

## **PRIORITY BRIEFING**

The purpose of this briefing paper is to aid Stakeholders in prioritising topics to be taken further by PenCLAHRC as the basis for a specific evaluation or implementation research project. This paper was prepared in 2-3 days.

### **Can web based pre-operative assessment in low risk orthopaedic patients improve patient satisfaction without influencing quality outcome measures?**

#### **Question ID: 4**

**Question type:** Intervention

**Question:** Can web based pre-operative assessment in low risk orthopaedic patients improve patient satisfaction without influencing quality outcome measures?

**Population:** Adults between 18 and 60 years of age who are healthy or who have a mild systemic disease who require elective minor or intermediate level orthopaedic surgery. We would use a validated triage tool to select these patients, based on an existing triage tool used in the Royal Devon and Exeter NHS Trust.

**Intervention:** We envisage that the pre-operative assessment process can commence at the same outpatient clinic in which the surgeon has made the decision to operate. The patient would fill out a brief health assessment questionnaire and receive a link via email to complete an on-line assessment at home. Due to the population selected, none of the patients would require blood tests or an ECG and we would not envisage including individuals who need such tests in this project. At a later date we would include a system for organising blood tests and ECGs so that an online pre-operative assessment service could be used by more people. The web based system would not involve an extra trip to hospital or time off work and it could be done at a time to suit the individual. It would also have links to tailored health promotion advice and surgery specific information to aid the consent process. All outpatient clinic patients are weighed, have their height recorded and have their blood pressure measured (in accordance with NICE guidelines) so these important pieces of information will already be available. In addition to this, patients could provide a urine sample for checking (where necessary) and have a nose swab for MRSA status where appropriate.

**Control:** Treatment as usual which is face-to-face pre-operative assessment as currently delivered in the Royal Devon and Exeter NHS trust.

**Outcome:** The primary outcome would be comparing satisfaction scores of patients in the context of patient demographics. The secondary outcome would be objective case assessment to assess the quality of information received in the pre-operative process (as measured by case note review to assess information quality e.g. significant past medical history, venous thrombo-embolism risk assessment, reasons for day of surgery cancellation etc.) and an economic

assessment looking at number of lost working days and reduction in patient trips to hospital. If a web based system is as good as or better (as rated by patients) than face-to-face pre-operative assessment and it is as safe for patients then the results could be used by all hospitals involved in elective surgery in wider specialities to reduce the number of trips to hospital and lost working days for this population across the country.

\*Please note the details in the box are from the original submission and have been edited where necessary for clarity and precision

**Orthopaedic surgery:** this is surgery on the musculoskeletal system. Minor level surgery would equate to cases such as knee/ankle/wrist/shoulder arthroscopy, bunion surgery, hand surgery, knee ligament reconstruction and shoulder surgery.

**Pre-operative assessment:** Individuals due to have routine orthopaedic surgery are asked to complete a pre-operative assessment 2-4 weeks prior to surgery. These assessments are usually conducted by specialist nurses in a specified clinic but this question proposes an internet based assessment. During the assessment individuals are asked about their medical history and will usually undergo a blood pressure check and a urine check. Various investigations or tests may also be performed, including blood tests, X-rays and an ECG All patients are screened for the MRSA bug. Any problems that may arise from the assessment are dealt with prior to admission to hospital, thus ensuring individuals are as fit as possible for their surgery.

### **The Health Problem:**

In the RD&E, we assess 30,000 patients per year prior to surgery. Sixty percent of these undergo day case surgery and of these, at least 10-15% (approx. 1800-2700) people fit into the target population for this study. A web-based pre-assessment service could save 2000-3000 hospital attendances, journeys and missed days of work per year. It would give greater control to patients who could complete the pre-operative assessment process at their own convenience and, as part of the process, be directed to resources where they can find out more about their health and the procedure they are choosing to undertake.

Across the NHS, seven million operations are performed per year. If the figures from the RD&E are average, national adoption of an online system like this would save around 600,000 hospital trips per year.

At present, there is no suitable software available for on-line home pre-operative assessment and this is something with which help is needed. Although we have some capability of designing such databases (though rather simpler ones) in-

house, this is a very time consuming process and help is needed to closely define exactly what the programme should do.

### **Guidelines:**

NICE guidelines on Preoperative Tests (2003) suggest that a thorough medical history should be taken by someone with appropriate training. The guidelines also state that decisions about whether or not to test should follow discussion between the patient and the doctor or nurse, especially where there is uncertainty about whether a test should be recommended or not.

Nationally there is a directive to increase the proportion of patients receiving day case surgery and newer healthcare technologies make these targets achievable.

