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# Evaluation Of Different Approaches To Screening For Pain In The Oncology Outpatient Department

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## Abstract

### Context

Screening for pain is an effective means of identifying patients with untreated pain in the oncology outpatient department. However, evaluation of different approaches to screening for pain has not been investigated.

### Objectives

To identify which screening approaches resulted in the highest rate of completed and returned screening forms. To determine the barriers and facilitators involved in staff and patient engagement with the pain screening process.

### Method

We used a single question from the Brief Pain Inventory Numerical Rating Scale (NRS) to assess which approach to screening for pain would result in the highest rate of completed and returned pain screening forms. We evaluated i) the regularity of screening, ii) screening time of day, and iii) targeted screening to ascertain the approach that would yield the highest rate of returned pain-screening forms. We conducted qualitative interviews of nursing and clerical staff to determine their views of the different pain-screening approaches.

### Results

The study identified that pain-screening conducted in morning oncology outpatient clinics resulted in a higher return of pain-screening forms. There were no statistically significant differences in conducting screening through different time intervals or when screening all outpatients versus screening only a single clinic.

### Conclusion

Improvements in organisation, pain specialist review and staff education are needed to enhance the pain-screening process further.

## INTRODUCTION

Estimates into the prevalence of pain in oncology outpatient clinics range from 25 to 65% [1 - 9]. The severity of the pain, described as 'moderate to severe', is present in nearly one out of two cancer patients despite analgesia being prescribed [1, 2, 10, 11, 12, 13]. Under-treatment of pain is partly due to a failure to identify these patients and modify their medications [2, 11, 12, 13, 14, 15]. When the presence of pain is recognised, it can lead to immediate patient benefit

[16].

National & International pain governing bodies have produced guidelines to improve cancer pain management [17-20]. These focus on the importance of early treatment and assessment of pain, and education of patients and staff. Screening patients for pain is considered fundamental to improving clinical practice.

Screening for pain has been reported to be effective at

highlighting pain that is poorly managed [21, 22], and can result in health-economic benefits such as reduction of chronic symptoms and likelihood of hospitalisations [23]. Pain screening was introduced by the USA Veterans Health Administration in 2000 [24] in an initiative called ‘pain as the fifth vital sign’. This involved defining pain on a Number Rating Scale (NRS) – zero being “no pain” whilst ten being “worst pain possible”. This pain-screening initiative has been shown to be effective in the outpatient department [22]. However, no research group has investigated effective approaches to conducting the pain-screening process. For example, would screening be more productive if it was conducted on a weekly basis rather than a more periodic basis, say every three weeks? Would productivity be increased by screening all patients versus a more targeted selection of patients? And is screening more productive in mornings or afternoons?

The purpose of our study was to identify which approaches to pain-screening would result in the highest number of completed and returned screening forms from patients in the oncology outpatient department.

## METHODS

### Aim

The primary aim was to identify which approaches to pain-screening would result in the highest rate of completed and returned pain-screening forms. The secondary objective was an assessment of the barriers and facilitators to the pain-screening process assessed by observation and focus group interviews.

### Study Population

The oncology outpatient department has four clinical areas covering medical and surgical specialities during morning and afternoon sessions. Throughout the 14-month study period in 2012 and 2013, a weekly average of over 1000 outpatients attended the clinics. Outpatient staff included ten clerical and fifteen nursing staff.

### Study design

The study was approved by the Clinical Audit and Service Evaluation committee. Confidentiality and anonymity were maintained in accordance with the Data Protection Act 1998.

### Screening process

The screening form comprised a single Number Rating Scale (NRS) question from the Brief Pain Inventory [26], (see

figure 1).

### Figure 1

The Screening Form Numerical Rating Scale, BPI

“Please rate your pain by circling one number that best describes your pain at its worst in the last 24 hours”;

No pain	0	1	2	3	4	5	6	7	8	9	10	Worst pain imaginable
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*Completed* forms were defined as those distributed to attending patients at reception by clerical staff, answered whilst waiting, and handed to a clinic nurse. If a significant pain score of  $\geq 4/10$  was noted by the clinic nurse, pain treatment options were offered to the patient. These treatments included immediate pain specialist assessment, pain clinic appointment, or continued management by their clinical team or another healthcare provider usually their GP. Those forms with significant pain scores would need the chosen treatment option to be documented by the clinic nurse to confirm their completion.

*Returned* forms were defined as those forms collected by the research team.

A screening form was deemed to have fulfilled the screening process by being both completed and returned.

### Screening approaches

We investigated three approaches to pain-screening (1 to 3 below). The best approach was defined quantitatively as the approach that resulted in the highest rate of completed and returned screening forms.

