

October 14, 2022

Keith Gottesdiener, M.D.
President and Chief Executive Officer
Prime Medicine, Inc.
21 Erie Street
Cambridge, MA 02139

Inc.

Registration Statement on Form S-1
2022

Re: Prime Medicine,
Amendment No. 1 to
Filed October 13,
File No. 333-267579

Dear Keith Gottesdiener:

We have reviewed your amended registration statement and have the following comment.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comment applies to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to this comment, we may have additional comments.

Amendment No. 1 to Registration Statement on Form S-1

Use of Proceeds, page 86

1. Your disclosure that your development activities are generally not allocated to specific programs does not align with your disclosure that you intend to use \$65 million of the offering proceeds for "certain of [y]our current therapeutic programs[.]" Please revise and, to the extent that you plan to use a material portion of the proceeds to fund the development of certain of your current therapeutic programs, please specify these programs and separately quantify the amounts you expect to allocate to each program. If, due to the number of programs you currently have in the discovery stage, or for other reasons, you currently are unable to specify to what stage of development the net proceeds from this offering, together with your existing cash and cash equivalents, and short-term investments, will bring any of your particular programs or product candidates, please make that clear.

Keith Gottesdiener, M.D.
Prime Medicine, Inc.
October 14, 2022
Page 2

You may contact Tracey Houser at 202-551-3736 or Angela Connell at 202-551-3426 if you have questions regarding comments on the financial statements and related matters. Please contact Dillon Hagius at 202-551-7967 or Tim Buchmiller at 202-551-3635 with any other questions.

Sincerely,

FirstName LastNameKeith Gottesdiener, M.D.

Corporation Finance
Comapany NamePrime Medicine, Inc.

Division of

Office of Life

Sciences
October 14, 2022 Page 2
cc: Gabriela Morales-Rivera, Esq.
FirstName LastName