

Implementing a Hybrid Model of Online and In-person Audiology Care

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From left: Ms. Ratanjee-Vanmali is a PhD candidate at the University of Pretoria (UP) and a clinical research audiologist at the Hearing Research Clinic, a nonprofit based in South Africa. Dr. Swanepoel is a professor of audiology at UP in South Africa and the editor-in-chief of the International Journal of Audiology. Dr. Laplante-Lévesque is an associate professor in the department of behavioral sciences and learning at Linköping University in Sweden.

[This is part three of a four-part article series.](#)

To be relevant in today's technology driven world, professionals in the health sector need to adopt digital technologies. The ability to adapt is critical to remain relevant in a changing world especially in the current global situation. The COVID-19 pandemic has further exposed audiologists' challenges and opportunities in utilizing connected technologies to provide remote care.

As discussed in parts one and two of this article series, we conducted process evaluation research on a hearing care model incorporating online and in-person modalities for adults. When we started this project, we did not inherit an existing patient database, and our marketing was limited to online channels and via word of mouth. In designing this model, we recognized the critical role of the audiologist in service delivery and communication with existing and potential patients. Therefore, we designed all services to maximize interactions with the audiologist. The result was a five-step hybrid model—the first two steps of which (i.e., online hearing screening and motivational engagement) were free of charge, while the final three steps required a fee (based on market price) that can be reimbursed via a patient's health insurance. Let's go over each of the five steps and the patient outcomes over 19 months of implementing this hybrid model (Table 1).¹

Step 1: Online hearing screening

We used online advertisements (Facebook and Google) which raised awareness of hearing loss and encouraged people to visit the Hearing Research Clinic website (www.hearingresearchclinic.org) within a targeted geographical area to allow for face-to-face services when necessary. Individuals were encouraged to complete the validated online hearing screening test²⁻³ embedded on the website⁴ (asynchronous service). Persons who failed the online hearing screening test and who were from the greater Durban (KwaZulu-Natal, South Africa) area and above the age of 18 were invited to submit their contact details. Persons provided online consent to the clinic audiologist (first author) to make contact. Within a period of 19-months, 665 persons completed the online hearing screening and provided their contact details to be contacted by the clinic audiologist¹ ([link to article 2: Optimizing Audiology Websites to Increase Patient Reach](#)).

Step 2: Motivational engagement

The clinic audiologist contacted persons who submitted their details via audio/video calling, instant messaging or email (synchronous or asynchronous services). Motivational

engagement was conducted by the use of the line from the Ida Institute⁵⁻⁷ and staging algorithm⁸ to assess the readiness and stage of change of those persons seeking hearing health care. The line is a single question: “How important is it for you to improve your hearing right now, on a scale of 0 to 10, where 0 represents *not important at all* and 10 represents *very important*. The staging algorithm consists of four statements which were read or sent in written format for the patient to choose one of the four statements that best described their current situation; (Stage 1) I do not think I have a hearing problem, therefore nothing should be done about it (pre-contemplation), (Stage 2) I think I have a hearing program. However, I am not ready to take any action to solve the problem, but may do so in the future (contemplation), (Stage 3) I know I have a hearing problem, and I intend to take action to solve it soon (preparation) and (Stage 4) I know I have a hearing problem, and I intend to take action to solve it now (action).

If the person displayed readiness to seek hearing health care (≥ 5 on the line and stage 3 or 4 on the staging algorithm), a face-to-face diagnostic hearing consultation was booked immediately. Once the appointment was scheduled, persons then became patients of the research clinic. Out of the 665 persons requesting to be contacted after the online screening, 629 were reached to assess their readiness to seek hearing health care. The remainder could not be reached due to incorrect details submitted. An email confirming the date and time of the face-to-face appointment, together with preparation information regarding the diagnostic assessment was provided (what to expect, encouraging a significant other to attend the appointment, reflection on situations/challenges experienced in daily life etc.).

Step 3: Diagnostic hearing evaluation

The clinic audiologist and the patient met for a face-to-face diagnostic evaluation at the clinic (a rented space on a weekly basis) or at the patient’s home. The project and services were described to the patient, the clinic audiologist answered any questions, and obtained written informed consent from the patient. The clinic audiologist completed a diagnostic evaluation for the patient which included a case history, comprehensive hearing evaluation including video otoscopy, tympanometry, acoustic (ipsi- and contralateral) reflexes, pure tone (air and bone conduction) audiometry and speech audiometry. After the evaluation the patient was counseled in regard to their hearing status and treatment plan options and a hearing aid trial was offered if the patient consented and no medical conditions warranting a medical referral was present in the same appointment. A total of 46 patients completed face-to-face diagnostic hearing evaluations over the period of 19-months.

Step 4: Hearing aid trial and hearing aid fitting

Patients were offered a 2–4-week bilateral hearing aid trial. When the trial period ended, patients could purchase their own hearing aids (some patients had access to reimbursement through their health insurance). Hearing aid type and style were chosen to meet the audiological profile and personal preferences, ensuring that all parameters were addressed (acoustics, signal processing, etc.). The patient’s hearing aids were then fitted and the trial hearing aids returned at a face-to-face appointment (Table 1) where real-ear measurements were performed (synchronous service) and an online aural rehabilitation program was offered (asynchronous service). A total of 31 patients completed a hearing aid trial of which 15 patients proceeded with the purchase of their own hearing aids over the period of 19-

months. Financial constraints were one of the main reason's patients did not continue (did not purchase hearing aids) with seeking hearing health care.

