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COMBINED EMAIL AND IN OFFICE TECHNOLOGY IMPROVES PATIENT REPORTED OUTCOMES COLLECTION IN STANDARD ORTHOPAEDIC CAREX. Zhou, R. Karia, R. Iorio, J. Zuckerman, J. Slover, P. Band. *NYU Langone Med. Ctr., Hosp. for Joint Diseases, New York, NY, United States*

Purpose: Patient reported outcomes (PRO) provide an important measure of clinical condition from the patient's perspective. Recently, there has been increasing interest in the use of PRO scores during routine clinical practice, as the focus on quality and value-based healthcare continues to grow. However, the routine collection of PRO data without disrupting clinical workflow remains a challenge. This study evaluates the capture rates of PRO data as part of standard orthopaedic care, collected electronically via either e-mail or in the office setting.

Methods: An electronic PRO collection system was developed at a large, tertiary, academic medical center in 2012, designed to routinely collect PRO data as part of standard care. An e-mail distribution function was built to send a secure HIPPA compliant e-mail to patients three days before their visit. A PRO questionnaire link is embedded in the e-mail allowing completion at home prior to the visit. Patients who do not complete via e-mail receive a touchscreen in the office to complete the PRO questionnaire prior to their clinical exam. PRO scores are calculated in real-time, integrated into the patient's EMR, and made available to the evaluating physician for clinical decision-making.

Results: Between May, 1st, 2012 and April 30, 2013, PRO questionnaires were completed for 19218 of 26548 total patient visits to 21 adult reconstruction or sports medicine practices. Overall, completion rates were 79% and 68%. Office staff collected email addresses for 48% of total patient visits, and consequently, 64% (12306 of 19218) of the completed PRO questionnaires were done in the office versus 36% (6912 of 19218) via email. The completion rate via email was 41% in adult reconstruction and 32% in sports medicine. When the email completion rate is calculated based on patients for whom office staff obtained email addresses, completion rates via email at home are 55% in adult reconstruction and 53% in sports medicine. Elderly patients (≥ 65 years) had a higher e-mail completion rate (57%) than younger (< 40 years) patients (52%), $p < 0.001$.

Conclusion: Electronic collection of PRO scores as part of standard orthopaedic care is feasible, especially when both email and office-based collection methods are used. Older patients were more compliant with email than younger patients. Email is a useful tool for PRO collection in the orthopaedic outpatient setting, and office staff should work to obtain email addresses even from older patients, who are more compliant with home email completion of surveys than younger patients. Patients should be encouraged to complete PRO questionnaires via email to minimize disruption to office clinical workflow.

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CORRELATION BETWEEN ROUTINE ASSESSMENT OF PATIENT INDEX DATA 3 (RAPID3) AND WOMAC IN ROUTINE CARE IN PATIENTS WITH KNEE OSTEOARTHRITISA. Lurati, D. Bompane, K. Re, M. Marrazza, M. Scarpellini. *Rheumatology Unit Fornaroli Hosp., Magenta, Italy*

Objective: To compare Routine Assessment of Patient Index Data 3 (RAPID3) on a Multidimensional Health Assessment Questionnaire (MDHAQ) with the Western Ontario and Mc-Master Universities Osteoarthritis Index (WOMAC) in patients with knee osteoarthritis and to evaluate its reliability.

Methods: Consecutive patients with symptomatic knee osteoarthritis (VAS > 50 mm) based on ACR Classification criteria were enrolled. A radiological Kellgren-Lawrence index 1–2 was required. Correlation between indices was estimated with Spearman's Rho. A General Linear Model (GLM) was used to estimate the effect size between indices. Reliability analysis was assessed finally using coefficients of IntraClass Correlation.

Results: 221 patients were enrolled and completed WOMAC and MDHAQ-RAPID3 questionnaires during the period 2009–2013. RAPID 3 mean value was 5.7 ± 1.3 in patients with knee OA. Kurtosis -0.287 ± 0.211 , skewness -0.61 ± 0.12 . The ceiling/floor effect, % of responses that are coded at the maximum/minimum value, ranged

$< 10\%$. WOMAC total score was 57.2 ± 13.4 . Spearman's rho index was 0.84. Using a General Linear Model (GLM) to estimate the proportion of variation of WOMAC explained by RAPID 3 we found an effect size of 0.82 ($p < 0.01$). Coefficients of IntraClass Correlation between mean values of WOMAC and RAPID3 was 0.812, F test with $P = 0.001$.

