



# Specialist and Patient Perspectives on Strategies to Improve Cardiovascular Disease Prevention Among Persons Living With Psoriatic Disease

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## Abstract

**Background:** Psoriasis is an immune-mediated disease associated with excess risk for cardiovascular disease (CVD). Guidelines recognize psoriasis as a CVD risk enhancer; however, psoriasis patients often do not have CVD risk factors identified nor managed. **Objective:** This study examines strategies to improve CVD prevention care from the perspective of physicians and patients with psoriasis. **Methods:** Qualitative interviews were conducted using the Consolidated Framework for Implementation Research to examine the perspectives of physicians (N = 16) and patients with psoriatic disease (N = 16) on barriers and facilitators to CVD prevention. Interviews were transcribed and coded using an integrated approach designed to enhance reliability and validity using NVivo software. **Results:** We found 3 major themes suggesting areas to target for the future: (1) Appropriateness: perceptions of whether CVD care should be deployed in this setting by both physicians and patients, (2) Feasibility: whether CVD prevention care could be integrated into the current structure of specialist practice, and (3) Care Coordination: an interest by all parties to better integrate a team approach in CVD preventative care to reduce duplicative efforts, work practically in an already existing system rather than reinventing the wheel, and progress with the patients' best interests in mind. **Conclusions:** These findings will inform the design of a clinical trial comparing the effectiveness of specialist clinician implementation of CVD guideline-based prevention care in patients with psoriasis. Ultimately, this study aims to increase the lifespan and health of patients living with psoriatic disease by decreasing barriers to their receiving appropriate CVD prevention care.

## Keywords

psoriasis, psoriatic arthritis, statins, cholesterol, cardiovascular disease, risk reduction, implementation science, qualitative interviews

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## Contributions to the Literature

- Barriers to cardiovascular disease prevention care in specialty practice include clinician familiarity or comfort with guidelines, concern about working outside of scope of practice, confusing boundaries between other clinicians, and time constraints.
- Patients with psoriasis expressed interest in specialist physicians addressing cardiovascular risk in the context of managing psoriatic disease, and physicians expressed willingness to support cardiovascular risk preventative care, particularly if they were able to connect patients with primary care physicians for ongoing management.
- Patients with psoriasis may be more likely to receive cardiovascular disease preventative care if care coordination between their clinicians is improved.

## Background

Psoriasis and psoriatic arthritis (PsA), autoimmune inflammatory diseases affecting over 125 million people worldwide, are associated with medical comorbidity and premature mortality.<sup>1-3</sup> Cardiovascular disease (CVD) is the leading cause of excess mortality in patients with psoriatic disease<sup>4-8</sup> and psoriatic disease is a CVD risk enhancer warranting increased prevention efforts.<sup>9-19</sup>

Recent guidelines from the American Academy of Dermatology/National Psoriasis Foundation and the American Heart Association/American College of Cardiology identify patients with psoriatic disease as a key population for enhanced CVD prevention.<sup>1,4,9</sup> Evidence-based practices for managing CVD risk in patients with psoriasis include (1) counseling patients regarding elevated CVD risk associated with psoriatic disease, (2) risk score assessment followed by screening for dyslipidemia, hypertension, and diabetes in patients aged 40-75, and (3) prescribing statins for primary prevention in patients with a 10-year risk of a major CV event of 5% or greater. Statins are safe, well tolerated, inexpensive, easy to prescribe and monitor, and lower risk of major CV events and mortality.<sup>9</sup> However, patients with psoriatic disease frequently have undiagnosed or inadequately managed dyslipidemia and other major CV risk factors.<sup>20-24</sup>

While CVD risk is typically managed by primary care clinicians (PCPs) and/or cardiologists, patients with psoriatic disease may not regularly visit these clinicians as visits to PCPs have been declining in the US.<sup>25</sup> Estimates suggest that only 46% of commercially insured US adults aged 18-64 visited a PCP in 2016 with visits declining by 24% in the prior 8 years. Second, patients with psoriasis or PsA primarily see dermatologists or rheumatologists respectively. Only 22% of men and 17% of women with psoriasis had encounters with a PCP within a year of their first encounter with their dermatologist.<sup>25,26</sup> This suggests that the current model in which PCPs screen and manage CVD risk factors may be ineffective for many patients with psoriatic disease. There is an opportunity for dermatologists and rheumatologists to take a larger role in the screening and management of CVD risk factors.

The primary aim of this study was to elucidate barriers and facilitators to implementation of specialist CVD screening and management, in particular the use of statins for preventative care in patients with psoriatic disease.<sup>27</sup> This work will directly inform the development of strategies<sup>28</sup> to test the best ways to implement CVD prevention care in specialist settings for individuals with psoriatic disease.

