in a foreign currency, the specific terms of those debt securities and the applicable foreign currency will be specified in the accompanying prospectus supplement relating to those debt securities.

The terms of the debt securities of any series may differ from the terms of the debt securities of any other series, and the terms of particular debt securities within any series may differ from each other. Unless otherwise expressly provided in the accompanying prospectus supplement relating to any series of debt securities, we may, without the consent of the holders of the debt securities of any series, reopen an existing series of debt securities and issue additional debt securities of that series.

Unless otherwise described in an accompanying prospectus supplement relating to any series of debt securities and except to the limited extent set forth below under “—Merger, Consolidation and Transfer of Assets,” there will be no limitation upon our ability to incur indebtedness or other liabilities or that would afford holders of debt securities protection in the event of a business combination, takeover, recapitalization or highly leveraged or similar transaction involving us. Accordingly, we may in the future enter into transactions that could increase the amount of our consolidated indebtedness and other liabilities or otherwise adversely affect our capital structure or credit rating without the consent of the holders of the debt securities of any series.

### **Registration, Transfer and Payment**

Unless otherwise indicated in the applicable prospectus supplement, each series of debt securities will be issued in registered form only, without coupons.

Unless otherwise indicated in the applicable prospectus supplement, debt securities will be issued in denominations of \$1,000 or any integral multiples of \$1,000 in excess thereof.

Unless otherwise indicated in the accompanying prospectus supplement, the debt securities will be payable and may be surrendered for registration of transfer or exchange and, if applicable, for conversion into or exchange for other securities or property, at an office or agency maintained by us in the United States. However, we may, at our option, make payments of interest on any registered debt security by check mailed to the address of the person entitled to receive that payment or by wire transfer to an account maintained by the payee with a bank located in the United States. Unless otherwise indicated in the accompanying prospectus supplement, no service charge shall be made for any registration of transfer or exchange, redemption or repayment of debt securities, or for any conversion or exchange of debt securities for other securities or property, but we may require payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in connection with that transaction.

Unless otherwise indicated in the applicable prospectus supplement, we will not be required to:

- issue, register the transfer of or exchange debt securities of any series during a period beginning at the opening of business 15 days before any mailing of a notice of a redemption for the debt securities of that series selected for redemption and ending at the close of business on the day of such mailing; or
- register the transfer of or exchange any debt security, or portion of any debt security, selected for redemption, except the unredeemed portion of any registered debt security being redeemed in part.

## **Book-Entry Debt Securities**

We may issue the debt securities in whole or in part in the form of one or more global certificates or notes, which we refer to as global securities, that we will deposit with a depository or its nominee that we identify in the applicable prospectus supplement.

We will describe the specific terms of the depository arrangement covering the debt securities in the prospectus supplement relating to that series. We anticipate that the following provisions will apply to all depository arrangements.

Upon the issuance of the debt securities in the form of one or more global securities, the depository or its custodian will credit, on its book-entry registration and transfer system, the number of shares or principal amount of securities of the individual beneficial interests represented by these global securities to the respective accounts of persons who have accounts with the depository. Ownership of beneficial interests in the global securities will be shown on, and the transfer of this ownership will be effected only through, records maintained by the depository or its nominee with respect to interests of participants and the records of participants with respect to interests of persons other than participants. These accounts initially will be designated by or on behalf of the underwriters, initial purchasers or agents, or by us if we offer and sell the debt securities directly, and ownership of beneficial interests in the global securities will be limited to participants or persons who hold interests through participants. Qualified institutional buyers may hold their interests in the global securities directly through the depository if they are participants in this system, or indirectly through organizations which are participants in this system. The laws of some states of the U.S. may require that some purchasers of securities take physical delivery of the debt securities in definitive registered form. These limits and the laws may impair your ability to own, transfer or pledge interests in the global securities.

So long as the depository, or its nominee, is the registered owner or holder of the debt securities, the depository or its nominee, as the case may be, will be considered the sole owner or holder of the debt securities represented by the global securities for all purposes. No beneficial owner of an interest in the global securities will be able to transfer that interest except in accordance with the depository's procedures.

We will make dividend payments on, or payments of the principal of, and premium, if any, and interest on, the global securities to the depository or its nominee, as the case may be, as the registered owner of the global securities. We will not have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests in the global securities or for maintaining, supervising or reviewing any records relating to the beneficial ownership interest.

We expect that the depository or its nominee, upon receipt of any dividend payment on, or payment of the principal of, and premium, if any, and interest on, the global securities, will credit participants' accounts with payments in amounts proportionate to their respective beneficial interests in the debt securities as shown on the records of the depository or its nominee. We also expect that payments by participants to owners of beneficial interests in the global securities held through the participants will be governed by standing instructions and customary practice, as is now the case with securities held for the accounts of customers registered in the names of nominees for their customers. These payments will be the responsibility of the participants. Transfers between participants in the depository will be effected in the ordinary way through the depository's settlement system in accordance with the depository rules and will be settled in same day funds.

