

# Setting up an Arthroplasty Care Practitioner-led virtual clinic for follow-up of elective hip and knee replacement patients

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## Abstract

This paper provides an overview of the set up for an Arthroplasty Care Practitioner (ACP) led Virtual Orthopaedic Clinic (VOC). This has been running successfully in a university teaching hospital with cost savings, reduction in outpatient waiting times and high levels of patient satisfaction. Similar clinics have the potential to become normal practice across the NHS and this paper outlines the steps necessary to implement a successful VOC. The lessons learnt during this exercise may be useful for other ACPs when setting up a VOC.

## Introduction

Over 200,000 primary hip and knee replacements procedures are carried out every year in the UK and the numbers are rising (National Joint Registry 2017). With growing demand and increased life expectancy, it is expected that the need for hip and knee replacement may increase by more than 600% by the year 2030 (Culliford et al, 2015).

Currently, the guidelines recommend routine follow-up of hip replacements at years 1, 7, 10 and three yearly thereafter (British Hip Society et al, 2017). For knees, the recommended intervals are years 1 and 7, and three yearly thereafter (British Association of Knee Surgery et al, 2017). This is, in part, to ensure that patients do not have any on-going problems related to their replaced joints and if so, a timely and appropriate intervention is planned. With increasing use of joint replacement in young and active patients who tend to have higher expectations as well as higher revision rates, regular follow-up is crucial. Follow-up needs to include a patient reported outcome measure (a measure of patient's perception of pain and function in the replaced joint) and an up-to-date radiograph which can identify any untoward features such as implant loosening, osteolysis, fracture, component or leg mal-alignment. However, this has huge cost implications. It is believed that routine follow-ups need an additional £50m per annum. Although follow-up in line with the published guidelines is considered best practice, many (88%) of these patients are happy with their joint replacement, have normal x-rays and no intervention results from their follow-up appointment. The number of appointments needed in accordance with the guidelines places great demand on orthopaedic units (Kingsbury et al, 2016). This in turn affects new referrals with prolonged waiting times for patients. With increasing numbers and limited resources various alternative methods are being developed to ensure safe, efficient and cost-effective follow-up.

In the UK, the orthopaedic community has been supporting the development of advanced practitioners for more than ten years and guidelines for follow-up include employing the skills of this group of health professionals (ACPA 2013, Skills for Health 2014). Around eight years ago, our local NHS Trust adopted this approach and introduced nurse-led face-to-face follow up clinics to improve efficiency and reduce patient waiting times. These became a standard practice and with time have evolved into the current “Virtual Orthopaedic Clinic” (VOC).

In this article, experience of VOC is reported from the perspective of an Orthopaedic Nurse Specialist and an Arthroplasty Care Practitioner (ACP) working at an NHS teaching hospital Trust. It highlights the issues around setting up and running a VOC for the routine follow-up of primary hip and knee replacement patients after their initial post-surgery outpatient visit.

## Methodology

In 2016, a VOC at Chapel Allerton Orthopaedic Centre (CHOC), Leeds was set up. CHOC is part of the Leeds Teaching Hospitals Trust, performing around 1500 primary joint replacements every year. These patients are routinely seen at 6 to 12 weeks post-discharge and then are followed up at intervals according to the current guidelines as specified in the introduction. The ACP runs the VOC in line with these guidelines. Five stages of the Leeds VOC are described below.

### The five stages of setting up a VOC

#### *Stage 1 – Identify suitable patients for the VOC pathway*

The first outpatient follow-up after hip or knee replacement is in a doctor led clinic. At that point a clinical decision is made as to whether the patient is suitable for review in VOC at one year post surgery, or whether there are clinical, radiological, or other reasons for the patient to remain on a doctor-led follow up.

If suitable, the patient is then advised about the VOC and can indicate whether he/she is happy to be followed up in this clinic. The clinic administration outcome sheet has been amended with allowing clinicians to generate a VOC appointment at the appropriate time for the next attendance. The patient and their next review date are then added to the 'VOC follow-up waiting list' using the Patient Administration System (PAS) by an outpatient clerk. A regular clinic template is set up to run weekly on PAS, and patients can be allocated to the available appointments in chronological order from the waiting list when their review is due.

### *Stage 2 – Request an x-ray in advance of the next VOC visit*

When the patient is due for a VOC review, the ACP reviews the patients' previous clinical documentation and previous imaging using the electronic case note and imaging systems. The joint (or joints) due review are identified by the ACP and a new x-ray is digitally requested 4 weeks in advance of the planned VOC appointment on PAS. Correspondence going to the patient is prepared at this stage. (The timings and sites available to the patient have been agreed with the x-ray departments of the local sites) and these details are included in a letter sent to the patient along with a prepared questionnaire indicating to the patient the joint(s) for review.

