

# Use of a validated screening tool for psoriatic arthritis in dermatology clinics

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## Abstract

Dermatology clinics represent a key opportunity to screen patients with psoriasis for psoriatic arthritis (PA) which often remains unrecognised. A significant proportion of adults with psoriasis develop arthropathy [5] with around two-thirds having progressive arthritis.[6] NICE has recognised this by the annual use of a validated screening tool such as psoriasis epidemiological screening tool (PEST) on all psoriasis patients without PA. We introduced the PEST into our dermatology department since there was no established system of screening for PA. Twenty-one percent of patients that were identified through PEST as requiring a referral at baseline were not referred to rheumatology through the current system without PEST. This represented a significantly missed proportion of patients with possible PA.

Using the PDSA cycle method, we introduced the PEST into cycle 1 and educated key staff about the tool. All eligible patients were referred appropriately. Through doctor and patient feedback, changes were adopted for cycle 2 and informative emails to all key staff about PEST were sent. We noted a drop in the number of PEST uptake in this cycle possibly due to lack of awareness on the purpose and use of PEST among staff, across the department. An educational teaching session was delivered to a wider audience and posters were placed in strategic areas of the department prior to the final cycle. This resulted in 100% PEST uptake and 100% of those with a score of >3 being referred. A total of 51 patients were studied, comprising of 30 eligible patients for PEST. Of these, 27 patients were actually screened (90%) and five with a PEST score of  $\geq 3$  were identified and referred appropriately (18.5%). We felt this represented a successful outcome in increasing PEST uptake within the department and in capturing a significant proportion of patients at risk of PA.

## Problem

We conducted a quality improvement project (QIP) in the dermatology department in St. George's Hospital, London, which is one of the UK's largest teaching hospitals.

National Institute for Health and Care Excellence (NICE) guidelines for psoriasis [1,2] recommend an annual assessment for psoriatic arthritis (PA) using a validated tool such as the psoriasis epidemiological screening tool (PEST) in both primary and secondary care. It is recommended that patients should be referred to a rheumatologist for assessment and advice about planning their care if they score three or more in the questionnaire. Although it does not detect axial arthritis or inflammatory back pain, PEST is a validated tool for use in adult patients.

Unfortunately, the uptake of PEST in dermatology clinics is poor nationally.[3] This was a recognised issue by the British Association of Dermatologists (BAD) and they have provided a central online resource to easily access this scoring tool. BAD suggested possible reasons for the poor uptake to include time, availability of the tools, acceptance by target audience and problems locating the tool in clinics.[3]

During psoriasis and general dermatology clinics we noted there was no current system to screen for PA in psoriasis patients, and therefore NICE guidelines were not being followed. Patients attending psoriasis clinic currently complete the dermatology life quality index (DLQI) in the waiting room and the psoriasis area

severity index (PASI) in the consultation room, but neither of these address joint involvement. Psoriasis patients attending general clinic do not receive any questionnaires.

We wanted to implement a robust system of screening for PA in both psoriasis and general dermatology clinics in accordance with NICE guidelines which would be sustainable and reduce potential missed cases of the disease. We felt this was an invaluable opportunity to introduce the PEST questionnaire into our dermatology department.

## Background

Psoriasis has a UK prevalence of approximately 2 to 3% [4] and represents a significant proportion of the patients seen in dermatology outpatient clinics. Up to a third of patients have underlying PA [9] and it is likely that this is unrecognised in many patients.[4] A significant proportion of adults with psoriasis develop arthropathy (reported in one study to be 13.8%) [5] and around two-thirds of these patients have progressive, damaging arthritis.[6] As psoriasis is an inflammatory arthritis with a potential to progressively damage joints, it is recommended that such patients should be referred early to a rheumatologist for assessment [4] especially within the first 10 years of the disease.[1]

Some studies have shown that PA results in radiological damage in up to 47% of patients over a median interval of two years.[7] Furthermore, the use of new biological therapies that suppress inflammation have also improved outcomes in people with

established PA.[8] Considering these findings, in line with prompt robust treatments for the well-studied joint erosive conditions such as rheumatoid arthritis already in standard practice, it seems imperative to identify and treat PA patients early on in the disease journey.