**1. Regularity of screening.** We compared outpatient clinics screened once a week (weekly screening) versus screening every three weeks (periodic screening)

**2. Targeted screening.** We compared screening all outpatient clinics on a particular day versus screening randomly selected clinics

**3. Time of day.** We compared the screening of morning clinics versus afternoon clinics

### Qualitative data collection

This was assessed by observations of the research investigators and by interviewing staff on the pain-screening process through two focus group meetings. These were arranged for nursing and clerical staff to determine their views of the pain-screening process. Staff at the focus group

meetings varied in seniority and experience with seven nurses and six clerical staff attending. The meetings were led by an experienced senior research fellow. Open questions were posed to gain understanding and appreciation into the advantages and disadvantages of the different pain-screening approaches. These meetings were audio-recorded and transcribed verbatim.

**Statistics**

Each time pain-screening took place was defined as an occasion and data were collated for all 48 screening occasions. Analysis assessed and compared the rates of returned and completed screening forms and compared them according to the three screening approaches. In addition, correlation between these rates and the pain scores of  $\geq 4/10$  was analysed. Kruskal Wallis analysis of variance was used to compare the approaches. Rank correlation was used to investigate the relationship between the completed and returned form rates and the proportion of patients with high pain scores. Reflective research methods [30] and thematic analysis [31], commonly used in qualitative health research [32], was used to analyse the focus groups.

**RESULTS**

**Demographics**

From January 2012 to March 2013, 1850 patients attended the outpatient clinic on all pain-screening occasions. There was an even spread of cancer groups being investigated (see table 1).

Of the 25 staff members that were employed at the start of the study, six left their roles whilst seven were added. From the 1850 attending outpatients, 905 screening forms were returned with a documented pain score. Of these, 841 were correctly filled in according to study criteria. Thus, the overall rate of completed and returned forms was 46% (841/1850).

**Table 1**

Medical and surgical cancer groups chosen for screening occasions

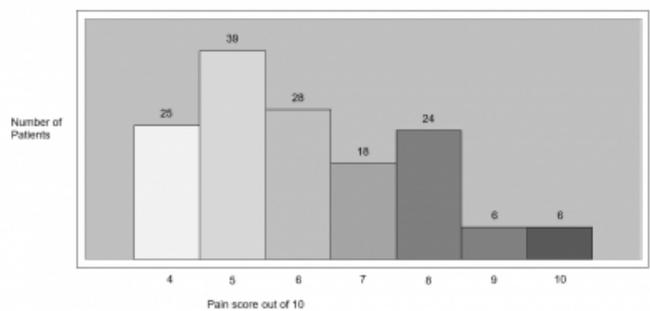
Medical oncology	Surgical oncology
Breast	Breast
Gastroenterology	Renal
Gynecology	Sarcoma
Hematology	Urology
Lung	
Sarcoma	
Skin/Renal	
Urology	

**Pain prevalence**

Of the 905 documented pain scores, just over 16% (146) complained of significant pain ( $\geq 4/10$ ) with almost 2/3 indicating moderate pain with scores 4-6/10 (see figure 2). Yet only around half of those with a significant pain score (82) were questioned as to their preferred choice for pain management. Of these 82, approximately 20% (16/82) requested pain specialist assistance and of these, over 60% displayed severe pain of 7-10/10.

**Figure 2**

Distribution of total documented significant BPI Numerical Rating Scale pain scores



**Screening approaches (see table 2.)**

**1. Regularity**

Completed and returned form median rates were higher for periodic screening compared with weekly screening (50% and 39% respectively) but did not show any statistically

significant variability despite being close ( $p=0.06$ ).

**2. Targeted**

Targeting of specific clinics showed a marginally higher median rate of completed and returned forms than screening all clinics (48% and 45% respectively) but did not show any statistically significant difference.

**3. Time of day**

Morning clinics showed a statistically significant higher rate of completed and returned forms compared with afternoon clinics (54% vs 41%,  $p=0.004$ )

**Table 2**

Kruskall Wallis analysis of variance for rates of completed and returned screening forms for trialed approaches

Approach	Median completed form return rate (%)	Overall p value
<b>1. Regularity of pain-screening</b>		
Once a week	39	0.06
Every three weeks	50	
<b>2. Targeting of pain-screening</b>		
Targeting – Specific clinic	48	0.88
Targeting – All clinics	45	
<b>3. Time of pain-screening</b>		
Morning	54	.004
Afternoon	41	