We will issue securities in certificated form in exchange for global securities (subject, in the case of the third bullet point, to the procedures of the depository) if:

- the depository notifies us that it is unwilling or unable to continue as a depository for the global securities or ceases to be a "clearing agency" registered under the Exchange Act of 1934, and a successor depository is not appointed by us within 90 days of the notice;
- an event of default under the instrument governing the debt securities has occurred and is continuing; or
- we determine that the debt securities will no longer be represented by the global securities.

## **DESCRIPTION OF RIGHTS**

As specified in the applicable prospectus supplement, we may issue rights to purchase the securities offered in this prospectus to our existing stockholders, and such rights may or may not be issued for consideration. The applicable prospectus supplement will describe the terms of any such rights. The description in the prospectus supplement will not purport to be complete and will be qualified in its entirety by reference to the documents pursuant to which such rights will be issued.

## **DESCRIPTION OF UNITS**

As may be specified in an accompanying prospectus supplement, we may issue units consisting of one or more of our securities registered hereby. An accompanying prospectus supplement will describe:

- the terms of the units and of the securities comprising the units, including whether and under what circumstances the securities comprising the units may be traded separately;
- a description of the terms of any unit agreement governing the units; and
- a description of the provisions for the payment, settlement, transfer or exchange of the units.

## PLAN OF DISTRIBUTION

We may sell the securities from time to time, by a variety of methods, including the following:

- on any national securities exchange or quotation service on which the securities may be listed or quoted at the time of sale;
- in the over-the-counter market;
- in transactions otherwise than on these exchanges or systems or in the over-the-counter market;
- through the writing or settlement of options, whether such options are listed on an options exchange or otherwise;
- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales made after the date the Registration Statement is declared effective by the SEC;
- broker-dealers may agree with a us to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The securities may be distributed from time to time in one or more transactions:

- at a fixed price or prices, which may be changed;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

Offers to purchase the securities being offered by this prospectus may be solicited directly. Agents may also be designated to solicit offers to purchase the securities from time to time. Any agent involved in the offer or sale of our securities will be identified in a prospectus supplement.

If a dealer is utilized in the sale of the securities being offered by this prospectus, the securities will be sold to the dealer as principal. The dealer may then resell the securities to the public at varying prices to be determined by the dealer at the time of resale.

If an underwriter is utilized in the sale of the securities being offered by this prospectus, an underwriting agreement will be executed with the underwriter at the time of sale and the name of any underwriter will be provided in the prospectus supplement that the underwriter will use to make resales of the securities to the public. In connection with the sale of the securities, we, or the purchasers of securities for whom the underwriter may act as agent, may compensate the underwriter in the form of underwriting discounts or commissions. The underwriter may sell the securities to or through dealers, and those dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for which they may act as agent. Unless otherwise indicated in a prospectus supplement, an agent will be acting on a best efforts basis and a dealer will purchase securities as a principal, and may then resell the securities at varying prices to be determined by the dealer.

Any compensation paid to underwriters, dealers or agents in connection with the offering of the securities, and any discounts, concessions or commissions allowed by underwriters to participating dealers will be provided in the applicable prospectus supplement. Underwriters, dealers and agents participating in the distribution of the securities may be deemed to be underwriters within the meaning of the Securities Act, and any discounts and commissions received by them and any profit realized by them on resale of the securities may be deemed to be underwriting discounts and commissions. In compliance with the guidelines of the Financial Industry Regulatory Authority, Inc., or FINRA, the maximum amount of underwriting compensation, including underwriting discounts and commissions, to be paid in connection with any offering of securities pursuant to this prospectus may not exceed 8% of the aggregate principal amount of securities offered. We may enter into agreements to indemnify underwriters, dealers and agents against civil liabilities, including liabilities under the Securities Act, or to contribute to payments they may be required to make in respect thereof and to reimburse those persons for certain expenses. The securities may or may not be listed on a national securities exchange. To facilitate the offering of securities, certain persons participating in the offering may engage in transactions that stabilize, maintain or otherwise affect the price of the securities. This may include over-allotments or short sales of the securities, which involve the sale by persons participating in the offering of more securities than were sold to them. In these circumstances, these persons would cover such over-allotments or short positions by making purchases in the open market or by exercising their over-allotment option, if any. In addition, these persons may stabilize or maintain the price of the securities by bidding for or purchasing securities in the open market or by imposing penalty bids, whereby selling concessions allowed to dealers participating in the offering may be reclaimed if securities sold by them are repurchased in connection with stabilization transactions. The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. These transactions may be discontinued at any time.