Step 5: Online audiological rehabilitation and counseling

A continuous therapeutic relationship ensured the patient was supported along their journey to better hearing by providing the online aural rehabilitation program (Eriksholm Guide to Better Hearing) and ongoing appointments to re-instruct, counsel and fine-tune hearing aids (Table 1). Communication was maintained between face-to-face appointments (synchronous services) using online modalities (synchronous and asynchronous services). A total of 15 patients obtained hearing aids, completed online rehabilitation and received ongoing support and coaching within this 19-month period.

Patient satisfaction and experience

We used a process evaluation method to capture patients' experiences and satisfaction at each step (see Table 1). This process evaluation was required to address some of the uncertainties and assumptions we made at the beginning of this project as outlined in part one of this article series ([link to article 1: Strengthening the role of the audiologist in the Digital Age](#)). In all, the patients' positive feedback was very encouraging.

Table 1: Patient experience and satisfaction ratings for receiving online and face-to-face hearing services through the hybrid model

Step	Mode	Patient feedback – statements/descriptions and percentage of persons who “agreed” or “strongly agreed” with them
Step 1 Online hearing screening	Online/ asynchronous	<ul style="list-style-type: none"> • Simple to complete (96%) • Quick and informative (88%) • Easy to use (89%) • Assisted to continue with seeking hearing health care (92%)
Step 2 Readiness management to continue seeking hearing health care	Online/ synchronous (IM, phone) or asynchronous (email, SMS)	<ul style="list-style-type: none"> • Mode of communication was easy (100%) • Quick (100%) • Provided useful (100%) • Relevant information (96%) • Assisted in taking next step (96%) • Assisted in booking diagnostic hearing evaluation (96%)
Step 3 Face-to-face diagnostic hearing evaluation appointment	Face-to-face/ synchronous	<ul style="list-style-type: none"> • Comprehensive (100%) • Provided information needed (100%) • Easy to complete (100%) • Was trustworthy (100%) • Sufficient time spent taking test (100%)
Step 4 Hearing aid trial & fitting	Face-to-face/ synchronous	<ul style="list-style-type: none"> • Hearing aid trial helped to experience the different that hearing aids can make in their life (96%) • All patients who acquired hearing aids - hearing aid trials informed the purchase and usage was beneficial
Step 5 Audiological rehabilitation, overall coaching, support and satisfaction	Online & face-to-face / asynchronous and synchronous	<ul style="list-style-type: none"> • Online audiological rehabilitation program was helpful (89%) • Validated Short Assessment of Patient Satisfaction Questionnaire⁹: Very satisfied (52%) Satisfied (45%)

We found that patients used instant messaging (87%), emails (81%), voice calls (77%), text messaging (13%), and Facebook Messenger (7%) to communicate with the clinic audiologist.¹ Of note, a good majority of patients preferred to communicate by instant messaging (81%), emails (65%), followed by voice calls (61%).¹

Nineteen of the 31 patients (61%) who completed the process evaluation (Table 1) had previously received hearing health care through traditional methods. Eighteen of the 19 patients rated services and experiences from this hybrid model as better, and only one patient rated it as the same. Patient responses regarding their experiences on clinician engagement factors included aspects of personal attention, patience, dedication, thorough explanations, professional behavior, exceeding expectations, friendliness, and trust. Technology aspects commented on included aspects of the latest technology and equipment and offering a hearing aid trial.¹

Clinical insights

Clinical insights from each step of the hybrid hearing health care model and how synchronous and asynchronous services can be combined to offer patient-centered care are summarized in Table 2. Steps three and four were the only in-person appointments between the patient and the clinic audiologist, while the other steps were conducted via online modalities. However, step five may warrant in-person care on occasion when remote support/troubleshooting was not possible.

Table 2: Clinical insights on each step of the hybrid online and face-to-face model

Step	Clinical insights
1 Online hearing screening	<ul style="list-style-type: none"> • 60% of hearing screening tests were completed outside a 9am-5pm workday (links to articles 1 & 2) • Asynchronous offering • At a time and place convenient for the patient
2 Readiness management to continue seeking hearing health care	<ul style="list-style-type: none"> • Quickly and easily administered • Understand patient needs, build trust and understanding prior to step 3 • Assisted in patient readiness and expectation management prior to step 3
3 Face-to-face diagnostic hearing evaluation appointment	<ul style="list-style-type: none"> • Combined diagnostic battery and hearing aid trial into one appointment if medically warranted • Saved time instead of separate appointments • Patient closely monitored, and experience and satisfaction were tracked during trial
4 Hearing aid trial & fitting	<ul style="list-style-type: none"> • Hearing aid trial assisted in adaptation to hearing aids • Challenges and concerns raised during hearing aid trial were addressed in a timely manner (inserting of hearing aids into the ear canal, changing of batteries, cleaning and the do's and don'ts) • Hearing aid trial eased hearing aid fitting process due to familiarity • Hearing aid trial hearing aids were exchanged for specific ordered hearing aids if patient proceeded with care
5 Audiological rehabilitation, overall coaching, support and satisfaction	<ul style="list-style-type: none"> • Patients' needs and concerns were addressed in a timely manner without the need/wait for face-to-face appointments • Support and care provided on a preferred communication channel, at the time when the patient needed assistance the most which was important in providing patient-centered care

This hybrid hearing care model provides audiologists with a framework to rethink service provision and consider no- and low-touch audiological services to reduce COVID-19 infection risk¹⁰ and to accommodate patients' busy schedules, transport costs, and limited access. Our research findings support positive patient satisfaction, which demonstrates the potential of a hybrid hearing health care model to better meet patient needs. In the final article of this series, we will explore the influence of digital proficiency of adults with hearing loss on the uptake of audiology services via a hybrid model.




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