### *Stage 3 – Contact the patient to advise that their follow-up VOC appointment is due*

The only contact with the patient is by post. The prepared documentation indicates that they are due follow up review of their joint replacement, and the patient information on electronic records confirms that an open access x-ray is available, with no appointment being required when attending for an x-ray. Patients may attend at their own convenience over a three to four-week period, Monday to Friday 8:30am-4:30 pm. The patient questionnaire enclosed is for the patient to complete before they attend the X-ray department. They return the questionnaire to the X-ray reception when they attend for their X-ray. The radiology

reception checks with the patient that their questionnaire has been completed and will not proceed to an X-ray unless this has been performed. Spare forms are available if required, and patients are able to complete the questionnaire in the x-ray waiting area if necessary. The completed questionnaires are stored in x-ray reception ready for the ACP to collect.

#### *Stage 4 - Review the VOC X-ray and questionnaire*

The ACP reviews the patient questionnaires and x-rays. Initially this is with the consultant; however, as the ACP develops in competency, they proceed to unsupervised interpretation. The patient's outcome, based on both the questionnaire and the x-ray, is marked as either routine (i.e. further follow-up in line with the guidelines), discharge, or further action if required. If the patient is over 75 years of age and both the x-ray and questionnaire are satisfactory, the patient is discharged. Wainwright et al (2011) reported that patients under the age of 65 are more likely to require revision surgery in their lifetime. Patients in their mid-seventies at primary hip replacement have a 90% chance of dying before revision is required whereas the converse applies in those under fifty. This is referenced in the BOA guidelines (BOA 2012) for follow up of hip replacement patients and local trust guidelines reflect this recommendation.

To ensure that discharge of the patient is safe, the last set of radiographs as well as questionnaire data are compared with those collected at previous appointments. If there are no untoward features on the radiograph (e.g. implant loosening, osteolysis, cement fracture) and the questionnaires do not show a significant reduction in the outcome scores, the patient is discharged. All VOC results which require further action (x-ray and VOC questionnaire) are discussed with the consultant. Possible outcomes from this may include further imaging, blood tests, full case note review or telephone follow-up for additional information, or review with a senior orthopaedic medical colleague. The outcome of the patient review is indicated on the clinic outcomes sheet for administrative staff to record on the hospital system

## *Stage 5 – Correspond with the GP and the patient advising the outcome of the VOC appointment*

The ACP writes a letter to the patient and to their General Practitioner (GP). This letter records an overview of the VOC questionnaire, indicating the patient's levels of pain, function and satisfaction. The outcome of the x-ray review as well as an overall outcome is documented together with advice on future follow-up.

## Positives and negatives relating to the set up and running of the VOC

### Administrative processes

The process of setting up a waiting list and clinic template, and amending existing documentation was straightforward. In order to start running the new clinic, patients from the existing ACP nurse-led clinic waiting list were transferred onto the VOC with a supporting patient information leaflet being sent to the patient if they were expecting a face to face review.

All members of the orthopaedic and administrative team were informed and educated about the new clinic, and the appointment booking guide was changed to indicate they could book patients into the VOC clinic slots from the waiting list, but that they should not send out a standard letter or book transport. A dedicated VOC clerk was appointed to book the patients into the VOC slots.

### Capacity

Running a VOC does not require the use of an outpatient clinic room, giving the organisation additional capacity to either run other clinics, or use existing appointment slots in doctor led / nurse led clinics more effectively. In view of this, patients attending x-ray for VOC are, in effect, additional activity for the radiology department in addition to other face-to-face consultation clinics running. This raised the concerns of bottlenecks in the x-ray service due

to excessive demand; however, this has not proved to be an issue. The radiology department has been fully engaged with the development of this clinic and have been able to accommodate this additional 'walk in' activity with no problems, and this has allowed an increase of 100% (from 15 to 30 VOC patients a week) without a negative impact on the radiology service.

### Validation of the review

It became apparent that this process streamlines patient flow as well as reduces wastage. When the ACP identifies the joint(s) for review the clinical documents and previous x-ray images are checked, which may identify if the patient has had recent x-rays of the joint to be reviewed for incidental reasons, and only patient reported outcomes are required at that stage. This enables the ACP to consider if review in a nurse led telephone clinic would be more suitable. Occasional administrative errors or patient pathway errors can also be identified ensuring the patient receives the right appointment at the right time in the most suitable clinic. Patients are encouraged to contact the ACP directly if they have any queries.

### Time frame for the patient to attend x-ray

The patient is given a four-week period to attend for x-ray to allow for any postal delays and for them to make transport arrangements, if required, with their families or friends. After this period, any patient who did not attend is contacted by the x-ray administration clerk, in order to facilitate patient attendance. This system has been developed as all digital x-ray requests within our organisation remain active for a six-week period. This allows for late attenders and avoids repetition of Nurse Specialist work in the reappointment of those patients who did not attend (DNA). Radiology clerical staff can help with any difficulties the patients may have encountered e.g. transport issues, changing postal address, failure to understand the VOC process, and informing them they still have opportunity to attend if they are able to do so. If the patient fails to attend after this time, the ACP makes a clinical

decision on whether to discharge or a future appointment. Currently, the DNA rate for VOC follow up ranges between 0 and 15% which is not dissimilar to face-to-face nurse consultant led clinics.