**Qualitative assessment results**

**General overview**

Nursing staff were initially concerned that patients would be missed or repeated through periodic screening as most return on a monthly basis. Clerical staff disagreed and relayed that patients had expressed saturation during weekly screening with unease at repeated form filling especially when symptoms had not changed;

“...so that patients don’t say: ‘oh well I done- I done this last week’ or you know like when you get that sort of response... but I suppose if you targeted different clinics on alternate- you know- different weeks it would probably work better in a way ‘cause you’re not getting the same patients all the time” [clerical participant [5]

There was preference amongst staff for targeted screening rather than screening all sessions, even though this could skew prevalence results;

“maybe once you’ve looked at the data and you can see a certain area which actually, yeah, we get a lot of people with four or above then this is an area we need to look at but there’s no point coming to a breast post-op clinic where you probably don’t get any, you know it’s a bit of a waste of resource, you’re better off targeting an area that you get a lot...” [nurse 4]

Interestingly, there was a tendency for clinics comprising of patients with significant pain to have a higher completed and return rate of forms, yet this was not statistically significant (spearman  $\rho=0.20$ ,  $P=0.19$ ).

**Facilitators to screening**

**Screening appreciation**

Although nursing staff felt that the oncological clinical teams could continue to manage patients’ pain with referral to specialists only when symptoms become uncontrolled, they appreciated the identification of pain amongst patients revealed by the screening process. For example, for the unscheduled patient that presents at reception complaining of pain or for those patients who do not raise pain as an issue as they feel it is an inevitable side effect.

“I do appreciate then, once somebody’s finished their treatment if they don’t raise it as an issue its not necessarily something that’s brought up regularly in consultations... they may then think that they’re pain is normal” [nurse 3]

**Pain awareness**

Staff felt that the screening process had also caused more clinicians to enquire about pain, with anecdotal evidence including earlier analgesic increases or changes, increasing the pain service profile and confidence in disclosing other symptoms.

**Screening improvement ideas**

Ideas to improve screening included posters, flyers, use of the outpatient electronic information board to promote immediate pain specialist assessments, a walk-in pain clinic, a listening post or telephone assessments for those who had documented significant pain scores. Employment of a member of staff dedicated to coordinating the screening process within the outpatient department was also discussed but although this role would free the outpatient staffs' responsibility, it was felt that patients would be missed as there are too many attendees for one person to coordinate.

### **Barriers to screening**

#### ***Distribution of pain-screening forms***

During the pilot phase, the completed and returned screening form rate was low due to attending patients being missed because clerical staff did not have sufficient instructions as to which patients to screen. An informal meeting with staff led to an initial improvement although only evident for a short duration. During the full study, approximately 35% of screening forms were not distributed. This was calculated from the number of unused tools at reception per screening occasion. Clerical staff cited difficulties following large numbers of attendees, less staff at reception, or when repeated phone calls caused disruption. Interestingly, variability of the tool completion and returned rate was unrelated to either the number of nursing and clerical staff present (spearman rho=0.05, P=0.74), or to the number of patients in attendance (spearman rho=0.08, P=0.59).

Pain-screening form distribution was also felt to be most difficult when all clinics were being screened leading clerical staff to suggest that nursing staff should conduct the process alone.

“...at least if they're going into clinic the nurse will remember 'cause they're only dealing with that one patient at a time, where we're dealing with several patients at a time... [clerical participant 4]

#### ***Collection***

During the pilot phase, forms were being lost as patients bypassed their clinic nurses and handed them to physicians who either filed or discarded them. Information provided at an informal meeting with outpatient staff led to a short improvement. During the full study, collection was poor with evidence of forms being left in waiting areas, at

reception or taken to other departments, or being posted and lost in the internal mail, some of these with significant pain scores documented. Discussions with nurses at the focus group meeting indicated that they were often too busy to remind patients to return their pain-screening forms.

A lack of research team personnel also led to poor collection of completed forms, being most apparent after afternoon screening sessions due to late finishes. Collection boxes were trialled but were deemed inappropriate due to issues with patient confidentiality.

#### ***Patient selection***

Integration of the screening process into the outpatient department was met with some resistance due to questioned appropriateness of patients. One surgeon initially refused to allow screening as any pain declared was likely postsurgical and easily managed. This was also raised by outpatient staff.

“...one of my concerns and issues that came up whilst we were doing the screening was that if patients are immediately post-op then the clinicians felt that they were best placed to deal with that post-op pain as opposed to maybe escalating it straight away...”[nurse 6]

Screening of non-cancer related pain and those already under the care of palliative care or hospice teams was also queried. Additionally, effective pain management was assumed to mean pain-free rather than pain controlled, with cancer patients were simplified into two distinct groups.

