

Transcript of Christopher Morris, M.D.
Conducted on May 4, 2026

1 (1 to 4)

<p>1 UNITED STATES PATENT AND TRADEMARK OFFICE</p> <p>2 -----</p> <p>3 BEFORE THE PATENT TRIAL AND APPEAL BOARD</p> <p>4 -----</p> <p>5 IMPERATIVE CARE, INC.</p> <p>6 Petitioner,</p> <p>7</p> <p>8 v.</p> <p>9</p> <p>10 INARI MEDICAL, INC.,</p> <p>11 Patent Owner.</p> <p>12 -----</p> <p>13</p> <p>14 Case No. IPR 2025-01021</p> <p>15 Patent No. 11,969,333</p> <p>16 Case No. IPR 2-25-01025</p> <p>17 Patent No. 11,974,910</p> <p>18</p> <p>19 VIDEOTAPED DEPOSITION OF CHRISTOPHER MORRIS, M.D.,</p> <p>20 Deposition taken at Hotel Burlington, 41 Cherry</p> <p>21 Street, Burlington, Vermont, on Monday, May 4, 2026,</p> <p>22 commencing at 9:05 a.m.</p>	<p>1 I N D E X</p> <p>2 WITNESS: CHRISTOPHER MORRIS, M.D.</p> <p>3</p> <p>4 EXAMINATION: PAGE</p> <p>5 By Mr. Stowell 5</p> <p>6</p> <p>7</p> <p>8</p> <p>9 EXHIBITS FOR IDENTIFICATION:</p> <p>10 MORRIS, M.D. DESCRIPTION PAGE</p> <p>11 (No exhibits marked.)</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p>
<p>1 Court Reporter:</p> <p>2 Pamela J. Carle, LCR, RPR, CRR</p> <p>3</p> <p>4 APPEARANCES</p> <p>5</p> <p>6 For the Petitioner:</p> <p>7 KNOBBE MARTENS OLSON & BEAR, LLP</p> <p>8 2040 Main Street, 14th Floor</p> <p>9 Irvine, California 92614</p> <p>10 By: Joshua J. Stowell, Esq.</p> <p>11 949.760.0404</p> <p>12</p> <p>13 For the Patent Owner:</p> <p>14 PERKINS COIE LLP</p> <p>15 1888 Century Park East, Suite 1700</p> <p>16 Los Angeles, California 90067-1721</p> <p>17 By: Joseph Hamilton, Esq.</p> <p>18 310.788.9900</p> <p>19</p> <p>20 Videographer:</p> <p>21 John Gugarty</p> <p>22</p>	<p>1 THE VIDEOGRAPHER: Here begins media</p> <p>2 No. 1 in the videotaped deposition of Christopher</p> <p>3 S. Morris, M.D., in the matter of Imperative Care,</p> <p>4 Inc. versus Inari Medical, Inc., in the United</p> <p>5 States Patent and Trademark Office before the</p> <p>6 patent trial and appeal board, case numbers IPR</p> <p>7 2025-01021, and IPR 2025-01025.</p> <p>8 Today's date is May 4, 2026. The time</p> <p>9 on the video monitor is 9:05 Eastern. The</p> <p>10 videographer today is John Gugarty representing</p> <p>11 Planet Depos, which is headquartered at 451</p> <p>12 Hungerford Drive, Suite 400 in Rockville,</p> <p>13 Maryland. This video deposition is taking place</p> <p>14 at No. 41 Cherry Street in Burlington, Vermont.</p> <p>15 Would counsel please voice identify</p> <p>16 themselves and state whom they represent.</p> <p>17 MR. STOWELL: Joshua Stowell on behalf</p> <p>18 of the petitioner, Imperative Care.</p> <p>19 MR. HAMILTON: Joseph Hamilton on</p> <p>20 behalf of patent owner and the witness.</p> <p>21 THE VIDEOGRAPHER: The court reporter</p> <p>22 today is Pamela Carle, also representing Planet</p>

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<p>5</p> <p>1 Depos. The witness will now be sworn, and then we</p> <p>2 may proceed.</p> <p>3 CHRISTOPHER MORRIS, M.D.,</p> <p>4 having been duly sworn,</p> <p>5 was deposed and testified</p> <p>6 as follows:</p> <p>7 EXAMINATION</p> <p>8 BY MR. STOWELL:</p> <p>9 Q. Good morning, can you please provide</p> <p>10 your first and last name?</p> <p>11 A. Christopher Morris.</p> <p>12 Q. And what is your home address?</p> <p>13 A. 561 West Shore Road, South Hero,</p> <p>14 Vermont, 05486.</p> <p>15 Q. And what is your current occupation?</p> <p>16 A. I'm a physician.</p> <p>17 Q. And you have been retained by Inari to</p> <p>18 provide testimony regarding two inter partes</p> <p>19 reviews, is that correct?</p> <p>20 A. That is correct.</p> <p>21 Q. And today I'll use the shorthand IPR to</p> <p>22 refer to inter partes review, is that okay?</p>	<p>7</p> <p>1 that you could face as a result of not telling the</p> <p>2 truth?</p> <p>3 A. Yes.</p> <p>4 Q. Today we'll need to avoid talking over</p> <p>5 each other, and so I'll ask if you can wait to</p> <p>6 respond until I finish my question, and then I'll</p> <p>7 wait to ask the next question until you've</p> <p>8 completed your response. Is that fair?</p> <p>9 A. Yes.</p> <p>10 Q. The court reporter is writing down what</p> <p>11 we say, so all of your answers will need to be</p> <p>12 verbal as opposed to gestures, head nods or head</p> <p>13 shakes. Do you understand?</p> <p>14 A. Yes.</p> <p>15 Q. You will have to answer all of my</p> <p>16 questions unless you're specifically instructed</p> <p>17 not to do so by your counsel. Do you understand?</p> <p>18 A. Yes.</p> <p>19 Q. If at any point today you don't</p> <p>20 understand one of my questions, please let me</p> <p>21 know. If you don't speak up, we'll understand</p> <p>22 that you've understood the question. Okay?</p>
<p>6</p> <p>1 A. Yes.</p> <p>2 Q. If I use the term IPR, you will</p> <p>3 understand what I'm referring to?</p> <p>4 A. Yes.</p> <p>5 Q. Have you been deposed before?</p> <p>6 A. Yes.</p> <p>7 Q. How many times?</p> <p>8 A. Many times. I do not know, probably</p> <p>9 more than 50.</p> <p>10 Q. So then you're well acquainted with the</p> <p>11 procedures here, but I'll just go through some</p> <p>12 reminders on the ground rules. You were just</p> <p>13 sworn in, so you are under oath, just as if you</p> <p>14 were testifying in a court of law. Do you</p> <p>15 understand?</p> <p>16 A. Yes.</p> <p>17 Q. And you understand that by swearing to</p> <p>18 the oath, you have agreed to tell the truth here</p> <p>19 today, and that you are required to do so by law?</p> <p>20 A. Yes.</p> <p>21 Q. And you understand that if you do not</p> <p>22 tell the truth, there could be criminal penalties</p>	<p>8</p> <p>1 A. Yes.</p> <p>2 Q. If at any point you need a break, just</p> <p>3 let me know. The only thing I'll ask is that we</p> <p>4 finish the line of questioning we're on before we</p> <p>5 take that break. Is that fair?</p> <p>6 A. Yes.</p> <p>7 Q. Is there any reason you can't give</p> <p>8 truthful testimony today?</p> <p>9 A. No.</p> <p>10 Q. Have you taken any medications or had</p> <p>11 any food or drink that would impair your ability</p> <p>12 to tell the truth?</p> <p>13 A. No.</p> <p>14 Q. You have submitted two declarations on</p> <p>15 behalf of Inari in two different IPRs, correct?</p> <p>16 A. Yes.</p> <p>17 Q. So I'm going to hand you what has been</p> <p>18 previously marked as Inari Exhibit 2016 in IPR</p> <p>19 2025-01021.</p> <p>20 Doctor Morris, do you recognize</p> <p>21 Exhibit 2016?</p> <p>22 A. Yes.</p>

<p>9</p> <p>1 Q. Is this one of the declarations that</p> <p>2 you have submitted on behalf of Inari Medical?</p> <p>3 A. Yes.</p> <p>4 Q. If we turn to page 32 of the</p> <p>5 declaration, is that your signature?</p> <p>6 A. Yes.</p> <p>7 Q. And did you sign this document on March</p> <p>8 12, 2026?</p> <p>9 A. Yes.</p> <p>10 Q. And where were you when you signed this</p> <p>11 document?</p> <p>12 A. I believe I was in South Hero, Vermont.</p> <p>13 Q. Looking at the front of the</p> <p>14 declaration, it appears that this declaration</p> <p>15 relates to you as patent No. 11,969,333, is that</p> <p>16 correct?</p> <p>17 A. Yes.</p> <p>18 Q. And today if we refer to the patent by</p> <p>19 shorthand as the '333 patent, is that okay?</p> <p>20 A. Yes.</p> <p>21 Q. If I refer to the '333 patent, you'll</p> <p>22 understand what I'm talking about?</p>	<p>11</p> <p>1 A. Yes.</p> <p>2 Q. And for purposes of today's deposition</p> <p>3 I'll refer to that as the '910 patent, is that</p> <p>4 okay?</p> <p>5 A. Yes.</p> <p>6 Q. So if I refer to the '910 patent,</p> <p>7 you'll know what I'm referring to?</p> <p>8 A. Yes.</p> <p>9 Q. Other than the IPR relating to the '333</p> <p>10 patent and the '910 patent, have you worked on any</p> <p>11 other IPRs on behalf of Inari?</p> <p>12 A. No.</p> <p>13 Q. Have you ever worked on an IPR before?</p> <p>14 A. No.</p> <p>15 Q. Have you ever served as an expert in an</p> <p>16 IPR proceeding before?</p> <p>17 A. No.</p> <p>18 Q. Do you understand why parties file</p> <p>19 IPRs?</p> <p>20 A. Yes.</p> <p>21 Q. And what is your understanding?</p> <p>22 A. Briefly, my understanding is that one</p>
<p>10</p> <p>1 A. Yes.</p> <p>2 Q. I'll also hand you what has been</p> <p>3 previously marked as Inari Exhibit 2016 in IPR</p> <p>4 2025-01025.</p> <p>5 Doctor Morris, do you recognize</p> <p>6 Exhibit 2016 from IPR 2025-01025?</p> <p>7 A. Yes.</p> <p>8 Q. And is this one of the declarations</p> <p>9 you've submitted on behalf of Inari Medical?</p> <p>10 A. Yes.</p> <p>11 Q. And if we turn to page 33 of this</p> <p>12 declaration, is that your signature on page 33?</p> <p>13 A. Yes.</p> <p>14 Q. And did you sign this document on March</p> <p>15 12, 2026?</p> <p>16 A. Yes.</p> <p>17 Q. And where were you when you signed this</p> <p>18 document?</p> <p>19 A. I believe I was in South Hero, Vermont.</p> <p>20 Q. And if we look at the front of this</p> <p>21 declaration, it refers to US patent</p> <p>22 No. 11,974,910. Do you see that?</p>	<p>12</p> <p>1 party believes that the patent that was in</p> <p>2 existence should not be in existence, or at least</p> <p>3 parts of that patent should not be in existence.</p> <p>4 Q. And sometimes we refer to that as the</p> <p>5 patent is invalid, is that a term you're familiar</p> <p>6 with?</p> <p>7 A. Yes.</p> <p>8 Q. And what is your understanding of your</p> <p>9 role in the IPR?</p> <p>10 A. My role as an expert is to provide my</p> <p>11 unbiased opinions about the issues brought up in</p> <p>12 this proceeding.</p> <p>13 Q. And do you believe that you've provided</p> <p>14 unbiased opinions in this proceeding?</p> <p>15 A. Yes.</p> <p>16 Q. What did you do to prepare for the</p> <p>17 deposition today?</p> <p>18 A. I read my declarations a few days ago.</p> <p>19 In addition, I looked at some of the references,</p> <p>20 not all of them, and some of the previous documents</p> <p>21 submitted to me, and then yesterday I met with</p> <p>22 Counselor Hamilton for a discussion about this</p>

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4 (13 to 16)

<p>13</p> <p>1 potential deposition occurring today.</p> <p>2 Q. And you mentioned you read your</p> <p>3 declarations and you also reviewed some of the</p> <p>4 references. Roughly how much time did you spend</p> <p>5 reviewing your declarations and the additional</p> <p>6 references?</p> <p>7 MR. HAMILTON: I just want to put an</p> <p>8 objection on the record to privilege. You can</p> <p>9 answer the question, except to the extent it</p> <p>10 reveals communications with counsel.</p> <p>11 A. I don't have an exact timeframe, but it</p> <p>12 was several hours reading declarations one day,</p> <p>13 several hours reading some of the other documents</p> <p>14 another day.</p> <p>15 BY MR. STOWELL:</p> <p>16 Q. And you said you reviewed some of the</p> <p>17 references, and that was done outside of your</p> <p>18 meeting with counsel, is that correct?</p> <p>19 A. Yes.</p> <p>20 Q. The references that you reviewed</p> <p>21 outside of your meeting with counsel, was one of</p> <p>22 the references that you reviewed the Garrison</p>	<p>15</p> <p>1 Stryker about your deposition?</p> <p>2 A. No.</p> <p>3 Q. Have you spoken with any of the other</p> <p>4 experts that are involved in the IPRs?</p> <p>5 A. No.</p> <p>6 Q. And did you speak with any experts</p> <p>7 involved in the District Court litigation in</p> <p>8 preparation for your deposition?</p> <p>9 A. No.</p> <p>10 Q. You mentioned you had an opportunity to</p> <p>11 review your declarations, and when you did that,</p> <p>12 did you notice any errors in your declarations?</p> <p>13 A. No.</p> <p>14 Q. Is there anything in your declarations</p> <p>15 that you would like to change?</p> <p>16 A. No.</p> <p>17 Q. Is there anything in your declarations</p> <p>18 that you would like to supplement?</p> <p>19 A. No.</p> <p>20 Q. With respect to the declarations, how</p> <p>21 did you go about preparing them?</p> <p>22 MR. HAMILTON: Objection. To the</p>
<p>14</p> <p>1 reference?</p> <p>2 A. Yes.</p> <p>3 Q. Was one of the references you reviewed</p> <p>4 the Laub reference?</p> <p>5 A. Yes.</p> <p>6 Q. Was one of the references you reviewed</p> <p>7 the Aklog reference?</p> <p>8 MR. HAMILTON: Just objection to this</p> <p>9 and the last few questions. Vague.</p> <p>10 A. Yes.</p> <p>11 BY MR. STOWELL:</p> <p>12 Q. And you said you met with counsel</p> <p>13 yesterday. How long did you meet with counsel?</p> <p>14 A. Roughly from 11 a.m. until almost 7</p> <p>15 p.m.</p> <p>16 Q. Have you spoken to anyone else, other</p> <p>17 than counsel, about your deposition today?</p> <p>18 A. No.</p> <p>19 Q. Have you spoken with anyone at Inari</p> <p>20 about your deposition?</p> <p>21 A. No.</p> <p>22 Q. And have you spoken with anyone at</p>	<p>16</p> <p>1 extent the answer involves communications with</p> <p>2 counsel, I advise -- or I instruct the witness not</p> <p>3 to answer. You can talk generally.</p> <p>4 A. I had multiple discussions with counsel</p> <p>5 about my opinions, and at that point I learned</p> <p>6 about what the IP -- IPR was in general. And after</p> <p>7 those meetings, counsel --</p> <p>8 MR. HAMILTON: Again, I caution you not</p> <p>9 to reveal any communications or any substance</p> <p>10 discussed with counsel.</p> <p>11 A. I received a draft report. Then I took</p> <p>12 the draft report, which was each declaration</p> <p>13 separately, and then edited those reports, added my</p> <p>14 opinions to a certain extent, and then sent back</p> <p>15 those edited drafts back to counsel. I may have</p> <p>16 received it again, I can't remember if I received</p> <p>17 it back immediately or several times, I don't know,</p> <p>18 can't remember.</p> <p>19 MR. HAMILTON: Again, I'll just let you</p> <p>20 answer that question. I want to instruct the</p> <p>21 witness not to answer to the extent it reveals the</p> <p>22 substance of any of those drafts that's not</p>

<p>17</p> <p>1 discoverable, or communications with counsel.</p> <p>2 BY MR. STOWELL:</p> <p>3 Q. Is your answer complete?</p> <p>4 A. Pretty much. The last time I sent it</p> <p>5 back to counsel I had signed it and dated it,</p> <p>6 both -- both declarations.</p> <p>7 Q. And during your response you had said</p> <p>8 you added your opinions to a certain extent. What</p> <p>9 did you mean by that?</p> <p>10 A. After our discussions, some of my</p> <p>11 opinions were written to my satisfaction, but</p> <p>12 others needed clarification, and so I generated my</p> <p>13 opinions to clarify certain issues, which ones I</p> <p>14 can't even remember at this point.</p> <p>15 Q. How long did you spend working on your</p> <p>16 declarations?</p> <p>17 A. I would say the entire process from</p> <p>18 start to finish was somewhere between 30 and 35</p> <p>19 hours.</p> <p>20 Q. And did you bill Inari for the time you</p> <p>21 spent working on the declarations?</p> <p>22 A. Yes.</p>	<p>19</p> <p>1 right?</p> <p>2 A. Yes.</p> <p>3 Q. And when you reviewed the Laub patent</p> <p>4 publication, did you feel like you understood it?</p> <p>5 A. Yes.</p> <p>6 Q. Were there any parts of Laub that you</p> <p>7 had trouble understanding?</p> <p>8 A. No.</p> <p>9 Q. Before you signed your declarations,</p> <p>10 did you also review the Aklog patent?</p> <p>11 A. Yes.</p> <p>12 Q. And when I refer to the Aklog patent,</p> <p>13 do you know what I'm referring to?</p> <p>14 A. Yes.</p> <p>15 MR. HAMILTON: Objection to that</p> <p>16 question. Vague.</p> <p>17 BY MR. STOWELL:</p> <p>18 Q. And when you reviewed the Aklog patent,</p> <p>19 do you feel like you understood it?</p> <p>20 A. Yes.</p> <p>21 Q. Were there any parts of the Aklog</p> <p>22 patent that you did not understand?</p>
<p>18</p> <p>1 Q. And before you signed your</p> <p>2 declarations, I'm sure you carefully reviewed them</p> <p>3 to make sure they were accurate, is that correct?</p> <p>4 A. Yes.</p> <p>5 Q. When you were preparing the</p> <p>6 declarations, did you speak to anyone besides</p> <p>7 counsel about the subject matter of your</p> <p>8 declarations?</p> <p>9 A. No.</p> <p>10 Q. Did you speak to any other experts</p> <p>11 while you were preparing your declaration?</p> <p>12 A. No.</p> <p>13 Q. Did you speak to anyone at Stryker or</p> <p>14 Inari regarding your declarations?</p> <p>15 A. No.</p> <p>16 Q. Before signing your declaration you</p> <p>17 reviewed the Laub patent publication, correct?</p> <p>18 MR. HAMILTON: Objection, vague.</p> <p>19 A. Yes.</p> <p>20 BY MR. STOWELL:</p> <p>21 Q. And when I refer to the Laub patent</p> <p>22 publication, you know what I'm referring to,</p>	<p>20</p> <p>1 A. Not that I remember.</p> <p>2 Q. And before you signed your declaration,</p> <p>3 you also reviewed the Garrison patent publication,</p> <p>4 correct?</p> <p>5 A. Yes.</p> <p>6 Q. And when I refer to the Garrison patent</p> <p>7 publication, you know what I'm referring to,</p> <p>8 right?</p> <p>9 A. Yes.</p> <p>10 MR. HAMILTON: Again, objection to</p> <p>11 those last two questions. Vague.</p> <p>12 BY MR. STOWELL:</p> <p>13 Q. And when you reviewed the Garrison</p> <p>14 patent publication, do you feel like you</p> <p>15 understood it?</p> <p>16 A. Yes.</p> <p>17 Q. Were there any parts of the Garrison</p> <p>18 patent publication that you had trouble</p> <p>19 understanding?</p> <p>20 A. Not that I remember.</p> <p>21 Q. Did you also review Imperative Care's</p> <p>22 expert, Doctor Turk's declarations, before signing</p>

<p>21</p> <p>1 your declarations?</p> <p>2 A. Yes.</p> <p>3 Q. And when you reviewed Doctor Turk's</p> <p>4 declaration, do you feel like you understood it?</p> <p>5 A. I understood it, that doesn't mean I</p> <p>6 agreed with it.</p> <p>7 Q. Were there any parts of the declaration</p> <p>8 that you had trouble understanding?</p> <p>9 A. I had trouble understanding his</p> <p>10 opinion, but I did not -- I think I understood what</p> <p>11 he was trying to say, yes.</p> <p>12 Q. And were you familiar with Doctor Turk</p> <p>13 before you got involved in these IPR proceedings?</p> <p>14 A. No.</p> <p>15 Q. And having reviewed Doctor Turk's</p> <p>16 declaration and the materials with it, would you</p> <p>17 agree that Doctor Turk is an expert in mechanical</p> <p>18 thrombectomy?</p> <p>19 MR. HAMILTON: Objection, calls for a</p> <p>20 legal conclusion.</p> <p>21 A. That's hard to answer, because</p> <p>22 mechanical thrombectomy is a broad topic, and where</p>	<p>23</p> <p>1 these IPRs, Brian Brown. Did you review his</p> <p>2 declarations before you signed your declaration?</p> <p>3 A. Yes.</p> <p>4 Q. You reviewed both of his --</p> <p>5 MR. HAMILTON: Just objection. Vague.</p> <p>6 BY MR. STOWELL:</p> <p>7 Q. And so Mr. Brown submitted declarations</p> <p>8 for the '333 patent. Do you remember reviewing</p> <p>9 his declaration relating to the '333 patent?</p> <p>10 A. It was a while ago, so I don't</p> <p>11 remember. I would have to look at it again, to see</p> <p>12 it.</p> <p>13 Q. And Mr. Brown also submitted a</p> <p>14 declaration relating to the '910 patent. Do you</p> <p>15 remember whether you reviewed his declaration</p> <p>16 relating to the '910 patent?</p> <p>17 MR. HAMILTON: Objection, vague.</p> <p>18 A. I don't remember.</p> <p>19 BY MR. STOWELL:</p> <p>20 Q. Prior to signing your declaration, I</p> <p>21 take it you reviewed the '333 patent in detail, is</p> <p>22 that fair?</p>
<p>22</p> <p>1 he may be an expert in cerebral mechanical</p> <p>2 thrombectomy, I do not believe he's an expert in</p> <p>3 peripheral thromboembolism.</p> <p>4 BY MR. STOWELL:</p> <p>5 Q. Would you agree that Doctor Turk helped</p> <p>6 create the field of mechanical thrombectomy when</p> <p>7 he developed the ADAPT Procedure that he talks</p> <p>8 about in his declaration?</p> <p>9 A. I know that he published that, but I</p> <p>10 also know that interventional radiologists were</p> <p>11 performing suction thrombectomy in the cerebral</p> <p>12 vessels for decades before he prescribed that</p> <p>13 procedure.</p> <p>14 Q. Imperative Care has another expert in</p> <p>15 these IPRs, Mr. Troy Thornton. Did you review the</p> <p>16 declarations from Mr. Thornton before you signed</p> <p>17 your declaration?</p> <p>18 A. Yes.</p> <p>19 Q. And were you familiar with Mr. Thornton</p> <p>20 before you got involved in these IPRs?</p> <p>21 A. No.</p> <p>22 Q. Inari has retained another expert in</p>	<p>24</p> <p>1 A. A while ago, yes.</p> <p>2 Q. And before you signed your declaration,</p> <p>3 did you feel like you understood the '333 patent?</p> <p>4 A. Yes.</p> <p>5 Q. Were there any parts of the '333 patent</p> <p>6 that you recall having trouble understanding?</p> <p>7 A. Not that I remember.</p> <p>8 Q. And before you signed your declaration,</p> <p>9 did you review the '910 patent in depth?</p> <p>10 A. Yes.</p> <p>11 Q. And did you feel like you understood</p> <p>12 the '910 patent?</p> <p>13 A. Yes.</p> <p>14 Q. Do you recall any parts of the '910</p> <p>15 patent you had problems understanding?</p> <p>16 A. Not that I remember.</p> <p>17 Q. And in preparation for your deposition</p> <p>18 today, did you rereview the '333 patent?</p> <p>19 A. I read it quickly.</p> <p>20 Q. And what does read it quickly mean?</p> <p>21 A. I read -- I did not study it. Because</p> <p>22 I had previously read it, it was a refresher read,</p>

<p>25</p> <p>1 essentially, so I did speed reading through it.</p> <p>2 Q. And for your deposition today, did you</p> <p>3 also rereview the '910 patent?</p> <p>4 A. Yes.</p> <p>5 Q. And did you do the same time of speed</p> <p>6 reading review of the '910 patent?</p> <p>7 A. I perused it, yes.</p> <p>8 Q. And so during your preparation for</p> <p>9 today's deposition, other than the prior art</p> <p>10 references we discussed, the '333 patent, the '910</p> <p>11 patent and your declarations, did you review any</p> <p>12 other documents?</p> <p>13 MR. HAMILTON: Objection, privileged.</p> <p>14 You can answer, but I caution the</p> <p>15 witness, you cannot answer with respect to</p> <p>16 communications with counsel.</p> <p>17 A. I cannot remember reading additional</p> <p>18 ones.</p> <p>19 BY MR. STOWELL:</p> <p>20 Q. The patent board has issued an</p> <p>21 institution decision, a written decision for the</p> <p>22 '333 patent. Do you recall ever reviewing the</p>	<p>27</p> <p>1 Q. And are you aware that there's also a</p> <p>2 lawsuit pending between Inari and Imperative Care?</p> <p>3 A. Yes.</p> <p>4 Q. And what do you know about the lawsuit?</p> <p>5 A. Not much.</p> <p>6 Q. Well, what do you know?</p> <p>7 A. I really know nothing about it. I just</p> <p>8 know there is a lawsuit.</p> <p>9 Q. Are you aware that Inari moved for a</p> <p>10 preliminary injunction in the lawsuit?</p> <p>11 A. No.</p> <p>12 Q. And so you're probably not aware that</p> <p>13 in preliminary injunction proceeding Inari raised</p> <p>14 the '910 patent, is that fair?</p> <p>15 A. I'm not aware of that.</p> <p>16 Q. And so I take it you haven't read the</p> <p>17 court's decision on the preliminary injunction</p> <p>18 that relates to the '910 patent, is that correct?</p> <p>19 A. That is correct.</p> <p>20 Q. So you mentioned that you have been</p> <p>21 deposed many times in the past. What types of</p> <p>22 cases have you been deposed in previously?</p>
<p>26</p> <p>1 institution decision that was authored by the</p> <p>2 board?</p> <p>3 A. I do not recall.</p> <p>4 Q. The board in that decision</p> <p>5 preliminarily found that Imperative Care was</p> <p>6 likely to show that claim 1 of the '333 patent was</p> <p>7 invalid.</p> <p>8 Do you recall reading a decision where</p> <p>9 the claim 1 of the '333 patent was found to be</p> <p>10 preliminarily invalid?</p> <p>11 MR. HAMILTON: Objection.</p> <p>12 Mischaracterizes the document. Vague.</p> <p>13 A. I do not remember reading that.</p> <p>14 BY MR. STOWELL:</p> <p>15 Q. Inari and Imperative Care are involved</p> <p>16 in a number of other IPRs. Have you reviewed any</p> <p>17 of the papers filed with respect to other IPRs</p> <p>18 besides those relating to the '333 and '910</p> <p>19 patent?</p> <p>20 MR. HAMILTON: Objection, vague.</p> <p>21 A. No.</p> <p>22 BY MR. STOWELL:</p>	<p>28</p> <p>1 A. The majority of them have been in the</p> <p>2 realm of product liability. The second most common</p> <p>3 subject area is medical malpractice.</p> <p>4 Q. And in the product liability cases,</p> <p>5 which side did you represent, the plaintiff,</p> <p>6 defendant, or both?</p> <p>7 A. Defendant.</p> <p>8 Q. And so in all the product liability</p> <p>9 cases in which you have participated, you have</p> <p>10 been on the side of the defendant, is that</p> <p>11 correct?</p> <p>12 A. Yes.</p> <p>13 Q. And in those product liability cases,</p> <p>14 were you acting as an expert witness on behalf of</p> <p>15 the defendant?</p> <p>16 A. Yes.</p> <p>17 Q. And you also mentioned medical</p> <p>18 malpractice cases. In those cases which side did</p> <p>19 you represent, the plaintiff or the defendant?</p> <p>20 A. Both.</p> <p>21 Q. And in those cases, were you -- those</p> <p>22 medical malpractice cases, were you acting as an</p>