Many screening tools have been developed to help identify those with potential PA. We chose the psoriasis epidemiology screening tool (PEST) as this is a highly sensitive (0.94) and specific (0.78) [1] tool and is approved for use by both NICE and Scottish Intercollegiate Guidelines Network (SIGN). The PEST questionnaire has been well established as one of the superior screening tools for PA at present and seems easy to use in the busy clinic setting.

## Baseline measurement

We set out to identify current practice of assessing patients in psoriasis clinic for PA (if any) before introducing the PEST. Data were collected from the medical notes of patients with psoriasis seen in two types of clinic; specialist psoriasis clinic and general dermatology clinic over a two week period. A total of 10 clinics were analysed conducted by five different clinicians of various grades.

Careful assessments of the notes were carried out prior to each clinic where we identified those already with a definite or possible diagnosis of psoriasis. Excluded patients included all psoriasis patients already known to have PA and those already under the rheumatologists for PA.

For all eligible patients, data were then entered into a pre-devised data collection table (see attached data tables) looking at two main outcome measures:

First outcome measure was of whether a validated screening tool for PA, such as PEST, was used for psoriasis patients as per NICE guidance within the last one year. Other commonly used validated tools such as psoriatic arthritis screening evaluation (PASE) and Toronto psoriatic arthritis screen (ToPAS) were accepted as alternatives to the PEST.

The baseline results identified 21 patients in total with psoriasis that were eligible to receive the PEST i.e. after excluded patients. Unsurprisingly, the results showed none of the psoriasis patients were previously screened using a validated tool for psoriatic arthropathy.

The second outcome measure was whether the patient had a specific joint inquiry documented in the notes within the last one year (to include any of the five questions from PEST) and whether this led to a rheumatology referral. This was considered as some clinicians had anecdotally mentioned that they had asked patients about general joint symptoms instead of using a targeted tool such as the PEST. We wanted to see if this current method was leading to appropriate referrals to rheumatology.

A clinician documenting "No PA", as occasionally seen in notes, was not accepted as adequate documentation for screening for PA as this term is very vague and gives no indication as to whether any

relevant questions for PA have actually been asked on that occasion. This could simply represent a practice of replicating previous diagnoses headings, without further inquiry in that consultation.

Results showed only two out of 21 (9.5%) of patients had a specific joint inquiry documented in the last consultation or in the last one year showing that the current system was not adequate. No referrals to rheumatology were made among this cohort of patients even though there was some form of joint enquiry.

After each consultation, all eligible psoriasis patients were then targeted to receive the PEST to fill in at reception. A further review of the notes was made after clinic to look at a third outcome measure of how many patients that had a PEST of >3 were identified and referred to rheumatology under the current system without the use of PEST.

Results showed three out of 21 (14.3%) of patients had a PEST score of >3. None of these were identified or referred to rheumatology through current clinical practice, which represented a missed opportunity to capture possible PA in clinic. Furthermore, none of these three patients had an adequate prior joint inquiry within the last one year, adding weight to the argument that the correct patients with a true risk of PA were simply not being targeted and picked up through the previous system. We find this to be a significant proportion of patients that could potentially benefit from early intervention and the associated benefits of early treatment and reduced morbidity.

## Design

We set out to introduce the PEST as a simple to use and quick questionnaire to help screen for PA patients in the dermatology clinic. We conducted the PDSA or plan, do, study, act cycle, as a model for this study. The intervention was introduced in multiple cycles with feedback and improvement implemented at each stage.

Specialised psoriasis clinics at St George's Hospital already had a system in place of clinic staff handing questionnaires (DLQI) to patients before they were seen by a dermatologist in the waiting room. The clinic member would then place the completed form loosely in the notes for the doctor to review. It was therefore straightforward to include the PEST questionnaire alongside this already established process in the clinic by informing clinic staff to add this extra questionnaire. Apart from ensuring this new tool was also photocopied and handed out, this required minimal additional work for staff.