“I mean there are two different kinds aren't there, there's the intractable long-term pain often done, that's not caused by the cancer now but is caused by x treatment, you know from the past erm which is pretty bad- can be very bad, and the people that are perhaps on their path you know to Palliative Care that have got pain and want to make their lives as pain free as possible for whatever length...” [nurse 6]”

#### ***Pain specialist review***

When pain was identified, some patient requests for review were ignored. For instance, one oncology team overrode a patient's wish to be reviewed although this was because they

were to be admitted. Another who had documented a score of 8/10 was deemed inappropriate by a clinic nurse as “pain was from somewhere else”. This led to the questioning of the validity of the NRS pain score;

“their idea of their level of pain might be different from what we would think is – you know – so I never know quite how you’re ever going to get on top of exactly what the level of pain is – you know – measuring that score like you did before (.) some people would put oh three and other person would put nine for the same pain... [nurse 4]”

Barriers to pain review were also noted following delays in immediate assessment by the pain team. Most patients were happy to wait although one patient decided to leave, declining an appointment at the pain clinic. Delays can last up to a few hours and block rooms creating additional pressure for the outpatient staff.

“The clinic room is occupied but if it needs to be that they got to be seen there is nothing we can do, we got to wait for the pain team to come and assess the patient there and then to see what they can do for them” [nurse 1]

### DISCUSSION

The study identified that pain-screening conducted in morning oncology outpatient clinics was statistically significant in producing a higher rate of completed and returned pain-screening forms. There were no statistically significant differences in conducting screening at different time intervals or when screening all outpatients versus targeted screening. However, both periodic and targeted screening gained higher rates of completed and returned screening forms and staff generally preferred them as approaches to screening. Therefore, it could be suggested that the most effective approach to screening would be to regularly screen for pain in targeted oncology morning outpatient clinics over periodic time intervals. Despite the increase in pain awareness and appreciation of screening for pain that this may bring, as demonstrated by the study, barriers to the screening process suggest that improvements are still required before this approach can be undertaken.

Failures in screening form distribution and collection led to a low rate of completed and returned screening forms.

Approximately 35% of forms were not distributed and this was demonstrated by clerical staff either not understanding the screening process or being too busy to screen especially with a greater number of attendees and less personnel available (even though this was not proved statistically). Collection of completed and returned screening forms reduced when screening occurred during afternoon sessions and this may have been due to lost forms, or when nurses were too busy to collect forms. Improvements to screening form distribution and collection could include simplifying the process with nurses only screening patients and this has been well described in other research [33-35] with evidence of successful coordination even in busy outpatient departments [36]. Additionally, ensuring a secure method to collect forms, particularly after afternoon sessions, would assist collection rates.

Although it was recognized by outpatient staff that missed or undertreated pain is an issue in cancer management, the value of pain-screening was still misunderstood. Partly, this was due to a lack of understanding about which patients should be selected with some patients being inappropriately withdrawn by staff. This was despite 20% of those screened with a significant pain score wanting immediate pain specialist review. Improvements could include education of outpatient staff to understand cancer pain and the impact of screening, possibly through the use of regular monthly staff forums. Research supports this with Bennett, Fleming and Closs demonstrating that educational interventions are effective in modifying professional behavior and can be directed as part of optimal oncological management [37].

Patients expressed saturation at being screened regularly, specifically during weekly screenings, and this impacted on the rate of completed and returned screening forms. Additionally, as 80% of those with significant pain scores chose their oncology team to manage their pain, this suggests both a need to improve the screening process and the profile of specialised pain management. Improvements could be to ensure immediate review by the pain team as well as to educate staff about the benefits of specialised care.

Rates of *completed* and *returned* screening forms were higher in clinics with known high pain prevalence. Another improvement would be to concentrate on screening high pain prevalence clinics. Of note, screening of these groups has been shown to reduce program costs [38, 39].

Finally, consideration should be given to whether the screening question itself should be modified. The validity of

the Numerical Rating Scale as a screening tool is well documented but cancer patients pain are often affected by social and psychological elements and its lone use in outpatients may be incomplete. For example, amongst veteran outpatients in South California, a tool assessing pain-related bother showed good discriminatory ability and improved pain detection [3]. Broad-based questionnaires have also been considered in the outpatient department with use of the Short-Form-36 Health Survey demonstrating significantly lower scores in physical health and social functioning than previously assumed [40]. Additionally, the medium by which to screen could be improved through more modern, reliable and rapid electronic methods in the outpatient setting [41-43].

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