## Methods

*Participants.* Participants, selected using convenience sampling, included 32 individuals from 4 groups: dermatologists (n=8), rheumatologists (N=8), patients with psoriasis (n=8) primarily managed by dermatologists, and patients with PsA (n=8) primarily managed by rheumatologists. Study investigators engaged in outreach to clinicians nationally who might be interested in participating. From that outreach, we generated a list of 11 dermatologists and 24 rheumatologists working in a range of settings including large urban academic medical centers and small community settings. From this list, clinicians were randomly selected and contacted to take part in the study with an eye towards balancing demographic characteristics until we had interviews from 8 dermatologist and 8 rheumatologists.

To recruit patient participants, clinician colleagues at Penn Medicine, outside institutions, and colleagues at the National Psoriasis Foundation referred the names of 68 patients from whom they had obtained verbal approval to be contacted for participation in the study. The target sample included adults aged 40 to 75 with psoriasis and/or psoriatic arthritis who had no history of diabetes or atherosclerotic diseases. Of these 68 patients, 62 of them met inclusion criteria and patients were randomly contacted and invited to take part in the qualitative interview until all 16 patient interviews were conducted (8 patients with psoriasis and 8 patients with PsA), again looking to balance demographic characteristics.

*Procedure & Data Collection.* Semi-structured interview guides were informed by the Consolidated Framework for Implementation Research (CFIR)<sup>27</sup> and addressed barriers and facilitators to implementation, and appropriateness and feasibility of selected implementation strategies targeting clinicians and patients (ie, education materials, prompts, telemedicine services, and peer strategies).

One-time interviews were conducted by 4 University of Pennsylvania staff and investigators between August 31, 2020 and December 23, 2020. This research was approved as exempt from the University of Pennsylvania Institutional Review Board. Interviewers had no previous relationship with the interviewees. During the consent process, interviewers shared the intentions of the research team. The interviews were conducted privately via telephone, and audio recorded, lasting on average 30 to 60 minutes. Patients and clinicians who participated received \$50 for their participation.

Interviewers completed summary sheets immediately following the interviews summarizing high-level impressions. Interviews were then transcribed, de-identified and uploaded into the NVivo 12 Data Analysis Software program.

**Table 1.** Participant Demographics.

Variable	Clinicians (N=16)			Patients (N=16)		
	Mean (SD) or Percent			Mean (SD) or Percent		
	Derm	Rheum	Both	Psoriasis	PsA	Both
Age, years	43.13 (8.35)	38.88 (7.74)	41.06 (8.1)	52.75 (10.66)	57.13 (6.38)	54.94 (2.83)
Sex						
Female	37.5%	75.0%	56.25%	50%	50%	50%
Male	62.5%	25.0%	43.75%	50%	50%	50%
Race/Ethnicity						
Hispanic/Latinx	0%	0%	0%	0%	12.5%	6.25%
American Indian/Alaskan Native	0%	0%	0%	0%	0%	0%
Asian	12.5%	37.5%	25%	25%	12.5%	18.75%
Black/African American	0%	0%	0%	25%	0%	12.5%
White	87.5%	62.5%	75%	50%	0%	68.75%
Native Pacific Islander	0%	0%	0%	0%	87.5%	0%
Other	0%	0%	0%	0%	0%	0%
Prefer not to disclose	0%	0%	0%	0%	0%	0%
Years in practice	12.63 (9.3)	7.75 (6.65)	10.19 (8.21)	–	–	–
Length of time diagnoses with psoriatic disease, years (SD)	–	–	–	26.62 (14.1)	22.13 (14.4)	25.38 (13.96)
Type of doctor seen for psoriatic disease	–	–	–			
Dermatologist				75%	0%	37.5%
Rheumatologist				0%	50%	25%
Other				25%	0%	12.5%
Both				0%	50%	25%

Note. Derm. = dermatologist, rheum. = rheumatologist, PsA = psoriatic arthritis.

Transcripts were not returned to participants for their feedback. Interviews continued until reaching theme saturation.

*Qualitative Data Analysis.* Using an integrated analysis approach that incorporated *a priori* constructs and modified grounded theory, transcripts were reviewed by 3 members of the research team and major themes, relationships and categories were defined. In an iterative process, applications of the coding system were compared and the codebook was refined. The revised codebook was then applied to all the interviews by 3 coders with 25% overlap using NVivo software. Interrater reliability was strong ( $\kappa = .86$ ). Coded interviews were compared for agreement and finalized through consensus. Post-hoc, we explored potential differences in themes by stakeholder group.

## Results

Table 1 describes participant characteristics. Table 2 provides elaborative quotes. Three major themes were endorsed by both clinicians and patients regarding implementation of evidence-based CVD prevention and intervention efforts in the dermatological and rheumatological setting relating to appropriateness, feasibility, and the need for a coordinated care model. We present overall results organized by clinician and patient groups. Differences in themes across the subgroups within clinicians (dermatologists, rheumatologists)

and patients (psoriasis, PsA) were not identified in post hoc analysis.