However, the general dermatology clinic posed some challenges: since these usually involve a mixture of various dermatological diagnoses, it was not possible to establish which patients had a definite or suspected diagnosis of psoriasis before they were seen by the dermatologist without going through each set of notes individually.

There were therefore two possibilities - the doctor remembering to complete the form either within or after the consultation, or the

nurses looking through all the notes beforehand to pick up such patients and then hand out the questionnaires accordingly.

Initially, we felt that the latter may be a feasible option and an informal meeting was organised with clinic nurses and the dermatology sister in charge to discuss the issue further. However, they felt that this was beyond the scope of their skill set and would be too time-consuming while trying to run multiple busy clinics simultaneously. The issue was also discussed with the dermatology head of department who agreed that this would be too much work for clinic staff. It was agreed that doctors would have to remember to complete the PEST for all psoriasis patients they see.

We decided to trial the doctors handing out the PEST to patients within the consultation during cycle 1 by asking clinic staff to place the PEST in generic leaflet boxes within each clinic room. Doctor feedback on the process was obtained during this and future cycles and consistently indicated a preference for this process rather than asking patients to fill in PEST after the consultation and having to collect it afterwards. There was concern about not remembering to collect the PEST from reception as it would add an extra layer of work that may be forgotten. They also felt that having the PEST straight after the consultation would assist in remembering to include it in dictations, which are often done after each patient.

Data collection tables were devised to collect information from the patient notes, including whether there was a current or past history of psoriasis, whether a PEST was done in the clinic, the PEST score, whether anyone was referred to rheumatology, and whether they had a PEST or joint inquiry within the last 1 year. Patients with known PA that had a PEST completed were not counted as this is not a validated use of the tool.

Feedback questionnaires were also handed out to patients and doctors during initial cycles to help refine the PEST tool further and to improve the process. The results from the doctor feedback suggested many changes to the PEST which we adopted. These included adding a question on whether the patient has been seen by a rheumatologist in the past high up in the PEST tool to act as a prompt to the doctor to enquire if the patient is already known to have PA. The PEST questions were tabulated and placed above the diagram to help ease of entry and to ensure the crucial data is captured in the first instance before going on to completing the diagram. Clear instructions for the doctor on what to do with the score were placed in the footer of the PEST tool to ensure that the whole process is followed through and documented. In particular, we added a note to dictate the "next PEST due date" in the clinic letter to act as a prompt for repeat screening in clinic or by the patients' GP if they were discharged.

The patient feedback was equally valuable. Ninety percent (90%) of patients stated that the questionnaire was easy to fill in. Suggestions on having the questions placed above the diagram were mentioned again, the diagram was made bigger and data entry boxes were also enlarged. The diagrams appearance was changed with the addition of a smiley face to make the tool more user friendly.

The changes above can be seen more clearly when comparing the original PEST with the modified one in the attachments to this article.

As well as introducing a modified PEST driven by this feedback before each cycle, we used other methods of encouraging the use of PEST to the department. This included emails, educational teaching sessions and posters within the department. Highlighting its place in NICE and SIGN guidance gave more backing for the project and seemed to engage more staff into implementing this process.

We proceeded to make the PEST available as above for both psoriasis and general clinics.

The questionnaire is a very cost effective tool as it fits on one A4 sized page in black and white format and the cost of printing multiple sheets to maintain the clinic stock would be low. The process of doing this is not complex and is already replicated by printing copies of existing questionnaires used in the department (DLQI and PASI) and would therefore not require any new skills or procedures. We did not have to draw on extra resources to store the PEST as there were already generic form storage boxes in each clinic room. The form is easily modifiable in the word format of the PEST tool we designed, helping adapt to potential changes in the future. The form is quick to fill out before seeing the doctor and in psoriasis clinic in particular, it can be filled in before the patient is seen, saving the doctor valuable time in the consultation. One could argue that filling the form within a general clinic may also save the doctor time by focusing his history in a more targeted way with the PEST.