<p>29</p> <p>1 expert witness in those cases?</p> <p>2 A. The vast majority, yes. Several of</p> <p>3 them I also acted as a treating physician.</p> <p>4 Q. And so in the cases, the medical</p> <p>5 malpractice cases where you acted as an expert</p> <p>6 witness, have you represented both the plaintiff</p> <p>7 and the defendant?</p> <p>8 A. Yes.</p> <p>9 Q. And you mentioned you've also been the</p> <p>10 treating physician in some medical malpractice</p> <p>11 cases, is that correct?</p> <p>12 A. Yes.</p> <p>13 Q. How many cases have you been involved</p> <p>14 in where you were the treating physician?</p> <p>15 A. Maybe three.</p> <p>16 Q. And in those cases, were you a named</p> <p>17 defendant in the medical malpractice case?</p> <p>18 A. If I can -- I'll answer that in one</p> <p>19 second. Can I answer -- correct my last -- I think</p> <p>20 I was a treating physician in four, and in two of</p> <p>21 those -- actually, in one of those four I was a</p> <p>22 named defendant.</p>	<p>31</p> <p>1 that -- that lawsuit.</p> <p>2 The next one, I was a treating</p> <p>3 physician who had had a bad outcome previously with</p> <p>4 surgery, and my procedure was life saving for the</p> <p>5 patient. So the plaintiff's counsel had me testify</p> <p>6 about my treatment and my prognosis for the patient</p> <p>7 long term. I was not named in that case.</p> <p>8 And then there was a more recent case</p> <p>9 where the hospital, University of Vermont Medical</p> <p>10 Center, was named. I was part of a very large</p> <p>11 treatment team on the patient, and I provided a</p> <p>12 deposition.</p> <p>13 I was deposed by the plaintiffs in that</p> <p>14 case, and I haven't heard what happened with that</p> <p>15 case. I was never named to begin with, but I</p> <p>16 haven't heard anything more. It's been three or</p> <p>17 four years.</p> <p>18 Q. So in the third case where you were the</p> <p>19 treating physician and there was a bad outcome,</p> <p>20 what type of treatment did you provide?</p> <p>21 A. The patient -- I have to give a slight</p> <p>22 background of what happened. The patient had</p>
<p>30</p> <p>1 Q. And in the cases where you were the</p> <p>2 treating physician but you weren't the named</p> <p>3 defendant, who was the named defendant in those</p> <p>4 cases?</p> <p>5 A. I would have to go back to the records.</p> <p>6 I can't remember names.</p> <p>7 Q. For the four cases where you've been a</p> <p>8 treating physician, what types of procedures did</p> <p>9 those cases involve?</p> <p>10 A. Well, one of them goes back when I was</p> <p>11 actually named in the 1980s when I was a resident,</p> <p>12 and that involved the correct interpretation of a</p> <p>13 neonatal abdominal radiograph. And that was my</p> <p>14 only association with that case, which was dropped,</p> <p>15 so to speak, on my behalf.</p> <p>16 Another one was -- actually, I was</p> <p>17 named in two. So the second one was in the 1990s</p> <p>18 when I was named. That had to do with a</p> <p>19 complication after surgery. And I had performed an</p> <p>20 angiogram, a catheter angiogram, prior to the</p> <p>21 surgical procedure, and I was essentially dropped</p> <p>22 on that -- in that case. The surgeon settled</p>	<p>32</p> <p>1 cholecystitis, inflammation of the gallbladder.</p> <p>2 And so a surgeon performed a cholecystectomy, which</p> <p>3 is removing the gallbladder surgically, and injured</p> <p>4 bile ducts by transecting the bile ducts. So the</p> <p>5 patient had bile leaking into the abdomen and</p> <p>6 became, you know, very -- critically ill because of</p> <p>7 that.</p> <p>8 And I performed a percutaneous biliary</p> <p>9 drainage. So I put a drainage tube into the bile</p> <p>10 ducts in the liver to drain the bile outside the</p> <p>11 liver into a bag instead of the bile entering the</p> <p>12 abdomen. And then later on converted that biliary</p> <p>13 drainage tube crossing the transected common bile</p> <p>14 duct to reestablish anatomy, a normal anatomy for</p> <p>15 the patient.</p> <p>16 Which he then healed around the</p> <p>17 drainage tube and reestablished control of the bile</p> <p>18 drainage that way, and then he recovered and did</p> <p>19 well after that.</p> <p>20 Q. And the fourth case where you were part</p> <p>21 of the treatment team at the University of</p> <p>22 Vermont, what was the treatment that you were</p>

<p>33</p> <p>1 providing in that case?</p> <p>2 A. That patient had a catheter that had</p> <p>3 been placed at surgery, some type of cardiac</p> <p>4 surgery, open-heart surgery. And the catheter was</p> <p>5 allegedly sewn into the heart, but no one knew that</p> <p>6 for sure, and the surgeon asked me to perform a</p> <p>7 foreign body retrieval of the catheter, which we</p> <p>8 did successfully.</p> <p>9 And I still don't know whether it was</p> <p>10 sewn in with a tiny suture or not, but the catheter</p> <p>11 came out easily. And then the patient was still</p> <p>12 intubated, did well in the ICU for, I want to say,</p> <p>13 four or five hours.</p> <p>14 Then when they decided to extubate the</p> <p>15 patient, the patient had cardiorespiratory arrest.</p> <p>16 Went to the operating room, and they basically</p> <p>17 could not save the patient, thinking that the</p> <p>18 patient had some cardiac complication.</p> <p>19 Q. On the cases where you've served as an</p> <p>20 expert on product liability cases, have any of</p> <p>21 those cases related to devices for mechanical</p> <p>22 thrombectomy?</p>	<p>35</p> <p>1 A. Yes.</p> <p>2 Q. So you've served as an expert or have</p> <p>3 been involved with cases relating to product</p> <p>4 liability and medical malpractice. Have you been</p> <p>5 involved in cases relating to any other areas of</p> <p>6 law?</p> <p>7 A. I guess I don't know the exact term,</p> <p>8 but it may be personal injury. I have more</p> <p>9 recently served as an expert witness to the</p> <p>10 Department of Justice, Middle District of Florida,</p> <p>11 for personal injury cases on the side of the</p> <p>12 defense.</p> <p>13 Q. Have you ever participated in a patent</p> <p>14 case before?</p> <p>15 A. Other than my own patents, no.</p> <p>16 Q. And when you say other than your own</p> <p>17 patents, were your own patents part of a patent</p> <p>18 lawsuit?</p> <p>19 A. No.</p> <p>20 Q. So in terms of your involvement with</p> <p>21 litigation, adversarial proceedings, you've never</p> <p>22 participated in an adversarial proceeding relating</p>
<p>34</p> <p>1 A. No.</p> <p>2 Q. And we should probably talk about</p> <p>3 terminology. What is your definition of</p> <p>4 mechanical thrombectomy?</p> <p>5 A. Mechanical thrombectomy means removing</p> <p>6 or breaking up clot non-pharmacologically. It can</p> <p>7 involve many different techniques. The clot can be</p> <p>8 completely extracted out of the body intact, or it</p> <p>9 can be fibrinolysed mechanically and removed from</p> <p>10 the body, so essentially liquified, and removed out</p> <p>11 of the body by various catheter techniques, or it</p> <p>12 can -- the clot can be broken up into smaller</p> <p>13 pieces so it travels distally out of the central</p> <p>14 area into the distal vascular distribution.</p> <p>15 So I think those are the four broad</p> <p>16 topics that explain mechanical thrombectomy.</p> <p>17 Q. And do mechanical thrombectomy</p> <p>18 procedures always use aspiration?</p> <p>19 A. No.</p> <p>20 Q. And so would aspiration-based</p> <p>21 thrombectomy be a distinct subset within</p> <p>22 mechanical thrombectomy?</p>	<p>36</p> <p>1 to patents, is that fair?</p> <p>2 A. That is correct.</p> <p>3 Q. In terms of the number of cases where</p> <p>4 you served as an expert, what percentage would you</p> <p>5 estimate were product liability?</p> <p>6 A. This will be a rough guess, but I would</p> <p>7 say maybe 60 to 70, maybe even 80 percent. The</p> <p>8 majority.</p> <p>9 Q. And what percentage would you say were</p> <p>10 medical malpractice cases?</p> <p>11 A. Probably 20 to 30 percent. Can I</p> <p>12 clarify? Are these cases that result in testimony,</p> <p>13 or just review prior to -- you know, during the</p> <p>14 discovery process?</p> <p>15 Q. Yeah, that's a good clarification. Any</p> <p>16 case where you've been retained by a party.</p> <p>17 A. Then the medical malpractice may</p> <p>18 increase at that point, because many of those cases</p> <p>19 never get to the testimony stage. So it may be</p> <p>20 50/50 product liability and medical malpractice.</p> <p>21 And I'm throwing the personal injury in the medical</p> <p>22 malpractice group.</p>

<p>37</p> <p>1 Q. And how many cases total have you 2 participated in product liability and medical 3 malpractice?</p> <p>4 A. Again, that's very difficult to answer, 5 because the product liability was initially 6 involved with a class action, and I think there 7 were 30-some cases alone in that class action and I 8 had to review each one.</p> <p>9 And then it also became an M.D.L., and 10 there were many, many bellwether cases I was 11 involved with. So on an individual basis, well 12 over 100.</p> <p>13 Q. And you mentioned that you have your 14 own patents. How many patents are you a listed 15 inventor on?</p> <p>16 A. Three.</p> <p>17 Q. And what technologies do those patents 18 relate to?</p> <p>19 A. The first two relate to peritoneal 20 dialysis, specifically a peritoneal dialysis 21 catheter.</p> <p>22 Q. And what about the third one?</p>	<p>39</p> <p>1 concept out there, and I think we are getting ready 2 to submit some more patents on the same topic.</p> <p>3 And then with the AI patent, same kind 4 of process, that was all done at the University of 5 Vermont and they became the assignee. And I was 6 just one of, I think, four or five patent authors 7 on that project.</p> <p>8 Q. And so would you say you're generally 9 familiar with the parts of a patent?</p> <p>10 A. Yes.</p> <p>11 Q. And so if I refer to the specification 12 of a patent, do you know what part that refers to?</p> <p>13 A. Not really.</p> <p>14 Q. Okay. You know patents have figures, 15 right?</p> <p>16 A. Yes.</p> <p>17 Q. And you're familiar with claims, 18 patents have claims?</p> <p>19 A. Yes.</p> <p>20 Q. And if I refer to the claims, you'll 21 know what I'm referring to?</p> <p>22 A. Yes.</p>
<p>38</p> <p>1 A. That's a -- excuse me. That's an AI, 2 artificial intelligence, patent on machine learning 3 in image review, specifically related to abdominal 4 aortic aneurysm endoleaks.</p> <p>5 Q. And an endoleak is a leak around the 6 outside of the endograft?</p> <p>7 A. Correct.</p> <p>8 Q. The dialysis catheter, are you the only 9 named inventor on those patents?</p> <p>10 A. Yes.</p> <p>11 Q. And what role did you play in the 12 process of getting the patent, without revealing 13 any attorney-client privileged information?</p> <p>14 A. Well, it was my intellectual property, 15 and I worked with the University of Vermont 16 Department of Innovations and their legal team, and 17 I was -- quite a long process, but they're the ones 18 that, you know, did a lot of the -- the legal work, 19 and eventually got assigned to University of 20 Vermont.</p> <p>21 And now that I also work out at the 22 University of Utah, there's further work on that</p>	<p>40</p> <p>1 Q. And with respect to the specification, 2 I may use that word today, that just refers to the 3 written material of the patent in combination with 4 the drawings, so kind of the entire patent is its 5 specification. Okay?</p> <p>6 A. Okay, yes.</p> <p>7 Q. What do you consider to be your areas 8 of expertise?</p> <p>9 A. I have specialized in vascular 10 interventional radiology during my entire career. 11 Older interventional radiologists were very 12 involved with endovascular techniques throughout 13 the 80s, 90s and much of the 2000s, until vascular 14 surgeons and cardiologists entered that space and 15 started controlling the patients.</p> <p>16 So interventional radiologists then 17 innovated in other ways, including cancer. So we 18 have a branch called interventional oncology, and 19 other interventions throughout the body.</p> <p>20 And to answer your question, I never 21 really considered one area my area of expertise, I 22 considered all of them my area of expertise,</p>

<p style="text-align: right;">41</p> <p>1 including much in the realm of neurointerventional.</p> <p>2 I have probably placed more carotid</p> <p>3 stents than anyone in the state of Vermont, for</p> <p>4 instance. So we were heavily involved in</p> <p>5 neurovascular intervention as well.</p> <p>6 And I just can't narrow it down to</p> <p>7 one -- one specific area, because we perform over</p> <p>8 100 discrete types of procedures throughout the</p> <p>9 body from the top of the head down to the feet, and</p> <p>10 everything in between.</p> <p>11 Q. Do you consider yourself to be an</p> <p>12 expert in catheter design?</p> <p>13 A. Very difficult question to answer.</p> <p>14 MR. HAMILTON: Objection, vague.</p> <p>15 A. In the realm of designing my weighted</p> <p>16 peritoneal dialysis catheter, I am an expert, but</p> <p>17 that's my only experience in designing a catheter.</p> <p>18 So I would not generalize that to say I'm an expert</p> <p>19 in all catheters.</p> <p>20 BY MR. STOWELL:</p> <p>21 Q. And the dialysis catheter that you've</p> <p>22 invented, what part of the body is that catheter</p>	<p style="text-align: right;">43</p> <p>1 membrane is a semipermeable membrane. So dialysis</p> <p>2 can be performed by infusing a solution called a</p> <p>3 dialysate through that catheter into the peritoneal</p> <p>4 space.</p> <p>5 That fluid then dwells for a period of</p> <p>6 time, and the semipermeable membrane allows that</p> <p>7 dialysate to fill up with the toxins that the</p> <p>8 kidneys normally would serve, you know, to rid the</p> <p>9 body of. And then over time, that fluid is then</p> <p>10 drained out of the abdomen, and essentially</p> <p>11 removing those toxins out of the body.</p> <p>12 So it replaces the kidney. It's a</p> <p>13 kidney replacement therapy analogous to</p> <p>14 hemodialysis, where patients get the same thing</p> <p>15 done by circulating the blood through a dialysis</p> <p>16 machine and then back into the body. It's another</p> <p>17 means of performing dialysis.</p> <p>18 Q. And what is unique or novel about the</p> <p>19 catheter that you've designed?</p> <p>20 A. The problem with peritoneal dialysis,</p> <p>21 which can be done while the patient is sleeping,</p> <p>22 and the fact that it makes patients feel better,</p>
<p style="text-align: right;">42</p> <p>1 inserted into?</p> <p>2 A. The peritoneal space.</p> <p>3 Q. And where is the peritoneal space?</p> <p>4 A. That's the potential space that -- in</p> <p>5 the abdomen and pelvis that forms the cavity. So</p> <p>6 the organs such as the liver project into the</p> <p>7 peritoneal space, the bowel projects into the</p> <p>8 peritoneal space.</p> <p>9 It's a lining that consists of two</p> <p>10 parts, a visceral peritoneum, which covers the</p> <p>11 bowel and the organs such as the liver, and then</p> <p>12 the parietal peritoneum, which is the underside of</p> <p>13 the abdominal wall. And the fluid develops, called</p> <p>14 ascites, in the abdomen and pelvis. It fills up</p> <p>15 that peritoneal space.</p> <p>16 Q. And what is the catheter that you've</p> <p>17 designed used for?</p> <p>18 A. So that is placed into that potential</p> <p>19 space, and -- in patients that have end stage renal</p> <p>20 disease. And it takes advantage of the fact that</p> <p>21 the peritoneal membrane that lines the peritoneal</p> <p>22 space, it takes advantage of the fact that that</p>	<p style="text-align: right;">44</p> <p>1 they live longer, it's cheaper, there's a million</p> <p>2 advantages to peritoneal dialysis, but it's not</p> <p>3 widely used because the catheters malfunction.</p> <p>4 They get clogged. They move out of the</p> <p>5 dependent portion of the pelvis where they work</p> <p>6 well. They float out of that dependent portion of</p> <p>7 the pelvis and into the upper abdomen, and then get</p> <p>8 trapped between bowel loops and this fatty layer</p> <p>9 called the omentum, and they get scar tissue</p> <p>10 growing into them and they occlude, essentially.</p> <p>11 So my patent weights that catheter to</p> <p>12 keep it down into the dependent part of the pelvis</p> <p>13 where it works well, and stays down there, it</p> <p>14 doesn't become dislocated. So I'm trying to make</p> <p>15 the catheters work better so that more patients</p> <p>16 with end stage renal disease can then undergo</p> <p>17 successful dialysis with that -- that technique.</p> <p>18 Q. And how is the catheter weighted?</p> <p>19 A. Well, that's what we're working on at</p> <p>20 this point. But in my trials I used tungsten ball</p> <p>21 bearings that were encased in silastic tubing and</p> <p>22 attached to the catheter as far as my prototype.</p>

Conducted on May 4, 2026

<p style="text-align: right;">45</p> <p>1 But we are under the process of building a more, I 2 guess, sophisticated prototype that could actually 3 be used in, first, animal studies, and then in 4 human studies. 5 Q. And did you work with engineers to make 6 your weighted prototype? 7 A. Yes. 8 Q. And why did you bring in engineers to 9 assist with the prototype? 10 A. Well, one of the engineers was an 11 environmental engineer, because I wanted to make 12 sure that the catheter containing the tungsten ball 13 bearings were not exposed to body tissues. So I 14 wanted to make sure there was no leak of tungsten 15 outside of the catheter. 16 Not that tungsten's a poison, but if we 17 used a different metal or substance, I just wanted 18 to make sure it was watertight and not -- so that 19 it was durable. And he helped me with all the 20 studies showing that it was -- remained watertight 21 and did not leak. 22 Q. Any other engineers you worked with on</p>	<p style="text-align: right;">47</p> <p>1 treating patients suffering from blood clots, 2 where were you working? 3 A. I was a resident at Ohio State 4 University Hospital in the department of radiology. 5 Q. And what was your role in the treatment 6 of these patients at that time? 7 A. We would place IVC filters, which 8 prevent pulmonary embolism. We would also 9 thrombolyze clot using a medicine back then called 10 urokinase, and those were our primary procedures at 11 that point. 12 Q. And so when you say place filters, were 13 you the person that would actually place the 14 filter within the patient? 15 A. Yes. 16 Q. And was the filter delivered through a 17 catheter? 18 A. Yes. 19 Q. And the filter that you would place, 20 where in the body would that filter be put? 21 A. They typically were placed into the big 22 vein in the abdomen called the inferior vena cava.</p>
<p style="text-align: right;">46</p> <p>1 the prototype? 2 A. Not at University of Vermont, but I am 3 working with biomedical engineers at University of 4 Utah. 5 Q. Is it fair to say that you have not 6 designed any catheters that are inserted into a 7 patient's vasculature? 8 A. Yes, that's fair to say. 9 Q. Do you have any -- or do you claim to 10 be an expert in pumps and pump design? 11 A. No. 12 Q. So when did you begin treating patients 13 suffering from blood clots? 14 A. Forty years ago. 15 Q. So roughly the mid 80s? 16 A. Yes. 17 Q. And there are a number of terms, 18 emboli, thrombus. Is blood clot a good general 19 term to kind of refer to the entire category of 20 clots and emboli and thrombus? 21 A. Yes. 22 Q. And so in the mid 80s when you started</p>	<p style="text-align: right;">48</p> <p>1 And if I may correct -- or add to one 2 of my previous answers. Another procedure we were 3 performing in the 80s was suction thrombectomy. 4 Q. So for the filter placed in the 5 inferior vena cava, where in the body would that 6 catheter be inserted into the patient? 7 A. Either from the vein in the groin 8 called the femoral vein, or the vein in the neck 9 called a jugular vein, and then rarely through an 10 arm vein. 11 Q. And then once that catheter was 12 inserted into the patient, it would be advanced 13 into the inferior vena cava, is that correct? 14 A. Yes. And rarely we placed filters into 15 the superior vena cava in the chest. 16 Q. And what were the size of the catheters 17 you were using for this filter procedure in the 18 mid 1980s? 19 A. The original catheter was 28 French. 20 Q. And you say the original catheter. Did 21 the catheter size change over time? 22 A. Yes.</p>

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<p style="text-align: right;">49</p> <p>1 Q. How so?</p> <p>2 A. Well, they became smaller, because the</p> <p>3 technology of the actual IVC filters that were in</p> <p>4 place became smaller. So the original filter that</p> <p>5 we were placing was called the Greenfield filter,</p> <p>6 because the very first filter, called the</p> <p>7 Mobin-Uddin filter, was only placed by surgeons.</p> <p>8 But the Greenfield filter was then</p> <p>9 placed by interventional radiologists</p> <p>10 percutaneously, and that was a large filter. And</p> <p>11 over time the systems got smaller and smaller, so</p> <p>12 by the 90s probably the average sheath size was</p> <p>13 10 French.</p> <p>14 Q. And so when you were using the</p> <p>15 28 French catheter initially, were you able to</p> <p>16 effectively place the filters with that catheter?</p> <p>17 A. Yes.</p> <p>18 Q. And using that catheter, could you</p> <p>19 place the filters in both the inferior vena cava</p> <p>20 and the superior vena cava?</p> <p>21 A. I don't remember ever placing the</p> <p>22 28 French Greenfield in the superior ven cava, that</p>	<p style="text-align: right;">51</p> <p>1 Q. And when you referred to the arterial</p> <p>2 system in the lower extremities, were you treating</p> <p>3 DVTs with lytics in the mid-to-late 80s?</p> <p>4 A. We did not treat DVTs until later on.</p> <p>5 And this is just a rough estimate of when we</p> <p>6 evolved to treating DVTs, but maybe by the late</p> <p>7 90s, 1990s.</p> <p>8 Q. Just so I have the timeline, so in the</p> <p>9 mid 1980s you were using lytics to treat clots in</p> <p>10 the arterial system and in some grafts. By the</p> <p>11 late 80s you were using it to treat pulmonary</p> <p>12 embolisms, and then maybe in the late 1990s you</p> <p>13 were using it to treat DVTs, is that a correct</p> <p>14 chronology?</p> <p>15 A. Yes.</p> <p>16 Q. And when you delivered the lytics, were</p> <p>17 you always delivering the lytic using a 5 French</p> <p>18 or a 6 French catheter between the late 1980s and</p> <p>19 late 1990s?</p> <p>20 A. Generally speaking, yes.</p> <p>21 Q. When you say generally, why do you use</p> <p>22 that word?</p>
<p style="text-align: right;">50</p> <p>1 came later on in the mid-to-later 1990s, and by</p> <p>2 then we were not using the 28 French Greenfield</p> <p>3 filter anymore.</p> <p>4 Q. Now, you also mentioned you were also</p> <p>5 using lytics in the mid 1980s to treat</p> <p>6 patients suffering from blood clots?</p> <p>7 A. Yes.</p> <p>8 Q. Is that fair?</p> <p>9 A. Yes.</p> <p>10 Q. And how would you deliver the lytics to</p> <p>11 the patient?</p> <p>12 A. It would be infused directly into the</p> <p>13 clot through a 5 or 6 French catheter.</p> <p>14 Q. And in the mid 1980s, what types of</p> <p>15 clots were you treating with lytics?</p> <p>16 A. Clots in the arterial system, and</p> <p>17 particularly the lower extremity arteries, in</p> <p>18 addition to surgical bypass grafts that were placed</p> <p>19 to deliver arterial blood around a blocked native</p> <p>20 artery. And by the late 80s we were administering</p> <p>21 urokinase into the pulmonary arteries for pulmonary</p> <p>22 embolism.</p>	<p style="text-align: right;">52</p> <p>1 A. There may have been a case where I used</p> <p>2 a 7 French catheter or maybe even a 4 French</p> <p>3 catheter, but the go-to at that time was a 5 French</p> <p>4 catheter. And, by the way, a microcatheter.</p> <p>5 Q. And what do you mean by a</p> <p>6 microcatheter?</p> <p>7 A. So the typical technique was to place a</p> <p>8 4 or 5 or 6 French catheter into the proximal</p> <p>9 portion of the clot, and then we would advance a</p> <p>10 microcatheter coaxially through that 4, 5 or</p> <p>11 6 French catheter.</p> <p>12 That microcatheter was basically the</p> <p>13 size of a guidewire, and that would be advanced</p> <p>14 through the clot to the distal extent of the clot,</p> <p>15 typically through the clot completely into the</p> <p>16 reconstituted artery beyond the clot, and both of</p> <p>17 those catheters were infused with the urokinase</p> <p>18 thrombolytic.</p> <p>19 Q. So the microcatheter would be</p> <p>20 telescoped through the 5 or 6 French catheter, is</p> <p>21 that correct?</p> <p>22 A. Yes.</p>

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<p>53</p> <p>1 Q. And this was a procedure you were doing</p> <p>2 in the 1980s and 1990s?</p> <p>3 A. Yes.</p> <p>4 Q. And when you started treating the</p> <p>5 pulmonary embolism in the late 1980s with the</p> <p>6 lytics, did you have any trouble getting the</p> <p>7 catheters to the blood clots?</p> <p>8 A. We were using what we call -- what we</p> <p>9 consider to be diagnostic catheters. So they are</p> <p>10 anywhere between 5 and 7 French. So they were very</p> <p>11 amenable to placing those catheters into the</p> <p>12 pulmonary arteries.</p> <p>13 Q. And when you say a diagnostic catheter,</p> <p>14 were these catheters that were used for other</p> <p>15 applications besides delivering lytics?</p> <p>16 A. Yes.</p> <p>17 Q. And what other type of procedures would</p> <p>18 the diagnostic catheters be used for?</p> <p>19 A. Well, back then there was no CT scans</p> <p>20 to diagnose pulmonary embolism on a regular basis</p> <p>21 like there is now, so all pulmonary embolism cases</p> <p>22 were diagnosed by a conventional pulmonary artery</p>	<p>55</p> <p>1 holes, all these types of catheters. But it was --</p> <p>2 they were designed pretty early on in my career.</p> <p>3 Q. But when you started and you were using</p> <p>4 the diagnostic catheters, those were not</p> <p>5 specifically designed for delivering lytics,</p> <p>6 correct?</p> <p>7 A. That is correct.</p> <p>8 Q. Earlier when we talked about the</p> <p>9 28 French catheter that was used to deliver the</p> <p>10 filter in the vena cava, was that catheter</p> <p>11 specifically designed for that filter?</p> <p>12 A. Yes. And if I may expound on that just</p> <p>13 a little bit, it was really called the delivery</p> <p>14 sheath, the Greenfield filter, the original</p> <p>15 stainless steel Greenfield filter.</p> <p>16 And sheaths are measured by what size</p> <p>17 catheter they will accept inside their lumen. So I</p> <p>18 believe it was actually called a 2 French sheath.</p> <p>19 But if it were a catheter, it would be the size of</p> <p>20 a 28 French catheter. So the hole that it made was</p> <p>21 a 28 French.</p> <p>22 Q. Why did you not start treating DVTs</p>
<p>54</p> <p>1 angiogram.</p> <p>2 And in order to obtain the pulmonary</p> <p>3 artery angiogram pictures, we needed to place the</p> <p>4 diagnostic catheter into the pulmonary artery,</p> <p>5 either the right or the left, and then inject X-ray</p> <p>6 dye, also known as contrast media, iodinated</p> <p>7 contrast media, during special X-ray pictures.</p> <p>8 And then that would outline the</p> <p>9 pulmonary embolism if it were present, or it would</p> <p>10 determine that the pulmonary arteries were widely</p> <p>11 patent and free of thromboemboli.</p> <p>12 Q. And so it's fair to say that the</p> <p>13 catheters you were using in the late 80s and 90s</p> <p>14 to deliver lytics were not specifically designed</p> <p>15 to deliver lytics to a blood clot, is that fair?</p> <p>16 A. At some point catheters were designed</p> <p>17 specifically for thrombolytics, and they basically</p> <p>18 were designed sometime in the 90s. I don't know</p> <p>19 exactly when.</p> <p>20 One was called the Mewissen,</p> <p>21 M-E-W-I-S-S-E-N, for instance. There were many</p> <p>22 others. Multi-channelled catheters, multi side</p>	<p>56</p> <p>1 with lytics until the late 1990s?</p> <p>2 A. Well, one reason is that systemic</p> <p>3 anticoagulation was already shown to work very,</p> <p>4 very well, and that study by Doctor Barrett and</p> <p>5 others was published in, I believe, 1960.</p> <p>6 It was a randomized controlled trial</p> <p>7 showing that patients that had acute pulmonary</p> <p>8 embolism -- and every one of those patients had a</p> <p>9 DVT, because that's how pulmonary embolism</p> <p>10 occurs -- if they were treated with anticoagulation</p> <p>11 it was extremely effective in saving their lives.</p> <p>12 And of the patients that didn't get</p> <p>13 anticoagulation, like about a third of them died,</p> <p>14 or something like that. It was a very astounding</p> <p>15 result in favor of anticoagulation.</p> <p>16 So anticoagulation, meaning heparin,</p> <p>17 Coumadin, those medications at that time, now we</p> <p>18 have so many others, was the effective treatment</p> <p>19 and the gold standard treatment.</p> <p>20 So we did not recognize that DVT had</p> <p>21 another effect called the postthrombotic syndrome.</p> <p>22 We did not recognize, really, that that was a</p>