### Hospital transport

Initial concerns regarding requests for hospital transport were proven to be unfounded. The burden on hospital transport is reduced as patients have flexibility to attend at their convenience, or when a family member or friend can bring them.

### Time burden for running the clinic

Reviewing x-rays and questionnaires and deciding on an outcome, proceeded without specific problems. During the trial period, the team ran two systems simultaneously for evaluation of questionnaires and x-ray, and collected metrics which provided additional evidence of ACP competency for independent running of the new clinic. Both the ACP and the consultant reviewed the questionnaires and x-rays and independently formed an outcome decision until there was sufficient evidence of the competency of the ACP.

The time burden for the consultant review (stage 4) was approximately one minute per patient. When reviewing 30 patients, it became apparent that additional time must be built into orthopaedic consultant job plans to guarantee availability of the consultant and to avoid delays in determining an outcome. The consultant clinic template was therefore amended by three patients a week, to protect the time needed for the consultant to review 30 VOC patient questionnaires and x-rays. The ACP also needed to build this into their job plan. Stages 1, 2 and 3 took approximately six minutes per patient using digital patient records and requesting systems. Stages 4 and 5 took on average 10 minutes per patient. Each week the ACP can prepare and complete a 30 patient VOC, and the time required to complete all tasks needs to be accounted for in their job plan.



## Payment Tariff

When planning a new clinic, a discussion with the senior management team is appropriate as the Trust should receive payment for this activity. Hospital Trust contracts with their local Clinical Commissioning Groups can vary and it is important to clarify this aspect before setting up a VOC.

## Patient feedback

There have been concerns from colleagues and patient groups that patients would not be happy with the VOC service. In Leeds, feedback from the first consecutive 100 service users was collected and the response has been overwhelmingly positive. Patients reported that the clinic ran efficiently, saved attendance time and was far more convenient. Two patients (2%) would have preferred a face-to-face consultation with their surgeon. All others were highly satisfied with the experience and would be happy to recommend a VOC follow-up to their friends.

## Current status

Review of the activity over the past 24 months confirmed that VOC has been a success. Capacity has significantly increased with a total of 30 VOC appointments and 24 nurse led clinic appointments, available for the follow up of elective hip and knee arthroplasty surgery on a weekly basis. Having gained competence in x-ray interpretation through mentorship, experience and training, the ACP has been reviewing x-rays independently for the past 12 months. In addition, the VOC process facilitates the process of collecting and interpreting relevant patient reported outcomes measures, such as the Oxford hip and knee scores (Murray et al 2007, Beard et al 2015).

This unit has previously reported on comparison of VOC with conventional consultation (Kingsbury SR, et al., 2016), patient satisfaction with VOC, efficacy of VOC (Stone M et al.,

2016) and the results of the first 600 patients to use the VOC. Data collection and research on this process continues, both within our organisation, and in collaboration with other centres. A high level of engagement continues with patients, clinicians, radiology, managers and academics.

### Developing the advanced practitioner role

This role has provided the opportunity to use clinical expertise and develop a specialist nursing role through innovating patient care pathways. The continuing professional development has been structured by guidelines from the multi-professional framework for advanced clinical practice in England (NHS Health Education England 2017), and evidenced using work-based assessments, external workshops, x-ray interpretation courses, lectures and conferences, in-house tutorials and university modules.

The Arthroplasty Care Practitioners Association (ACPA), which represents multidisciplinary health professionals involved in the care of patients with a joint replacement, has provided a valuable support network and forum for discussion (ACPA 2013). Some of the training has been provided through membership of ACPA but it has required a significant input from local orthopaedic consultants as well as support from nursing managers and the Trust as a whole. This has involved shadowing of orthopaedic consultants in hip and knee clinics to understand how a patient is assessed and how radiographs are interpreted, plus recognition of the key adverse features. In addition, attendance at weekly departmental meetings (where all the radiographs of the previous week are discussed) provides an ongoing learning experience. Attendance at the annual ACPA conferences includes dedicated sessions on the evolving role of ACPs and offers links to training modules in key areas. After attending these workshops, one-to-one tutorials with a consultant has increased understanding of the importance of comparing radiographs, developing a systematic approach to x-ray assessment and ways to interpret the patient reported outcome scores.

## Conclusion

This article highlights the need for the development of safe, efficient and cost-effective methods of arthroplasty follow-up. It outlines lessons learnt in the process of setting up and running a virtual orthopaedic clinic by an Arthroplasty Care Practitioner in a university teaching hospital and demonstrates feasibility for the potential application of VOC at a national level. The future for VOC is bright!

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