The sustainability of the process relies on doctors and clinic staff members being made aware of the PEST by incorporating it into the routine procedures when seeing patients with psoriasis. This was achieved by individual discussion with clinic staff, an educational session, emails, and posters. In the future it could be made more sustainable by introducing it as part of induction of new clinic staff in the department.

The ability to produce copies relies on the use of a departmental printer located in the sister's office next to the clinic rooms and this would need to be maintained and serviced as normal. It is not anticipated that the frequency or cost of this would be significantly affected by using this extra one page questionnaire.

## Strategy

PDSA cycle 1: we introduced the standard PEST (as available on the BAD website) to dermatology clinics over a two week period, comprising of three psoriasis clinics. A brief summary of the purpose and use of PEST was given to the clinic nurse in charge of handing out questionnaires to patients in the waiting room and the two doctors conducting the clinics beforehand. Copies of the PEST were provided to the nurse to hand out during these clinics.

Patient feedback forms were attached to each questionnaire and staff feedback forms on the process and questionnaire itself were

all collected at the end of each clinic. The results of these were taken into consideration for the next cycle.

PDSA cycle 2: we now extended the project to include both psoriasis and general clinics within one week, comprising one psoriasis and three general clinics. The questionnaire and process was modified according to the feedback given previously.

For psoriasis clinic, doctor feedback had indicated that they preferred the patient to hand them the completed forms directly rather than it being placed loosely in the notes. Therefore the nurse in charge was instructed accordingly.

For general clinic, copies of our modified PEST were given to the clinic nurse to place inside generic leaflet boxes already present in each of the consultation rooms for the doctors to use. More doctors were individually advised on the project, its purpose and the importance of getting the patients to do the PEST tool themselves, since there was no feasible system to have these completed beforehand.

For this cycle, an email alert was sent out to all staff describing our project, its purpose and details of the PEST tool, together with where the questionnaires can be found in the clinic area. This also allowed people to reply individually and give further feedback or ask questions.

Although PEST was being used for some psoriasis patients, some were still being missed as some staff had not been spoken to or checked their emails and others commented they didn't understand the reason for the form and why there was yet extra paperwork to manage in already very busy clinics.

PDSA cycle 3: having had increased uptake in both types of clinics from baseline, it was planned to roll out the questionnaire to all clinics occurring all week by all clinicians. Data were collected over a three week period during this final cycle, comprising of nine general and two psoriasis clinics. The PEST was further modified into a final version using the feedback from cycle 2.

To increase awareness and educate staff on the importance of our intervention for this cycle, a departmental teaching session on NICE guidance on screening for PA in psoriasis patients was given to the dermatology department, to include consultants, junior doctors, and associate specialists. Emphasis was placed on when to use the questionnaires, what to document and dictate, and where the questionnaires were to be found in the department. Feedback on how use of the tool had already picked up a few cases of possible PA and referred to rheumatology was given. This helped further encourage and motivate attendees about the importance and value of PEST in clinical practice.

A further similar teaching session was given to all the clinic nursing staff and HCAs with emphasis on how the process would work and where the questionnaires could be located. A key person who is normally responsible for handing out questionnaires during the clinics was designated to be responsible for printing the PEST, handing out to patients and topping up the clinic boxes, with a

specific hand-over to be given to a back-up person if they were away or busy. However, all staff were reminded that these responsibilities needed to be shared among themselves if clinic members were away or busy.

Posters reminding all staff about the importance of using PEST for all psoriasis patients were placed in key areas of the department, including all clinic rooms, consultant rooms, registrar rooms, the sister's office, nurse weighing room, and the library. The posters aimed to inform staff who could not attend the teaching sessions and remind staff during the actual clinics in real time to use the PEST (see attachment for poster).

These processes ensured that many more psoriasis patients were now screened for PA compared to baseline practice, with more referrals made to rheumatology as a result.

See supplementary file: ds4765.docx - "PDSA cycles (1 and 2), original and modified PESTs, and poster"

## Post-measurement

Data from using the PEST tool were collected continuously during each PDSA cycle, to include rapid review of clinic notes after each relevant clinic and feedback from patients and doctors on the ease of use of the questionnaire and process.