### Appropriateness

A major theme reported both by clinicians and patients centered on whether CVD preventative care should be integrated into specialty practice (ie, appropriateness).

*Clinicians.* Clinicians expressed general concern over whether CVD preventative care, particularly prescribing statins, was appropriate within the context of specialty care. They warned against the dangers of being too eager to prescribe statins and to recommend lifestyle modifications first (Theme 1.1). Clinicians noted patient's willingness and motivation as essential to engaging with a specialist in CVD care. Some concerns were expressed over whether patients would be open to CVD management from a dermatologist or rheumatologist in comparison to a PCP or cardiologist (Theme 1.2). Clinicians also questioned whether they had the appropriate training, knowledge, or skills to address CVD prevention care, particularly prescribing statins, citing a lack of familiarity and comfort with this class of medications. Many clinicians did not feel confident about their abilities to address CVD risk without further education (Theme 1.3). Clinicians noted further concerns about whether CVD care fell within their scope of practice or would be perceived by other

**Table 2.** Major themes from semi-structured qualitative interviews.

Themes	Illustrative Quotes
<b>I. Appropriateness</b>	
I.1 Whether CVD prevention care, particularly taking statins, is appropriate	<p>"Yeah, I feel like this is a one-sided statement, that dermatologists should be prescribing statins. I think it'd be nice if there was a statement to follow through or recommend the further discussion of the primary doctor to take more ownership of the prescribing of statins because oftentimes pushing pills is not the solution to a lot of things, it's lifestyle modification." - Dermatologist</p> <p>"I think it's really just a combination between understanding what statins may be chosen first for individuals and then looking at their risks." - Rheumatologist</p> <p>"I think that I would want to understand a little bit better why the dermatologist feels like I have to do this at this point in time as opposed to trying other life-style modifications to improve my heart health." - Patient with psoriasis</p> <p>"I would not have minded any one of them sending me for the blood work... if it had been the initial prescribing, it seems a little bit odd for me for the rheumatologist or dermatologist to do it, but if they had done the appropriate test, I would've been fine with it." Patient with PsA</p>
I.2 Patient's willingness or motivation to receive CVD preventative care from specialists	<p>"Patients are a little reticent to take general, in quotations, "internal medicine" type of advice from their dermatologist. So, they might be more resistant to hearing, "oh, you're at risk for cardiovascular disease. This is something that you should take seriously." They may believe it less if it's coming from a dermatologist vs if it's coming from their primary care doctor."- Dermatologist</p> <p>"...So a lot of people don't want to take statins...either because of myalgia, or they've tried them before and they get leg pain, or they don't want to take it because they know someone who ended up having myositis from it. I mean, we hear of this all the time, not just for statins but for all kinds of other drugs. But there is kind of a block to that, we hear that all the time, "Oh no, I can't take that..." - Rheumatologist</p> <p>"If it was a conversation about reducing my psoriasis flares or my experience that I was having with the disease...that would feel the most natural. It would feel a little less natural if it was fully a topic of conversation related to CVD." - Patient with psoriasis</p> <p>"If he made the suggestion, I would definitely take his consideration and concern, obviously. And I would take that information and then go see a cardiologist just to be rest assured." - Patient with PsA</p>
I.3 Clinician's familiarity or lack thereof with in engaging with CVD prevention care	<p>"It's outside of my wheelhouse, so I'd have to get a lot more education before I feel comfortable doing more of this screening or prescribing." - Dermatologist</p> <p>"If during training it's not really beat into your head, counseling cardiovascular risk with all these patients that have inflammatory arthritis, then it's really not going to vary over into your career." - Rheumatologist</p> <p>"It's all based on training and knowledge. If it was a method that all doctors of all specialties have the baseline of the understanding and know when and how to prescribe a statin, then I can accept that." - Patient with psoriasis</p> <p>"I personally would want my rheumatologist to be up to speed and kind of up to date on the risks and benefits of statins. So that goes to the kind of competence and the cardiology area. But I don't know if rheumatologist are up to speed... If they're up to speed on that and are taking a holistic look at psoriatic arthritis, then I'm very comfortable with that." - Patient with PsA</p>

(continued)