If indicated in the applicable prospectus supplement, underwriters or other persons acting as agents may be authorized to solicit offers by institutions or other suitable purchasers to purchase the securities at the public offering price set forth in the prospectus supplement, pursuant to delayed delivery contracts providing for payment and delivery on the date or dates stated in the prospectus supplement. These purchasers may include, among others, commercial and savings banks, insurance companies, pension funds, investment companies and educational and charitable institutions. Delayed delivery contracts will be subject to the condition that the purchase of the securities covered by the delayed delivery contracts will not at the time of delivery be prohibited under the laws of any jurisdiction in the United States to which the purchaser is subject. The underwriters and agents will not have any responsibility with respect to the validity or performance of these contracts.

We may engage in at-the-market offerings into an existing trading market in accordance with rule 415(a)(4) under the Securities Act. In addition, we may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement so indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use securities pledged by us, or borrowed from us or others to settle those sales or to close out any related open borrowings of Common Stock, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of our Common Stock. In addition, we may loan or pledge securities to a financial institution or other third party that in turn may sell the securities using this prospectus and an applicable prospectus supplement. Such financial institution or other third party may transfer its economic short position to investors in our securities or in connection with a concurrent offering of other securities.

The underwriters, dealers and agents may engage in transactions with us, or perform services for us, in the ordinary course of business for which they receive compensation.

## **LEGAL MATTERS**

The validity of the Shares have been passed upon by Morgan Lewis Bockius LLP, Palo Alto, California.

## **EXPERTS**

The consolidated financial statements as of December 31, 2022 and 2021, and for each of the years then ended incorporated by reference in this prospectus have been so incorporated in reliance on the report of Armanino LLP an independent registered public accounting firm, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting. The report on the consolidated financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern.

## **WHERE YOU CAN FIND MORE INFORMATION**

This prospectus is part of the registration statement on Form S-3 we filed with the SEC under the Securities Act and does not contain all of the information set forth or incorporated by reference in the registration statement and the exhibits to the registration statement. For further information with respect to us and the securities we are offering under this prospectus, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. We file annual, quarterly, and current reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including SeaStar Medical Holding Corporation. The address of the SEC website is [www.sec.gov](http://www.sec.gov).

We maintain a website at [www.SeaStarmedical.com](http://www.SeaStarmedical.com). Information contained in or accessible through our website does not constitute a part of this prospectus.

## INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” into this prospectus the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Any statement contained herein or in a document incorporated or deemed to be incorporated by reference into this document will be deemed to be modified or superseded for purposes of the document to the extent that a statement contained in this document or any other subsequently filed document that is deemed to be incorporated by reference into this document modifies or supersedes the statement. We incorporate by reference in this prospectus the following information (other than, in each case, documents or information deemed to have been furnished and not filed in accordance with SEC rules):

- our Annual Report on Form 10-K for the year ended December 31, 2022, filed with the SEC on [March 30, 2023](#), and as amended on Form 10-K/A, filed with the SEC on [April 28, 2023](#);
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2023, June 30, 2023, and September 30, 2023, filed with the SEC on [May 15, 2023](#), [August 14, 2023](#), and [November 14, 2023](#), respectively;
- our Current Reports on Form 8-K filed with the SEC on [January 9, 2023](#), [February 9, 2023](#), [February 15, 2023](#), [March 16, 2023](#), [May 9, 2023](#), [June 9, 2023](#), [June 16, 2023](#), [June 30, 2023](#), [August 2, 2023](#), [August 8, 2023](#), [August 30, 2023](#), [September 8, 2023](#), [September 20, 2023](#), [September 26, 2023](#), [October 3, 2023](#), [October 30, 2023](#), [November 27, 2023](#), and [November 29, 2023](#); and
- the description of our Common Stock which is registered under Section 12 of the Exchange Act, in our registration statement on [Form 8-A](#), filed on January 22, 2021, including any amendments or reports filed for the purposes of updating this description.

We also incorporate by reference in to this prospectus all documents (other than Current Reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items) that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of such registration statement, as well as after the date of this prospectus until we file a post-effective amendment that indicates the termination of the offering of the shares of our Common Stock made by this prospectus and will become a part of this prospectus from the date that such documents are filed with the SEC. These documents include periodic reports, such as Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K, as well as proxy statements.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, without charge upon written or oral request, a copy of any or all of the documents that are incorporated by reference into this prospectus but not delivered with this prospectus, including exhibits which are specifically incorporated by reference into such documents. You should direct any requests for documents to SeaStar Medical Holding Corporation 3513 Brighton Blvd., Suite 410 Denver, CO 80216; telephone: (844) 427-8100.

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference into this document will be deemed to be modified or superseded for purposes of the document to the extent that a statement contained in this document or any other subsequently filed document that is deemed to be incorporated by reference in to this document modifies or supersedes the statement.

**SeaStar Medical Holding Corporation**

**947,868 shares of Common Stock**

**PROSPECTUS SUPPLEMENT**

**H.C. Wainwright & Co.**

**July 10, 2024**

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