Overall this project looked at a total of 58 patients with psoriasis, with 21 in baseline measurements, 19 patients over cycles 1 and 2 and 18 patients in the final cycle. Of the patients where the PEST was introduced (from cycle 1 to the final cycle), 30 were eligible to have a PEST completed. This was actually done in 27 patients (90%). Furthermore, five patients had a PEST of  $\geq 3$  and all five (100%) had appropriate onward referral to rheumatology. Tables of raw data with a bar graph below them are attached to summarise all the cycles and uptake of PEST. These are useful to correlate with the discussion below to help gain an overview of the results.

PDSA cycle 1: Analysing the data from cycle 1, we found that there were 12 patients with psoriasis, three of which had known PA therefore only nine needed to have a PEST. All nine eligible patients (100%) had a PEST done during psoriasis clinics. Of these, two of the nine patients (22%) had a PEST score of  $>3$  and all two patients (100%) were referred to rheumatology.

On looking through the notes, four patients had a previous joint inquiry but all of these had a PEST of  $<3$  in our study. Two patients had a PEST score of  $>3$  but neither of these had a joint inquiry within the last one year. This may suggest that through the previous system of opportunistic joint enquiries, which in turn is dependent on the clinician's discretion, the right patients at risk of PA were not targeted for joint enquiry.

PDSA cycle 2: Analysing the data from cycle 2, we found that there were seven patients with psoriasis, one of which had known PA therefore only six needed a PEST carried out. Three of the six patients (50%) had a PEST done during both psoriasis and general clinics. Of these, none of the patients had a PEST of greater than



three and only one patient with the known PA had a previous joint enquiry in the last year (incidentally, this patient had an unnecessary PEST completed with a score of 5 but was not referred on anyway).

PDSA cycle 3: After a departmental educational talk, further modification of the questionnaire and distribution of posters in the department, data from the final cycle were analysed. We found that there were 18 patients with psoriasis, three of which had known PA therefore only 15 needed to have a PEST. All 15 eligible patients had a PEST completed across both psoriasis and general clinics. Of these, three of the patients had a PEST of  $\geq 3$  and all three (100%) were referred to rheumatology. Only one patient with psoriasis had a joint enquiry and their PEST was less than three and no further action was required. Interestingly, one patient was recently investigated by rheumatology for an erosive arthritis of unclear aetiology. He was seen for the development of psoriatic plaques in our clinic and his PEST score was 3, thus this patient would possibly have been captured as a possible PA earlier had the PEST been done at an earlier opportunity.

If we consider all the patients from cycle 1 through to the final cycle spanning a period of one month, 30 patients were identified as requiring PEST. Of these, 27 patients (90%) were screened and five out of the 27 patients (16.7% of the total patients who had a PEST) had a score  $\geq 3$ . All of these five patients (100%) were referred to rheumatology.

See supplementary file: ds4235.docx - "Data tables and graph of results for baseline and cycles"

## Lessons and limitations

This project has highlighted how effective using a cheap and widely available tool can be to screen for an important condition in specialist clinics. Highlighting such a tool was well received in principle among the dermatology department.

However, conducting this project demonstrated the importance of involving all relevant stakeholders to effectively implement a new system within the department.

In cycle 1, it was relatively straightforward to approach a limited number of clinicians (two) and clinic nurses to initially implement the PEST in a few specialised clinics, thus achieving 100% uptake of PEST in eligible patients.

However once this was applied to a larger number of different clinicians (four) and clinics in cycle 2, we found that disseminating the message about the value of using PEST was more difficult and required more than one approach. There was a drop in the uptake of PEST to 50% in cycle 2. This was mainly due to the clinic being run by three different doctors who were unaware of the PEST project that week. This is in contrast to cycle one where I had the opportunity to speak to all the doctors involved. Relying on emails and word of mouth for increased uptake of PEST did not capture all potential users of the tool and some were still unclear on the reasons for use and potential benefits. Furthermore, one of the key

staff involved in distributing the PEST in the clinic boxes was away and it was not available in the rooms for the general clinics.