### **NHS Priority:**

#### **Regional**

##### **SW SHA Priorities framework 2008-11**

- Expand the use of telecare, telemedicine and assistive technology in three or more health communities
- Implement hospital systems to support clinical activity in all acute NHS trusts

QIPP - This research study supports achieving the efficiency savings set out in the White Paper, whilst continuing to innovate, deliver high quality and increase the focus on prevention and supported self care. The proposal may also fit with QIPP priorities of adopting best-practice care pathways for long term conditions, shifting settings of care and estates optimization.

#### **Local**

Only Plymouth PCT have stated an aim to improve clinical and cost effectiveness within planned care.

### **Existing Research:**

#### **Published research**

Little research has been conducted on the use of web-based preoperative assessment in any medical field. However, one brief article<sup>1</sup> reports a case study of using an online preoperative assessment for patients undergoing surgery. The online service was developed in the US by Source Medical and Medical Web Technologies. The facility ensures patients fill in all necessary data before they can move to the next page etc and allows medical staff to add to and monitor the patients record at any time. They found that the facility reduced medical errors, staff time spent on routine data and costs. Another study looked at the impact of using a web-based programme to prepare adolescents for outpatient

tonsillectomy day surgery<sup>6</sup>. This found increased knowledge levels and higher rates of patient (and parent) satisfaction in comparison to standard procedure (not described). However it is not clear if this web-based intervention replaced the actual pre-operative assessment or was just for additional information purposes.

Other areas of research have investigated the use of web-based education interventions to improve the knowledge of patients about their condition and surgery implications before going to surgery<sup>2</sup>. This research has found that web-based information-giving is more successful in improving the level of knowledge and awareness of patients awaiting surgery than face-to-face education with a nurse. Similarly, two studies report using web-based information to inform patients about anaesthesia before surgery<sup>3,4</sup>. Both of these studies used web-based information to prepare the patient for their preoperative assessment with the anaesthetologist, and found that patients who received information from the internet had a greater level of knowledge about anaesthesia and found the web-based teaching more acceptable than those who received an information leaflet. However, patients were no less anxious about the surgery irrespective of how they received the information. A survey conducted in 2009<sup>5</sup> found that patients valued face-to-face contact with experts in a preoperative assessment. Only 4 patients out of 138 would have preferred the assessment to be done by phone or online although the provision of a website with information on the day surgery process was desired.

### **Ongoing research**

No ongoing research was identified.

### **Feasibility:**

There is clear support for this initiative from the Royal Devon and Exeter NHS Trust Pre-operative Assessment Department, the Medical Lead and the Senior Matron. This department is continually looking for ways to improve the patient experience in elective surgery and has trained and set up a nurse based pre-operative assessment service across the Trust.

### **References:**

- 1) (2009). "Patients go online for preoperative screening. Software provides more complete preoperative information from patients prior to surgery dates and easy access for operating room staff." Health Management Technology **30**(8): 24-25.
- 2) Heikkinen, K., L. Helena, et al. (2008). "A comparison of two educational interventions for the cognitive empowerment of ambulatory orthopaedic surgery patients." Patient Education & Counseling **73**(2): 272-279.

**Objective:** The aim of this study was to compare the cognitive empowerment of ambulatory orthopaedic surgery patients when using Internet-based education (experiment) in contrast to face to face education conducted by a nurse (control). **Methods:** Elective ambulatory orthopaedic surgery patients were randomized to either an experiment group (n = 72) receiving Internet-based education, or to a control group (n = 75) receiving face-to-face education with a nurse. The data were collected at three different time points: before the preoperative education session, after preoperative education and 2 weeks after the operation. Three structured instruments were used: the Knowledge Test, the Sufficiency of Knowledge and the Orthopaedic Patient Knowledge Instrument.

**Results:** Patients in both groups showed improvement in their knowledge. However, patients who received Internet-based education improved their knowledge level significantly more in the ethical (p = 0.005) and functional (p = 0.023) dimensions and also in total (p = 0.033) than those patients who underwent face-to-face education with a nurse. In addition, patients in the experiment group had higher scores in sufficiency of knowledge in the experiential (p = 0.050) and financial (p = 0.048) dimensions and, moreover, their scores in sufficiency of knowledge in the ethical dimension improved significantly more (p = 0.008) during the study period than patients in the control group.

**Conclusion:** Improvements in the patients' level and sufficiency of knowledge within both groups indicates an increase in patients' cognitive empowerment.

**Practice implications:** Internet-based education can be used in ambulatory orthopaedic surgery patient education for increasing patients' cognitive empowerment.

3) Edward, G. M., N. V. D. Naald, et al. (2011). "Information gain in patients using a multimedia website with tailored information on anaesthesia." British Journal of Anaesthesia **106**(3): 319-324.