<p>57</p> <p>1 potential indication for treating DVT until really</p> <p>2 the 2000s. So it was not recognized that we could</p> <p>3 prevent postthrombotic syndrome by performing DVT</p> <p>4 thrombectomy until later on.</p> <p>5 Q. Now, you mentioned when you started you</p> <p>6 were also using suction thrombectomy?</p> <p>7 A. Yes.</p> <p>8 Q. And that was in the mid 1980s, is that</p> <p>9 right?</p> <p>10 A. Probably mid-to-late 1980s.</p> <p>11 Q. And what do you mean by suction</p> <p>12 thrombectomy?</p> <p>13 A. At that time most of the suction</p> <p>14 thrombectomy was performed to treat a complication</p> <p>15 that we cause by balloon angioplasty.</p> <p>16 So we did not have stents back then,</p> <p>17 which are typically used a lot now. We would have</p> <p>18 a stenosis in an artery, typically a lower</p> <p>19 extremity artery, dilated it with a balloon.</p> <p>20 And occasionally, despite the fact that</p> <p>21 we had the patient treated with anticoagulation, a</p> <p>22 small piece of clot or plaque would break off and</p>	<p>59</p> <p>1 A. Well, I was a resident as part of the</p> <p>2 team, but I was not considered the attending at</p> <p>3 Ohio State. But they were performing it at Ohio</p> <p>4 State as well.</p> <p>5 Q. And you mentioned that the physicians</p> <p>6 would use a non-tapered sheath for this procedure.</p> <p>7 Was it the sheath specifically designed for</p> <p>8 aspirating clots?</p> <p>9 A. No.</p> <p>10 Q. What was the sheath typically used for?</p> <p>11 A. A sheath in general is a vascular</p> <p>12 structure to assist with placing another device for</p> <p>13 either diagnostic purposes or intervention. So</p> <p>14 it's an access device.</p> <p>15 Q. And so these would have been sheaths</p> <p>16 that would have been available to the doctors for</p> <p>17 use in a range of different procedures, is that</p> <p>18 correct?</p> <p>19 A. Yes.</p> <p>20 Q. And how would you, as a physician,</p> <p>21 determine whether to use a 5 French sheath or a</p> <p>22 6 French sheath?</p>
<p>58</p> <p>1 travel down the leg arteries causing a problem,</p> <p>2 blockage down distally.</p> <p>3 So we would extend a non-tapered</p> <p>4 vascular device that we call a sheath, because they</p> <p>5 are not tapered, unlike diagnostic catheters which</p> <p>6 are tapered at their tip to hug a guidewire. So we</p> <p>7 would put this sheath, typically a 5 French,</p> <p>8 sometimes 6 French sheath, down to the embolus, and</p> <p>9 then suck out, aspirate out the embolus through the</p> <p>10 sheath.</p> <p>11 Q. And this was a procedure that you</p> <p>12 personally performed in the 80s and early 90s?</p> <p>13 A. Yes. I was a resident until I was a</p> <p>14 fellow in 1990, and I specifically remember</p> <p>15 performing that multiple times during my</p> <p>16 fellowship. And I know that the team at</p> <p>17 Mass. General performed that procedure quite a lot.</p> <p>18 Q. So you performed it during your</p> <p>19 fellowship. What years was your fellowship?</p> <p>20 A. 1990 to '91.</p> <p>21 Q. Do you remember performing the</p> <p>22 procedure before you were a fellow?</p>	<p>60</p> <p>1 A. A lot of that depends on what device is</p> <p>2 planned to be used, and some devices require a</p> <p>3 6 French sheath, others can fit through a 5 French</p> <p>4 sheath.</p> <p>5 So one of the general principles of</p> <p>6 endovascular therapy, particularly in the smaller</p> <p>7 extremities, is to stay as small as possible</p> <p>8 because we have to close that hole that we generate</p> <p>9 in the femoral artery to gain access. So if we can</p> <p>10 get away with using a 5 French sheath in the leg</p> <p>11 arteries, that's what we'll use.</p> <p>12 Q. And when you were doing the suction</p> <p>13 thrombectomy procedures, how would you decide</p> <p>14 whether you'd use a 5 French sheath or 6 French</p> <p>15 sheath?</p> <p>16 A. Same -- same reasoning. Because we</p> <p>17 often already have sheath in place. And if we were</p> <p>18 performing a balloon angioplasty and the balloon</p> <p>19 could fit through a 5 French sheath, more than</p> <p>20 likely we would already have a 5 French sheath in</p> <p>21 place. So we could extend it then down to the clot</p> <p>22 and then suck -- you know, aspirate the clot, clot</p>

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<p style="text-align: right;">61</p> <p>1 out of the artery.</p> <p>2 Q. And you said you would use this</p> <p>3 procedure to remove clots from the lower</p> <p>4 extremities. When you refer to lower extremities,</p> <p>5 what are you talking about?</p> <p>6 A. The legs.</p> <p>7 Q. And I take it the sheaths that you were</p> <p>8 using during your fellowship to suck out clots</p> <p>9 were flexible enough to reach the clots within the</p> <p>10 lower extremities?</p> <p>11 A. Yes. They could be sheaths. Other</p> <p>12 non-tapered vascular devices called guiding</p> <p>13 catheters could be used. Cardiologists tend to use</p> <p>14 those instead of using sheaths, but they are also</p> <p>15 non-tapered. Those could be used as well.</p> <p>16 Q. And so at this time, physicians were</p> <p>17 using both sheaths and guiding catheters to remove</p> <p>18 blood clots using suction?</p> <p>19 A. Yes.</p> <p>20 Q. And how was the suction created in</p> <p>21 these devices that you were using during your</p> <p>22 fellowship?</p>	<p style="text-align: right;">63</p> <p>1 catheter and did another pull to engage the clot.</p> <p>2 Q. And at this time when you were doing</p> <p>3 your fellowship and you would use this method to</p> <p>4 extract a clot, were you returning the blood to</p> <p>5 the patient after you pulled it out of the</p> <p>6 patient?</p> <p>7 A. No.</p> <p>8 Q. And the syringes that you were using,</p> <p>9 were these syringes that were specifically made to</p> <p>10 extract clots from a patient?</p> <p>11 A. No.</p> <p>12 Q. These were just off-the-shelf syringes</p> <p>13 that could be used for a number of different</p> <p>14 purposes?</p> <p>15 A. Yes.</p> <p>16 Q. So we've talked about using suction</p> <p>17 thrombectomy in conjunction with these balloon</p> <p>18 angioplasty procedures where you would remove</p> <p>19 clots from the lower extremities.</p> <p>20 Did you use that suction thrombectomy</p> <p>21 procedure in this early 90s timeframe to remove</p> <p>22 any other types of clots?</p>
<p style="text-align: right;">62</p> <p>1 A. Simply by aspirating with a syringe.</p> <p>2 Q. And how large were the syringes you</p> <p>3 were using?</p> <p>4 A. I don't remember, but anywhere from as</p> <p>5 small as 10 cc syringes to as large as 50 cc</p> <p>6 syringes.</p> <p>7 Q. During these procedures during your</p> <p>8 fellowship, would you ever need to use more than</p> <p>9 one syringe to remove the clot?</p> <p>10 A. Not more than one syringe. We may have</p> <p>11 used the same syringe multiple times.</p> <p>12 Q. Okay, that's a good clarification.</p> <p>13 Were there times where you would have to pull the</p> <p>14 syringes more than one time to remove the clot?</p> <p>15 A. Yes.</p> <p>16 Q. And how many times -- what was kind of</p> <p>17 the maximum number of times you would have to pull</p> <p>18 the syringe to remove the clot?</p> <p>19 A. I don't remember, but it often may have</p> <p>20 required multiple aspirations. Not so much because</p> <p>21 of the aspiration, but the position of the</p> <p>22 catheter. We may have adjusted the position of the</p>	<p style="text-align: right;">64</p> <p>1 A. I think we were using it occasionally</p> <p>2 in the renal arteries and the mesenteric arteries.</p> <p>3 Q. Could you spell mesenteric for our</p> <p>4 court reporter?</p> <p>5 A. Yes, M-E-S-E-N-T-E-R-I-C.</p> <p>6 Q. And so the physicians that were using</p> <p>7 suction thrombectomy to remove clots from the</p> <p>8 lower extremity, would they be the same physicians</p> <p>9 that would use it to remove clots from the renal</p> <p>10 arteries or the mesenteric arteries?</p> <p>11 A. Yes.</p> <p>12 Q. And how would the physician get access</p> <p>13 to the clot in the renal artery at this time</p> <p>14 period, the early 1990s?</p> <p>15 A. We would use diagnostic catheters to</p> <p>16 select the renal artery or the mesenteric artery.</p> <p>17 Q. And would the access be done through a</p> <p>18 femoral access to get the catheter into place near</p> <p>19 the blood clot?</p> <p>20 A. Usually, but also an arm access could</p> <p>21 have also been used.</p> <p>22 Q. And to access the clots in the</p>

<p>65</p> <p>1 mesenteric arteries, would you also use a femoral 2 access? 3 A. Yes. 4 Q. And the catheters that you were using 5 for the renal arteries and the mesenteric 6 arteries, were those also 5 or a 6 French in 7 diameter? 8 A. Yes. 9 Q. And was the method of creating the 10 suction also using a syringe? 11 A. Yes. 12 Q. And how long did you use this suction 13 thrombectomy method that you started using in the 14 1990s to remove blood clots? 15 A. What do you mean by how long, for how 16 many years? 17 Q. Yes. 18 A. Well, we would use that sometimes 19 initially to see if it was successful to avoid the 20 next step, which would be thrombolytics. And we 21 would also do that occasionally in the brain, as 22 well, for stroke, by the -- probably by the late</p>	<p>67</p> <p>1 A. Yes. 2 Q. And did you also personally use the 3 suction thrombectomy technique to remove clots 4 from the renal arteries? 5 A. Yes. 6 Q. And also from the mesenteric arteries? 7 A. Yes. 8 Q. Between when you started using this 9 method in 1990 to the end of the 90s, let's say, 10 were any changes made to the catheters that you 11 were using for the suction thrombectomy procedure? 12 A. I do not believe there were dedicated 13 catheters available for suction thrombectomy. 14 Q. So during the 1990s, you were using the 15 sheaths and guide catheters typically used for 16 other procedures to perform the suction 17 thrombectomy, is that correct? 18 A. Yes. Anything non-tapered worked 19 better than tapered catheters. 20 Q. And why did non-tapered work better? 21 A. Because the lumen was not constricted 22 by the tip of the catheter, which is the case in a</p>
<p>66</p> <p>1 1990s. 2 And it was a technique that sometimes 3 worked for a smaller clot to establish flow, and 4 then the patient could avoid -- back then it was 5 urokinase thrombolytics, and then later on, tPA 6 thrombolytics, as the next step. 7 Q. So it sounds like towards the end of 8 the late 1990s, this suction thrombectomy 9 procedure had expanded to use in the cerebral 10 vasculature, is that correct? 11 A. I believe before that, as well. My 12 personal experience was probably 1990s, when I 13 started using it. 14 MR. HAMILTON: Josh, we've been going 15 about an hour and a half. Is this a good time for 16 a break? 17 MR. STOWELL: Sure. Just a few more 18 questions. 19 BY MR. STOWELL: 20 Q. And so in the 1990s you personally used 21 the suction thrombectomy technique to remove clots 22 from the cerebral vasculature?</p>	<p>68</p> <p>1 tapered diagnostic catheter. 2 MR. STOWELL: Okay, why don't we take a 3 break there. 4 THE VIDEOGRAPHER: We are going off the 5 record. The time is 10:29. 6 (Recess taken.) 7 THE VIDEOGRAPHER: We are back on the 8 record. The time is 10:45. 9 BY MR. STOWELL: 10 Q. Doctor Morris, do you understand that 11 you are still under oath? 12 A. Yes. 13 Q. And did you talk to anybody about the 14 subject matter of your testimony during the break? 15 A. No. 16 Q. Okay, before we took a break we were 17 talking about the suction thrombectomy procedures 18 that you had performed in the 80s and 90s. Were 19 these -- was this suction thrombectomy procedure, 20 was this something that was widely known in the 21 medical field? 22 A. In the interventional radiology</p>

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<p>69</p> <p>1 community, and particularly those practices</p> <p>2 performed a lot of what we called endovascular</p> <p>3 procedures today, arterial, primarily, types of</p> <p>4 procedures. It was a common technique to use</p> <p>5 initially for those situations that I've described</p> <p>6 previously.</p> <p>7 Q. And one of the situations we've talked</p> <p>8 about was treating pulmonary embolisms with this</p> <p>9 suction thrombectomy technique, correct?</p> <p>10 A. In the -- what timeframe are we talking</p> <p>11 about?</p> <p>12 Q. I believe you said in the late 1980s</p> <p>13 this suction thrombectomy method was used -- or</p> <p>14 started being used to treat pulmonary embolisms,</p> <p>15 is that correct?</p> <p>16 A. I don't know if I said that. I think I</p> <p>17 was referring to thrombolysis.</p> <p>18 Q. Okay. When do you recall starting to</p> <p>19 use suction thrombectomy to treat pulmonary</p> <p>20 embolisms?</p> <p>21 A. Not until definitely the 2000s, and it</p> <p>22 may have been around the mid-2000s timeframe.</p>	<p>71</p> <p>1 A. That is correct.</p> <p>2 Q. And how would you create the negative</p> <p>3 pressure to create the suction in these</p> <p>4 procedures?</p> <p>5 A. With drawing back the plunger on the</p> <p>6 syringe.</p> <p>7 Q. And would you ever use a clamp or some</p> <p>8 other device to stop flow through the catheter</p> <p>9 while you pulled back the syringe?</p> <p>10 A. I never remember doing that.</p> <p>11 Personally, I don't remember.</p> <p>12 Q. Do you ever remember seeing any of your</p> <p>13 colleagues doing that?</p> <p>14 A. No.</p> <p>15 Q. Do you ever remember reading any papers</p> <p>16 about that in the 80s and 90s?</p> <p>17 A. No.</p> <p>18 Q. And so you would -- to describe the</p> <p>19 procedure, you would insert a catheter into the</p> <p>20 patient, and then you would just pull back on the</p> <p>21 syringe; whatever would come into the syringe is</p> <p>22 what you would withdraw?</p>
<p>70</p> <p>1 Q. So going back to the mid 1980s and</p> <p>2 1990s when you were performing the suction</p> <p>3 thrombectomy, what was the range of the amount of</p> <p>4 blood you would remove in one of those types of</p> <p>5 procedures?</p> <p>6 A. Small volumes. And typically anywhere</p> <p>7 from 5 to 10 ccs to 20 to 30 ccs of blood.</p> <p>8 Q. And earlier you had said that you would</p> <p>9 use a 50 cc syringe for those procedures. So if</p> <p>10 you were using a 50 cc syringe, would you remove</p> <p>11 at least 50 ccs in that procedure?</p> <p>12 A. These were the arteries. And so when</p> <p>13 suction thrombectomy is performed, often the artery</p> <p>14 collapses, and so the blood content is relatively</p> <p>15 small. The reason we were using the --</p> <p>16 occasionally using a 50 cc syringe is to generate</p> <p>17 greater suction. But the amount of blood that was</p> <p>18 aspirated was relatively small.</p> <p>19 Q. And so during the 1980s and 1990s, is</p> <p>20 it fair to say that you would not return the blood</p> <p>21 you withdrew from these suction thrombectomy</p> <p>22 procedures?</p>	<p>72</p> <p>1 A. Yes.</p> <p>2 Q. And you weren't using a locking syringe</p> <p>3 at this time that would be pre-primed and then</p> <p>4 attached to the catheter, is that correct?</p> <p>5 A. That is correct.</p> <p>6 Q. And in the 80s and 90s when you were</p> <p>7 doing this suction thrombectomy procedure, did you</p> <p>8 ever use catheters that were larger than 6 French?</p> <p>9 A. Not that I remember.</p> <p>10 Q. Did you ever use a pump instead of a</p> <p>11 syringe in the 80s and 90s when you were doing</p> <p>12 these procedures?</p> <p>13 A. Not that I remember.</p> <p>14 Q. Did you ever use hospital suction to</p> <p>15 create the negative pressure in the suction</p> <p>16 thrombectomy procedures in the 80s and 90s?</p> <p>17 A. No.</p> <p>18 Q. So you had mentioned that you recall</p> <p>19 that you started treating DVTs with lytics in the</p> <p>20 late 1990s, is that correct?</p> <p>21 A. Yes.</p> <p>22 Q. And prior to that you had been treating</p>

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<p>73</p> <p>1 pulmonary embolisms with lytics beginning in the 2 early 1980s, is that correct?</p> <p>3 A. Yes.</p> <p>4 Q. And then you mentioned you recall 5 starting to treat PE with suction thrombectomy in 6 the mid 2000s, is that correct?</p> <p>7 A. Yes.</p> <p>8 Q. And where were you working in the mid 9 2000s when you started using this procedure?</p> <p>10 A. University of Vermont.</p> <p>11 Q. And what was your position at that 12 time?</p> <p>13 A. I believe I was division director of 14 interventional radiology, and either associate 15 professor or full professor of radiology at that 16 time.</p> <p>17 Q. And in the mid 2000s, what devices were 18 you using to perform the suction thrombectomy to 19 remove pulmonary embolisms?</p> <p>20 A. At that time a device called the 21 AngioJet was made by Possis. I don't believe 22 Possis makes it anymore, but it's a suction</p>	<p>75</p> <p>1 A. No, I do not.</p> <p>2 Q. And you recall using the AngioJet 3 device to treat pulmonary embolisms, is that 4 correct?</p> <p>5 A. Yes.</p> <p>6 Q. Did you use the AngioJet device to 7 treat any other blood clots?</p> <p>8 A. Yes.</p> <p>9 Q. What other types of blood clots did you 10 use the AngioJet device for?</p> <p>11 A. It was our go-to device, and still is, 12 for dialysis graft thrombosis and dialysis fistula 13 thrombosis. So the vast majority were used for 14 that indication, and AngioJet is also used 15 occasionally in other vascular distributions, 16 including arterial peripheral arteries and veins.</p> <p>17 Q. When you refer to peripheral arteries 18 and veins, what part of the body are we talking 19 about for peripheral?</p> <p>20 A. Either lower extremity arteries, or 21 abdominal pelvic arterial structures such as renal 22 arteries, mesenteric arteries. Those are all</p>
<p>74</p> <p>1 thrombectomy device that we were using.</p> <p>2 Q. And so the AngioJet device was a device 3 specifically made for suction thrombectomy?</p> <p>4 A. Yes.</p> <p>5 Q. And when do you recall that device 6 first becoming available?</p> <p>7 A. I don't recall, exactly.</p> <p>8 Q. But mid 2000s or earlier, is that fair 9 to say?</p> <p>10 A. Yes.</p> <p>11 Q. And how large was the catheter or 12 catheters used with the AngioJet device?</p> <p>13 A. We typically used a 6 French catheter, 14 but I think they made an 8 French, I don't know 15 when that was released, and they also made a 16 smaller one for coronary arteries.</p> <p>17 Q. And do you recall if the device was 18 first approved for coronary applications?</p> <p>19 A. I don't know.</p> <p>20 Q. Do you recall what application the 21 device -- the AngioJet device was first approved 22 for?</p>	<p>76</p> <p>1 considered the peripheral arterial system.</p> <p>2 Occasionally upper extremity arteries.</p> <p>3 Q. By upper extremity you mean arms?</p> <p>4 A. Yes.</p> <p>5 Q. And you said that the Angio device was 6 and still is the go-to device for dialysis graft 7 thrombosis. Why is it the go-to device for that 8 type of thrombosis?</p> <p>9 A. It's very successful in extracting 10 clot, and there's no downside to using it in 11 dialysis grafts and dialysis fistulae. So it's 12 effective, quick and safe.</p> <p>13 Q. And where in the body is a dialysis 14 graft placed?</p> <p>15 A. Typically in the arms.</p> <p>16 Q. And then where are the thromboses that 17 are being removed as a result of the dialysis 18 graft?</p> <p>19 A. A dialysis graft usually goes from an 20 artery to the vein in the arm. If it's a native 21 system, meaning the surgeon connects an artery to a 22 vein, that's called a dialysis fistula, and then</p>

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<p style="text-align: right;">77</p> <p>1 that venous -- those veins that get hypertrophied</p> <p>2 from arterial flow create the actual fistula that</p> <p>3 is stuck with needles.</p> <p>4 More recently that fistula can be</p> <p>5 created with a catheter, called a percutaneous AV</p> <p>6 fistula, that interventional radiologists, among</p> <p>7 other interventionalists perform. And so they're</p> <p>8 always, generally speaking, in the arm, but</p> <p>9 occasionally a dialysis graft can be in the leg as</p> <p>10 well.</p> <p>11 A surgeon may place a synthetic graft</p> <p>12 from the artery to the vein in the thigh. And when</p> <p>13 those get clotted, we are typically asked to open</p> <p>14 them up, get the clot out, and fix the reason why</p> <p>15 they clotted in the first place.</p> <p>16 Q. And so do you remember using the</p> <p>17 AngioJet device to treat clots in both the arm and</p> <p>18 the leg?</p> <p>19 A. Yes.</p> <p>20 Q. And did you do that in the mid-2000</p> <p>21 time period?</p> <p>22 A. Yes. Probably earlier, actually.</p>	<p style="text-align: right;">79</p> <p>1 Q. And how did it help the patient?</p> <p>2 A. Well, we were able -- I was able to</p> <p>3 remove clot that was obstructing flow in the</p> <p>4 pulmonary arteries.</p> <p>5 Q. How was the -- sorry, to back up. And</p> <p>6 that was in the mid-2000 time period, when you</p> <p>7 were doing the procedures with the AngioJet device</p> <p>8 on the pulmonary embolisms?</p> <p>9 A. Yes.</p> <p>10 Q. And how was the suction created with</p> <p>11 the AngioJet device?</p> <p>12 A. It's called a rheostatic mechanism. So</p> <p>13 there is a pump that's associated with the AngioJet</p> <p>14 machine that forces saline from a port near the</p> <p>15 distal tip of the catheter, but not the very distal</p> <p>16 portion, because that saline jet gets infused back</p> <p>17 into the catheter.</p> <p>18 And that saline jet creates a vortex,</p> <p>19 and it's right adjacent to a large fenestration or</p> <p>20 hole in the catheter, and that vortex is what sucks</p> <p>21 in the clot. So it creates like a very negative</p> <p>22 pressure inside the catheter, and that sucks in</p>
<p style="text-align: right;">78</p> <p>1 Q. Prior to mid 2000s?</p> <p>2 A. Yes.</p> <p>3 MR. HAMILTON: Objection to those</p> <p>4 previous questions, and vague.</p> <p>5 BY MR. STOWELL:</p> <p>6 Q. When you used the AngioJet device to</p> <p>7 remove pulmonary embolisms in the mid 2000s, what</p> <p>8 was the access route you would use to get to the</p> <p>9 blood clot?</p> <p>10 MR. HAMILTON: Objection.</p> <p>11 Misrepresents the testimony. Vague.</p> <p>12 A. Typically the femoral vein in the</p> <p>13 groin, occasionally the jugular vein in the neck.</p> <p>14 BY MR. STOWELL:</p> <p>15 Q. And so then the AngioJet device would</p> <p>16 be inserted through the femoral vein in that</p> <p>17 approach and advanced to the lungs where the blood</p> <p>18 clot would be located?</p> <p>19 A. Yes.</p> <p>20 Q. And did the AngioJet device help</p> <p>21 patients suffering from pulmonary embolism?</p> <p>22 A. Yes.</p>	<p style="text-align: right;">80</p> <p>1 clot, which often gets semi-liquefied as it gets</p> <p>2 sucked out of the patient.</p> <p>3 Q. And so other than the infusion of</p> <p>4 saline, is there any other suction that's being</p> <p>5 applied to the catheter?</p> <p>6 A. No.</p> <p>7 Q. So there's no pump actually sucking the</p> <p>8 clot back into the device?</p> <p>9 A. No, it's the vortex created by that jet</p> <p>10 of saline.</p> <p>11 Q. Okay. And so then the AngioJet device,</p> <p>12 is the clot then located at the distal end of the</p> <p>13 catheter, and you withdraw the catheter with the</p> <p>14 clot?</p> <p>15 A. Yes.</p> <p>16 Q. And you said you typically used the</p> <p>17 6 French size AngioJet. Why did you select that</p> <p>18 size?</p> <p>19 A. That's the size we typically had</p> <p>20 available to use in dialysis grafts and dialysis</p> <p>21 fistulae.</p> <p>22 Q. When you were using the AngioJet device</p>

