AMERICAN ONCOLOGY NETWORK, INC. Primary Offering of 8,337,500 Shares of Class A Common Stock Secondary Offering of 51,161,832 Shares of Class A Common Stock 6,113,333 Warrants to Purchase Shares of Class A Common Stock

This prospectus supplement is being filed to update and supplement the information contained in the prospectus dated May 3, 2024 (the "*Prospectus*"), which forms part of our registration statement on Form S-1 (No. 333-274975), as amended, with the information contained in our Current Report on Form 8-K, filed with the Securities and Exchange Commission (the "*SEC*") on May 21, 2024 (the "*Current Report*"). Accordingly, we have attached the Current Report to this prospectus supplement.

The Prospectus and this prospectus supplement relate to: (i) the issuance by us of up to 8,337,500 shares of class A common stock, par value \$0.0001 per share (the "Class A Common Stock"), of American Oncology Network, Inc., a Delaware corporation (the "Company" "we," "us," or "AON"), to be issued upon the exercise of 8,337,500 public warrants, which entitles its holder to purchase shares of Class A Common Stock at an exercise price of \$11.50 per share and (ii) the resale of (a) an aggregate of 51,161,832 shares of Class A Common Stock by certain of the selling securityholders named in the Prospectus (each a "Selling Securityholder" and, collectively, the "Selling Securityholders") and (b) 6,113,333 private placement warrants to purchase shares of Class A Common Stock issued to the Selling Securityholders.

This prospectus supplement updates and supplements the information in the Prospectus and is not complete without, and may not be delivered or utilized except in combination with, the Prospectus, including any amendments or supplements thereto. This prospectus supplement should be read in conjunction with the Prospectus and if there is any inconsistency between the information in the Prospectus and this prospectus supplement, you should rely on the information in this prospectus supplement. Terms used in this prospectus supplement but not defined herein shall have the meanings given to such terms in the Prospectus.

You should read the Prospectus, this prospectus supplement and any additional prospectus supplement or amendment carefully before you invest in our securities. Our Class A Common Stock is listed on the Nasdaq Stock Market under the symbol "AONC". Our warrants are listed on the Nasdaq Stock Market under the symbol "AONC". Our warrants are listed on the Nasdaq Stock Market under the symbol "AONC". On May 20, 2024, the closing price of our Class A Common Stock was \$2.63 and the closing price of our warrants was \$0.21.

Investing in our Class A Common Stock and warrants involves a high degree of risk. See the section titled "*Risk Factors*" beginning on page 13 of the Prospectus and in our other documents subsequently filed with the SEC.

Neither the SEC nor any other state securities commission has approved or disapproved of these securities or passed on the adequacy or accuracy of the Prospectus or this prospectus supplement. Any representation to the contrary is a criminal offense.

May 21, 2024

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 8-K

CURRENT REPORT Pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): May 21, 2024

American Oncology Network, Inc.

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation or organization) 001-40177 (Commission File Number)

14543 Global Parkway, Suite 110 Fort Myers, FL (Address of principal executive offices) 85-3984427 (I.R.S. Employer Identification Number)

33913 (Zip Code)

(833) 886-1725

(Registrant's telephone number, including area code)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

□ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

□ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

□ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

□ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Securities Exchange Act of 1934:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Class A common stock, par value \$0.0001, per share	AONC	The Nasdaq Stock Market LLC
Warrants, each whole warrant exercisable for one share of Class A common stock at an exercise price of \$11.50 per share	AONCW	The Nasdaq Stock Market LLC

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 or Rule 12b-2 of the Securities Exchange Act of 1934.

Emerging growth company \Box

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

Item 3.01 Notice of Delisting or Failure to Satisfy a Continued Listing Rule or Standard; Transfer of Listing.

On May 21, 2024, American Oncology Network, Inc. (the "Company") announced that it has determined to voluntarily delist its Class A Common Stock ("Common Stock") and publicly traded warrants to purchase Class A Common Stock (the "Warrants") from the Nasdaq Capital Market ("Nasdaq"), as recommended to the Board of Directors (the "Board") of the Company by a special committee (the "Special Committee") of the Board comprised solely of disinterested directors. On May 21, 2024, the Company notified Nasdaq of its determination.

In making its determination, the Special Committee concluded that delisting the Company's securities from Nasdaq is in the best interests of the Company and its stockholders. The Special Committee's recommendation and the Board's decision were the product of careful review and consideration of a number of factors, including, but not limited to, (1) the lack of research coverage of the Company by securities and industry analysts, (2) the lack of an active trading market for our securities on Nasdaq, and (3) the required personnel resources and the high costs relating to continued Exchange Act and Nasdaq disclosure and reporting requirements and related regulatory burdens, which have resulted and would continue to result in significant operating expense and significant attention of the Company's management team. In addition, the Company and certain of its significant equityholders also agreed to certain protections for the holders of the Company's common equity following the delisting, including (1) in the event such significant equityholders arrange for purchases or other acquisitions of the Company's outstanding equity securities, such acquisitions would be made at a premium to the trading price of the Company's Class A common stock prior to delisting, which premium shall not be less than a specified threshold (unless otherwise approved by the Special Committee) and (2) for such equityholders to enter into a customary stockholders' agreement with the Company under certain circumstances. The Company provides no assurances as to the timing, pricing, or occurrence of any purchases or other acquisitions of the Company's outstanding equity securities in the future.

A copy of the press release is filed with this Current Report on Form 8-K as Exhibit 99.1 and is incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

Exhibit No.	Description
99.1	Press Release of the Company, dated May 21, 2024
104	Cover Page Interactive Data File, formatted in Inline Extensible Business Reporting Language (iXBRL).

SIGNATURE

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

AMERICAN ONCOLOGY NETWORK, INC.

By: /s/ Todd Schonherz

Name:Todd SchonherzTitle:Chief Executive OfficerDated:May 21, 2024