**BACKGROUND:** The preoperative visit is an appropriate time to educate the patient on anaesthesia. The aim of this study was to determine if a website, as an information source for anaesthesia before the visit to the preoperative assessment clinic (PAC), increases patients' knowledge on anaesthesia. **METHODS:** A multimedia website was developed containing specific information about anaesthesia relevant to the patient. A questionnaire was developed to measure knowledge gain. Patients were divided into three groups: (i) those who read the existing brochure; (ii) those who looked at the new website; and (iii) a cluster of non-brochure and non-website users: those who did not read the brochure or website but had completed the questionnaire. An anaesthesiologist also informed all three groups during the preoperative visit at the PAC. **RESULTS:** Patients visiting the website had a higher educational level than others. A significant increase in knowledge was observed after using the website information compared with the other two groups (P<0.001). The group with higher education levels had higher knowledge gains, and the website independently contributed to the knowledge gain. **CONCLUSIONS:** A patient-tailored multimedia website is an effective way to support the information provided by the anaesthesiologist in order to inform patients about their

upcoming anaesthetic procedure. The use of such a website gives a significant increase in knowledge compared with only spoken information, or spoken information combined with a brochure.

4) Hering, K., J. Harvan, et al. (2005). "The use of a computer website prior to scheduled surgery (a pilot study): impact on patient information, acquisition, anxiety level, and overall satisfaction with anesthesia care." AANA Journal **73**(1): 29-33.

Scheduled surgery can often be a stressful time for patients. While anesthesia providers give a full explanation of care to the patient, research suggests that anxiety and time constraints imposed by the system may hinder the amount and quality of information provided. Use of technology to augment dissemination of information may have an impact. The purpose of this study was to determine the impact of a website on: (1) preoperative patient education, (2) patient anxiety, and (3) patient satisfaction with anesthesia care. The week prior to surgery, 64 ASA class I and II subjects at a 350-bed urban university affiliated hospital completed a demographic questionnaire, State Trait Anxiety Inventory (STAI) and modified Standard Anesthesia Learning Test (mSALT), and the experimental group was given website information. On the day of surgery, all subjects completed the STAI and mSALT. Before discharge, subjects rated satisfaction. The experimental group had a significant increase in posttest mSALT scores ( $P = .004$ ). Neither the experimental nor the control group had a significant change in posttest state anxiety ( $P = .279$  and  $.762$ ) or trait anxiety ( $P = .823$  and  $.570$ ). The experimental group differed significantly from the control group in satisfaction with teaching ( $P = .019$ ).

5) Lewis, S., M. Stocker, et al. (2009). "A patient survey to determine how day surgery patients would like preoperative assessment to be conducted." Journal of One-Day Surgery **19**(2): 32-36.

Preoperative assessment is an essential part of a quality day surgery service. Although usually conducted face-to-face with a senior nurse within the day surgery facility, other means of gaining and giving information, such as telephone interview or internet-based methods, have been proposed. Attendance at a preoperative assessment clinic in person adds another step to the patient's journey at a time when there is increasing pressure to shorten the total referral-to-treatment time to below 18 weeks. Patients' views should be taken into account when designing services. We therefore designed a questionnaire canvassing the views of patients within our day surgery unit where most assessments are done face-to-face. The main objective was to determine when and where patients want their preoperative assessment to take place. We received responses from 138 patients over a two week period. Preoperative assessment was completed on the day they met the surgeon in 18%, at a separate hospital appointment in 75% and by telephone in 4%. The majority of patients (84%) were found to value preoperative assessment performed by day surgery staff within the hospital's day surgery facility, and 52% would have preferred this to be on the same day that they saw the surgeon and were added

to the waiting list. A small minority (11%) would have preferred to undergo assessment within their GP practice, but only four patients chose preoperative assessment by telephone or by internet methods. However, the provision of a website providing information on the day surgery process was desirable to over half of all patients across all age groups. The high value placed on face-to-face contact emphasises the expert input by day surgery unit nurses and will guide further development of the service.

6) O'Conner-Von, S. (2008). "Preparation of Adolescents for Outpatient Surgery: Using an Internet Program." AORN Journal **87**(2): 374,377-378,380-382,384,386-388,390-392,394,396-398.

THIS STUDY COMPARED the effectiveness of an Internet-based method with a standard method for preparing adolescent patients scheduled for out-patient tonsillectomy procedures. A TWO-GROUP EXPERIMENTAL DESIGN compared adolescents' state anxiety, knowledge acquisition, postoperative pain intensity, and satisfaction with the method of preoperative preparation. PARENTS' STATE ANXIETY and satisfaction with their child's preparation method also were compared. DATA ANALYSIS REVEALED significantly increased knowledge acquisition and satisfaction among adolescents who were assigned to the Internet method of preparation and increased satisfaction among their parents. AORN J 87 (February 2008) 374-398.