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<p>81</p> <p>1 to treat pulmonary embolisms, was the device</p> <p>2 specifically approved for that use?</p> <p>3 A. No, it was not. And, in actuality, the</p> <p>4 FDA eventually applied a black box warning to the</p> <p>5 device not to be used in the pulmonary arteries.</p> <p>6 Q. So even though the device did help you</p> <p>7 to remove clot, eventually a warning was added not</p> <p>8 to use it for that purpose?</p> <p>9 A. Yes.</p> <p>10 Q. And when did that warning come out?</p> <p>11 A. You're very much stretching my memory.</p> <p>12 I don't remember. Some -- sometime also shortly</p> <p>13 after the time we were using it. Because there</p> <p>14 were hemodynamic issues that had been reported,</p> <p>15 mainly cardiac complications. So we stopped using</p> <p>16 it in the pulmonary arteries, but I can't remember</p> <p>17 the exact year.</p> <p>18 Q. Did you personally ever experience any</p> <p>19 issues with the device in treating pulmonary</p> <p>20 embolisms?</p> <p>21 A. Fortunately I never had a bad outcome,</p> <p>22 but I did observe stoppage of the heart.</p>	<p>83</p> <p>1 tPA.</p> <p>2 They were both effective, but we</p> <p>3 weighed the benefit-to-risk ratio of both</p> <p>4 techniques, and at that point initially, we thought</p> <p>5 the AngioJet was a better choice.</p> <p>6 Q. So after you stopped using the AngioJet</p> <p>7 device to treat PEs, what was the next suction</p> <p>8 thrombectomy device you used for treating PEs?</p> <p>9 A. We had the Pronto device, which is a</p> <p>10 suction thrombectomy device, available to us, I</p> <p>11 believe, early 2000s, and we occasionally used it</p> <p>12 for dialysis grafts. And I honestly can't remember</p> <p>13 when -- when we were using it for pulmonary</p> <p>14 embolism, but I think we had some use of it in the</p> <p>15 pulmonary arteries around that same timeframe.</p> <p>16 Q. When you say around that same</p> <p>17 timeframe, are you referring to the mid 2000s?</p> <p>18 A. Yes.</p> <p>19 Q. And what were the size of the catheters</p> <p>20 for the Pronto device?</p> <p>21 A. I believe the maximum size was</p> <p>22 8 French.</p>
<p>82</p> <p>1 Q. That sounds like a bad outcome.</p> <p>2 A. No. It started up again, fortunately.</p> <p>3 Q. Okay.</p> <p>4 A. But that's called asystole, and there</p> <p>5 were cases reported where the asystole was</p> <p>6 prolonged and the patient had a bad outcome. So</p> <p>7 that's why we had already stopped using it when</p> <p>8 that black box warning came out.</p> <p>9 Q. So when you were using the AngioJet</p> <p>10 device, what parts of the vasculature was it</p> <p>11 approved for?</p> <p>12 A. I don't know, but I believe coronaries</p> <p>13 and dialysis grafts.</p> <p>14 Q. And so what made you think to use the</p> <p>15 AngioJet device to treat a PE?</p> <p>16 A. Because it was very effective at</p> <p>17 removing clot. And before we were using AngioJet,</p> <p>18 the standard device was thrombolysis, and tPA at</p> <p>19 that point was the thrombolytic we were using.</p> <p>20 TPA also has complications associated</p> <p>21 with it, so we thought the complications with</p> <p>22 AngioJet would be less than the complications with</p>	<p>84</p> <p>1 Q. And you used it to treat pulmonary</p> <p>2 embolisms. Did you use the Pronto device to treat</p> <p>3 other types of blood clots?</p> <p>4 A. The primary use was in dialysis grafts</p> <p>5 and dialysis fistulae, but I, as well as my</p> <p>6 colleagues, believed the AngioJet was a better</p> <p>7 device for that indication.</p> <p>8 Q. Going back on the AngioJet and its use</p> <p>9 to treat pulmonary embolisms, I take it you</p> <p>10 weren't the only hospital that was using the</p> <p>11 AngioJet to treat pulmonary embolisms in the mid</p> <p>12 2000s, is that correct?</p> <p>13 A. That is correct.</p> <p>14 Q. So for the Pronto device that you used</p> <p>15 in the mid 2000s for pulmonary embolisms, did it</p> <p>16 help patients suffering from pulmonary embolism?</p> <p>17 A. I did not think it was very effective.</p> <p>18 Q. And why not?</p> <p>19 A. I believed the catheter was just too</p> <p>20 small. So the suction pressure was not large</p> <p>21 enough, the catheter diameter was not large enough,</p> <p>22 and we were not able to extract much clot from it.</p>

<p>85</p> <p>1 Q. Could you extract any clot using the</p> <p>2 Pronto when you were treating a pulmonary</p> <p>3 embolism?</p> <p>4 A. Small -- small amounts.</p> <p>5 Q. And were you using the 8 French Pronto</p> <p>6 in those procedures?</p> <p>7 A. I believe so, yes.</p> <p>8 Q. And so in the mid 2000s, you'd realized</p> <p>9 that the Pronto 8 French catheter was too small to</p> <p>10 most effectively treat pulmonary embolisms, is</p> <p>11 that fair?</p> <p>12 MR. HAMILTON: Objection.</p> <p>13 Mischaracterizes the testimony. Incomplete</p> <p>14 hypothetical.</p> <p>15 A. Well, I cannot remember exactly what</p> <p>16 years that was. We had -- we had the use of the</p> <p>17 Pronto since the early 2000s. I can't remember</p> <p>18 exactly what year we used it in the pulmonary</p> <p>19 artery system, but at some point we did.</p> <p>20 BY MR. STOWELL:</p> <p>21 Q. And was that in the 2000s, at least,</p> <p>22 when you used it in the pulmonary arteries, the</p>	<p>87</p> <p>1 approved to treat PE?</p> <p>2 A. I don't know.</p> <p>3 Q. When you were using the Pronto device,</p> <p>4 do you remember what indications it was approved</p> <p>5 for?</p> <p>6 A. I remember using it first and for a</p> <p>7 while only in dialysis grafts. So it may have been</p> <p>8 dialysis grafts, but I'm not sure.</p> <p>9 Q. How many procedures do you remember</p> <p>10 doing to treat PE with the Pronto device?</p> <p>11 A. I don't remember a number, but not very</p> <p>12 many.</p> <p>13 Q. Do you think you were the only hospital</p> <p>14 using the Pronto device to treat PE in the 2000s?</p> <p>15 A. No.</p> <p>16 Q. Were you aware that there were other</p> <p>17 physicians who were using the Pronto device to</p> <p>18 treat PE in the 2000s?</p> <p>19 A. I was aware, yes.</p> <p>20 Q. So you used the AngioJet device and the</p> <p>21 Pronto device to treat PEs. What other suction</p> <p>22 thrombectomy devices did you use to treat PE?</p>
<p>86</p> <p>1 Pronto device?</p> <p>2 A. Yes.</p> <p>3 Q. And so when you started using the</p> <p>4 Pronto device in the pulmonary arteries, you</p> <p>5 recognized that the catheter was too small to most</p> <p>6 effectively remove pulmonary embolisms, is that</p> <p>7 correct?</p> <p>8 MR. HAMILTON: Objection. Incomplete</p> <p>9 hypothetical.</p> <p>10 A. That is correct.</p> <p>11 BY MR. STOWELL:</p> <p>12 Q. What type of device was used to create</p> <p>13 the suction on the Pronto device?</p> <p>14 A. A syringe.</p> <p>15 Q. Do you remember the size of the</p> <p>16 syringe?</p> <p>17 A. I believe any syringe could be used.</p> <p>18 Q. So you would be able to use any syringe</p> <p>19 that you had on the shelf with the Pronto device,</p> <p>20 based on your recollection?</p> <p>21 A. Yes.</p> <p>22 Q. Was the Pronto device specifically</p>	<p>88</p> <p>1 A. What timeframe?</p> <p>2 Q. Let's talk about in the 2000 to 2010</p> <p>3 timeframe.</p> <p>4 A. I don't think the Penumbra Indigo was</p> <p>5 available at that time, but that would have been</p> <p>6 the next device that we used. I can't remember</p> <p>7 when it was marketed and available to us.</p> <p>8 Q. But your recollection is the next</p> <p>9 suction thrombectomy device that you used to treat</p> <p>10 PE would have been the Penumbra Indigo?</p> <p>11 A. Yes.</p> <p>12 Q. And do you recall using the Penumbra</p> <p>13 Indigo before 2015, for example?</p> <p>14 A. Yes.</p> <p>15 Q. And did you use it to treat PE before</p> <p>16 2015?</p> <p>17 A. I can't remember the exact year, but I</p> <p>18 believe so.</p> <p>19 Q. And was the Penumbra Indigo indicated</p> <p>20 for the treatment of PE?</p> <p>21 MR. HAMILTON: Objection, vague.</p> <p>22 A. I don't know, but I think so.</p>

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<p>89</p> <p>1 BY MR. STOWELL:</p> <p>2 Q. Did you use the Penumbra Indigo for</p> <p>3 removing other types of clots?</p> <p>4 A. Very rarely.</p> <p>5 Q. And when you would use it for other</p> <p>6 types of clots, what other types of clots would</p> <p>7 you use it on?</p> <p>8 A. DVT by that point.</p> <p>9 Q. And by that point, do you mean before</p> <p>10 2015?</p> <p>11 A. Yes.</p> <p>12 Q. Do you recall using the Penumbra Indigo</p> <p>13 to treat any other types of clots besides PE and</p> <p>14 DVT?</p> <p>15 A. No.</p> <p>16 Q. And are you aware of other physicians</p> <p>17 using the Penumbra Indigo to treat other types of</p> <p>18 clots besides PE and DVT?</p> <p>19 A. I'm not aware.</p> <p>20 Q. And what was the size of the catheters</p> <p>21 for the Penumbra Indigo?</p> <p>22 A. I believe it was 8 French, was the</p>	<p>91</p> <p>1 was continuous when it was activated.</p> <p>2 Q. And is the Penumbra Indigo the first</p> <p>3 time that you had used a pump for suction</p> <p>4 thrombectomy?</p> <p>5 A. I believe so, yes.</p> <p>6 Q. And on either the Pronto or the</p> <p>7 Penumbra Indigo, would you ever use a tube clamp</p> <p>8 or other type of device to close off the catheter</p> <p>9 from the negative pressure source while the</p> <p>10 negative pressure source was turned on or</p> <p>11 activated?</p> <p>12 A. I never did.</p> <p>13 Q. Did you ever see other doctors do that?</p> <p>14 A. I don't recall that I ever did.</p> <p>15 Q. And the Penumbra Indigo, what was the</p> <p>16 access route to place that device into the</p> <p>17 patient?</p> <p>18 A. Typically it was the femoral vein from</p> <p>19 the groin, but it could also be placed from the</p> <p>20 jugular vein from the neck, or even an arm vein.</p> <p>21 Q. And the pump, you mentioned you just</p> <p>22 turn it on. Did it have specific pressure</p>
<p>90</p> <p>1 largest size.</p> <p>2 Q. Were there also smaller sizes?</p> <p>3 A. I'm not sure.</p> <p>4 Q. Do you know if it came in a 12 French?</p> <p>5 A. Not -- I don't think initially. It may</p> <p>6 have with time, but not when it was first released.</p> <p>7 Q. So when you first used the Penumbra</p> <p>8 Indigo to treat PE, it would have been the</p> <p>9 8 French catheter, is that correct?</p> <p>10 A. That's what I recall.</p> <p>11 Q. And did the Penumbra Indigo help</p> <p>12 patients suffering from PE?</p> <p>13 A. Not very well.</p> <p>14 Q. Were you able to remove pulmonary</p> <p>15 embolism clot material with the Penumbra Indigo?</p> <p>16 A. Not very much.</p> <p>17 Q. Were you able to remove portions of the</p> <p>18 clot with the Penumbra Indigo?</p> <p>19 A. Only minimal amounts.</p> <p>20 Q. And how was the suction created with</p> <p>21 the Penumbra Indigo?</p> <p>22 A. The unit has a self-contained pump that</p>	<p>92</p> <p>1 settings that you would use?</p> <p>2 A. It has its own algorithm, and I relied</p> <p>3 more on the technologists working with me, as well</p> <p>4 as the clinical monitor that was often at the</p> <p>5 cases, to deal with the pump settings.</p> <p>6 Q. Now, Penumbra at this time, before</p> <p>7 2015, also sold catheters for use in the cerebral</p> <p>8 vasculature, correct?</p> <p>9 A. Yes.</p> <p>10 Q. And Penumbra actually sold catheters</p> <p>11 for the cerebral vasculature before it sold the</p> <p>12 Indigo device for PE, correct?</p> <p>13 A. Yes.</p> <p>14 Q. And are you aware if there are any</p> <p>15 differences between the pumps used for Penumbra's</p> <p>16 cerebral devices and the Indigo device?</p> <p>17 A. I do not know.</p> <p>18 Q. Would it surprise you if the pumps were</p> <p>19 the same?</p> <p>20 A. Probably. Yes.</p> <p>21 Q. Would it surprise you if the pressures</p> <p>22 generated by the pumps for removing cerebral clots</p>

<p style="text-align: right;">93</p> <p>1 and PEs was exactly the same?</p> <p>2 A. If that were the case, that would</p> <p>3 explain why we couldn't get much clot out of the</p> <p>4 pulmonary arteries.</p> <p>5 Q. But it wouldn't surprise you if the --</p> <p>6 A. If the pumps were the same, I -- it's</p> <p>7 hard to say. Because I know that Penumbra has</p> <p>8 always used these special algorithms to generate</p> <p>9 their pressures, so I don't know if the algorithm</p> <p>10 might be different between the two vascular</p> <p>11 territories. I don't know.</p> <p>12 MR. HAMILTON: And for the last</p> <p>13 question, objection. Calls for speculation.</p> <p>14 BY MR. STOWELL:</p> <p>15 Q. So you used the Penumbra Indigo to</p> <p>16 remove PEs. After that device, have you used any</p> <p>17 other devices to remove PEs, any other suction</p> <p>18 thrombectomy devices?</p> <p>19 MR. HAMILTON: Objection.</p> <p>20 Misrepresents the testimony.</p> <p>21 A. I believe the next step was to use the</p> <p>22 Inari FlowTrievers.</p>	<p style="text-align: right;">95</p> <p>1 Q. And what's the access route for</p> <p>2 inserting the FlowTrievers device?</p> <p>3 A. Usually it's a femoral vein. I have</p> <p>4 done it from -- I have accessed the jugular vein</p> <p>5 and come in from above, as well.</p> <p>6 Q. And have you used the FlowTrievers to</p> <p>7 treat clots in any other part of the body besides</p> <p>8 pulmonary embolisms?</p> <p>9 A. Yes.</p> <p>10 Q. What other types of clots have you</p> <p>11 treated with the FlowTrievers?</p> <p>12 A. DVT, inferior vena cava, iliac veins,</p> <p>13 which are basically an extension of DVT, so venous.</p> <p>14 And, I might add, heart. Right heart atrium and</p> <p>15 right ventricle.</p> <p>16 Q. And when you are treating a pulmonary</p> <p>17 embolism with the FlowTrievers, roughly how many</p> <p>18 pulls of the syringe do you do in a typical</p> <p>19 procedure?</p> <p>20 A. That varies. It could be two or three</p> <p>21 pulls, or it could be as many as ten pulls.</p> <p>22 Q. And with each pull, are you removing</p>
<p style="text-align: right;">94</p> <p>1 BY MR. STOWELL:</p> <p>2 Q. And do you remember when you started</p> <p>3 using the Inari FlowTrievers?</p> <p>4 A. I don't know the exact date, but we</p> <p>5 were an early adopter, and I believe it was either</p> <p>6 2018 or 2019.</p> <p>7 Q. And is the FlowTrievers another suction</p> <p>8 thrombectomy device?</p> <p>9 A. Yes.</p> <p>10 Q. And how is the negative pressure</p> <p>11 generated or the vacuum generated by the</p> <p>12 FlowTrievers?</p> <p>13 A. A syringe.</p> <p>14 Q. And do you know the size of that</p> <p>15 syringe?</p> <p>16 A. 60 ccs.</p> <p>17 Q. And what are the size of the catheters</p> <p>18 on the FlowTrievers?</p> <p>19 A. There are multiple sizes. They are all</p> <p>20 greater than -- either 16 French or greater.</p> <p>21 There's a 16 French, there's a 20 French, and the</p> <p>22 one I usually start with is a 24 French.</p>	<p style="text-align: right;">96</p> <p>1 approximately 60 ccs of blood from the patient?</p> <p>2 MR. HAMILTON: Objection. Incomplete</p> <p>3 hypothetical.</p> <p>4 A. It does depend on multiple factors.</p> <p>5 More often than not the syringe does fill up with</p> <p>6 blood, but other times it may stop at, say, only 30</p> <p>7 or 40 ccs.</p> <p>8 BY MR. STOWELL:</p> <p>9 Q. And so in the FlowTrievers procedures</p> <p>10 that you've performed, what is the range of blood</p> <p>11 you've removed from a patient in those procedures?</p> <p>12 A. Minus what we've returned to the</p> <p>13 patient, or total amount out before returning to</p> <p>14 the patient?</p> <p>15 Q. Total amount out.</p> <p>16 MR. HAMILTON: Before you answer it,</p> <p>17 objection, vague. Incomplete hypothetical.</p> <p>18 A. It could be close to a liter.</p> <p>19 BY MR. STOWELL:</p> <p>20 Q. And why would it take up to ten pulls</p> <p>21 of the syringe for a PE procedure?</p> <p>22 A. Because the volume of clot in pulmonary</p>

<p style="text-align: right;">97</p> <p>1 embolism sometimes is huge, and the clot also can 2 extend into multiple, large pulmonary artery 3 branches. So we need -- I need often to move the 4 catheter into different positions to extract the 5 amount of clot that I am planning on removing. 6 In addition, there's the right side and 7 the left side. So once we get a large amount of 8 clot out of one side, we then need to redirect our 9 attention to the other side and continue to extract 10 clot, if it's a bilateral pulmonary embolism, from 11 time to time. 12 Q. You mentioned blood return. Do you 13 always have to return blood when you're using the 14 Inari FlowTrievers for a PE procedure? 15 A. I always do. 16 Q. And is there a threshold of blood 17 removed below which you wouldn't need to return 18 blood? 19 MR. HAMILTON: Objection. Incomplete 20 hypothetical. Vague. 21 A. Maybe if the entire procedure resulted 22 in only 40 or 50 ccs, I probably might consider not</p>	<p style="text-align: right;">99</p> <p>1 you have used the FlowTrievers when you have not 2 returned blood to the patient? 3 A. I do not recall any. 4 Q. When you used the Penumbra Indigo for 5 PE, how much blood would you typically remove in 6 those procedures? 7 MR. HAMILTON: Objection. Vague. 8 A. All I can answer is much smaller 9 amounts of blood. 10 BY MR. STOWELL: 11 Q. And when you used the Penumbra Indigo 12 to treat PE, did you return the blood you withdrew 13 to the patient? 14 A. No. 15 Q. And the blood you removed with the 16 Penumbra Indigo when you were treating PE, was it 17 less than 300 ccs of blood? 18 A. I don't recall. 19 Q. Is there any standard operating 20 procedure or standard guidelines for how much 21 blood you can withdraw before you need to return 22 blood to a patient?</p>
<p style="text-align: right;">98</p> <p>1 returning that blood, but I've never run into that 2 case. 3 MR. HAMILTON: I'll also add, 4 objection, calls for speculation. 5 BY MR. STOWELL: 6 Q. And so is it your view that if during a 7 suction thrombectomy procedure the physician 8 withdraws more than 50 ccs of blood, that the 9 physician should return blood to the patient? 10 MR. HAMILTON: Objection. Vague. 11 Incomplete hypothetical. 12 A. In the Inari FlowTrievers procedure, I 13 do believe that the blood should be returned. 14 BY MR. STOWELL: 15 Q. And is that your view for any procedure 16 using the Inari FlowTrievers? 17 MR. HAMILTON: Objection. Vague. 18 Incomplete hypothetical. 19 A. Meaning if I used it outside the 20 pulmonary arteries? Pretty much, yes. 21 BY MR. STOWELL: 22 Q. Have there been any circumstances where</p>	<p style="text-align: right;">100</p> <p>1 MR. HAMILTON: Objection, vague. 2 Incomplete hypothetical. 3 A. I'm not aware of any. 4 BY MR. STOWELL: 5 Q. And so other than the devices we've 6 talked about today, have you used any other 7 suction thrombectomy devices to treat PE? 8 A. Yes. 9 Q. And what other devices have you used? 10 A. I've used the Penumbra CAT16 when that 11 became available. Then it became the Flash, but I 12 think it's basically the same -- same catheter. 13 But I don't remember any others. 14 Q. When did the Penumbra CAT16 become 15 available? 16 A. It was definitely after the Inari 17 FlowTrievers, but I can't remember exactly how soon 18 after. 19 Q. And you have personally used the CAT16 20 to treat PE? 21 A. Yes. And if I can go back to my last 22 answer, at least when I was at University of</p>

<p>101</p> <p>1 Vermont, that's when we had -- when it was made</p> <p>2 available to us. I don't know if it was made</p> <p>3 available to other interventionalists across the</p> <p>4 country earlier or not.</p> <p>5 Q. Did the CAT16 system also use a pump to</p> <p>6 generate the negative pressure?</p> <p>7 A. Yes.</p> <p>8 Q. And what were the size of the catheters</p> <p>9 used in the CAT16 product?</p> <p>10 A. 16 French.</p> <p>11 Q. Was the CAT16 product effective at</p> <p>12 removing pulmonary embolism?</p> <p>13 A. It was definitely better than the</p> <p>14 Indigo, but I -- in my personal opinion, I did not</p> <p>15 believe it approached the efficiency and the</p> <p>16 effectiveness of the Inari FlowTrieve for</p> <p>17 pulmonary embolism.</p> <p>18 Q. Did you use the CAT16 to treat other</p> <p>19 types of blood clots?</p> <p>20 A. Yes.</p> <p>21 Q. What other types of blood clots did you</p> <p>22 use it for?</p>	<p>103</p> <p>1 Q. And do you know how, if at all, those</p> <p>2 catheters differ from the Indigo catheter, for</p> <p>3 example?</p> <p>4 A. No, I don't.</p> <p>5 Q. And do you know how Penumbra's cerebral</p> <p>6 catheters differ from the CAT16 catheters?</p> <p>7 A. No, I do not.</p> <p>8 Q. So in the mid 2000s, you started using</p> <p>9 suction thrombectomy to treat PE. When did you</p> <p>10 start using suction thrombectomy to treat DVT?</p> <p>11 A. I can't remember if I ever used the</p> <p>12 Pronto as an adjunct, but it's possible that I did</p> <p>13 in the earlier 2000s.</p> <p>14 We primarily used pharmacologic</p> <p>15 thrombolysis at that point, but at maybe mid to</p> <p>16 later 2000s another device became available called</p> <p>17 the Trellis DVT device, and that used a combination</p> <p>18 of suction and thrombolysis together.</p> <p>19 It had two balloons, one on the distal</p> <p>20 end of the catheter, and one on the proximal end of</p> <p>21 the catheter -- and by the way, this is</p> <p>22 specifically for lower extremity leg DVT venous</p>
<p>102</p> <p>1 A. Occasionally DVT, lower extremity</p> <p>2 veins, iliac veins, and IVC. But I liked it as my</p> <p>3 first option for portal venous recanalization</p> <p>4 procedures.</p> <p>5 Q. Why did you like it for those</p> <p>6 procedures?</p> <p>7 A. Because I believe the portal vein was</p> <p>8 more amenable to the features of the CAT16.</p> <p>9 Smaller device, lower pressures, for portal venous</p> <p>10 is a different vascular bed than the pulmonary</p> <p>11 arteries, and even the lower extremity venous</p> <p>12 system, and it seemed to work well for portal</p> <p>13 venous interventions.</p> <p>14 Q. And you mentioned lower pressures.</p> <p>15 Lower pressures as compared to what?</p> <p>16 A. As opposed to the locking syringe</p> <p>17 system of the Inari.</p> <p>18 Q. Of the Inari FlowTrieve?</p> <p>19 A. Yes.</p> <p>20 Q. Have you ever used any of the Penumbra</p> <p>21 catheters designed for the cerebral vasculature?</p> <p>22 A. I don't recall.</p>	<p>104</p> <p>1 clot.</p> <p>2 And those two balloons were inflated to</p> <p>3 create an isolated segment. Pharmacologic enzymes,</p> <p>4 such as tPA, was injected. And then associated</p> <p>5 with the catheter was an agitator, which is</p> <p>6 basically a curved wire that would spin around, and</p> <p>7 agitate the thrombolytic medicine into the clot,</p> <p>8 essentially nearly liquefying it. And then there</p> <p>9 were aspiration ports on the catheter, and we</p> <p>10 manually aspirated that dissolved clot out of that</p> <p>11 segment.</p> <p>12 Q. And when you say manually aspirated it,</p> <p>13 what do you mean?</p> <p>14 A. We used a syringe, and pulled back on</p> <p>15 the syringe to create aspiration pressure.</p> <p>16 Q. And you mentioned an agitator. So</p> <p>17 there was actually a part of the wire that would</p> <p>18 be extended out of the catheter and into the clot,</p> <p>19 and then rotated to break up the clot, is that</p> <p>20 fair?</p> <p>21 A. Yes.</p> <p>22 Q. And what were the diameters of the</p>

<p>1 catheters used for the Trellis system? 2 A. I don't recall. 3 Q. Do you have a rough estimate? 4 A. It was around the 8 to 10 French range, 5 I believe. 6 Q. And did the Trellis device help 7 patients suffering from DVT? 8 A. I believe so, yes. 9 Q. You were able to remove at least 10 portions of the DVT with the Trellis device from 11 the patients? 12 A. Yes. 13 Q. Over what time period did you use the 14 Trellis device? 15 A. I believe it was 2010s, at some point. 16 I can't remember exactly when. Definitely before 17 2015, so probably 2010 to 2012 timeframe. 18 Q. So after the Trellis device, what was 19 the next device you remember using to treat DVT 20 that was a suction thrombectomy device? 21 A. I think we've covered them. At that 22 point, we were primarily using thrombolytics, and</p>	<p>105 107 1 so if we can decrease the amount of clot that the 2 enzyme needs to work on, the procedure will be less 3 lengthy, you know, shorter time periods. Because 4 these patients need to be admitted to the ICU, and 5 so we try to shorten procedure as much as possible. 6 Q. And when you would use the Penumbra 7 Indigo for DVT applications, were you using the 8 same pump that you used when you treated PE? 9 A. Yes. 10 Q. And were you using the same catheter 11 size to treat the DVTs that you used for the PE? 12 A. Yes. 13 Q. And then you mentioned that you also 14 used the FlowTrieve to treat DVTs, is that 15 correct? 16 A. Yes. 17 Q. And that was sometime 2018 or after, 18 correct? 19 A. Correct. 20 Q. Have you ever used any of Imperative 21 Care's devices to remove a blood clot from a 22 patient?</p>
<p>106 1 did not use suction thrombectomy in a big way until 2 the Inari system was made available to us, and 3 eventually the Penumbra system. 4 Q. And previously I think you had said you 5 had used a Penumbra Indigo a few times to try to 6 treat DVT, is that accurate? 7 A. As an adjunct, yes. 8 Q. And when you say as an adjunct, you 9 mean in addition to thrombolytics? 10 A. Exactly. Yes. 11 Q. And you were using the Indigo system to 12 treat DVTs prior to 2015, right? 13 A. I believe so, yes. 14 Q. And did the Indigo system help patients 15 suffering from DVT? 16 A. I think it helped, somewhat, to debulk 17 the thrombus, but it was never used as the 18 definitive treatment technique. 19 Q. When you say debulk, what do you mean? 20 A. The amount of clot in a DVT is usually 21 extensive, and so thrombolytics take time to -- to 22 perform their enzymatic mechanism of action. And</p>	<p>108 1 A. I have not. 2 Q. And we touched on this a little bit, 3 but have you actually used devices to remove blood 4 clots from the cerebral vasculature? 5 A. Early on I used the MERCI device. I 6 can't remember if I've actually used the Penumbra 7 in cerebral, because a lot of times we did those 8 stroke thrombectomy procedures in collaboration with 9 whoever we may have had at the time as a 10 neurointerventional radiologist. 11 I have performed tPA thrombolysis and 12 suction thrombectomy. But I can't remember if I've 13 actually used the Penumbra, if that was your 14 question. 15 Q. The MERCI device, was that a suction 16 thrombectomy device? 17 A. Not really. It was a very flexible 18 corkscrew-like wire that would be screwed into the 19 clot, and then that, most of the time, grabbed the 20 clot, and then we could pull that into the catheter 21 and remove it out of the patient's artery. 22 Q. And you said early on you used that.</p>