**Table 2.** (continued)

Themes	Illustrative Quotes
1.4 Whether CVD prevention care was perceived to be in scope of work	<p>"I guess I don't have an issue prescribing the statins—there's nothing intrinsically prohibiting me from prescribing them, but in my view it's generally been the purview of a primary care doctor to manage hypertension, hypercholesterolemia, diabetes." – Dermatologist</p> <p>"I feel like the counseling and screening for sure. We as rheumatologists or dermatologists should really encourage to step up to the plate. I think for the prescribing that still should be cardiology or primary care doctors. I still think the onus is on them. We should be assisting them in the process though." – Rheumatologist</p> <p>"So, as a dermatologist, you're focused on things that's related that can contribute to whatever skin, dermo, thing that's causing that dermal reaction. If the heart disease is not causing the skin issue and vis-versa, where the skin issue is causing the heart, then I think that more-so actually a cardiologist would need to be in play with the- now you have 3 doctors that's working together instead of just 2 or just one." - Patient with psoriasis</p> <p>"I mean by 'odd,' just unexpected that- I guess just my more traditional way of thinking is you see a specialist for a more limited scope of any issue. And you tend to, I mean if I was to go to a cardiologist, I would certainly talk about the heart. Primary care, sees that, but I wouldn't- it's not what I would expect from a conversation with a rheumatologist or dermatologist. - Patient with PsA</p>
<b>2. Feasibility</b>	
2.1 Patient's knowledge, awareness or understanding about CVD risk, or their ability/capacity to understand	<p>"I think the patients will forget if you push info on them all at once." – Dermatologist</p> <p>"If folks already had cardiovascular disease or family history and they're aware of cardiovascular risks I think it makes it a little bit easier to prescribe the medications." – Rheumatologist</p> <p>"Patients who are their own advocates, they are more proactive, they are well educated about their disease and well educated about their medical condition in general are more open to counseling." – Rheumatologist</p> <p>"I think that I would want to understand a little bit better why the dermatologist feels like I have to do this at this point in time as opposed to trying other life-style modifications to improve my heart health." - Patient with psoriasis</p> <p>"I personally, I'd be a little bit hesitant to take it, only because I would want to read through the side effects." - Patient with PsA</p>
2.2 External constraints such as competing demands and lack of time to include more into visits	<p>"In the dermatology clinic, office visits are often run every 10 minutes to every 15 minutes. And just to discuss psoriasis itself takes me fifteen to 20 minutes, that's the skin counseling part, and then you add 5 to 10 minutes to counsel on just lipidemia, BMI, cardiovascular risk factors, stop smoking, stop drinking. I think that requires almost a whole visit." – Dermatologist</p> <p>"We have so much to do, so much to do, so many things to take care of. I think it's one more thing to consider and counsel on, so time can be an issue." – Rheumatologist</p> <p>"I mean those appointments don't last very long. I mean again, they're both very nice, they're cordial, I mean everything- but it's I guess it seemed like the life of the specialist is they have 5 or 10 minutes with each patient and they move on. So yeah, I think it would be great if they would spend more time with the patient, but it's more what I've seen from specialists generally." – Patient with psoriasis</p> <p>"... if I'm there for one issue, specialists typically don't spend a whole lot of time with patients and it's more just, deal with the issue at hand, and let somebody else take care of their other specific issues. I mean I know not all doctors act that way, but it's more what I've seen." Patient with PsA</p>

(continued)

Table 2. (continued)

Themes	Illustrative Quotes
2.3 Role of practice and social norms and expectations, values and assumptions about clinician activities	<p>"I don't know of any colleagues, other than the few true experts in psoriasis who would consider giving statins to people. So, I'd like to see more physicians or know of more physicians who are doing this, and I'd like to have more personal education and training on it." – Dermatologist</p> <p>"So, I think the main barrier, at least where I'm practicing, is that there would have to be a widespread understanding, and if there were to be a change, a change in the role of that rheumatologist to be the one primarily managing that therapy. And that would have to be something that the primary care providers agree to and that the rheumatologists agree to. I think that it would have to be kind of a universal agreement that this would be a role of the rheumatologist to take on the monitoring and management of treating patients with statins." – Rheumatologist</p> <p>"When a dermatologist comes in, just their skillset is, 'let's check your skin, let's check the- all over.' I've never heard a doctor, a dermatologist, ever bring up blood pressure, ever ask me, 'How's your blood pressure? How's this?' That it's pretty specific what they're looking at, so you'd have to pull the lens away, and I just don't see, from my experience, they're more task oriented, which I know they're not, but that's the impression that I get. Whereas a GP wants to take a look at the whole picture, and it's like, okay, the dermatologist- where's the buy-in on this for that? And it's just- there's not." – Patient with psoriasis</p> <p>"I'm there for one issue, specialists typically don't spend a whole lot of time with patients and it's more just, deal with the issue at hand, and let somebody else take care of their other specific issues" – Patient with PsA</p>
<b>3. Care Coordination</b>	3.1 Issues of care coordination between clinicians working with the same patient
	<p>"I think maybe the concept of team management, I think is what I'd like to do with said patients. So, there should always be an internist or a family doc on board, a dermatologist in the room, and that's at the least. Yeah, and then the patient going back and forth between the 3 of us, so information can be shared between the 3 of us; and if that becomes the norm, I think that would make it easier for all 3 specialties to counsel, treat, prescribe without overlapping duties." – Dermatologist</p> <p>"Definitely a good team approach is essential, you let the primary care doctor have a good communication system established and you have multidisciplinary care then it makes it easier. Of course, if you have an electronic health record that communicates and talks to each other, the patient data sharing becomes easier than counseling certainly feels more streamlined." – Rheumatologist</p> <p>"I find it odd if they were to say, 'I think there's a different statin or some other class of drug instead of a statin to go on.' I don't think I would do that without asking them to talk to my primary care or for me to talk to my primary care. I mean it's-- but that's how I expect doctors to act in general, that they wouldn't supersede over somebody else that I'm seeing." – Patient with PsA</p> <p>"It seems like an odd thing, but... I guess I surely would not object any of the docs that I see talking to each other. And I think that would be a good thing... I don't know in general that's the best expertise for it, but I mean if one of them had some input. If the rheumatologist or dermatologist had input as to what a more appropriate treatment would be, I mean I would certainly be open to that. Hearing it directly from them or having them talk to my primary care." – Patient with psA</p>
3.2 Patient's relationship, trust & comfort level in clinician doing CVD prevention care	<p>"In my opinion, every doctor we go into is going, 'here's your weight, here's where you should be at. What's your plan?' And I don't care what doctor it is. But that's my opinion." – Patient with psoriasis</p> <p>"I mean I'm comfortable with all the docs that I see, so I wouldn't feel uncomfortable with them talking about any issue" – Patient with PsA</p> <p>"For that one it's one you have the best rapport with" – Patient with PsA</p>
<b>4. Implementation Strategies</b>	(continued)