Conclusion: RAPID3 scores provide similar quantitative information to WOMAC in patients with knee osteoarthritis.

Clinical Trials

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COST-UTILITY OF EXERCISE THERAPY ADDED TO GENERAL PRACTITIONERS' CARE VERSUS GENERAL PRACTITIONERS' CARE ALONE IN PATIENTS WITH HIP OSTEOARTHRITISS. Tan †, C. Teirlinck †, J. Dekker §, A. Bohnen †, P. van Es †, J. Verhaar †, B. Koes ‡, S. Bierma-Zeinstra †, P. Luijsterburg †, M. Koopmanschap †. † *Erasmus Univ. Rotterdam, Rotterdam, Netherlands*; ‡ *Erasmus MC, Erasmus Univ. Med. Ctr., Rotterdam, Netherlands*; § *VU Med. Ctr./EMGO Inst., Amsterdam, Netherlands*

Purpose: To determine the cost-effectiveness over a period of 12 months of exercise therapy added to general practitioners' care compared to general practitioners' care alone in patients with a new episode of hip OA in general practice.

Methods: A cost-utility study was performed in conjunction with a multi-center randomized controlled trial with a parallel group design. Patients participated if they were 45 years or older, comply with the clinical American College of Rheumatology criteria for hip OA, and visited their general practitioner (GP) for a new episode of complaints due to hip osteoarthritis. Patients were excluded if they: 1) were already treated with exercise therapy in the present episode of hip OA, 2) had a hip pain score of < 2 on the 11-point numeric rating scale (0 to 10), 3) had a high level of physical function, a score of < 2 on the walking ability and the physical function sections of the Alfofunctional index, 4) had undergone hip surgery or on the waiting list, 5) had severe disabling co-morbidity and 6) had insufficient comprehension of the Dutch language and/or were mentally incapable of participation.

The patients were allocated at random in two treatment groups: one group received exercise therapy supervised by a physiotherapist (up to 15 sessions in the first 3 months and 3 follow-up sessions in month 5, 7 and 9) added to GP care and the control group received GP care only. The cost-utility study was primarily conducted from a societal perspective, but the healthcare perspective was also applied. Data on direct medical costs, productivity costs and quality of life was collected at baseline and at 6, 13, 26, 39 and 52 weeks follow-up. Annual costs were determined by adding up the costs per period. The costs for the time between the measurement periods (week 6–7) were established through linear interpolation. All costs were based on Euro 2011 cost data. The quality of life score per patient during the 52 weeks follow up was estimated by combining the EQ-5D scores at all measurement moments. Differences between the intervention and control group were assessed by means of the independent sample T test (for variables showing a normal distribution), the Mann Whitney U test (for variables not normally distributed) or Pearson Chi-square test (for variable fractions). Using nonparametric bootstrapping (drawing 2,500 observations at random), the degree of uncertainty for costs and health effects and the cost-utility ratio was examined on the so-called CE-plane. In addition, an acceptability curve was generated to indicate the probability that the intervention has lower incremental costs per quality adjusted life year (QALY) gained than various thresholds for the maximum willingness to pay for an extra QALY.

Results: The study took place in the period 2009–2012 and finally 203 patients were included. The annual direct medical costs per patient were significantly lower for the exercise group ($\text{€ } 1,233$) compared to the control group ($\text{€ } 1,331$) despite additional physiotherapy visits. The average annual societal costs per patient were lower in the exercise group ($\text{€ } 2,634$ versus $\text{€ } 3,241$; $P = 0.002$). Productivity costs were higher than direct medical costs. Patients in the exercise group experienced a slightly, but not significantly, higher quality of life (0.776 versus 0.770). We found a societal average cost effectiveness (CE)-ratio of $-\text{€ } 107,505$ per quality adjusted life year (exercise cost effective). When only direct medical