<p style="text-align: right;">109</p> <p>1 What time period are you talking about that you 2 were using the MERCI? 3 A. That was probably early to mid 2000 -- 4 maybe mid 2000s. I can't remember exactly. 5 Q. And then is it fair to say that since 6 that point, you haven't personally been the one 7 treating neurovascular blood clots? 8 A. Then -- correct. Then we developed -- 9 then we were able to obtain multiple 10 neurointerventional radiologists and that's all 11 they did, and I could concentrate on other areas of 12 interventional radiology. 13 Q. And so before the mid 2000s, was it 14 common for a radiologist to treat clots across all 15 different parts of the body, including the 16 cerebral vasculature? 17 A. Most -- as far as stroke thrombectomy? 18 Q. Correct. 19 A. And I believe it's still the same 20 today. Most stroke thrombectomy is performed by 21 body interventional radiologists. Because there 22 are so many more body interventional radiologists</p>	<p style="text-align: right;">111</p> <p>1 And then there are times when we only 2 had one. And they can't take call every single 3 night of the year, so we would help them with 4 stroke thrombectomy at various time -- time points. 5 Q. Got it. So even if the hospital had a 6 neurointerventionalist, you may still -- as a body 7 radiologist, you may still need to perform some 8 stroke procedures, correct? 9 A. Not back in the last 15 years, but back 10 then, in the mid 2000s, yes. 11 Q. And I know you said earlier you're not 12 that familiar with the Penumbra cerebral 13 thrombectomy devices, is that correct? 14 A. That's correct. 15 Q. And so is it fair to say you don't have 16 an opinion on whether Penumbra upsized its 17 cerebral thrombectomy devices for other parts of 18 the vasculature? 19 A. I don't have an opinion on that. 20 MR. HAMILTON: Objection, vague. 21 BY MR. STOWELL: 22 Q. In your time as a radiologist, have you</p>
<p style="text-align: right;">110</p> <p>1 than there are specific neurointerventionalists, 2 whether that's a radiologist or a neurosurgeon or 3 even a neurologist. 4 I don't know the most current 5 statistics, but I remember ten to 15 years ago most 6 strokes were treated with -- by body interventional 7 radiologists. 8 Q. And body interventional radiologists 9 are radiologists who treat clots in all different 10 parts of the body, they don't focus on a specific 11 area, is that fair? 12 A. That's correct. 13 Q. And so it sounds like, though, at 14 Vermont, at least, in the mid 2000s you got a 15 specialist in the neuro vasculature, and so that 16 person typically would remove the clots that were 17 in the patient's brain, is that fair? 18 A. Yes, we've -- we've had many different 19 neurointerventionalists in radiology, they would 20 come for a short period of time and then move on to 21 somewhere else. And so there were in-between times 22 when we did not have any.</p>	<p style="text-align: right;">112</p> <p>1 ever witnessed a company upsize a product intended 2 for one part of the vasculature for another part 3 of the vasculature? 4 MR. HAMILTON: Objection, vague. 5 A. That's hard to answer because there are 6 so many variables, often. And I guess sometimes 7 when a company makes a device larger, they may 8 change it in other ways that may make it a little 9 more amenable to treating a different disease 10 entity or, you know, area of the body, for 11 instance. So that's hard to answer. 12 BY MR. STOWELL: 13 Q. So as we sit here today, is it fair to 14 say that you haven't formed an opinion on whether 15 companies upsize products from one part of the 16 vasculature for another? 17 A. That -- 18 MR. HAMILTON: Objection. Vague. 19 Calls for speculation. 20 A. That is correct. 21 BY MR. STOWELL: 22 Q. In your declaration I noticed that you</p>

<p>113</p> <p>1 mentioned another device called the AngioVac 2 system? 3 A. Yes. 4 Q. Are you familiar with that product? 5 A. Yes. 6 Q. And how did you become familiar with 7 the AngioVac system? 8 A. I used it at University of Utah just a 9 few months ago. 10 MR. HAMILTON: Josh, I don't know if 11 this is a good time, we're about noon. If you're 12 going into another area, it might be a good time 13 to break for lunch? 14 MR. STOWELL: Yeah. Maybe we finish 15 this out and then we'll, yeah, break. 16 BY MR. STOWELL: 17 Q. Sorry, so you had the opportunity to 18 use the AngioVac a few months ago, is that 19 correct? 20 A. Yes. 21 Q. Had you used the AngioVac system prior 22 to a few months ago?</p>	<p>115</p> <p>1 learn about it at that time? 2 A. Yes. 3 Q. And how would you have learned about it 4 at that time? 5 A. I learned about it at national 6 meetings, primarily. 7 Q. And do you consider the AngioVac system 8 to be a suction thrombectomy product? 9 A. Yes. 10 Q. And how is the suction created with the 11 AngioVac system? 12 A. It has its own inherent pump system. 13 Q. When you say inherent pump system, what 14 do you mean? 15 A. It's all part of the machine. 16 Q. So it uses a pump to generate the 17 vacuum, or negative pressure, in the system? 18 A. Yes. 19 Q. And what is the size of the catheter 20 that's used with the AngioVac system? 21 A. 22 French. 22 Q. And do you know if that size has</p>
<p>114</p> <p>1 A. I did not. 2 Q. Had you seen others use the AngioVac 3 system prior to a couple of months ago? 4 A. Only at national meetings, 5 demonstrations, things of that sort. Because most 6 of my career has been at University of Vermont, and 7 since the 2010s, whenever the AngioVac became 8 available, we made a push to acquire it, but we 9 were never able to get it past our operating room, 10 you know, budget process. 11 So we never -- as far as I know, we 12 still don't have it as University of Vermont, but 13 we do at University of Utah, because I'm both. 14 Q. It's fortunate. And do you know when 15 the AngioVac system was first launched? 16 A. I don't know the exact date, no. 17 Q. Do you know roughly when it became 18 commercially available? 19 A. 2010s, but I can't remember if it was 20 the mid 2010s or early 2010s, but it was sometime 21 in that timeframe. 22 Q. And when it became available, did you</p>	<p>116</p> <p>1 changed since the device was introduced in the 2 early-to-mid 2010s? 3 A. I don't know. I do know that they also 4 introduced a smaller 16 French catheter 5 specifically for pulmonary embolism called the 6 AlphaVac, but I don't know when that was even 7 released. 8 Q. But as far as you know, the AngioVac 9 system catheter has always been 22 French? 10 MR. HAMILTON: Objection, vague. 11 A. I don't know. 12 BY MR. STOWELL: 13 Q. In the time that you've been aware of 14 the AngioVac system, has the catheter always been 15 22 French? 16 MR. HAMILTON: Objection, vague. 17 A. Yes. 18 BY MR. STOWELL: 19 Q. And what types of blood clots is the 20 AngioVac system approved for? 21 A. I do not believe the AngioVac is 22 approved -- FDA approved or cleared for pulmonary</p>

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<p style="text-align: right;">117</p> <p>1 embolism. I believe it's cleared for venous clot,</p> <p>2 maybe cardiac clot, and other materials.</p> <p>3 Q. What about DVT? Would it be approved</p> <p>4 for DVT?</p> <p>5 A. I think they have a generic indication</p> <p>6 for venous clot, which I believe would include DVT.</p> <p>7 Q. When you first learned about the</p> <p>8 AngioVac system at those national meetings in the</p> <p>9 early-to-mid 2010s, what was the device being used</p> <p>10 for, what types of clots?</p> <p>11 A. The classic indication was clot in</p> <p>12 transit. And that represents clot in the right</p> <p>13 side of the heart, either the right atrium or the</p> <p>14 right ventricle.</p> <p>15 Q. And you said in transit. Where is the</p> <p>16 clot in transit from?</p> <p>17 A. It's usually clot that is an embolus</p> <p>18 that originates in the leg veins, breaks off, and</p> <p>19 travels up to the heart and gets trapped by either</p> <p>20 the mitral valve or the pulmonic valve, and resides</p> <p>21 within either one of the chambers of the right side</p> <p>22 of the heart, the right atrium or the right</p>	<p style="text-align: right;">119</p> <p>1 Q. Do you know if it was before 2018?</p> <p>2 A. I think it was.</p> <p>3 Q. And do you know when physicians began</p> <p>4 using the AngioVac device to treat DVT?</p> <p>5 A. The same answer. I don't know.</p> <p>6 Q. But do you believe it was before 2018?</p> <p>7 A. I don't know.</p> <p>8 MR. HAMILTON: Objection. Calls for</p> <p>9 speculation.</p> <p>10 A. I don't know.</p> <p>11 BY MR. STOWELL:</p> <p>12 Q. When you used the AngioVac device a few</p> <p>13 months ago, what did you use it for?</p> <p>14 A. It was a combination of clot and</p> <p>15 vegetation, which is a bacterial growth on the</p> <p>16 valves of the heart that propagated into the right</p> <p>17 atrium of the heart.</p> <p>18 And these are typically formed in</p> <p>19 patients that have IV drug abuse histories, and so</p> <p>20 they have these infected clots called vegetations.</p> <p>21 And so we sucked that out of the right atrium of</p> <p>22 the heart.</p>
<p style="text-align: right;">118</p> <p>1 ventricle.</p> <p>2 Q. And are you aware of the AngioVac</p> <p>3 device being used to treat PEs?</p> <p>4 A. I know it has been used, yes -- so,</p> <p>5 yes, I do know that.</p> <p>6 Q. Have you ever used the AngioVac device</p> <p>7 to treat PE?</p> <p>8 A. No, I have not.</p> <p>9 Q. Are you aware of the AngioVac device</p> <p>10 being used to treat DVT?</p> <p>11 A. I'm aware of that, yes.</p> <p>12 Q. Have you ever used the AngioVac device</p> <p>13 to treat DVT?</p> <p>14 A. No, I have not.</p> <p>15 Q. And do you know when physicians began</p> <p>16 using the AngioVac device to treat PE?</p> <p>17 A. Could you repeat the question?</p> <p>18 Q. Yeah. Do you know when physicians</p> <p>19 began using the AngioVac device to treat PE?</p> <p>20 MR. HAMILTON: Objection, vague.</p> <p>21 A. I don't know the exact date.</p> <p>22 BY MR. STOWELL:</p>	<p style="text-align: right;">120</p> <p>1 Q. And did the AngioVac system work for</p> <p>2 that purpose?</p> <p>3 A. Yes, it did.</p> <p>4 Q. And have you reviewed any literature</p> <p>5 relating to the use of the AngioVac system to</p> <p>6 treat PEs and DVTs?</p> <p>7 A. Not specifically recently. I know I</p> <p>8 have in the past, but I can't recall exactly what</p> <p>9 papers they were.</p> <p>10 Q. And I know you haven't used it, but are</p> <p>11 you able to form an opinion on whether the</p> <p>12 AngioVac system is effective in removing PE?</p> <p>13 A. I think that with the AngioVac system,</p> <p>14 and I'm specifically talking about the 22 French --</p> <p>15 MR. HAMILTON: If I can just jump in.</p> <p>16 Objection. Vague. Incomplete hypothetical.</p> <p>17 A. Sure. Again, no -- I have no</p> <p>18 experience with the AlphaVac, which is indicated --</p> <p>19 you know, FDA, you know, indication for PE.</p> <p>20 The AngioVac, to my knowledge, still</p> <p>21 does not have an indication for PE. But if it can</p> <p>22 safely be placed in the pulmonary arteries, I think</p>

<p>121</p> <p>1 it is effective in treating pulmonary embolism.</p> <p>2 BY MR. STOWELL:</p> <p>3 Q. And for the 22 French AngioVac system,</p> <p>4 do you have an opinion on whether the device would</p> <p>5 be effective to treat DVT?</p> <p>6 MR. HAMILTON: Same objections.</p> <p>7 Incomplete hypothetical. Vague.</p> <p>8 A. I think it can be effective for DVT.</p> <p>9 MR. STOWELL: Okay, I think we're</p> <p>10 probably at a good breaking point for lunch, if</p> <p>11 that's okay with everybody.</p> <p>12 MR. HAMILTON: That's great.</p> <p>13 THE VIDEOGRAPHER: We are going off the</p> <p>14 record. The time is 11:59.</p> <p>15 (Recess taken.)</p> <p>16 THE VIDEOGRAPHER: We are back on the</p> <p>17 record. The time is 13:03.</p> <p>18 BY MR. STOWELL:</p> <p>19 Q. Okay, welcome back, Doctor Morris.</p> <p>20 A. Thank you.</p> <p>21 Q. You understand you're still under oath?</p> <p>22 A. Yes.</p>	<p>123</p> <p>1 Q. And do you know if the amount of blood</p> <p>2 that you pulled out of the patient during that</p> <p>3 procedure was similar to the average amount used</p> <p>4 in the typical AngioVac procedure?</p> <p>5 A. I don't know.</p> <p>6 Q. Today we've talked about suction</p> <p>7 thrombectomy, and I just want to do a terminology</p> <p>8 thing. Is suction thrombectomy the same thing as</p> <p>9 aspiration thrombectomy?</p> <p>10 A. Yes.</p> <p>11 Q. Okay. We've talked about your</p> <p>12 experience performing suction thrombectomy with</p> <p>13 different types of catheters. In your view, are</p> <p>14 there any significant differences between</p> <p>15 aspiration catheters and catheters used to be</p> <p>16 inserted into other parts of the vasculature?</p> <p>17 A. Well, generally, yes, there are some</p> <p>18 difference --</p> <p>19 MR. HAMILTON: Let me just --</p> <p>20 objection. Incomplete hypothetical. Vague.</p> <p>21 A. There are some differences. Notably,</p> <p>22 an aspiration catheter needs a lumen that's large</p>
<p>122</p> <p>1 Q. And did you talk to anybody about your</p> <p>2 testimony during the break?</p> <p>3 A. No.</p> <p>4 Q. Did you review any documents?</p> <p>5 A. No.</p> <p>6 Q. Before we took a break we had talked</p> <p>7 about your experiences returning blood after using</p> <p>8 the Inari FlowTrieve system, do you recall that?</p> <p>9 A. Yes.</p> <p>10 Q. Have you ever had to return blood using</p> <p>11 any other mechanical thrombectomy systems?</p> <p>12 A. Only the AngioVac.</p> <p>13 Q. And so your experience with the</p> <p>14 AngioVac a few months ago, during that procedure</p> <p>15 you needed to return some blood?</p> <p>16 A. Yes.</p> <p>17 Q. And when you used the AngioVac, how</p> <p>18 much blood did you withdraw from the patient?</p> <p>19 A. I don't know.</p> <p>20 Q. Do you know how much blood you</p> <p>21 returned?</p> <p>22 A. No.</p>	<p>124</p> <p>1 enough -- which includes the port of that catheter</p> <p>2 to be nonconstricted so that it can generate enough</p> <p>3 aspiration pressure to remove a substance such as a</p> <p>4 clot.</p> <p>5 Whereas other types of catheters, such</p> <p>6 as diagnostic angiographic catheters, are tapered</p> <p>7 at their distilled lumen so they have a tight fit</p> <p>8 or a hug, so to speak, the guidewire that they are</p> <p>9 often advanced over to get into a position. That's</p> <p>10 just one difference.</p> <p>11 BY MR. STOWELL:</p> <p>12 Q. So taking non-tapered catheters, we've</p> <p>13 talked about certain types of sheaths and</p> <p>14 catheters that are non-tapered that are inserted</p> <p>15 into the vasculature and are not specifically</p> <p>16 designed for aspiration, do you recall that?</p> <p>17 A. Yes.</p> <p>18 Q. Are there any significant differences</p> <p>19 between non-tapered catheters designed for the</p> <p>20 vasculature and aspiration catheters?</p> <p>21 MR. HAMILTON: Objection, vague.</p> <p>22 Incomplete hypothetical.</p>

<p>125</p> <p>1 A. I think that's out of my wheelhouse, as 2 far as catheter design. That would be more of a 3 question for a catheter engineer of some sort. So 4 I don't really know what all the subtle differences 5 are. 6 BY MR. STOWELL: 7 Q. From your perspective as a physician 8 using the catheters, are there any significant 9 differences that you can point to between an 10 aspiration catheter and a non-tapered catheter for 11 other parts of the vasculature? 12 MR. HAMILTON: Objection, vague. 13 Incomplete hypothetical. 14 A. There are some -- some obvious 15 differences. For instance, a certain type of 16 non-tapered catheter may be used as an infusion 17 port, and if a suction or aspiration pressure is 18 applied to that catheter, it may collapse. 19 So a catheter that's meant primarily to 20 be used as an aspiration catheter needs to be rigid 21 enough that it won't collapse under aspiration 22 pressures and vacuum generation, things of that</p>	<p>127</p> <p>1 Q. And is IMS Legal an expert search firm? 2 A. I think so. 3 Q. And have you worked with IMS Legal in 4 the past? 5 A. They have approached me in the past, 6 but I think this is the first time I actually went 7 as far as signing a contract with them. 8 Q. And so you signed a contract with IMS 9 Legal, is that correct? 10 A. I believe so, yes. 11 Q. And did you also sign some sort of 12 engagement agreement with Inari? 13 A. I don't think so. 14 Q. Did you sign some type of engagement 15 with the Perkins Coie law firm that Mr. Hampton is 16 a part of? 17 A. I do not believe so. 18 Q. And I take it you've generated invoices 19 for your work on this matter? 20 A. Yes. 21 Q. And who do you submit the invoice to? 22 A. I submitted the one and only invoice to</p>
<p>126</p> <p>1 nature. 2 BY MR. STOWELL: 3 Q. So rigidity is one issue. Any other 4 differences between an aspiration catheter and 5 catheters used for other purposes in the 6 vasculature? 7 A. Not that I can think of right off the 8 top of my head. 9 Q. And based on your experience, there are 10 non-tapered catheters that aren't specifically 11 designed for aspiration that are still rigid 12 enough to perform aspiration, right? 13 A. Yes. Catheters and/or sheaths. 14 Q. Who first contacted you to work on the 15 Inari IPRs? 16 MR. HAMILTON: Just objection. Again, 17 I'll instruct the witness not to answer to the 18 extent it reveals the content of communications, 19 but other than that, you can answer. 20 A. I can't remember the name of the 21 individual, but that person worked with IMS Legal. 22 BY MR. STOWELL:</p>	<p>128</p> <p>1 IMS Legal. 2 Q. And do you have any understanding of 3 who pays your invoice once it's been submitted to 4 IMS Legal? 5 A. I do not. 6 Q. What rate are you charging for your 7 work on the Inari IPRs? 8 A. \$700 per hour for discovery-related 9 matters, and then \$800 per hour for 10 testimony-related matters. 11 Q. And would discovery-related matters 12 include the drafting of your declarations? 13 A. Yes. 14 Q. And the testimony-related matters, I 15 take it, would include our deposition today? 16 A. Yes. 17 Q. And would it include the prep for the 18 deposition? 19 A. Yes. 20 Q. And how do those values compare to the 21 rate that you charge for work on other cases, like 22 the med mal cases and the product liability cases?</p>

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<p>129</p> <p>1 A. Exactly the same.</p> <p>2 Q. And are you receiving any other</p> <p>3 compensation for your work on the Inari IPRs?</p> <p>4 A. No.</p> <p>5 Q. Have you received any offers of stock</p> <p>6 or equity for your work on the IPRs?</p> <p>7 A. No.</p> <p>8 Q. Are there any incentive bonuses or</p> <p>9 performance incentives for your work on the Inari</p> <p>10 IPRs?</p> <p>11 A. I'm not aware of any.</p> <p>12 Q. For the invoice that you submitted,</p> <p>13 what was the amount of the one invoice you</p> <p>14 submitted so far?</p> <p>15 A. I can't remember the exact figure, but</p> <p>16 it was around \$24,000.</p> <p>17 Q. And do you have any prior relationship</p> <p>18 with the Perkins Coie law firm?</p> <p>19 A. No.</p> <p>20 Q. You've never worked on any cases with</p> <p>21 the Perkins Coie law firm in the past?</p> <p>22 A. I'm not aware of any.</p>	<p>131</p> <p>1 Q. Have any of the hospitals you've worked</p> <p>2 for received funding or grants from Stryker?</p> <p>3 A. Again, I don't know. I don't think so,</p> <p>4 but I don't know. I -- I would just say I don't</p> <p>5 know, because I don't know what's going on at</p> <p>6 University of Utah, somewhere, maybe -- so I don't</p> <p>7 know.</p> <p>8 Q. And do you have any prior relationship</p> <p>9 with Imperative Care?</p> <p>10 A. No. Now, if I can just add to some of</p> <p>11 those answers. I am not aware of any financial</p> <p>12 relationship with any of these companies you</p> <p>13 mentioned. Whether some of my financial mutual</p> <p>14 funds have invested, I don't know, but I'm not</p> <p>15 aware of any.</p> <p>16 Q. Okay. Have you received any funding or</p> <p>17 grants from any other companies in the mechanical</p> <p>18 thrombectomy space?</p> <p>19 A. No.</p> <p>20 Q. Do you have any financial interest in</p> <p>21 any companies in the mechanical thrombectomy</p> <p>22 space?</p>
<p>130</p> <p>1 Q. And do you have any prior relationship</p> <p>2 with Inari Medical?</p> <p>3 A. No.</p> <p>4 Q. Do you have any financial interest in</p> <p>5 Inari Medical?</p> <p>6 A. No.</p> <p>7 Q. Have you ever received any funding or</p> <p>8 grants from Inari Medical?</p> <p>9 A. No.</p> <p>10 Q. Has a hospital you've worked at ever</p> <p>11 received funding or grants from Inari Medical?</p> <p>12 A. I do not know. I'll just leave it at</p> <p>13 that, I do not know.</p> <p>14 Q. Do you have any prior relationship with</p> <p>15 Stryker?</p> <p>16 A. No.</p> <p>17 Q. Do you have any financial interest in</p> <p>18 Stryker?</p> <p>19 A. No.</p> <p>20 Q. Have you received any grants or funding</p> <p>21 from Stryker?</p> <p>22 A. No.</p>	<p>132</p> <p>1 A. No.</p> <p>2 Q. Earlier we had talked about the</p> <p>3 Penumbra Indigo system. Are you aware of</p> <p>4 physicians using the Indigo system to treat</p> <p>5 cerebral occlusions?</p> <p>6 A. No.</p> <p>7 Q. Do you have any reason to doubt</p> <p>8 Doctor Turk's testimony that he has used the</p> <p>9 Indigo system to treat cerebral blood clots?</p> <p>10 A. I have no reason to doubt that. And if</p> <p>11 I did read that, then I am aware that he has used</p> <p>12 that.</p> <p>13 Q. Would you agree that a DVT can migrate</p> <p>14 to the lungs and become a pulmonary embolism?</p> <p>15 A. Yes.</p> <p>16 Q. Would you agree that a DVT can migrate</p> <p>17 to the brain and become a cerebral blood clot?</p> <p>18 A. Rarely. Yes.</p> <p>19 Q. Would you agree that it's more</p> <p>20 challenging to access cerebral blood clots than it</p> <p>21 is to access a DVT or a PE?</p> <p>22 MR. HAMILTON: Objection, vague.</p>

<p>1 Incomplete hypothetical.</p> <p>2 A. Not necessarily.</p> <p>3 BY MR. STOWELL:</p> <p>4 Q. There are situations where it can be</p> <p>5 equally or more difficult to access a DVT than a</p> <p>6 cerebral blood clot?</p> <p>7 A. Yes.</p> <p>8 MR. HAMILTON: Objection. Same</p> <p>9 objections, vague.</p> <p>10 A. Yes.</p> <p>11 BY MR. STOWELL:</p> <p>12 Q. And same for a PE. There are</p> <p>13 situations where it can be as difficult or more</p> <p>14 difficult to reach a PE than it is to reach a</p> <p>15 cerebral blood clot?</p> <p>16 MR. HAMILTON: Objection, vague.</p> <p>17 Incomplete hypothetical.</p> <p>18 A. In some instances, yes.</p> <p>19 THE VIDEOGRAPHER: Counsel, before you</p> <p>20 ask your next question. Mr. Hamilton, could you</p> <p>21 move your mike to your jacket, rather than your</p> <p>22 shirt?</p>	<p>133</p> <p>1 less.</p> <p>2 BY MR. STOWELL:</p> <p>3 Q. And so what would the situations be</p> <p>4 where the cerebral vasculature would be less</p> <p>5 delicate than the vasculature in the lungs or the</p> <p>6 legs?</p> <p>7 A. A small pulmonary artery branch is very</p> <p>8 delicate and thin-walled, because it's subjected to</p> <p>9 lower pressures than the cerebral vasculature,</p> <p>10 which has a thicker, muscular wall.</p> <p>11 And so I believe in -- have witnessed</p> <p>12 that it's easier to rupture a small, delicate</p> <p>13 pulmonary artery branch than it is to rupture a</p> <p>14 central cerebral or large vessel artery.</p> <p>15 Q. And what about smaller cerebral</p> <p>16 arteries?</p> <p>17 MR. HAMILTON: Same objections. Vague,</p> <p>18 incomplete.</p> <p>19 A. That is a difficult question to answer</p> <p>20 because smaller is subjective. And there are</p> <p>21 certain smaller cerebral arteries that nothing</p> <p>22 should be in there anyways, so, including a</p>
<p>134</p> <p>1 MR. HAMILTON: You bet.</p> <p>2 THE VIDEOGRAPHER: Thank you.</p> <p>3 BY MR. STOWELL:</p> <p>4 Q. Would you agree that that pathway the</p> <p>5 catheter has to travel to access a cerebral blood</p> <p>6 clot is longer if you're using a femoral access</p> <p>7 site than it is for a PE or DVT?</p> <p>8 A. Slightly longer, yes.</p> <p>9 Q. Would you agree that there are</p> <p>10 additional potential complications in treating</p> <p>11 cerebral blood clots that are not present when</p> <p>12 you're treating a PE or DVT?</p> <p>13 MR. HAMILTON: Objection, vague.</p> <p>14 Incomplete.</p> <p>15 A. Yes.</p> <p>16 BY MR. STOWELL:</p> <p>17 Q. Would you agree that the cerebral</p> <p>18 vasculature can be more delicate than the</p> <p>19 vasculature in the lungs or in the legs?</p> <p>20 MR. HAMILTON: Same objections.</p> <p>21 A. It depends on many different factors,</p> <p>22 but it can be, and in others -- situations, it's</p>	<p>135</p> <p>1 guidewire, because they will perf; it will</p> <p>2 perforate. So it's hard to answer that question.</p> <p>3 BY MR. STOWELL:</p> <p>4 Q. Would you agree that the amount of time</p> <p>5 to treatment is often more critical for cerebral</p> <p>6 blood clots than it is for a pulmonary embolism?</p> <p>7 MR. HAMILTON: Objection, vague.</p> <p>8 Incomplete.</p> <p>9 A. No.</p> <p>10 BY MR. STOWELL:</p> <p>11 Q. And why do you say no?</p> <p>12 A. Because some pulmonary embolisms that</p> <p>13 we treat are in dying patients. They're</p> <p>14 hypotensive, and they will die within minutes to</p> <p>15 hours unless the pulmonary embolism is resolved.</p> <p>16 Whereas in stroke, we have essentially</p> <p>17 up to six hours -- two hours, ideally, but up to</p> <p>18 six hours to treat a stroke. So, again, it depends</p> <p>19 on the clinical situation, which can vary</p> <p>20 dramatically among all those disease processes.</p> <p>21 Q. Would you agree that pulmonary</p> <p>22 embolisms can vary in age?</p>

<p>137</p> <p>1 A. Yes.</p> <p>2 Q. Would you agree that pulmonary</p> <p>3 embolisms can vary in composition?</p> <p>4 MR. HAMILTON: That last question and</p> <p>5 this one, vague, incomplete.</p> <p>6 A. Yes, I can.</p> <p>7 BY MR. STOWELL:</p> <p>8 Q. Would you agree that pulmonary</p> <p>9 embolisms can vary on their location in the lungs?</p> <p>10 MR. HAMILTON: Same objections. Vague,</p> <p>11 incomplete.</p> <p>12 A. Yes.</p> <p>13 BY MR. STOWELL:</p> <p>14 Q. Would you agree that pulmonary</p> <p>15 embolisms can vary based on patient-specific</p> <p>16 conditions?</p> <p>17 MR. HAMILTON: Same objections. Vague,</p> <p>18 incomplete.</p> <p>19 A. In general, yes.</p> <p>20 BY MR. STOWELL:</p> <p>21 Q. Would you also agree that cerebral</p> <p>22 clots can vary in age?</p>	<p>139</p> <p>1 Q. And for DVTs, would you also agree that</p> <p>2 DVTs can vary in age?</p> <p>3 MR. HAMILTON: I'll just -- for this</p> <p>4 line of questioning, vague and incomplete.</p> <p>5 A. Yes.</p> <p>6 BY MR. STOWELL:</p> <p>7 Q. And would you agree that DVTs can vary</p> <p>8 in composition?</p> <p>9 MR. HAMILTON: Same objections.</p> <p>10 A. Yes.</p> <p>11 BY MR. STOWELL:</p> <p>12 Q. And would you agree that DVTs can vary</p> <p>13 in location?</p> <p>14 MR. HAMILTON: Same objections.</p> <p>15 A. Yes.</p> <p>16 BY MR. STOWELL:</p> <p>17 Q. Would you agree that DVTs can vary</p> <p>18 based on patient-specific factors?</p> <p>19 MR. HAMILTON: Same objections.</p> <p>20 A. Yes.</p> <p>21 BY MR. STOWELL:</p> <p>22 Q. In your practice, have you ever</p>
<p>138</p> <p>1 MR. HAMILTON: Same objections. Vague,</p> <p>2 incomplete.</p> <p>3 A. Yes.</p> <p>4 BY MR. STOWELL:</p> <p>5 Q. And would you agree that cerebral clots</p> <p>6 can vary in composition?</p> <p>7 MR. HAMILTON: Same objections. Vague,</p> <p>8 incomplete.</p> <p>9 A. Yes.</p> <p>10 BY MR. STOWELL:</p> <p>11 Q. And would you agree that cerebral clots</p> <p>12 can vary in their location in the brain?</p> <p>13 MR. HAMILTON: Same objections. Vague,</p> <p>14 incomplete.</p> <p>15 A. Yes.</p> <p>16 BY MR. STOWELL:</p> <p>17 Q. And would you agree that cerebral clots</p> <p>18 can vary based on patient-specific factors?</p> <p>19 MR. HAMILTON: Again, same objections.</p> <p>20 Vague, incomplete.</p> <p>21 A. Yes.</p> <p>22 BY MR. STOWELL:</p>	<p>140</p> <p>1 encountered fibrous cerebral clots?</p> <p>2 MR. HAMILTON: Objection, vague.</p> <p>3 A. Most of the clots -- I don't know if</p> <p>4 I've ever encountered one, because most of the time</p> <p>5 they're not examined pathologically. But I've more</p> <p>6 often encountered fibrous, what we call, chronic</p> <p>7 thromboembolus in pulmonary artery thrombectomy and</p> <p>8 DVT thrombectomy than in cerebral thrombectomy.</p> <p>9 BY MR. STOWELL:</p> <p>10 Q. But in your experience, have you</p> <p>11 encountered fibrous clots in the cerebral</p> <p>12 vasculature?</p> <p>13 MR. HAMILTON: Objection. Asked and</p> <p>14 answered.</p> <p>15 A. Yes.</p> <p>16 BY MR. STOWELL:</p> <p>17 Q. And have you ever encountered cerebral</p> <p>18 clots that were difficult to extract?</p> <p>19 A. Yes.</p> <p>20 Q. And what would make a cerebral clot</p> <p>21 difficult to extract?</p> <p>22 MR. HAMILTON: Objection, to this and</p>