Table 2. (continued)

Themes	Illustrative Quotes
4.1 Education materials	<p>“... I would like some additional training on statins and use of statins. Any additional training or education in this would be helpful. Again, I think it’s for me personally, an issue of confidence and I would like to be comfortable with knowledge before I put this into action...” - Dermatologist</p> <p>“Yes, number one would be education. Just understanding, these AAD guidelines I was not aware of. Then I think also a stronger push from our own ACR would be helpful. I think also having something that would almost be like an automated thing either we or the medical assistants or someone in the office could pre-populate that would actually come up on the computer screen for every patient that has psoriatic arthritis as a diagnosis. That would be really helpful.” - Rheumatologist</p>
4.2 prompts	<p>“Some people are good at visuals, some people are good at things that are reading, some people are good at hearing things... I’d like to have different avenues on how to address it. Just telling me I have to lose weight and offering one suggestion I’ve been in sales all my life, and if you just offer one suggestion you have a 50% percent chance of getting a negative, because you’re looking at things binary, yes, no. And it would be easy to do. A sheet of paper, here’s a podcast, here’s a YouTube video, here’s this- because people are approaching things in different ways.” -Patient with psoriasis</p> <p>“Printed, or web-based materials would be good. Hearing the information as it’s dispensed during an appointment is good, I don’t always look it up myself. I would like something to go back to at my convenience, like “Let me look back at that document that was provided, let me download that just to peruse through that.” That’s an important thing to me. And being able to be looked at in depth, which is important. Something this potentially important on there, probably more so than a video which they’re probably going to get to. A short YouTube clip is good, but I usually don’t find them as informative as written material. I have a curious mind and I wanna know how things work, so verbal first would take place during an appointment whether that be live or virtual, but then something to refer back to after the appointment.” - Patient with PsA</p> <p>“(Electronic medical records) are generally pointed towards primary care physicians. Again, as specialty care physicians, we are not subject to those same guidelines that are set forth by our hospitals and our hospital administrators, so I think if it was something that we would get flagged on, or we would get prompted to review automatically, then we probably would focus more on it... I think that could also be a barrier- it’s just expectations within our hospital system don’t put that onus on specialty care physicians as much as it would on the primary care physician.” - Dermatologist</p> <p>“No, I mean, for providers I think one thing—I mean most of us are on electronic medical records and stuff, I mean I actually think that might be something that would be easier to do. On those system, is to do an alert any time the system sees a 40-75 person with these diagnosis, psoriasis, PSA, and alert in the EMR saying, “Hey, did you do a screening within the last year?” That’s something that is organizational and can be relatively easy across the board. And that at least prompts the providers to say, “Hey, I didn’t do this,” or “When was the last time I did this?” - Rheumatologist</p> <p>“I don’t like to receive texts like that. It’s okay if I was warned for something. If for my example, my dermatologist was like you have an appointment tomorrow at 5, that’s okay, not other information. I feel like that important information should be emailed or should be given to me in person. I think it’s because of my age, I just don’t like to use my phone a lot.” - Patient with psoriasis</p> <p>“I’m indifferent to it, it doesn’t matter to me, like it’s some sort of alert. I’m very old fashioned, I keep a paper calendar. I would write down appointments, write down reminders for bloodwork, all that kind of stuff. I’ve never quote, unquote “logged” exercise. I just exercise [laughs]. But when I did [Person 12]’s fitbit study, you had to sync the fitbit every day and then it was loaded onto this website, so you got these graphs for feedback and all. So I mean that’s nice for people to see, it’s just, I’m indifferent to it. It really doesn’t affect my ability to do one thing or another. I’ll just do it.” - Patient with PsA</p>

