

Grant ID: 089



College of Radiographers Industrial Partnership Research Grants Final Report

1. Principal Investigator	Beverley Atherton
2. Project Title	Can the early signs and symptoms suggestive of spinal cord compression be identified by radiographers during bone scans by gathering clinical information about back pain from patients ?.
3. Amount of Grant	£3569
4. Did you spend the money as indicated in your proposal (if not why)? Yes	
5. Did you reach your intended project outcomes (if not why)? Outcomes achieved	
<ul style="list-style-type: none">• 6. What are your significant findings? The study aimed 1) to assess the feasibility and 2) the acceptability of the questionnaire based on NICE signs and symptoms of MSCC and the BPI. Both questionnaires were proved to be feasible and acceptable for patients to complete to complete in the Nuc Med setting.<ul style="list-style-type: none">3) A comparison was made between the pain scores from both questionnaires and statistical analysis suggested that they were not unrelated, i.e. there was some correlation.4) Clinical follow up was restricted due to time limitations for submission of academic work but all patients subsequently treated for MSCC had pain scores above minimal vales when assessed in the department.5) Statistical analysis of the radiographers assessment of the images showed that radiographers reported less cases of “no mets identified” than radiologists and more cases of “uptake of uncertain significance” suggesting there was little risk false negative assessments by radiographers.6) The departmental team involvement in the project benefitted the project, patients and the professionals understanding of the condition greatly7) Awareness of the condition and it’s symptoms was significantly raised in the wider department and Trust8) Additional staff were4 able to undertake GCP training9) The response from patients, relatives and the public was extremely supportive	
7. Have you submitted the work for publication (if so where)? Not to profession journal but write up passed Maters in Clinical Research	
8. Have you presented the work at a national/international event (if so where) ?	
Yes	

SoR student Conference – April 2014
North West Nuclear Medicine User Group – Jan 2014
CoRIPS – Jan 2014
Trust Education – March 2014
Departmental – March 2014
Summary published in Wirral News, Wirral Globe, Liverpool Echo, Heart FM (radio), Synergy,
Trust magazine and Nursing Times

**9. Please provide an executive summary of your work (two sides of A4 maximum)
N.B. If you already have a draft or final version of the proposed publication can you please
attach.**

Background: Metastatic Spinal Cord Compression (MSCC) an emergency condition which can develop in some patients with cancer. Without timely treatment it can cause irreversible neurological damage. Early diagnosis and treatment makes a significant difference to the patient's quality of life.

Purpose: The study aimed to explore the feasibility and acceptability of radiographers gathering clinical information from patients regarding back pain which may identify early signs and symptoms suggestive of MSCC, during a patients radioisotope bone scan using two questionnaires. The study also assessed if there was any relationship between data collected using the two questionnaires as well as assessing standard clinical data acquired during a routine bone scan procedure and clinical outcome in terms of requirement for treatment of metastatic spinal disease. This project was the first stage in exploring the possibility of developing a risk assessment tool for use in an imaging setting.

Method: The project assessed back pain using two different questionnaires, the Brief Pain Inventory (BPI) and an additional back pain questionnaire developed for use in this study, based on the early signs and symptoms of spinal pain as defined by the National Institute for Health and Clinical Excellence (NICE).

Results: Invitations to participate were sent to 232 patients, 116 (50%) patients were consented. The NICE based questionnaire was considered easy to complete by both staff and patients. None took longer than 10 minutes to complete and 85% (n 99) were completed in five minutes. There were a total of 334 (24%) "yes" responses to the NICE based questionnaire (12 questions per questionnaire). Using Pearsons correlation coefficient a positive correlation was demonstrated between the number of "yes" responses from the NICE based questionnaire and the BPI scores. Mild pain was reported by 36 (33%) of patients using the BPI "worst pain",

moderate or severe pain by 47 (43 %) patients. Clinical follow up checked to see if any of the patients had undergone radiotherapy for treatment of spinal metastases since their bone scan. Data was collected 13-30 weeks after the bone scan. Four patients were identified as having undergone radiotherapy treatment. Results of the two questionnaires were compared for the treated and untreated patients. The mean score for each element of the questionnaires was higher in the treated patients but there was no statistical evidence of any difference between the groups, due to the small number of treated patients identified. A paired t-test was used to compare the results of the radiographer opinions of the bone scans to the radiologist report. The radiographers reported less cases of “no metastases” identified than the radiologists, and there was statistical evidence of a difference between their opinions (paired $t = -6.30$, $df = 2$, $p = 0.024$). The radiographers reported more cases of “uptake of uncertain significance” than the radiologist, (paired $t = 8.29$ $df = 2$, $p = 0.01$). This was consistent with the 95% confidence interval (95% CI = -31.41 to -5.92 for no metastases, 95% CI = 9.29 to 29.37 for uptake of uncertain significance). For cases where radiographers viewed the scan and were confident of the presence of metastatic disease though their opinion correlated with that of the radiologist report (paired- $t = -2.5$, $df = 2$, $p = 0.130$). The results were also consistent with the 95% confidence interval (95% CI = -4.54 to 1.20).

Conclusion: This study concluded that the NICE based questionnaire was both feasible and acceptable for completion by a patients and staff in a nuclear medicine setting. It correlated well with the pain scores recorded using an established and tested tool.

Initially, the results have identified areas worthy of further investigation using improved follow up data from the patients included in this study, subject to the appropriate approvals. In the short term this could support changes in clinical practice regarding some quick questions which patients could be asked and radiographers taking action after reviewing the bone scan images. Radiologist reports could then direct the referrer to the potential risk of MSCC and recommend that the patient is given standardised information regarding the symptoms and who to contact should they develop. In the longer term a scoping exercise based on this study design, with a view to developing a prognostic tool to identify patients who may benefit from urgent referral for MRI may also be appropriate.