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<p>141</p> <p>1 the previous question. Vague.</p> <p>2 A. Multiple factors might make it</p> <p>3 difficult. One might be the location. If it's</p> <p>4 more peripheral, it may be more difficult to engage</p> <p>5 the clot to remove it in a smaller, peripheral</p> <p>6 tortuous artery.</p> <p>7 If the clot is more fibrotic, calcified</p> <p>8 or heavily infused with platelets, they can be more</p> <p>9 difficult to manage. So there's lots of different</p> <p>10 reasons.</p> <p>11 BY MR. STOWELL:</p> <p>12 Q. And have you encountered in your</p> <p>13 practice cerebral clots that are more fibrotic and</p> <p>14 calcified, and I think you said infused with</p> <p>15 platelets?</p> <p>16 MR. HAMILTON: Objection, vague.</p> <p>17 A. And what I was thinking of before I</p> <p>18 said it is cholesterol plaque-type clots. Which I</p> <p>19 have encountered those, particularly with carotid</p> <p>20 stenting and those types of procedures.</p> <p>21 BY MR. STOWELL:</p> <p>22 Q. In your practice, have you ever had a</p>	<p>143</p> <p>1 injury.</p> <p>2 Q. And roughly what time period was this?</p> <p>3 A. A few years ago.</p> <p>4 Q. And do you remember the device that was</p> <p>5 used in that procedure?</p> <p>6 A. I do not recall.</p> <p>7 Q. Do you recall how much suction was used</p> <p>8 in that procedure?</p> <p>9 A. No.</p> <p>10 Q. Do you recall if the procedure was</p> <p>11 performed with a syringe or a pump?</p> <p>12 A. I do not, because I did not perform it.</p> <p>13 Q. Other than that experience, have you</p> <p>14 witnessed any other situations where a physician</p> <p>15 has used too much suction in a cerebral procedure</p> <p>16 such that it damaged a patient?</p> <p>17 A. Many times in medicine we don't have</p> <p>18 100 percent confidence of what transpired, but</p> <p>19 there have been multiple cases where that has been</p> <p>20 suspected as the leading cause of the vascular</p> <p>21 injury to the cerebral arteries.</p> <p>22 Q. And so is there a certain threshold of</p>
<p>142</p> <p>1 situation where you have applied too much vacuum</p> <p>2 pressure to the cerebral vasculature such that it</p> <p>3 harmed the patient?</p> <p>4 MR. HAMILTON: Objection, vague.</p> <p>5 Incomplete.</p> <p>6 A. Fortunately, I have not done that.</p> <p>7 BY MR. STOWELL:</p> <p>8 Q. Have you ever witnessed another</p> <p>9 physician apply too much vacuum pressure to the</p> <p>10 cerebral vasculature such that it harmed the</p> <p>11 patient?</p> <p>12 MR. HAMILTON: Same objections.</p> <p>13 A. Yes.</p> <p>14 BY MR. STOWELL:</p> <p>15 Q. And can you explain the circumstances</p> <p>16 that you witnessed?</p> <p>17 A. During a stroke thrombectomy, I</p> <p>18 witnessed an artery rupture. And in reviewing the</p> <p>19 imaging in our quality assurance conference, there</p> <p>20 was the consensus that it was not a guidewire</p> <p>21 perforation, yet but the only other option would</p> <p>22 have been a suction injury, or an aspiration</p>	<p>144</p> <p>1 pressure that is accepted within the industry to</p> <p>2 use within the cerebral vasculature?</p> <p>3 A. I have my own personal belief, but I</p> <p>4 don't know if there is a standard number. I would</p> <p>5 not use a 60 cc syringe with an on/off valve and</p> <p>6 aspirate to that degree in the cerebral arteries,</p> <p>7 but I don't know what a specific number would be.</p> <p>8 Q. And do you know if other doctors or</p> <p>9 physicians would feel comfortable using a 60 cc</p> <p>10 syringe in the cerebral vasculature?</p> <p>11 A. I don't know of any.</p> <p>12 Q. And do you know of any guidance in the</p> <p>13 industry that has specifically told physicians do</p> <p>14 not use a 60 cc syringe in cerebral vasculature</p> <p>15 applications?</p> <p>16 MR. HAMILTON: Objection. Vague,</p> <p>17 incomplete.</p> <p>18 A. Other than common sense, no, I do not.</p> <p>19 BY MR. STOWELL:</p> <p>20 Q. Have you witnessed, we'll call them</p> <p>21 suction injuries, in other parts of the</p> <p>22 vasculature outside of the cerebral context?</p>

<p>145</p> <p>1 MR. HAMILTON: Objection, vague.</p> <p>2 A. I have not.</p> <p>3 BY MR. STOWELL:</p> <p>4 Q. Earlier you talked about situations</p> <p>5 where certain pulmonary arteries may be more</p> <p>6 delicate than the cerebral vessels. Have you ever</p> <p>7 witnessed injury to pulmonary arteries due to</p> <p>8 suction?</p> <p>9 A. Not from suction, just guidewires.</p> <p>10 Q. And so do you feel comfortable using a</p> <p>11 60 cc syringe with an on/off control in the</p> <p>12 pulmonary arteries, even though some of them are</p> <p>13 more delicate than cerebral vasculature?</p> <p>14 MR. HAMILTON: Objection. Vague,</p> <p>15 incomplete.</p> <p>16 A. Not beyond the segmental arterial</p> <p>17 level.</p> <p>18 BY MR. STOWELL:</p> <p>19 Q. And so what's the segmental arterial</p> <p>20 level?</p> <p>21 A. There -- there's a right and a left</p> <p>22 pulmonary artery. The right -- well, I'll just</p>	<p>147</p> <p>1 Q. What is Exhibit 1006?</p> <p>2 A. This is more commonly called the</p> <p>3 Garrison patent publication.</p> <p>4 Q. And so earlier today when I asked you</p> <p>5 if you'd reviewed the Garrison patent publication,</p> <p>6 did you understand I was referring to</p> <p>7 Exhibit 1006?</p> <p>8 A. Yes.</p> <p>9 MR. STOWELL: And for the record, the</p> <p>10 Garrison patent has a publications number</p> <p>11 US 2015-0173-782 A1.</p> <p>12 BY MR. STOWELL:</p> <p>13 Q. Okay, and this is a patent that you</p> <p>14 reviewed in depth before you signed your</p> <p>15 declarations in these IPRs, correct?</p> <p>16 A. Correct.</p> <p>17 Q. And if we can turn to figure 34, which</p> <p>18 appears on page 23. Let me know when you're</p> <p>19 there.</p> <p>20 A. Okay.</p> <p>21 Q. And is figure 34 one of the portions of</p> <p>22 the patent that you reviewed before you signed</p>
<p>146</p> <p>1 talk about the right -- bifurcates into an upper</p> <p>2 lobe pulmonary artery and then interlobar pulmonary</p> <p>3 artery. That interlobar then branches into a</p> <p>4 middle lobe pulmonary artery and lower lobe</p> <p>5 pulmonary artery.</p> <p>6 And off the lobar arteries are</p> <p>7 segmental branch arteries. So we're getting out to</p> <p>8 about, what is that, the fifth order? And they</p> <p>9 basically subtend each section of the lung.</p> <p>10 So, for instance, the right lower lobe</p> <p>11 has five segments: superior, anterior, posterior,</p> <p>12 medial, lateral, and each one of those segments has</p> <p>13 an artery that supplies them. So I would not put a</p> <p>14 60 cc syringe under maximum suction beyond one of</p> <p>15 those segmental arteries.</p> <p>16 Q. I am going to hand you what has been</p> <p>17 previously marked as Imperative Care Exhibit 1006</p> <p>18 in the IPR relating to the '333 patent, which is</p> <p>19 IPR 2025-01021.</p> <p>20 Okay, Doctor Morris, do you recognize</p> <p>21 Exhibit 1006?</p> <p>22 A. Yes.</p>	<p>148</p> <p>1 your declaration?</p> <p>2 A. Yes.</p> <p>3 Q. And did you understand what was being</p> <p>4 described in figure 34?</p> <p>5 A. Yes.</p> <p>6 Q. And on the left-hand side we see some</p> <p>7 different identifiers for the vasculature; MCA,</p> <p>8 ICA, do you see where I'm referring?</p> <p>9 A. Yes.</p> <p>10 Q. And are you familiar with what the MCA</p> <p>11 is?</p> <p>12 A. Yes.</p> <p>13 Q. And what is that?</p> <p>14 A. That stands for middle cerebral artery.</p> <p>15 Q. And so in this particular image on</p> <p>16 figure 34, the catheter 2030 has been advanced</p> <p>17 into the MCA, is that correct?</p> <p>18 A. That is correct.</p> <p>19 Q. And is it your understanding that in</p> <p>20 use of the device that's pictured in figure 34,</p> <p>21 that that catheter 2030 would be advanced so that</p> <p>22 it was near the clot that was to be removed?</p>

<p>149</p> <p>1 A. Yes.</p> <p>2 Q. And do you have an understanding of</p> <p>3 what item 3325 is in figure 34?</p> <p>4 A. It is -- I'd have to see the caption.</p> <p>5 I believe it's a flow switch, but I need to refer</p> <p>6 to the caption that explains the figure.</p> <p>7 Q. And just to help, I'll direct you to</p> <p>8 paragraph 132. Obviously you can read more, but.</p> <p>9 A. Yeah.</p> <p>10 Yes, that's a flow switch.</p> <p>11 Q. And the patent actually calls it a</p> <p>12 valve 3325, correct?</p> <p>13 A. That is correct.</p> <p>14 Q. And it explains that the valve could</p> <p>15 be, for example, a three-way or a four-way</p> <p>16 stopcock, right?</p> <p>17 A. Yes.</p> <p>18 Q. And you're, of course, familiar with</p> <p>19 stopcocks from your work in the industry, I would</p> <p>20 take it, right?</p> <p>21 A. Yes.</p> <p>22 Q. And this patent was published in 2015.</p>	<p>151</p> <p>1 aspiration sources?</p> <p>2 A. Yeah.</p> <p>3 MR. HAMILTON: Objection, vague.</p> <p>4 Mischaracterizes the document.</p> <p>5 BY MR. STOWELL:</p> <p>6 Q. And so if item 3325, the valve, is</p> <p>7 closed in a way such that the aspiration source is</p> <p>8 not connected to the catheters -- do you follow</p> <p>9 me?</p> <p>10 A. Yes.</p> <p>11 Q. And let's say our aspiration source is</p> <p>12 a syringe, and the valve is closed and we pull</p> <p>13 back on the syringe. What happens within the</p> <p>14 system?</p> <p>15 MR. HAMILTON: Objection. Vague,</p> <p>16 mischaracterizes the document. Incomplete</p> <p>17 hypothetical.</p> <p>18 A. Your question was what happens?</p> <p>19 BY MR. STOWELL:</p> <p>20 Q. Right. What happens?</p> <p>21 A. A minimal amount of aspiration pressure</p> <p>22 is generated due to -- due to the limitations of</p>
<p>150</p> <p>1 By 2015 you would have been familiar with the</p> <p>2 operation of a stopcock?</p> <p>3 A. Yes.</p> <p>4 Q. And the patent explains that that</p> <p>5 stopcock can be turned such that the pressure</p> <p>6 source is not connected to either catheter,</p> <p>7 correct?</p> <p>8 A. Yes.</p> <p>9 Q. And the aspiration source in this</p> <p>10 example in figure 34 is denoted by item 3430,</p> <p>11 right?</p> <p>12 A. Yes.</p> <p>13 Q. And what different types of aspiration</p> <p>14 sources can be used with this figure, based on</p> <p>15 your review of the patent?</p> <p>16 A. I'd have to read further to, you know,</p> <p>17 find the description, but. I know one of them is a</p> <p>18 pump. Aspiration pump, a regular or locking</p> <p>19 syringe, a handheld aspirator, hospital suction or</p> <p>20 the like.</p> <p>21 Q. Okay. So it's your understanding that</p> <p>22 item 3430 could be any one of those types of</p>	<p>152</p> <p>1 the catheter system based on Poiseuille's law,</p> <p>2 because in order to get a catheter in that position</p> <p>3 it needs to be a small caliber catheter. But it</p> <p>4 will generate some pressure, but albeit minimal</p> <p>5 pressure.</p> <p>6 Q. And when you say generate some</p> <p>7 pressure, you mean it will create negative</p> <p>8 pressure within the portion of the system that is</p> <p>9 to the right of valve 3325 in figure 34?</p> <p>10 A. Correct.</p> <p>11 MR. HAMILTON: Objection. Vague.</p> <p>12 Mischaracterizes the document.</p> <p>13 BY MR. STOWELL:</p> <p>14 Q. And so when that negative pressure is</p> <p>15 created, would you agree with me that the pressure</p> <p>16 differential between the end of catheter 2030 in</p> <p>17 the blood vessel and the end of the tube being</p> <p>18 nearest the pressure source changes?</p> <p>19 MR. HAMILTON: Objection, vague.</p> <p>20 Incomplete. Document speaks for itself.</p> <p>21 A. I agree it changes to a small amount.</p> <p>22 BY MR. STOWELL:</p>

<p>153</p> <p>1 Q. And would you agree that the pressure</p> <p>2 differential between the first end of the catheter</p> <p>3 and the end of the tubing nearest the pressure</p> <p>4 source, that that difference increases?</p> <p>5 MR. HAMILTON: Objection. Incomplete,</p> <p>6 vague.</p> <p>7 A. I guess I don't understand the</p> <p>8 question. Could you repeat it, please?</p> <p>9 BY MR. STOWELL:</p> <p>10 Q. Sure. So there's a pressure at the end</p> <p>11 of catheter 2030 in the blood vessel, right?</p> <p>12 A. Yes.</p> <p>13 Q. And there's a pressure in the tubing to</p> <p>14 the right of item 3325, correct?</p> <p>15 A. Yes.</p> <p>16 Q. And if we close the valve and we pull</p> <p>17 back our syringe, the plunger on our syringe, we</p> <p>18 create a negative pressure to the right of the</p> <p>19 valve 3325, correct?</p> <p>20 MR. HAMILTON: Objection. Vague.</p> <p>21 Mischaracterizes the document. Are you still</p> <p>22 asking about figure 34?</p>	<p>155</p> <p>1 Mischaracterizes the document.</p> <p>2 A. Depending on where that negative</p> <p>3 pressure was generated and attached, it could be to</p> <p>4 the right of any of those structures.</p> <p>5 BY MR. STOWELL:</p> <p>6 Q. Well, let's take figure 34. Let's</p> <p>7 pretend now our pressure source is where the box</p> <p>8 with 3430 is, do you see that?</p> <p>9 A. Okay.</p> <p>10 Q. Okay. And so if we -- if that's our</p> <p>11 syringe, and we pull back the plunger on our</p> <p>12 syringe, would you agree that the negative</p> <p>13 pressure is going to be created in item 3418 and</p> <p>14 the tubing leading to box 3430?</p> <p>15 MR. HAMILTON: Objection. Vague.</p> <p>16 Mischaracterizes the figure, 34.</p> <p>17 A. Maybe, depending on what is going along</p> <p>18 with the pump structure between 3325 and 3430.</p> <p>19 BY MR. STOWELL:</p> <p>20 Q. Well, as we talked earlier, the</p> <p>21 pressure source in figure 34 could be a syringe,</p> <p>22 right?</p>
<p>154</p> <p>1 MR. STOWELL: Yeah, all these questions</p> <p>2 have been about figure 34, that's pretty clear.</p> <p>3 A. Yes, I agree with that.</p> <p>4 BY MR. STOWELL:</p> <p>5 Q. And so the pressure differential</p> <p>6 between the end of the catheter 2030 that's in the</p> <p>7 vessel, and the end of the tubing that's nearest</p> <p>8 item 3435, has grown larger. The difference</p> <p>9 between those has gotten bigger, right, because</p> <p>10 we've created a negative pressure on one side, do</p> <p>11 you agree?</p> <p>12 A. Yeah.</p> <p>13 MR. HAMILTON: Same. Same objections.</p> <p>14 Vague. Incomplete. Mischaracterizes the</p> <p>15 document.</p> <p>16 BY MR. STOWELL:</p> <p>17 Q. And the negative pressure that we have</p> <p>18 created through this process of closing the valve</p> <p>19 and pulling back the syringe is created within the</p> <p>20 filter chamber and the tubing to the right of item</p> <p>21 3325, correct?</p> <p>22 MR. HAMILTON: Objection, vague.</p>	<p>156</p> <p>1 A. Yes.</p> <p>2 Q. So let's pretend we have a syringe,</p> <p>3 that's our item 3430. If we were to pull our</p> <p>4 plunger back in our syringe, would you agree with</p> <p>5 me that the negative pressure would be created in</p> <p>6 the tubing to the right of item 3325 and in our</p> <p>7 filter chamber, 3418?</p> <p>8 MR. HAMILTON: Let me get my objection.</p> <p>9 Objection. Mischaracterizes the figure in the</p> <p>10 document. Vague. The document speaks for itself.</p> <p>11 A. Yes, because all that I see is 3430.</p> <p>12 BY MR. STOWELL:</p> <p>13 Q. Now, after we activate our pressure</p> <p>14 source, we pull back the plunger to create the</p> <p>15 negative pressure, what then happens if we open</p> <p>16 valve 3325 such that the pressure source is</p> <p>17 connected to catheter 230 now?</p> <p>18 MR. HAMILTON: Objection.</p> <p>19 Mischaracterizes the figure in the document.</p> <p>20 Vague.</p> <p>21 A. There will be a minimal amount of</p> <p>22 aspiration pressure generated.</p>

<p>157</p> <p>1 BY MR. STOWELL:</p> <p>2 Q. And that aspiration pressure will be --</p> <p>3 will move through the catheter 2030 to the end of</p> <p>4 the catheter 2030 and will provide suction at the</p> <p>5 end of the catheter, correct?</p> <p>6 MR. HAMILTON: Same objections. Vague,</p> <p>7 mischaracterizes the document. Incomplete.</p> <p>8 A. A minimal amount of suction, correct.</p> <p>9 BY MR. STOWELL:</p> <p>10 Q. And the minimal amount of suction would</p> <p>11 be applied to the end of the catheter 2030,</p> <p>12 correct?</p> <p>13 A. Yes.</p> <p>14 Q. Now, we just talked about figure 34</p> <p>15 using a syringe as part of our example, correct?</p> <p>16 Now, if we had a pump, 3430, or as item</p> <p>17 3430, would the creation of negative pressure</p> <p>18 change based on what we just discussed?</p> <p>19 MR. HAMILTON: Objection.</p> <p>20 Mischaracterizes the testimony, the document, and</p> <p>21 vague.</p> <p>22 A. Yes.</p>	<p>159</p> <p>1 A. Yes.</p> <p>2 Q. So let's look at your declaration for</p> <p>3 the '333 patent. It is Inari Exhibit 2016 for IPR</p> <p>4 2025-01021. Do you have that document in front of</p> <p>5 you?</p> <p>6 A. Yes.</p> <p>7 Q. And you had mentioned Poiseuille's law,</p> <p>8 I hope I'm not butchering that pronunciation.</p> <p>9 Right?</p> <p>10 A. Correct.</p> <p>11 MR. STOWELL: And for the court</p> <p>12 reporter, Poiseuille is spelled</p> <p>13 P-O-I-S-E-U-I-L-L-E.</p> <p>14 BY MR. STOWELL:</p> <p>15 Q. So at paragraph 53 of your '333</p> <p>16 declaration you discuss Poiseuille's law, correct?</p> <p>17 A. Yes.</p> <p>18 Q. And this is actually something that --</p> <p>19 this is a law that was identified in the Garrison</p> <p>20 reference, correct?</p> <p>21 A. Correct.</p> <p>22 Q. And I understand from your notes here</p>
<p>158</p> <p>1 BY MR. STOWELL:</p> <p>2 Q. And how would it change if we had a</p> <p>3 pump instead of the syringe?</p> <p>4 A. Well, assuming that the negative</p> <p>5 pressure is either stored or continuously</p> <p>6 generated, it would be lower to the right of 3325,</p> <p>7 and at the end of the catheter.</p> <p>8 Q. So maybe we'll walk through the</p> <p>9 process. So if I close valve 3325 so the pressure</p> <p>10 source is not connected to either catheter, and I</p> <p>11 turn on my pump, what then happens to the pressure</p> <p>12 to the right of the valve 3325?</p> <p>13 MR. HAMILTON: Objection, vague.</p> <p>14 Incomplete.</p> <p>15 A. It becomes lower.</p> <p>16 BY MR. STOWELL:</p> <p>17 Q. So we would generate some negative</p> <p>18 pressure to the right of valve 3325, correct?</p> <p>19 A. Yes.</p> <p>20 Q. And then if we were to open valve 3325,</p> <p>21 that negative pressure would be applied to the end</p> <p>22 of catheter 2030, correct?</p>	<p>160</p> <p>1 that your understanding of Poiseuille's law is</p> <p>2 that it is a calculation that determines the flow</p> <p>3 rate of fluid through a tube, correct?</p> <p>4 A. Laminar flow, yes.</p> <p>5 Q. So in the equation that's in paragraph</p> <p>6 53, the item Q represents flow rate, correct?</p> <p>7 A. Yes.</p> <p>8 Q. And in this particular equation there</p> <p>9 is a P, and you denote that that means pressure,</p> <p>10 correct?</p> <p>11 A. Correct.</p> <p>12 Q. And what the equation actually has is</p> <p>13 it has a delta P. So what does the delta P</p> <p>14 indicate?</p> <p>15 A. The change in pressure.</p> <p>16 Q. And it's actually -- it's the</p> <p>17 difference in pressure, right, between the two</p> <p>18 ends of the tube, correct?</p> <p>19 A. Yes.</p> <p>20 Q. And so if the difference in pressure</p> <p>21 between the two ends of a tube increases, the flow</p> <p>22 rate will also increase, according to Poiseuille's</p>

<p>161</p> <p>1 law, correct?</p> <p>2 A. Yes.</p> <p>3 Q. And Poiseuille's law applies to -- or</p> <p>4 would apply to all catheters, correct?</p> <p>5 A. To some extent, yes. It's really</p> <p>6 defined by rigid tubes, but catheters have</p> <p>7 variability in their rigidity and flexibility, so.</p> <p>8 But in general terms, it does apply, yes.</p> <p>9 Q. And it's not limited to small</p> <p>10 catheters, for example?</p> <p>11 A. No, it's not.</p> <p>12 Q. It would apply to large tubes and small</p> <p>13 tubes, correct?</p> <p>14 A. Yes.</p> <p>15 Q. And large catheters and small</p> <p>16 catheters, correct?</p> <p>17 A. Correct.</p> <p>18 Q. And is it your position that</p> <p>19 Poiseuille's law would apply to the catheters that</p> <p>20 are described in the Garrison reference?</p> <p>21 A. Yes.</p> <p>22 Q. And we just looked at figure 34 of</p>	<p>163</p> <p>1 valve on it that can connect and disconnect the</p> <p>2 pressure source to the catheter, correct?</p> <p>3 A. Correct.</p> <p>4 Q. What type of valve is it?</p> <p>5 A. I call it an on/off valve that's very</p> <p>6 unique, in the sense that it's not constrictive in</p> <p>7 any sense.</p> <p>8 Q. Is it a stopcock?</p> <p>9 A. Not a typical stopcock. Typical</p> <p>10 stopcocks are Luer Lock stopcocks, and they are</p> <p>11 constrictive.</p> <p>12 Q. And when you say constrictive, what do</p> <p>13 you mean?</p> <p>14 A. Meaning there's a male portion that</p> <p>15 fits into the female receptacle, and that male</p> <p>16 portion narrows down the lumen of the Luer Lock</p> <p>17 stopcock and restricts flow.</p> <p>18 Q. And so other than the size of the ports</p> <p>19 on the on/off valve, are there any other</p> <p>20 differences between the on/off valve on the</p> <p>21 FlowTrier and a typical stopcock?</p> <p>22 MR. HAMILTON: Objection, vague.</p>
<p>162</p> <p>1 Garrison. Do you believe that Poiseuille's law</p> <p>2 would apply to figure 34, or item 230, catheter</p> <p>3 230 in that figure?</p> <p>4 A. Yes.</p> <p>5 Q. Okay, why don't we move forward in your</p> <p>6 declaration. You have a section titled</p> <p>7 "Unexpected Results" on page 29. Let me know when</p> <p>8 you're there.</p> <p>9 A. I am there.</p> <p>10 Q. Okay. And here you're talking about</p> <p>11 experiences you have had with the Inari</p> <p>12 FlowTrier system, correct?</p> <p>13 A. Yes.</p> <p>14 Q. And we talked about this earlier, but</p> <p>15 the pressure source on the Inari FlowTrier</p> <p>16 system is a 60 cc syringe, correct?</p> <p>17 A. Yes.</p> <p>18 Q. And you would agree with me that</p> <p>19 syringes had been used as a pressure source for</p> <p>20 aspiration thrombectomy before 2018, correct?</p> <p>21 A. Yes.</p> <p>22 Q. And the Inari FlowTrier, it has a</p>	<p>164</p> <p>1 A. I'm not aware of any.</p> <p>2 BY MR. STOWELL:</p> <p>3 Q. Now, in claim -- or in paragraph 78 of</p> <p>4 Exhibit 2016, you reference claims 1 and 20 of the</p> <p>5 '333 patent. Do you see that? Right at the</p> <p>6 bottom of the paragraph?</p> <p>7 A. Yes.</p> <p>8 Q. Okay. And so have you formed opinions</p> <p>9 regarding whether the FlowTrier practices claim</p> <p>10 1 of the '333 patent?</p> <p>11 A. Yes, I do.</p> <p>12 Q. Okay, and do you believe it practices</p> <p>13 claim 1?</p> <p>14 A. Yes.</p> <p>15 Q. And how did you come to the opinion</p> <p>16 that the FlowTrier practices claim 1 of the '333</p> <p>17 patent?</p> <p>18 A. In order to be very specific, I'll need</p> <p>19 to see the patent publication.</p> <p>20 Q. Okay. You need to see the '333 patent?</p> <p>21 A. Yes.</p> <p>22 Q. Okay, so I'll provide to you what has</p>