(continued)

Table 2. (continued)

Themes	Illustrative Quotes
4.3 Telemedicine service	<p>"I like certain points of that strategy. I think the challenges that we recently were forced to do a lot of telehealth during the pandemic, and we quickly realized that many patients have very poor or no internet access, or they don't have a device with a camera on it, or they struggle with learning how to use these devices. So there immediately is going to be a patient gap where you can't access everybody through that system. And then I think the other challenge might be is finding who the specialist would be on the other end of telehealth, as it would be doing the management of the medications, because that would be somewhat of a new role, and so to recruit people into that might be difficult initially." - Dermatologist</p> <p>"I think you are stepping on primary care doctors' toes in that situation. I think you're involving outside, an outside provider, like healthcare provider, that's not really part of the patient's care team. And I think, so I would say the downsides to this—pros are that I guess it's an efficient way to address this issue, but the downside is you are potentially offending certain primary care doctors that you might work with regularly. I don't think it would be all that effective. I think patients might end up not using it. They would take it home and forget to do it. I think it'd be hard to coordinate them getting to the right lab to get it done. I don't think it'd be that effective. And I don't think it would be that acceptable." - Rheumatologist</p>
4.4 peers	<p>"Depends on how much that out-of-pocket is. It could be expensive. I think having some type of discount, especially if you don't have medical insurance, hopefully medical insurance will cover it; I think it can be a good service if it's cost effective. As long as the doctor to me is involved in this tele group is not replacing the doctor or taking the personal relationship away, I think it will work. I think if they act as the intermediary where they're in the middle, okay the doctor sees you, and doctor's known everything, but she or he then pushes it off to this group to then handle from there for labs and prescriptions, then I find that to be okay. But as long as it's not replacing the doctor cause I think that personal relationship is needed. So just being on the telephone or do a video is just, to me, not personal enough. Cause sometimes you cannot accurately read a person or give a just- that person overall, stature, figure, you may notice in person that you don't notice through a camera" - Patient with psoriasis</p> <p>"Yeah I think that telemedicine is just- it's come by leaps and bounds in only the past 6 months just because of the pandemic. And I personally have used it as a patient as well as a medical professional, so I think it's fantastic. As an entity right now, we have to use it in many cases. Certainly, if again, people are in their latter decades of life, that's the higher risk group right now with COVID, so I still think it's very advantageous. My only concern would be- you're saying it would be a mail-order component to the medication? Maybe out of would be some sort of thing to help remind the patient what to do and to read the labels on the bottles if there's multiple medications. That would be my only concern, if there's this, 5 medications in the mail, they just start taking them all. If they don't read the label, one could be twice a day, one could be once a week." - Patient with PsA</p> <p>"Yeah, I don't know that I would be in favor of that strategy. I think that much of medicine is trying to move in that direction, where it's a pay for performance. And I think it removes the art of medicine in many ways and kind of takes the physicians to a different place, where we're just trying to bank a lot of check marks and boxes. And I don't necessarily feel that's a very good model for healthcare." - Dermatologist</p> <p>"I really like that idea. Again, this is something that I have thought a lot about and care about. I'm trying to put myself in the shoes of people who are not like me. I think it's a great idea. I think it gives an incentive for people to think about this, and then I think it becomes a reminder, you're getting regular reminders to think about this with your patients. - Rheumatologist</p> <p>"I probably wouldn't (use peer coaching) Because now I'm connected with somebody, I don't know that's gonna tell me about stuff that my dermatologist and/or PCP probably has or has already told me about, or I already have some basic information for it." - Patient with psoriasis</p> <p>"I would be open to it. A lot would depend on who that person was. If it's someone I can relate to. I don't want to dismiss it out of hand, but if I got the right person then yeah that would be great. If I didn't get the right person, might not work for me." - Patient with PsA</p>



clinicians and patients as more suitable under the oversight of a PCP or cardiologist noting potential lack of role clarity and patient resistance to specialist guidance on CVD (Theme 1.4).

*Patients.* Patients also expressed concern over whether CVD prevention care, particularly prescribing statins, was appropriate within the context of specialty care. Patients similarly felt they would want to be sure taking a new medication was necessary (Theme 1.1). Patients noted it might feel out of place to discuss CVD care with their specialist, although there was an openness to discussing the topic (Theme 1.2). Patients also expressed concern over whether specialists had the appropriate training, knowledge, or skills to address CVD prevention care. Concern was frequently expressed that specialists may not have a comprehensive understanding of the rest of the patient's health history and medications to the extent a PCP would. Patients wondered if it would be a new skill for their specialists and felt they would be more comfortable engaging in CVD risk management, particularly taking statins, if they had a supporting recommendation from their PCP or cardiologist (Theme 1.3). Patients also noted perceptions that specialists were focused on their specialty areas and that CVD may be outside of their scope of practice (Theme 1.4).