A group teaching session and putting up posters helped spread the message and improved uptake and use of PEST. The teaching session in particular appeared to have a big impact as many of the dermatology registrars were not fully aware of NICE recommendations for yearly monitoring of psoriatic arthropathy. Allocating a key clinic person to be responsible for distributing the tool as well as targeted handover if they are away or busy may also help reduce poor uptake due to staff absence. Incorporating feedback on improving the PEST and the process may also have contributed to the improved uptake between cycle 2 and the final cycle.

A limitation of the study is that we did not know which patients identified with a PEST of  $\geq 3$  and referred to rheumatology went on to have a confirmed diagnosis of PA. This would be a useful outcome to measure in the future. There were initial concerns on whether a perceived delay in clinic through use of this questionnaire would reduce uptake of this tool, but from our results this doesn't seem to be the case.

## Conclusion

Identifying PA early through highly sensitive tools like PEST is a recommended concept according to national guidance. Our project showed that through implementing our modified PEST questionnaire in the department, we achieved 100% PEST completion rates for eligible patients in the final cycle compared to 0% at baseline. Five out of the 27 patients who completed a PEST scored greater than 3 (18.5%). All five patients (100%) were appropriately referred to rheumatology.

In the three cycles, seven patients were known to have PA and an additional five patients were identified as potentially suffering with this disease out of the 37 patients seen with psoriasis. This means that 32% of patients with psoriasis in our cohort either had PA or were at risk of developing the disease. This is in keeping with studies showing that 30% of patients with psoriasis have PA.[9]

PEST picked up an additional five patients at risk of PA from cycle 1 onwards. The Mease study [9] revealed that of a cohort of psoriasis patients with PA, as screened by a rheumatologist, 41% were found to have been previously undiagnosed. Our findings show that of the patients with or at risk of PA (total 12 patients), 42% (5/12) had not been picked up prior to our use of PEST.

The study showed that a joint enquiry did not identify patients at risk of PA. In this study, six patients had a joint enquiry in the past year and of these, only one (already known to have PA) had a PEST  $\geq 3$ . The other five patients with a positive joint enquiry were not referred to rheumatology. This indicates that a structured joint enquiry such as PEST is more likely to detect patients with PA and also more likely to prompt doctors to act on a positive result. In addition, it may be the case that PEST may reduce inappropriate referrals to rheumatology, ie referral of patients with a positive joint enquiry but a negative PEST.

A joint inquiry may fail to identify patients at risk of PA because it may omit other relevant indications of high risk such as heel pain. In addition, lack of knowledge on the prevalence of arthropathy within the psoriasis cohort, lack of confidence in detecting joint disease among dermatologists and time restraints in clinic may cause dermatologists to steer clear from screening for this important condition.

The dip in uptake of PEST by clinicians in cycle 2 may be due to the inclusion of non-specialist (general) clinics in this cycle, as well as trying to reach a wider audience. Uptake of PEST had increased again during the final cycle, possibly because of the teaching session and the various other strategies employed. We feel it was particularly helpful to highlight to clinicians the importance of early detection of PA, and the fact that this was a national guideline.

Uptake of PEST was 100% in both the psoriasis and general clinics after the final cycle, indicating the combinations of interventions above have been highly effective and robust.

Moving forward, there are several ways that continued uptake of PEST screening can be encouraged. These include (i) further emphasis on dictation of a PEST due date in letters to GPs, so that any patients with psoriasis discharged back to primary care can continue to be assessed for PA (ii) GP education on the importance of annual PEST screens at regional meetings e.g. the GP forum at St George's Hospital (iii) inclusion of education on PEST screening in induction sessions for junior doctors in the dermatology department (iv) inclusion of the PEST on the dermatology intranet due to be set up this year (v) inclusion of a PEST tick box in checklists for patients with psoriasis to be initiated on systemic agents (vi) devising a departmental newsletter, where reminders on the importance of PEST screening can be circulated.

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## Declaration of interests

Nothing to declare.

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