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<p>165</p> <p>1 previously been marked as Exhibit 1001 in the IPR</p> <p>2 relating to the '333 patent, which is IPR</p> <p>3 2025-01021.</p> <p>4 A. Thank you.</p> <p>5 MR. HAMILTON: Thank you.</p> <p>6 BY MR. STOWELL:</p> <p>7 Q. So my question was, did you come to an</p> <p>8 opinion that the FlowTrier practices claim 1 of</p> <p>9 the '333 patent?</p> <p>10 A. Yes.</p> <p>11 Q. And you believe the FlowTrier</p> <p>12 practices claim 1 of the '333 patent?</p> <p>13 A. Yes.</p> <p>14 Q. And that's a determination you made</p> <p>15 based on your own analysis?</p> <p>16 A. Yes.</p> <p>17 Q. And have you reached an opinion as to</p> <p>18 whether the FlowTrier practices claim 20 of the</p> <p>19 '333 patent?</p> <p>20 A. Yes.</p> <p>21 Q. And do you believe that the FlowTrier</p> <p>22 practices claim 20 of the '333 patent?</p>	<p>167</p> <p>1 functions as written in the document, yes.</p> <p>2 BY MR. STOWELL:</p> <p>3 Q. Okay, but do you believe that the</p> <p>4 FlowTrier device practices every claim in the</p> <p>5 '333 patent?</p> <p>6 MR. HAMILTON: Objection, vague.</p> <p>7 Beyond the scope of his declaration.</p> <p>8 A. I'd like to change my last answer and</p> <p>9 say that I have no opinion of that. I only stand</p> <p>10 by what I wrote in my declaration.</p> <p>11 BY MR. STOWELL:</p> <p>12 Q. Are you changing your answer based on</p> <p>13 the objections made by your counsel?</p> <p>14 A. No, I'm remembering what I wrote in my</p> <p>15 declaration versus what's in the published patent.</p> <p>16 Q. Okay. So I -- to be clear, you have no</p> <p>17 opinion as to whether the FlowTrier practices</p> <p>18 any of the dependent claims of the '333 patent, is</p> <p>19 that correct?</p> <p>20 A. That is correct.</p> <p>21 Q. Now, in paragraph 80 you refer to a</p> <p>22 declaration of Brian Brown provided in conjunction</p>
<p>166</p> <p>1 A. Yes.</p> <p>2 Q. And is that an opinion you formed based</p> <p>3 on your own analysis of the patent and the device?</p> <p>4 A. Yes.</p> <p>5 Q. Have you formed any opinions on whether</p> <p>6 the FlowTrier device practices any of the other</p> <p>7 claims of the '333 patent?</p> <p>8 A. You mean the dependent claims?</p> <p>9 Q. Correct.</p> <p>10 A. Yes.</p> <p>11 Q. And which dependent claims did you</p> <p>12 review and determine that the FlowTrier</p> <p>13 practices those claims?</p> <p>14 A. All of them.</p> <p>15 Q. Okay, so you believe that the</p> <p>16 FlowTrier device practices every claim in the</p> <p>17 '333 patent, is that correct?</p> <p>18 MR. HAMILTON: Objection.</p> <p>19 Mischaracterizes his declaration. Beyond the</p> <p>20 scope of his declaration. Vague.</p> <p>21 A. From what I am reading, although I did</p> <p>22 not discuss it in my declaration, I believe it</p>	<p>168</p> <p>1 with the related litigation. Do you see where I'm</p> <p>2 reading?</p> <p>3 A. Yes.</p> <p>4 Q. Okay. So did you review a declaration</p> <p>5 of Brian Brown from the related litigation?</p> <p>6 A. I did, but it was a while ago.</p> <p>7 Q. Okay. Is it something that you</p> <p>8 rereviewed in preparation for your deposition</p> <p>9 today?</p> <p>10 A. No, I did not.</p> <p>11 Q. And that declaration of Brian Brown</p> <p>12 that you're referring to in paragraph 80, it</p> <p>13 concludes that the FlowTrier system falls within</p> <p>14 the scope of and practices claim 1 of the '910</p> <p>15 patent, is that correct?</p> <p>16 A. Yes.</p> <p>17 Q. Now, did you do any independent</p> <p>18 analysis to determine whether the FlowTrier fell</p> <p>19 within the scope of claim 1 of the '910 patent?</p> <p>20 A. Only from my own experience with it.</p> <p>21 Q. And what -- do you have an opinion as</p> <p>22 to whether the FlowTrier practices claim 1 of</p>

<p>169</p> <p>1 the '910 patent?</p> <p>2 A. Well, now I need to see the '910</p> <p>3 published document.</p> <p>4 Q. So I'll hand you what's been marked as</p> <p>5 Imperative Care Exhibit 1001 from the IPR relating</p> <p>6 to the '910 patent. That is IPR 2025-01025.</p> <p>7 A. Thank you.</p> <p>8 Q. Okay. So my question was, do you have</p> <p>9 an opinion as to whether the FlowTrieve practices</p> <p>10 claim 1 of the '910 patent?</p> <p>11 A. I do.</p> <p>12 Q. And did you reach that opinion based on</p> <p>13 your own independent analysis?</p> <p>14 A. Yes.</p> <p>15 Q. And so in figure 80 when you refer to</p> <p>16 Brian Brown's declaration, in addition to</p> <p>17 reviewing that declaration, you did your own</p> <p>18 analysis, and you concluded that the FlowTrieve</p> <p>19 practices claim 1 of the '910 patent, is that</p> <p>20 correct?</p> <p>21 A. That is correct.</p> <p>22 Q. And do you have an opinion as to</p>	<p>171</p> <p>1 A. Yes.</p> <p>2 Q. And so what are you using in your</p> <p>3 analysis as the closest prior art?</p> <p>4 A. I'm using Garrison, Laub and Aklog.</p> <p>5 Q. And when you say Garrison, Laub and</p> <p>6 Aklog, are you using those references on their</p> <p>7 own, each as a prior art that you're comparing to</p> <p>8 the FlowTrieve device?</p> <p>9 MR. HAMILTON: Objection, vague.</p> <p>10 A. On their own and combined.</p> <p>11 BY MR. STOWELL:</p> <p>12 Q. And you cited here in 80, we just</p> <p>13 talked about it, the Brian Brown declaration from</p> <p>14 the litigation.</p> <p>15 Were you aware that the District Court</p> <p>16 had rejected a lot of Mr. Brown's opinions during</p> <p>17 the preliminary injunction proceedings?</p> <p>18 MR. HAMILTON: Objection, vague.</p> <p>19 Mischaracterizes the litigation.</p> <p>20 A. I'm not aware of that.</p> <p>21 BY MR. STOWELL:</p> <p>22 Q. You haven't reviewed any of the</p>
<p>170</p> <p>1 whether the FlowTrieve practices any other claims</p> <p>2 of the '910 patent?</p> <p>3 A. Yes.</p> <p>4 Q. Okay, what additional claims do you</p> <p>5 have the opinion that the FlowTrieve practices in</p> <p>6 the '910 patent?</p> <p>7 A. No. 11.</p> <p>8 Q. And did you come to that opinion based</p> <p>9 on your own analysis of the FlowTrieve device and</p> <p>10 claim 11?</p> <p>11 A. Yes.</p> <p>12 Q. Do you have an opinion as to whether</p> <p>13 the FlowTrieve device practices any other claims</p> <p>14 in the '910 patent?</p> <p>15 MR. HAMILTON: Objection. Beyond the</p> <p>16 scope of his declaration.</p> <p>17 A. I have no opinion on that.</p> <p>18 BY MR. STOWELL:</p> <p>19 Q. In paragraph 79 of your expert</p> <p>20 declaration, Inari Exhibit 2016 in IPR 2025-01021,</p> <p>21 you refer in paragraph 79 to the closest prior</p> <p>22 art. Do you see where I'm at?</p>	<p>172</p> <p>1 litigation documents, correct?</p> <p>2 A. No.</p> <p>3 Q. So in paragraph 81 you note that the</p> <p>4 AngioVac system is similar to the Aklog reference.</p> <p>5 Do you see where I'm at?</p> <p>6 A. Yes.</p> <p>7 Q. And so what did you find similar about</p> <p>8 the AngioVac system and the Aklog reference?</p> <p>9 MR. HAMILTON: Objection, vague.</p> <p>10 Incomplete.</p> <p>11 A. I'd have to go back to the Aklog</p> <p>12 publication document, but in general terms, the 16</p> <p>13 French or greater size, and the suction or</p> <p>14 aspiration technique are the main -- main features</p> <p>15 that I can remember. But anything more</p> <p>16 specifically, I'd need to see the Aklog publication</p> <p>17 document.</p> <p>18 BY MR. STOWELL:</p> <p>19 Q. When you say aspiration technique, what</p> <p>20 are you referring to?</p> <p>21 A. Suction.</p> <p>22 Q. And are you talking about the method of</p>

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<p>173</p> <p>1 creating the suction, or are you talking about</p> <p>2 something different?</p> <p>3 MR. HAMILTON: Objection, vague.</p> <p>4 A. Just the creation of a negative</p> <p>5 pressure.</p> <p>6 BY MR. STOWELL:</p> <p>7 Q. I guess my confusion is all aspiration</p> <p>8 thrombectomy systems create a negative pressure</p> <p>9 with suction. So what is it about the Aklog</p> <p>10 aspiration technique, as you put it, that you</p> <p>11 thought was similar to the AngioVac system?</p> <p>12 A. Well, they both have large catheters,</p> <p>13 or as a magnitude, larger than Garrison, which I</p> <p>14 think was limited by 8 French. And so the larger</p> <p>15 catheter can generate more aspiration pressure, so</p> <p>16 that is a similarity.</p> <p>17 Q. And you don't -- you don't take the</p> <p>18 view that the AngioVac system is similar to the</p> <p>19 Garrison reference?</p> <p>20 MR. HAMILTON: Objection, vague.</p> <p>21 A. That is correct.</p> <p>22 BY MR. STOWELL:</p>	<p>175</p> <p>1 used that.</p> <p>2 BY MR. STOWELL:</p> <p>3 Q. And does the CAT16 Flash, does it have</p> <p>4 a stopcock positioned within the system like the</p> <p>5 stopcock we looked at in figure 34 of Garrison?</p> <p>6 MR. HAMILTON: Objection, vague.</p> <p>7 A. It does have flow switches of some</p> <p>8 sort. I don't know if they're considered</p> <p>9 stopcocks, but they're generally not used with the</p> <p>10 generally accepted protocol. With the Penumbra</p> <p>11 CAT16 Flash system, it's a continuous suction</p> <p>12 algorithm.</p> <p>13 BY MR. STOWELL:</p> <p>14 Q. So then have you used a system like the</p> <p>15 Garrison system, with a stopcock like we saw in</p> <p>16 figure 34 of Garrison, with catheters that were 16</p> <p>17 French or larger?</p> <p>18 MR. HAMILTON: Objection, vague.</p> <p>19 Incomplete.</p> <p>20 A. No, but I've used the FlowTrievery</p> <p>21 system, which is a different system, but it also</p> <p>22 has an on/off valve, but a different</p>
<p>174</p> <p>1 Q. And you don't offer the opinion that</p> <p>2 the AngioVac system is similar to the Laub system,</p> <p>3 correct?</p> <p>4 A. That is correct.</p> <p>5 Q. And so when you're doing your</p> <p>6 comparison in the unexpected results section of</p> <p>7 your expert declaration, are you comparing the</p> <p>8 Inari FlowTrievery to your experiences with the</p> <p>9 AngioVac system?</p> <p>10 MR. HAMILTON: Objection.</p> <p>11 Mischaracterizes the document.</p> <p>12 A. Not really.</p> <p>13 BY MR. STOWELL:</p> <p>14 Q. So at the time you prepared your expert</p> <p>15 declaration, had you ever used a system like the</p> <p>16 Garrison system, but with larger catheters, let's</p> <p>17 say 16 French to 24 French. Have you had any</p> <p>18 experience with that?</p> <p>19 MR. HAMILTON: Objection, vague.</p> <p>20 Incomplete.</p> <p>21 A. Well, I think that the Penumbra CAT16</p> <p>22 Flash is similar in that respect. And, yes, I have</p>	<p>176</p> <p>1 suction-generating system, and a catheter that</p> <p>2 allows much greater flow rates and much greater</p> <p>3 pressure generation for aspiration.</p> <p>4 BY MR. STOWELL:</p> <p>5 Q. And so earlier you had said you were</p> <p>6 comparing the FlowTrievery to the Garrison system</p> <p>7 combined with Laub or Aklog. That was one of the</p> <p>8 comparisons you did, correct?</p> <p>9 A. Yes.</p> <p>10 Q. And yet you haven't used a system that</p> <p>11 combined the features of Garrison, the stopcock,</p> <p>12 with the catheters that are the size of the Laub</p> <p>13 and Aklog catheters, correct?</p> <p>14 MR. HAMILTON: Objection, vague.</p> <p>15 Incomplete.</p> <p>16 A. That is correct.</p> <p>17 BY MR. STOWELL:</p> <p>18 Q. And so is it fair to say that you are</p> <p>19 speculating as to how the Garrison plus Laub or</p> <p>20 Aklog system would behave in a patient?</p> <p>21 MR. HAMILTON: Objection. Vague.</p> <p>22 Mischaracterizes the testimony. Incomplete.</p>

<p>177</p> <p>1 A. Well, I look at the totality of a 2 device that combines all those features, and I look 3 at the risk/benefit of using that device. 4 So taking all those factors into 5 consideration, I would not expect it to work well. 6 BY MR. STOWELL: 7 Q. And so if we took, for example, the 8 Laub system, and we added Garrison's stopcock 9 within the flow path so that you could build up 10 pressure on one side of the system before 11 releasing it to the catheter, why wouldn't that 12 system work as well as the FlowTrievers? 13 MR. HAMILTON: Objection. Incomplete 14 hypothetical. Vague. 15 A. I think I'll need to see the Laub 16 published document. 17 BY MR. STOWELL: 18 Q. So I'll provide to you what has been 19 previously marked as Imperative Care Exhibit 1012 20 from the IPR relating to US patent 11,969,333, 21 which is IPR 2025-01021. 22 A. Thank you.</p>	<p>179</p> <p>1 series where it has been used in the pulmonary 2 arteries, but it's not, by any means, a reliable 3 exercise to advance the AngioVac, which is 4 basically a catheter system resulting from Laub and 5 Aklog, into the pulmonary arteries. So that's 6 No. 1, real-life experience with the device. 7 And even if we combine the properties 8 of all three of those catheters, prior to 2018 a 9 person of ordinary skill in the art would not be 10 thinking that a larger catheter would be the 11 solution to mechanical thrombectomy of the 12 pulmonary arteries. 13 As a matter of fact, the pulmonary 14 embolism space was really going in the opposite 15 direction, to smaller catheters with adjunctive 16 devices associated with them. The EKOS system that 17 gives a combination of thrombolytics and ultrasound 18 agitation, the BASHIR catheter, which is another 19 small -- smaller device. 20 Because no one expected that a larger 21 catheter in the pulmonary arteries would work as 22 well as it did, and as reliably as it did, until we</p>
<p>178</p> <p>1 Yes. So, comparing Laub, which 2 includes a steerable catheter, 10 French or 3 greater, associated with a pump, but there's no 4 designation of what type of on/off flow switch. 5 Just like in Garrison, there's no designation of 6 the type of flow switch. 7 And I believe it's limited, because 8 there's no designation of the amount of pressure 9 that is generated. And just because it's 10 telescoping multiple catheters, does not add any 11 utility to the system. 12 The AngioVac was loosely based on the 13 Laub description, along with Aklog, and it was 14 unable to be reliably advanced into the pulmonary 15 arteries, to the degree that the FDA never granted 16 an indication for pulmonary embolism. 17 There are actually cases of major 18 complications trying to get that system into the 19 pulmonary arteries. So it could increase 20 complications in that -- in that regard. And the 21 reason is because it's very rigid, unforgiving. 22 Yes, there has been case reports in</p>	<p>180</p> <p>1 had the benefit of using the Inari FlowTrievers. 2 Which was a reliable system that worked 3 just about every single time, and generated 4 excellent results because it could reliably get 5 into position and generate substantial aspiration 6 pressures to aspirate large volumes of clot from 7 the pulmonary artery safely. 8 Q. And so earlier I had asked you if your, 9 you know, basis for the unexpected results portion 10 of your report was based on your experience with 11 AngioVac, and what I just heard was that it is 12 based on -- your opinions are based on your 13 experience with the AngioVac device, correct? 14 MR. HAMILTON: Objection. 15 Mischaracterizes testimony. 16 A. It's based on my research and knowledge 17 about AngioVac, but not my personal experience with 18 AngioVac, because I did not use AngioVac. 19 Our institution, University of Vermont, 20 did not acquire AngioVac because of lots of 21 different issues, safety being one of them. 22 BY MR. STOWELL:</p>

<p>181</p> <p>1 Q. And you'll certainly agree with me that</p> <p>2 the Laub patent discloses a lot more variations</p> <p>3 than just the AngioVac system, correct?</p> <p>4 MR. HAMILTON: Objection, vague.</p> <p>5 A. The spherical portion. Yes, there are</p> <p>6 some features here that are not in AngioVac.</p> <p>7 BY MR. STOWELL:</p> <p>8 Q. And it discloses using a number of</p> <p>9 different pressures and different catheter sizes,</p> <p>10 correct?</p> <p>11 A. Yes.</p> <p>12 Q. And you're not suggesting that the Laub</p> <p>13 patent is limited to the commercially available</p> <p>14 AngioVac device, are you?</p> <p>15 A. Well, there's no other device that I</p> <p>16 know resulted from the Laub patent but the</p> <p>17 AngioVac.</p> <p>18 Q. So when you say the AngioVac resulted</p> <p>19 from the Laub patent, what is the basis for that</p> <p>20 statement?</p> <p>21 A. I just know there's a lot of similar</p> <p>22 features between Laub, Aklog and then the AngioVac</p>	<p>183</p> <p>1 A. Sure.</p> <p>2 Q. Okay. Would you agree that the Aklog</p> <p>3 patent is broader and discloses more features than</p> <p>4 just the commercially available AngioVac system?</p> <p>5 A. Minimally broader. It's pretty much</p> <p>6 exactly the AngioVac system. There might be a few</p> <p>7 subtle nuances that are not included, but it's --</p> <p>8 it's pretty close to it.</p> <p>9 Q. So in figure 7, for example, we see a</p> <p>10 system that includes a reservoir and a filter</p> <p>11 device that then leads to a pump that leads to</p> <p>12 another filter, and there's a reinfusion cannula.</p> <p>13 Do you see all that?</p> <p>14 A. Yes.</p> <p>15 Q. And does the AngioVac system include</p> <p>16 each one of those features?</p> <p>17 A. Yes.</p> <p>18 Q. And when you used the AngioVac system,</p> <p>19 did you use the reinfusion cannula?</p> <p>20 A. Oh, yes.</p> <p>21 Q. Now, when you reviewed Aklog and</p> <p>22 rendered your opinions, was it your understanding</p>
<p>182</p> <p>1 system that's in use today.</p> <p>2 Q. Okay. So you're referring to</p> <p>3 similar -- similarities between Laub's disclosure</p> <p>4 and what you've seen in the AngioVac system?</p> <p>5 A. Yes.</p> <p>6 Q. You're not suggesting that Laub or the</p> <p>7 assignee, TDL Innovations, had anything to do with</p> <p>8 the AngioVac device, are you?</p> <p>9 A. I don't know.</p> <p>10 Q. And with respect to Aklog reference,</p> <p>11 you would agree the Aklog reference is broader and</p> <p>12 discloses more than just the commercially</p> <p>13 available AngioVac device, correct?</p> <p>14 A. I'd have to look at the Laub published</p> <p>15 document to answer that question.</p> <p>16 Q. You said Laub. You mean the Aklog?</p> <p>17 A. I mean Aklog. Do I have Aklog?</p> <p>18 Q. I'll hand you what has been marked as</p> <p>19 Imperative Care Exhibit 1005 from the IPR related</p> <p>20 to US patent 11,974,910, that is IPR 2025-01025.</p> <p>21 Do you want me to read back the</p> <p>22 question?</p>	<p>184</p> <p>1 that the system that was disclosed in Aklog</p> <p>2 requires reinfusion of the blood?</p> <p>3 MR. HAMILTON: Objection. Vague.</p> <p>4 Document speaks for itself.</p> <p>5 A. Yes.</p> <p>6 BY MR. STOWELL:</p> <p>7 Q. Okay. And if that's just an optional</p> <p>8 feature of the inventions disclosed in Aklog,</p> <p>9 would that change your opinions?</p> <p>10 MR. HAMILTON: Objection. Vague.</p> <p>11 Mischaracterizes the document.</p> <p>12 A. Could you read the question back again?</p> <p>13 BY MR. STOWELL:</p> <p>14 Q. Yeah, I'll clarify it. So have you</p> <p>15 rendered any opinions based on an understanding</p> <p>16 that reinfusion of blood is merely optional in the</p> <p>17 Aklog reference?</p> <p>18 MR. HAMILTON: Objection, vague.</p> <p>19 Incomplete, and mischaracterizes the document.</p> <p>20 A. I do remember the flow rates. And at</p> <p>21 significant flow rates without reperfusion, the</p> <p>22 document does describe exsanguination, which is</p>

<p>185</p> <p>1 a -- can be a lethal event. So depending on the</p> <p>2 flow rate, it is required, yes.</p> <p>3 BY MR. STOWELL:</p> <p>4 Q. So there could be flow rates where the</p> <p>5 flow rate might be low enough that reintroduction</p> <p>6 of blood would not be required, correct?</p> <p>7 MR. HAMILTON: Objection, vague.</p> <p>8 Incomplete. The document speaks for itself.</p> <p>9 A. Only if the procedure time is extremely</p> <p>10 short, because with a low pressure flow rate, there</p> <p>11 will not be much suction required, and there will</p> <p>12 probably not be much efficacy to that procedure.</p> <p>13 But at a very high pressure, short</p> <p>14 burst of aspiration with a small quantity of blood</p> <p>15 aspirated, yes, then I agree with your question,</p> <p>16 premise of your question, that would state that</p> <p>17 that blood doesn't necessarily need to be reinfused</p> <p>18 into the patient because that's a small volume.</p> <p>19 BY MR. STOWELL:</p> <p>20 Q. When you rendered your opinions based</p> <p>21 on the Laub reference, did you understand the Laub</p> <p>22 reference to require reintroduction of blood to</p>	<p>187</p> <p>1 A. Thank you, Counsel.</p> <p>2 Q. You understand you are still under</p> <p>3 oath, correct?</p> <p>4 A. Yes.</p> <p>5 Q. Did you talk to anybody about your</p> <p>6 testimony during the break?</p> <p>7 A. I did not.</p> <p>8 Q. Did you review any documents?</p> <p>9 A. No.</p> <p>10 Q. So when we left we were talking about</p> <p>11 Inari Exhibit 2016. This is your declaration from</p> <p>12 the '333 patent IPR. IPR 2025-01021. And I'm at</p> <p>13 paragraph 83, still in your Unexpected Results</p> <p>14 section, okay? Let me know when you have a chance</p> <p>15 to get there.</p> <p>16 A. I'm there.</p> <p>17 Q. So in paragraph 83, you describe one of</p> <p>18 what you call an unexpected result, and it's the</p> <p>19 ability of the FlowTrier to reach the location</p> <p>20 of the pulmonary embolism within the central</p> <p>21 pulmonary arteries safely and consistently. Do</p> <p>22 you see where I am?</p>
<p>186</p> <p>1 the patient?</p> <p>2 A. No.</p> <p>3 Q. The AngioVac device, when you used it,</p> <p>4 did it have any sort of on/off control that would</p> <p>5 allow you to build up pressure in the system</p> <p>6 before you released it to the aspiration catheter?</p> <p>7 MR. HAMILTON: Objection, vague.</p> <p>8 Incomplete.</p> <p>9 A. Not that I remember. We used foot</p> <p>10 pedals, and it started the pump and stopped the</p> <p>11 pump. I don't recall ever using an on/off valve at</p> <p>12 the same time.</p> <p>13 COURT REPORTER: Would this be a good</p> <p>14 time to take a couple of minutes?</p> <p>15 MR. STOWELL: Yes.</p> <p>16 THE VIDEOGRAPHER: We are going off the</p> <p>17 record. The time is 14:29.</p> <p>18 (Recess taken.)</p> <p>19 THE VIDEOGRAPHER: We are back on the</p> <p>20 record. The time is 14:43.</p> <p>21 BY MR. STOWELL:</p> <p>22 Q. Welcome back, Doctor Morris.</p>	<p>188</p> <p>1 A. Yes.</p> <p>2 Q. And would you agree with me that the</p> <p>3 FlowTrier's ability to reach that location</p> <p>4 safely and consistently is dependent upon the</p> <p>5 characteristics of the catheter itself?</p> <p>6 A. Yes.</p> <p>7 Q. So the ability of the FlowTrier to</p> <p>8 reach the central pulmonary arteries safely and</p> <p>9 consistently is dictated by the catheter material</p> <p>10 and the catheter construction, correct?</p> <p>11 A. In part, yes.</p> <p>12 Q. Okay, you say in part. What else</p> <p>13 contributes to the catheter's ability to safely</p> <p>14 and consistently reach the central pulmonary</p> <p>15 arteries?</p> <p>16 A. Operator skill.</p> <p>17 Q. Operator skill, okay. Any other</p> <p>18 factors that allow the FlowTrier to reach the</p> <p>19 central pulmonary arteries safely and</p> <p>20 consistently?</p> <p>21 A. Development of new skill sets.</p> <p>22 Q. Okay, is that different than operator</p>

<p>189</p> <p>1 skill?</p> <p>2 A. It's related.</p> <p>3 Q. Okay. So the factors that contribute</p> <p>4 to the FlowTrier being able to reach the central</p> <p>5 pulmonary arteries safely and consistently are the</p> <p>6 catheter construction and materials, and then the</p> <p>7 operator skill and techniques, is that correct?</p> <p>8 A. Yes.</p> <p>9 Q. Anything else that contributes to the</p> <p>10 FlowTrier's ability to safely and consistently</p> <p>11 reach the central pulmonary arteries?</p> <p>12 A. Not that I can think of right now.</p> <p>13 Q. In paragraph 84, you say you were</p> <p>14 personally surprised that the generation of a</p> <p>15 quick burst of vacuum and rapid pressure</p> <p>16 equalization could so effectively remove a clot</p> <p>17 when treating PE or DVT. Do you see where I'm at?</p> <p>18 A. Yes.</p> <p>19 Q. So how is the quick burst of vacuum</p> <p>20 generated with the FlowTrier device?</p> <p>21 A. It is a technique unique to the</p> <p>22 FlowTrier due to its large size, and ability not</p>	<p>191</p> <p>1 that you're referring to in paragraph 84?</p> <p>2 A. And the abrupt opening of the on/off</p> <p>3 switch.</p> <p>4 Q. And when you say abrupt opening of the</p> <p>5 on/off switch, what do you mean by abrupt?</p> <p>6 A. Turning it quickly to the open</p> <p>7 position, which generates the vacuum at the end of</p> <p>8 the catheter. And in combination with the large</p> <p>9 caliber of the catheter, which I mentioned before,</p> <p>10 I generally start with 24 French catheter, creates</p> <p>11 a synergistic effect that I've never seen before.</p> <p>12 It was totally unexpected to see, in that the clot</p> <p>13 very consistently is aspirated completely out of</p> <p>14 the patient.</p> <p>15 And I have actually performed that</p> <p>16 procedure during contrast injections in</p> <p>17 fluoroscopy, and the pressure is so significant</p> <p>18 that the arteries will compress. The pulmonary</p> <p>19 arteries, these aren't flimsy veins, they're</p> <p>20 arteries, but they will compress because that</p> <p>21 pressure generation is so intense.</p> <p>22 Q. And so these unexpected results that</p>
<p>190</p> <p>1 to collapse during generation of a vacuum. Where</p> <p>2 the 60 cc syringe is charged by withdrawing it and</p> <p>3 locking it, but the entire system maintains the</p> <p>4 lumen -- the same degree or diameter of the lumen</p> <p>5 of the catheter, pretty much, and does not</p> <p>6 constrict in any -- in any way.</p> <p>7 So that when the on/off valve is</p> <p>8 opened, there's a dramatic, immediate transmissal</p> <p>9 of that vacuum to the terminus of the catheter,</p> <p>10 which is up in -- in proximity to the clot.</p> <p>11 Q. You've mentioned the no constriction in</p> <p>12 the system a couple of times. Is that an</p> <p>13 important feature for getting the rapid or the</p> <p>14 quick burst that you're referring to in paragraph</p> <p>15 84?</p> <p>16 A. Yes. In the setting of pulmonary</p> <p>17 embolism, which is the largest clots we see in the</p> <p>18 body, essentially.</p> <p>19 Q. And so the design of the FlowTrier</p> <p>20 system so that it doesn't have any constriction</p> <p>21 along the catheter and the parts leading to the</p> <p>22 syringe, that's what helps create that quick burst</p>	<p>192</p> <p>1 you're talking about, so these are due to, it</p> <p>2 sounds like, the absence of any constriction in</p> <p>3 the FlowTrier catheter system, in addition to</p> <p>4 the method of abruptly opening the on/off valve,</p> <p>5 is that correct?</p> <p>6 MR. HAMILTON: Objection. Vague.</p> <p>7 A. Yes. And both of those together create</p> <p>8 the synergistic effect, which we call the whoosh,</p> <p>9 because it's an actual audible phenomenon that</p> <p>10 occurs during the aspiration of the clot into the</p> <p>11 catheter.</p> <p>12 And actually there's a literal</p> <p>13 vibration that occurs. When the clot is sucked</p> <p>14 into the catheter, it has a chugging effect. And</p> <p>15 so everyone's waiting, when this process occurs,</p> <p>16 for the chug. The catheter chugs, chugs and chugs</p> <p>17 as the clot is aspirated out. It's -- I never</p> <p>18 thought that would ever happen.</p> <p>19 I was actually pretty pessimistic that</p> <p>20 it was going to work, with all the other devices</p> <p>21 that we had used, and remarkably surprised at how</p> <p>22 well it worked. That was the unexpected result.</p>