### Feasibility

A second theme frequently raised by both clinicians and patients related to whether integrating CVD care in the dermatological and rheumatological setting was practical and realistic (ie, feasibility).

*Clinicians.* Clinicians shed some doubt about their ability to fully convey information regarding CVD risk and management to their patients, and noted prescribing a statin would be easier if patients were already knowledgeable about CVD (Theme 2.1). Clinicians felt it may be unrealistic to incorporate conversations around CVD prevention within their already tight schedules and short visits. Other external constraints such as competing demands that need to be addressed in the visit and required by the practice were also cited as barriers to taking on this additional responsibility (Theme 2.2). Clinicians felt it would be unusual and not the expected behavior in their specialty to include CVD care and that specialists were typically focused on their specialty area. Clinicians felt norms would be a strong influence on whether they would take up this approach, and that continued education through educational materials, journal articles, professional association promotion, and educational information from pharmaceutical companies could change norms (Theme 2.3).

*Patients.* Patients frequently expressed a desire to be more informed about CVD risk related to their psoriatic disease and management techniques including statins

(Theme 2.1). Patients similarly noted the lack of time available during visits with their specialists and doubts that CVD care could be adequately addressed within the existing constraints (Theme 2.2). Patients similarly felt the norms of specialist and primary care practice would keep specialists focused on more "task-oriented" work and not CVD care (Theme 2.3).

*Coordinated Care.* Both clinicians and patients discussed the importance of coordinating care between specialists and PCPs for identification and management of CVD risk factors.

*Clinicians.* Clinicians viewed increasing coordination between themselves and PCPs as the solution to reduce the likelihood of duplicative efforts of requesting lab tests and prescribing statins between different clinicians, while increasing the comfort and respect patients would have in their involvement in CVD care. Difficulties in sharing records across health systems was a commonly cited obstacle to coordinated care. Clinicians also felt PCPs were more likely to have a more complete understanding and involvement in the patients' health management and therefore felt it was more appropriate for specialists to assist in counseling, screening, and perhaps prescribing, but that ongoing management of statins would be more suited to PCPs (Theme 3.1).

*Patients.* Patients similarly felt less comfortable being prescribed a statin for CVD by their specialist and would be interested in confirmation from their PCP or a cardiologist before initiating, but were interested in receiving counseling from any clinician, and screening if the results could be shared with their other clinicians and they weren't spending their time or money on duplicate testing (Theme 3.1). Patients frequently noted the significance of their individual relationships with their specialists and the influence that had on whether they would be willing to receive CVD prevention care from those clinicians. Their level of trust and comfort in their individual clinicians was described as influential on whether they would be willing to receive this kind of care from specialists, but there was a notable overall openness to the integration from patients (Theme 3.2).

### Implementation Strategies

We offered a list of potential implementation strategies (ie, education, alerts, peer strategies, performance reporting, and telehealth) for integration of CVD preventative care into specialist practice and asked participants to share their perspectives on these approaches.

*Clinicians.* Clinicians reported that educational materials would be crucial for them to gain confidence in providing CVD prevention care to increase understanding and awareness for both themselves and to share information with their patients (Theme 4.1).

Clinicians had mixed feelings about electronic health record alerts and order sets prompting statin prescription in eligible patients – some clinicians felt they would be helpful whereas others felt that specialists did not use alerts and order

sets in the same way that primary care clinicians do (Theme 4.2). Clinicians also had mixed feelings about the possibility of outsourcing lipid screening and statin management to a telemedicine service with some noting this could be a good option especially given advances made during COVID-19 and others reporting that it might further complicate cross-provider communication and many feeling the out-of-pocket cost would impact its suitability (Theme 4.3).

Clinicians did not like the idea of the additional burden to their regular practice of submitting data on a regular basis to receive reports on how their statin prescribing rates compared to their peers, or for pay-for-performance measures (Theme 4.4).

*Patients.* Patients felt educational materials would be beneficial as a non-burdensome, easily used option for increasing understanding and awareness (Theme 4.1).

Patients had mixed feelings on using a mobile text or app to encourage and guide them in managing their CVD risk. Patients reported that this could be a useful method for some, but intrusive for others. Many patients cited their age and lack of interest in their phones as a barrier (Theme 4.2). Patients similarly had mixed feelings about the possibility of outsourcing lipid screening and statin management to a telemedicine service with some feeling this could further complicate cross-provider communication and many feeling the out-of-pocket cost would impact its suitability as an intervention (Theme 4.3).

