

Cochlear's Remote Check as an alternative to clinic visits

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INTRODUCTION:

NAIP currently manages around 1600 patients, and of these around 1200 have a Cochlear™ device/s. Remote Check (RC) allows cochlear implant (CI) users to complete clinical assessments from their own home via the Nucleus® Smart App and is currently available to patients with Nucleus® CI400, CI500 and CI600 series implants, Nucleus® 7 or Kanso® 2 sound processors, and an Apple Smartphone or tablet.

Historically, all patients had up to 6 clinic appointments in the first year post implant and were offered annual appointments thereafter. As a result of the pandemic it became necessary to offer alternatives to clinic appointments, and RC played a large part in this.

Remote Check was successfully piloted with routine patients at NAIP in 2019 (1). The next phase has been to investigate the earliest interval at which RC can be incorporated into the postoperative pathway and whether it can be used with other patient groups as an alternative to a clinic visit (see Methods).

Since May 2020 it has been possible to disable selected tests within RC, for example if they are too challenging / not appropriate for a particular patient, which has significantly increased the number of patients who can be offered RC.

METHODS:

- Data was collected via the electronic patient file, spreadsheets and a clinician's survey.
- The existing screening system was refined, widening the criteria to include the following patient groups: younger patients, patients with less CI experience, those with additional needs and those who contacted NAIP to report a problem.
- The invitation to undertake RC was changed to tie in with the patients' routine appointment intervals, or when requested by the patient.

Patients may have been offered RC via a postal or email appointment letter or during clinical/virtual discussion.

- A RC waiting list and booking system was set up in the patient database (AUDITBASE)

As RC appointments are completed at the patient's own convenience, staff time needs to be scheduled at regular intervals to review any checks that have been undertaken.

- Refinements to RC are ongoing and to date have included:
 - Streamlining of the RC review process and patient feedback in the MyCochlear portal by Cochlear.
 - Information on necessary home technology and how to set up the Nucleus Smart App and a Cochlear account is being updated regularly and included in invites.
 - Enrolment onto RC is needed initially via the MyCochlear Portal. Assistance for enrolment issues was set up by Cochlear Customer Services.

RESULTS:

Recruitment and response rate: Just over 400 patients have so far been invited to complete a RC for their appointment and figure 1 shows the responses captured.

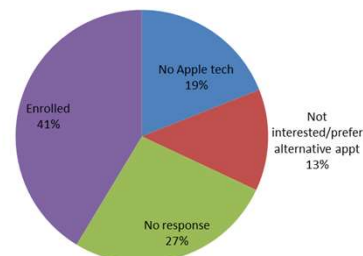
Enrolments and appointments: By 31/3/21, 170 patients had been enrolled for RC and 273 RC appointments had been completed, as shown in figures 2 and 3.

Patient groups: Figures 2 and 3 show patients with as little as 3 months CI experience as well as long term CI users, and young as well as older patients (age range: 1.3 - 87.5 yrs) could complete RC appointments.

REFERENCES:

- [1] Veekmans K & Johnson S (2020). Exploring a New Method of Patient Management using Cochlear's N7 Remote Check Technology. [Poster presentation] British Cochlear Implant Group meeting 2020, Nottingham, UK
- [2] Smits C, Goverts TS, Festen JM (2013). The digits-in-noise test: assessing auditory speech recognition abilities in noise. J Acoust Soc Am. Mar;133(3):1693-706.

Response rate for CI patients invited to complete a Remote Check appointment



Non-response rate 2019 (1): 57%

Figure 1: RC Response rate for CI patients who have been formally invited. Although a high non-response rate remains, whilst patients are chased and reminded when their RC is due, it has decreased considerably since 2019. Most patients do use the RC, even when overdue, when they have a question or a concern and when it's useful for them. RCs can be deferred to the next routine interval if appropriate.

Remote Check enrolments (n=170) and appointments (n=273) between April 19 and March 21

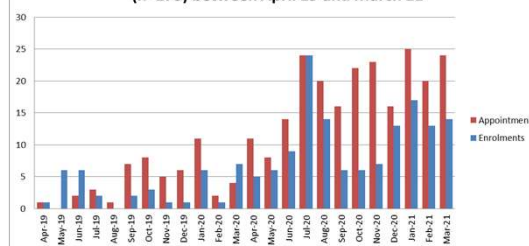


Figure 2: Distribution of RC enrolments and appointments per month. Increasingly more patients completed RC appointments each month, the amount of enrolments varied. Patients who did not respond or reported that they did not have Apple technology were offered an alternative appointment.

Remote Check Appointments in the Post-operative Pathway (Dec 2019 - March 2021)

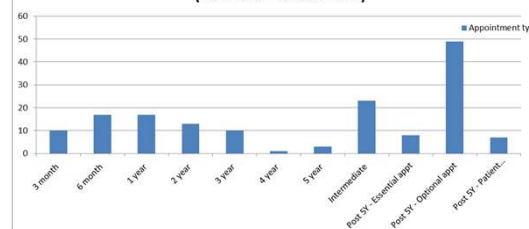


Figure 3: RCs completed for different review appointments. RCs could be completed as early as 3 months post-operatively. Most RCs were completed for routine optional appointments, however they could also be completed for essential or non-routine appointments.

Age range of patients completing RC appointments

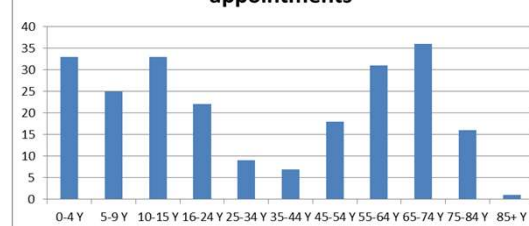


Figure 4: Amount of RCs completed by patients in different age categories. The RCs for patients under 16 years of age have been (partly) completed by the parents. Fewer young adults are completing RCs, possibly due to not being eligible yet due to their older internal device.

CONCLUSIONS AND FURTHER DEVELOPMENT:

- The number of RC enrolments and appointments has increased over time. This may be in part due to the pandemic. RC is a great way for certain patients to get their implant system/s checked when clinic visits are not possible or not preferred.
- RC has become more customisable and can now be used with a wide range of CI patients (age, experience, ability). This will increase further when RC becomes compatible with older devices and can run on Android smartphones and tablets.
- In most cases, issues/concerns could be identified and resolved via RC. In a small number of cases a clinic visit was required. Therefore RC can be used for a number of reasons, from routine checks to triaging before clinic appointments to emergency checks.
- RCs can be reviewed in approximately 20 min, however more time will be required if clinics also wish to record the information in their patient database and when follow up actions are required. Further streamlining of the MyCochlear Portal and Custom Sound Pro will allow for quicker and better comparison with historic data.