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<p>193</p> <p>1 BY MR. STOWELL:</p> <p>2 Q. Now, you mentioned abruptly opening the</p> <p>3 on/off valve. If you very slowly opened the</p> <p>4 on/off valve on the FlowTrievers, would you get</p> <p>5 what you called whoosh?</p> <p>6 A. No. That would end up creating the</p> <p>7 effect that we would see in Garrison, because that</p> <p>8 catheter restricts flow. It's orders of magnitude</p> <p>9 smaller, thus the radius is smaller. So that</p> <p>10 restricts the flow, and in addition to the length.</p> <p>11 Because you remember in Poiseuille's law, the flow</p> <p>12 is proportional to the radius to the 4th power and</p> <p>13 inversely proportional to the length.</p> <p>14 So it's a longer catheter in Garrison.</p> <p>15 Not by a lot, because the pulmonary arteries can be</p> <p>16 quite torturous, and so it's not that much longer,</p> <p>17 but it is longer, and certainly a much smaller</p> <p>18 caliber catheter, so it doesn't allow that whoosh</p> <p>19 to occur.</p> <p>20 It doesn't allow that dramatic</p> <p>21 generation of vacuum at the tip or the terminus of</p> <p>22 the catheter. For good reasons, because if it did,</p>	<p>195</p> <p>1 Q. That is a marketing term that was</p> <p>2 created by Inari, correct?</p> <p>3 A. Yes, but it was never witnessed before</p> <p>4 Inari FlowTrievers system was used and available.</p> <p>5 There was no other system that ever created that</p> <p>6 phenomenon.</p> <p>7 Q. Well, no system that you had observed,</p> <p>8 correct?</p> <p>9 A. Certainly no system that I had</p> <p>10 observed, but I don't know any other system that I</p> <p>11 have not used or observed that would allow that</p> <p>12 phenomenon to happen.</p> <p>13 Q. Well, for example, you reviewed</p> <p>14 Doctor Turk's declaration, and you reviewed the</p> <p>15 parts where he explained that they would put tube</p> <p>16 clamps on their tubing when they pulled back their</p> <p>17 syringe to build up negative pressure and get</p> <p>18 rapid aspiration, correct? You read that?</p> <p>19 A. Yes.</p> <p>20 Q. And you don't dispute that he actually</p> <p>21 did that with his colleagues in the 2010s, do you?</p> <p>22 A. I don't. I have some comments about</p>
<p>194</p> <p>1 it would injure to the cerebral artery, so.</p> <p>2 Q. And so have there been times when you</p> <p>3 have used the FlowTrievers device when you have not</p> <p>4 opened the on/off control abruptly enough?</p> <p>5 MR. HAMILTON: Objection. Incomplete</p> <p>6 hypothetical. Vague.</p> <p>7 A. I have not, because I know how to open</p> <p>8 it up. But it's possible that a trainee is not</p> <p>9 abrupt enough, or quick enough, on the on/off</p> <p>10 valve. But I have always used it correctly.</p> <p>11 BY MR. STOWELL:</p> <p>12 Q. And so to get the unexpected results of</p> <p>13 effectively removing the clot, you need the</p> <p>14 FlowTrievers system to have its unconstricted, or</p> <p>15 no constrictions in the catheter, and you also</p> <p>16 need to use the abrupt method of opening the</p> <p>17 on/off control, correct?</p> <p>18 A. Yes.</p> <p>19 Q. Now, you used the term "whoosh."</p> <p>20 That's not a term you used before you got involved</p> <p>21 in these IPRs, is it?</p> <p>22 A. That is correct.</p>	<p>196</p> <p>1 that. And like Garrison, the ability to generate</p> <p>2 that same magnitude of vacuum is limited in those</p> <p>3 types of -- those sizes of catheters that are</p> <p>4 safely placed into the cerebral arteries.</p> <p>5 And the other issue with performing</p> <p>6 that technique, it's frowned upon, generally</p> <p>7 speaking, because it's also a technique that less</p> <p>8 experienced interventional radiologists have used</p> <p>9 instead of a stopcock to stop bleeding back from a</p> <p>10 catheter.</p> <p>11 What it does is it actually damages the</p> <p>12 catheter. Because they're not designed to be</p> <p>13 clamped, the actual catheter itself, they often</p> <p>14 don't expand back to normal situs. They kinked or</p> <p>15 injure, or even worse, fracture.</p> <p>16 So that's not a technique that's</p> <p>17 recommended to be used. But, yeah, no, there's no</p> <p>18 doubt that he did that, and he stated that he did</p> <p>19 it.</p> <p>20 Q. Okay. And you're aware that other</p> <p>21 people use that practice as well?</p> <p>22 A. To my dismay, yes, that has been used</p>

<p>197</p> <p>1 in other places.</p> <p>2 MR. HAMILTON: For that question,</p> <p>3 objection, vague.</p> <p>4 BY MR. STOWELL:</p> <p>5 Q. And you're not suggesting that</p> <p>6 Doctor Turk was using a dangerous practice when he</p> <p>7 was treating his patients with a tube clamp, are</p> <p>8 you?</p> <p>9 A. I think that the generation of pressure</p> <p>10 makes it very limited, because a polyethylene</p> <p>11 polyvinyl chloride catheter will not bounce back to</p> <p>12 the same size. And I wish I had one here to show</p> <p>13 you, but if I put a clamp on it, it will stay</p> <p>14 crimped.</p> <p>15 May not be dangerous to the patient.</p> <p>16 Maybe it's actually safety, because it will</p> <p>17 generate less aspiration pressure. But the</p> <p>18 catheter does that inherently anyways because it's</p> <p>19 small caliber.</p> <p>20 Q. And you don't dispute that if you use a</p> <p>21 tube clamp on a catheter and you pull back a</p> <p>22 syringe, that you will generate negative pressure</p>	<p>199</p> <p>1 if a tube clamp were used on them, are you?</p> <p>2 A. Polyethylene and polyvinyl chloride</p> <p>3 catheters, PCV, will stay clamped – or crimped,</p> <p>4 sorry – to a varying degree.</p> <p>5 Q. And are those the only type of</p> <p>6 catheters that are used in patients?</p> <p>7 A. Well, there's different – there's a</p> <p>8 whole different spectrum of composite –</p> <p>9 compositions of catheters; some are braided, some</p> <p>10 are non-braided. But those are the most popular,</p> <p>11 polyethylene and polyvinyl chloride.</p> <p>12 Q. Do you know what the Penumbra catheters</p> <p>13 that are used for cerebral procedures are made of?</p> <p>14 A. I do not.</p> <p>15 Q. And so you don't know if those would</p> <p>16 bounce back or not if a tube clamp were used on</p> <p>17 them, correct?</p> <p>18 A. I do not know, no.</p> <p>19 Q. In your declaration, let's move to</p> <p>20 paragraph 43. I'm still in Inari Exhibit 2016,</p> <p>21 IPR 2025-01021.</p> <p>22 So paragraph 43 is in a section of your</p>
<p>198</p> <p>1 within the catheter, correct?</p> <p>2 MR. HAMILTON: Objection. Vague.</p> <p>3 Incomplete hypothetical. Calls for speculation.</p> <p>4 A. Possibly. Again, if that catheter</p> <p>5 remains crimped, it probably won't generate much</p> <p>6 negative pressure at the tip of the catheter.</p> <p>7 If it, for some reason, bounces back to</p> <p>8 its nominal state, then it will generate some</p> <p>9 pressure at the end, but not nearly as much as the</p> <p>10 Inari FlowTrievery, which is orders of magnitude</p> <p>11 bigger.</p> <p>12 BY MR. STOWELL:</p> <p>13 Q. So the difference that you're pointing</p> <p>14 to is the magnitude of suction between the</p> <p>15 FlowTrievery and some of the prior art devices that</p> <p>16 would have been used with a tube clamp?</p> <p>17 A. Not only the magnitude, but the tube</p> <p>18 clamp may actually eliminate the generation of any</p> <p>19 pressure, depending on what happens to that</p> <p>20 catheter when the tube clamp is released.</p> <p>21 Q. You're certainly not suggesting that</p> <p>22 all catheters would become permanently compressed</p>	<p>200</p> <p>1 expert declaration titled "Person of Ordinary</p> <p>2 Skill in the Art," correct?</p> <p>3 A. Yes.</p> <p>4 Q. And in paragraph 43 you state that, The</p> <p>5 '333 patent recites that the present technology</p> <p>6 relates generally to systems, methods and devices</p> <p>7 for the intravascular treatment of emboli and/or</p> <p>8 thrombi within the blood vessel of a human</p> <p>9 patient. Do you see that?</p> <p>10 A. Yes.</p> <p>11 Q. And is it your understanding that that</p> <p>12 statement there in paragraph 43 generally</p> <p>13 describes the field of the invention for the '333</p> <p>14 patent?</p> <p>15 A. Yes.</p> <p>16 Q. In paragraph 44 you provide a</p> <p>17 definition for a POSA, P-O-S-A. That's a person</p> <p>18 of skill in the art, right?</p> <p>19 A. Yes.</p> <p>20 Q. And you describe a person with a</p> <p>21 bachelor of science degree in engineering or an</p> <p>22 equivalent field, right?</p>

<p>201</p> <p>1 A. Yes.</p> <p>2 Q. And what do you consider to be an</p> <p>3 equivalent field?</p> <p>4 A. It could be physiology. Something</p> <p>5 related to the health sciences. It could be a</p> <p>6 Ph.D. in various disciplines, in medicine.</p> <p>7 For instance, we have Ph.D.s in our</p> <p>8 department of surgery and in our department of</p> <p>9 radiology. They're not MDs, but they're healthcare</p> <p>10 researchers of various -- that specialize in</p> <p>11 various areas of medicine and surgery. And so</p> <p>12 there's lots of different types of professionals</p> <p>13 that could be an equivalent field.</p> <p>14 Q. So a Ph.D. would be even beyond the</p> <p>15 bachelor of science degree. And I'm just curious,</p> <p>16 what's the equivalent field for the bachelor of</p> <p>17 science degree in engineering?</p> <p>18 You saying bachelor of science degree</p> <p>19 in engineering or an equivalent field. So I heard</p> <p>20 physiology. Any other majors that would qualify?</p> <p>21 A. Bachelor of arts in biology. Someone</p> <p>22 who may be specializing in hemostasis and</p>	<p>203</p> <p>1 arts degree.</p> <p>2 You know, there are a lot of physicians</p> <p>3 such as neurosurgeons that deal with stroke</p> <p>4 thrombosis. And they have lots of researchers that</p> <p>5 have a bachelor's of science or a bachelor of arts</p> <p>6 degree in various disciplines that help them with</p> <p>7 their research endeavors. So there's a wide</p> <p>8 spectrum of possibilities here.</p> <p>9 Q. When you say -- so you say industry</p> <p>10 experience in the mechanical thrombectomy</p> <p>11 industry. When you say the industry experience,</p> <p>12 what are you referring to there?</p> <p>13 A. Someone who has helped develop devices.</p> <p>14 So industry meaning the companies that actually</p> <p>15 bring devices to market after they've been</p> <p>16 conceptualized and tested and analyzed. So someone</p> <p>17 involved in that process.</p> <p>18 Q. Okay. So two to four years of</p> <p>19 experience developing mechanical thrombectomy</p> <p>20 devices, effectively?</p> <p>21 A. Yes.</p> <p>22 Q. And you also say, though, that two to</p>
<p>202</p> <p>1 thrombosis, or otherwise known as clotting, the</p> <p>2 clotting field.</p> <p>3 Q. Any others that you can think of right</p> <p>4 now?</p> <p>5 A. Not off the top of my head.</p> <p>6 Q. And then you next say, With two to four</p> <p>7 years of academic or industry experience in</p> <p>8 mechanical thrombectomy industry or comparable</p> <p>9 industry experience. Do you see that?</p> <p>10 A. Yes.</p> <p>11 Q. Okay. And so does the two to four</p> <p>12 years apply to the industry experience, or just</p> <p>13 the academic experience?</p> <p>14 A. It could be either.</p> <p>15 Q. Either, okay.</p> <p>16 A. Or a combination of the above.</p> <p>17 Q. So what type of academic experience</p> <p>18 would qualify a person to be a POSA?</p> <p>19 A. Well, it could be someone who's</p> <p>20 researching clots, or, you know, clotting relating</p> <p>21 to hemostasis and thrombosis. You know, a</p> <p>22 biologist's research is in that, with a bachelor of</p>	<p>204</p> <p>1 four years of industry experience in a comparable</p> <p>2 industry could qualify someone as a POSA. What</p> <p>3 are the comparable industries you are thinking of?</p> <p>4 A. Well, in addition to mechanical</p> <p>5 thrombectomy, other industries are involved in</p> <p>6 clotting diseases, such as companies that make</p> <p>7 thrombolytics. There's lots of different emerging</p> <p>8 thrombolytics in development.</p> <p>9 There's anticoagulants, they are also</p> <p>10 very much related to thrombectomy devices. Some do</p> <p>11 combinations of thrombolytics and mechanical</p> <p>12 thrombectomy, so there's a lot of crossover between</p> <p>13 all of those disciplines. Those are just some of</p> <p>14 them.</p> <p>15 Q. So a person with two to four years of</p> <p>16 industry experience using anticoagulants could</p> <p>17 qualify as a POSA under your definition?</p> <p>18 A. It depends what the background is. If</p> <p>19 it's a bachelor's of science degree in engineering,</p> <p>20 and they have two years of academic experience with</p> <p>21 mechanical thrombectomy device, and then they</p> <p>22 continue on for another two years, another company</p>

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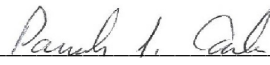
<p style="text-align: right;">205</p> <p>1 working in thrombolytics, then someone like that 2 could be a POSA. 3 Q. What about a person, though, with a 4 bachelor of science degree in engineering with two 5 to four years of experience working on 6 anticoagulants for use in the vasculature more 7 generally? 8 A. Without any -- is that person who's 9 working in the anticoagulant area, does that person 10 also have a bachelor's of science degree in 11 engineering? 12 Q. Yes. 13 A. I would have to look to see what that 14 experience in anticoagulates -- anticoagulation 15 actually entails. Possibly that person could be a 16 POSA. I don't know. 17 Q. What about, for example, a person of 18 skill in the art -- a person who has a bachelor of 19 science degree in engineering and who has 20 developed stents, and who has worked on ways to 21 minimize coagulation around the stents. Would 22 that person qualify as a person of ordinary skill</p>	<p style="text-align: right;">207</p> <p>1 under your definition would, where necessary or 2 desired, work or consult with others including a 3 physician. Why did you include that part of the 4 definition? 5 A. Because I think that a nonmedical 6 person may not understand a lot of the nuances that 7 are required to perform some of these procedures. 8 For instance, the AngioVac. It failed 9 to consistently reach the pulmonary arteries, 10 because whoever was working on that prior to 11 AngioDynamics didn't realize this can be really, 12 really difficult getting a large bore catheter into 13 that position. 14 In pulmonary embolism, everything 15 dilates behind the clot; the right ventricle gets 16 huge. It's very difficult to get a large bore 17 catheter in the pulmonary arteries in that 18 situation than it is to get a cerebral catheter in 19 the most adverse carotid patient I've ever seen, 20 short of a carotid occlusion. 21 And I just want to emphasize that 22 pulmonary artery thrombectomy is not to be taken</p>
<p style="text-align: right;">206</p> <p>1 in the art? 2 A. I think the common denominator here is 3 clotting, or clot. Does that person have a lot of 4 experience in clots, and mitigating the effects of 5 clots. 6 So stents in and of themselves 7 hopefully aren't associated with clots, except for 8 the stentriever, which is another device used for 9 stroke that competes with a lot of these aspiration 10 catheters. But that's a different type of a stent. 11 I think clot is the key. So if there's 12 experience working actually with clot, that's very 13 paramount in dealing with devices that are used to 14 treat clot. 15 Because there's all different types of 16 clot and sizes of clot, consistencies of clot. 17 Some clot is like jelly, and other clot is like 18 cardboard, essentially. I mean, it's a big 19 spectrum. And someone needs -- who is a POSA has 20 to be familiar with clot. Stents in and by 21 themselves aren't necessarily involved with clot. 22 Q. And you also say that the POSA No. 1</p>	<p style="text-align: right;">208</p> <p>1 lightly. Patients can die if it goes -- if a 2 complication occurs on the table. I've seen it 3 happen, unfortunately. So it's not an easy 4 procedure, and it's totally different than stroke 5 thrombectomy. 6 Q. So you referred to a nonmedical person. 7 Are you referring to a person without a medical 8 degree, when you say nonmedical person? 9 A. Oh, you mean from my further 10 discussion, not my declaration? What I just 11 stated? 12 Q. Yeah. Well, I had asked you why you 13 included the part about including a physician, and 14 you had said because nonmedical persons might not 15 understand the nuances. By nonmedical person, you 16 mean a person without a medical degree? 17 A. Basically. Someone who has not 18 performed those procedures. 19 Q. And your example with the AngioVac 20 device, it sounds like the AngioVac catheter was 21 not flexible enough to consistently get into the 22 pulmonary arteries, is that accurate?</p>

<p>209</p> <p>1 A. Yes.</p> <p>2 Q. Now, you have a second definition for</p> <p>3 your person of ordinary skill in the art, and that</p> <p>4 is an interventional radiologist or pulmonologist</p> <p>5 with at least three years' experience developing</p> <p>6 and/or using medical devices in thrombectomy</p> <p>7 procedures, correct? Did I read that right?</p> <p>8 A. Yes.</p> <p>9 Q. Okay. And so for this definition,</p> <p>10 definition No. 2, you are not requiring the</p> <p>11 interventional radiologist or pulmonologist to</p> <p>12 have necessarily used a medical device for a</p> <p>13 thrombectomy procedure, correct?</p> <p>14 A. By the letter of the law, that's how</p> <p>15 that reads. But it is assumed to be associated</p> <p>16 with knowledge of the use of those devices.</p> <p>17 And, while I'm reading this, I would</p> <p>18 also include cardiologists. Because there are</p> <p>19 cardiologists that do these procedures as well, not</p> <p>20 just interventional radiologists, but.</p> <p>21 Q. So in definition No. 2 you would expand</p> <p>22 that to be an interventional radiologist, a</p>	<p>211</p> <p>1 the engineer in this definition?</p> <p>2 A. Because the engineers are the experts</p> <p>3 with design, catheter design, medical device</p> <p>4 design. So I think it's, again, a synergistic</p> <p>5 effect that, you know, different specialties</p> <p>6 working together and collaborate can come up with a</p> <p>7 better device, an improved device, than one</p> <p>8 discipline working by his or herself.</p> <p>9 Q. Would the engineer that works with the</p> <p>10 interventional radiologist or pulmonologist need</p> <p>11 to have had prior mechanical thrombectomy</p> <p>12 experience to be helpful to the interventional</p> <p>13 radiologist or pulmonologist?</p> <p>14 A. I think the No. 1 definition implies</p> <p>15 that, yes.</p> <p>16 Q. So, for example, in your situation,</p> <p>17 when you were developing your catheter, you said</p> <p>18 you worked with an environmental engineer?</p> <p>19 A. Yes.</p> <p>20 Q. Had that environmental engineer had</p> <p>21 prior catheter experience?</p> <p>22 A. No, but that was a very -- that was a</p>
<p>210</p> <p>1 pulmonologist or a cardiologist?</p> <p>2 A. And, actually, a vascular surgeon.</p> <p>3 Sorry. But they're what I call interventionalists.</p> <p>4 They have knowledge of the procedures and are</p> <p>5 familiar with these mechanical thrombectomy</p> <p>6 procedures.</p> <p>7 And although I'm biased, I believe</p> <p>8 interventional radiology has taken the lead on</p> <p>9 this, but -- in this whole disease process -- but</p> <p>10 other specialties are involved as well.</p> <p>11 Q. And you include, when you refer to</p> <p>12 thrombectomy procedures, including for smaller</p> <p>13 arteries. Why did you include that parenthetical?</p> <p>14 A. I just think it made it more inclusive</p> <p>15 of all the thrombectomy devices. So that this</p> <p>16 isn't just necessarily specifically pertaining to</p> <p>17 pulmonary embolism, but other types of thrombectomy</p> <p>18 procedures as well.</p> <p>19 Q. And in this second definition you refer</p> <p>20 to the -- I'll call them a physician -- would work</p> <p>21 with or also potentially work with an engineer to</p> <p>22 develop the medical device. Why did you include</p>	<p>212</p> <p>1 pre-prototype version. Now that I'm developing an</p> <p>2 actual prototype, I am working with biomedical</p> <p>3 engineers at University of Utah.</p> <p>4 Q. And the biomedical engineers that you</p> <p>5 are working with on your catheter, do they have</p> <p>6 prior catheter design experience?</p> <p>7 A. Yes.</p> <p>8 Q. And then at the very end of your</p> <p>9 definition of a POSA you say, A person with less</p> <p>10 education but more relevant practical experience,</p> <p>11 or more relevant education but less practical</p> <p>12 experience, may also meet this standard. Why did</p> <p>13 you include that kind of catchall phrasing?</p> <p>14 A. Because some of these disciplines are</p> <p>15 basically intertwined. And someone that has been</p> <p>16 in the lab for, you know, 30 years, but may not</p> <p>17 actually have a bachelor's of science of</p> <p>18 engineering degree may be a very valuable</p> <p>19 contributor to the medical device design.</p> <p>20 So, you know, there's values to</p> <p>21 everyone's experience and educational levels. So I</p> <p>22 wanted to open it up to include some of these</p>

<p>213</p> <p>1 people that have been involved with clot 2 thrombectomy techniques -- and, again, clot is the 3 common denominator here -- I wanted to include them 4 and not exclude them.</p> <p>5 Q. If you could just pull out your 6 declaration for the '910 patent real quick. That 7 is Inari exhibit 2016 from IPR 2025-01025.</p> <p>8 A. Yes.</p> <p>9 Q. You have it in front of you?</p> <p>10 A. I have it, yes.</p> <p>11 Q. So in this declaration, you also have a 12 section on the person of ordinary skill in the 13 art. It begins at page 17, paragraph 43. Let me 14 know when you're there.</p> <p>15 A. Okay.</p> <p>16 Q. And it looks like you have proposed the 17 same definition for a person of ordinary skill in 18 the art for the '333 patent as you proposed for 19 the '910 patent, is that --</p> <p>20 A. Yes.</p> <p>21 Q. -- correct?</p> <p>22 A. Yes.</p>	<p>215</p> <p>1 describes -- or states that the devices described 2 in the patent could also be used in the cerebral 3 vasculature, for example, correct?</p> <p>4 A. This is the '333.</p> <p>5 Q. Correct.</p> <p>6 A. Yes.</p> <p>7 Q. And would you agree with me that the 8 written description of the '333 patent is the same 9 as the '910 patent?</p> <p>10 A. I haven't compared the two in a while, 11 but I think they are correct -- they are similar, 12 yes, if not the same.</p> <p>13 Q. And do you recall seeing any warnings 14 in the '333 patent about using too high of 15 pressures for the cerebral vasculature?</p> <p>16 A. No.</p> <p>17 MR. STOWELL: Okay, why don't we take a 18 break, I'll look through my notes here.</p> <p>19 MR. HAMILTON: All right.</p> <p>20 THE VIDEOGRAPHER: We are going off the 21 record. The time is 15:23.</p> <p>22 (Recess taken.)</p>
<p>214</p> <p>1 Q. And at paragraph 44 of your '910 patent 2 declaration, you state that the '910 patent 3 recites that the present technology relates 4 generally to systems, methods and devices for the 5 intravascular treatment of emboli and/or thrombi 6 within a blood vessel of a patient. Do you see 7 that?</p> <p>8 A. Yes.</p> <p>9 Q. And is it your understanding that that 10 is the field of technology for the '910 patent?</p> <p>11 A. Yes.</p> <p>12 Q. For the '333 patent, which was 13 Exhibit 1001 in the IPR related to the '333 14 patent, do you agree that the devices described in 15 here in this patent are described as being usable 16 to extract clots from areas other than the lungs 17 and the legs?</p> <p>18 MR. HAMILTON: Objection, vague. The 19 document speaks for itself.</p> <p>20 A. Yes.</p> <p>21 BY MR. STOWELL:</p> <p>22 Q. Okay. You agree that that patent</p>	<p>216</p> <p>1 THE VIDEOGRAPHER: We are back on the 2 record. The time is 15:35.</p> <p>3 BY MR. STOWELL:</p> <p>4 Q. Okay, Doctor Morris, you understand 5 you're still under oath?</p> <p>6 A. Yes.</p> <p>7 Q. And did you talk to anybody about your 8 testimony during the break?</p> <p>9 A. No.</p> <p>10 MR. STOWELL: Okay. Well, at this time 11 I have no further questions for you. I will pass 12 the witness to Mr. Hamilton.</p> <p>13 MR. HAMILTON: All right, let's just 14 take a couple of minutes, maybe five minutes, and 15 I'll see if I have anything else.</p> <p>16 THE VIDEOGRAPHER: We are going off the 17 record. The time is 15:26.</p> <p>18 (Recess taken.)</p> <p>19 THE VIDEOGRAPHER: We are back on the 20 record. The time is a 15:38.</p> <p>21 MR. HAMILTON: And the patent owner has 22 no questions.</p>

Transcript of Christopher Morris, M.D.
Conducted on May 4, 2026

55 (217 to 220)

<p>217</p> <p>1 THE VIDEOGRAPHER: This concludes 2 today's deposition of Christopher S. Morris, M.D. 3 We are going off the video record at 15:38. 4 (The deposition was concluded at 3:38 p.m.) 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22</p>	<p>219</p> <p>1 IN WITNESS WHEREOF, I have hereunto set my 2 hand this 18th day of May 2026. 3 4  5 6 Pamela J. Carle, LCR, RPR, CRR 7 NOTARY PUBLIC IN AND FOR THE 8 STATE OF VERMONT 9 10 11 12 13 14 15 16 17 18 19 20 21 22</p>
<p>218</p> <p>1 CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC 2 I, Pamela Carle, Reporter and Notary Public within 3 and for the state of Vermont, do hereby certify: 4 That Christopher Morris, the witness whose 5 deposition is hereinbefore set forth, was duly sworn 6 by me before the commencement of such deposition and 7 that such deposition was taken before me and is a 8 true record of the testimony given by such witness. 9 I further certify that the adverse party, 10 Petitioner, was represented by counsel at the 11 deposition. 12 I further certify that the deposition of 13 Christopher Morris occurred at Hotel Vermont, 14 41 Cherry Street, Burlington, Vermont 05401 on 15 Monday, May 4, 2026, commencing at 9:05 a.m. to 16 3:38 p.m. 17 I further certify that I am not related to any of 18 the parties to this action by blood or marriage, I 19 am not employed by or an attorney to any of the 20 parties to this action, and that I am in no way 21 interested, financially or otherwise, in the outcome 22 of this matter.</p>	

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