Most patients were not interested in engaging with a peer coach to assist them through their CVD risk management journey (Theme 4.4).

## Discussion

The link between CVD risk and psoriatic disease requires early prevention and intervention.<sup>1,4</sup> Our study used a qualitative approach to elucidate barriers and facilitators to implementing CVD preventative care in the specialist context. We found patients and clinicians agreed some aspects of CVD care would be well suited to the specialty setting, while others may not be appropriate or feasible. A major takeaway is the importance of coordinated care for supporting CVD preventative care.

Both groups agreed that aspects of CVD care could and should be implemented in specialty care. Both clinicians and patients were willing and interested in more patient-centered, holistic care and open to integrating at least counseling and screening into specialist visits and increasing care coordination between patients' PCPs and their specialists for statin initiation and management. To enhance feasibility, clinicians expressed increased willingness to take part in the process if they received education to increase personal confidence and to change norms as well as if ongoing statin management could be provided by PCP or a cardiologist.

However, concerns were expressed by both clinicians and patients about whether it was appropriate for

specialists to engage in ongoing management of statins by specialists based on the barriers we found. Both sets of stakeholders felt that PCPs are more familiar with the patient's whole health history and treatment preferences, or cardiologists would be more appropriately suited. Lack of organizational and systemic support, pressure for time during visits, and concern of infringing on other clinicians' scope of practice were mentioned as barriers by all individuals. Notably, while specialists described CVD management as out of scope, they regularly prescribe other disease modifying antirheumatic drugs and biologics, suggesting that shifting perceptions might be possible as cultural norms change.

A major opportunity for improvement is the need to increase care coordination between specialists and PCPs. One model to draw from is the Collaborative Care approach. In this model, patient's specific clinical goals are targeted using evidence-based practice guidelines and a measurement-guided care plan including a treatment team of clinicians working with the patient, led by a PCP. Among integration models, the Collaborative Care Model has the most evidence demonstrating its effective and efficient integration with outcomes of improving clinical outcomes, improving access, controlling costs, and increasing patient satisfaction.<sup>29</sup> However, in this case, the Collaborative Care model needs adaptation as it is likely not practical to have a PCP lead coordination with the specialist. An innovative approach would be to deploy a centrally located care coordinator embedded within existing infrastructures, such as the National Psoriasis Foundation patient navigator service. This approach would shift screening for traditional cardiovascular risk factors to the specialists who regularly care for patients with psoriatic disease, while developing an innovative care coordinator model to support specialists and patients in achieving better CV outcomes through CVD prevention management. Although this model has not yet been deployed in specialist practice for psoriasis, it is promising.

Both clinicians and patients most preferred implementation strategies with an educational focus. A recent review of the literature on interventions aimed at increasing statin-prescribing rates in adults without a history of psoriasis suggest that multilevel initiatives targeting both clinicians and patients demonstrate more promising results than those focused on physician education alone.<sup>30</sup> Future work understanding the trade-off between stakeholder preference for implementation strategies and the most effective approaches to change behavior is warranted.<sup>31</sup>

Limitations in this study include the use of convenience sampling. Due to this, our physician sample was likely more academically oriented than the general dermatology or rheumatology is in private practice. Information about whether participants represented suburban, urban or rural perspectives was not systematically collected. Although we did have diverse representation in our patient participants, a

majority of participants were from white racial backgrounds.

## Conclusions

This study suggests the need for increased care coordination between specialists and PCPs as well as a need for multilevel implementation strategies for both clinicians and patients around evidence-based CVD prevention. These findings will inform the design of a clinical trial testing a novel care coordinator model to lower CVD risk in patients with psoriatic disease. Ultimately, this study aims to increase the lifespan and health of patients living with psoriatic disease through identification of ways to improve cardiovascular health in patients with psoriatic disease.

## Appendix

### List of Abbreviations

PsA	Psoriatic Arthritis
PCP	Primary Care Provider
CVD	Cardiovascular Disease
CV	Cardiovascular

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### Authors' Contributions

JMG obtained funding and is the PI of the project. AWA, AO, NNM, JSB, and RSB were co-investigators who contributed to the overall conceptualization, design of the study, and interpretation of results. RSB and AEL designed the qualitative interviews with feedback from the rest of the team. Interviews were conducted by ACG (research assistant, program manager, and MPH student), AEL (Director of Research Operations), and JBM (Clinical Research Coordinator), all with previous training and experience in all aspects of qualitative research. ACG, JD, and AEL coded, developed codebook, and assisted in analyzing findings with input and guidance from RSB. ACG led drafting of the initial version of the manuscript with assistance from JD and support from RSB. All authors provided substantive edits and all read and approved the final manuscript.

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### Ethics Approval and Consent to Participate

This study was deemed exempt by the University of Pennsylvania IRB.

### Availability of Data and Materials

Dr. Beidas had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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