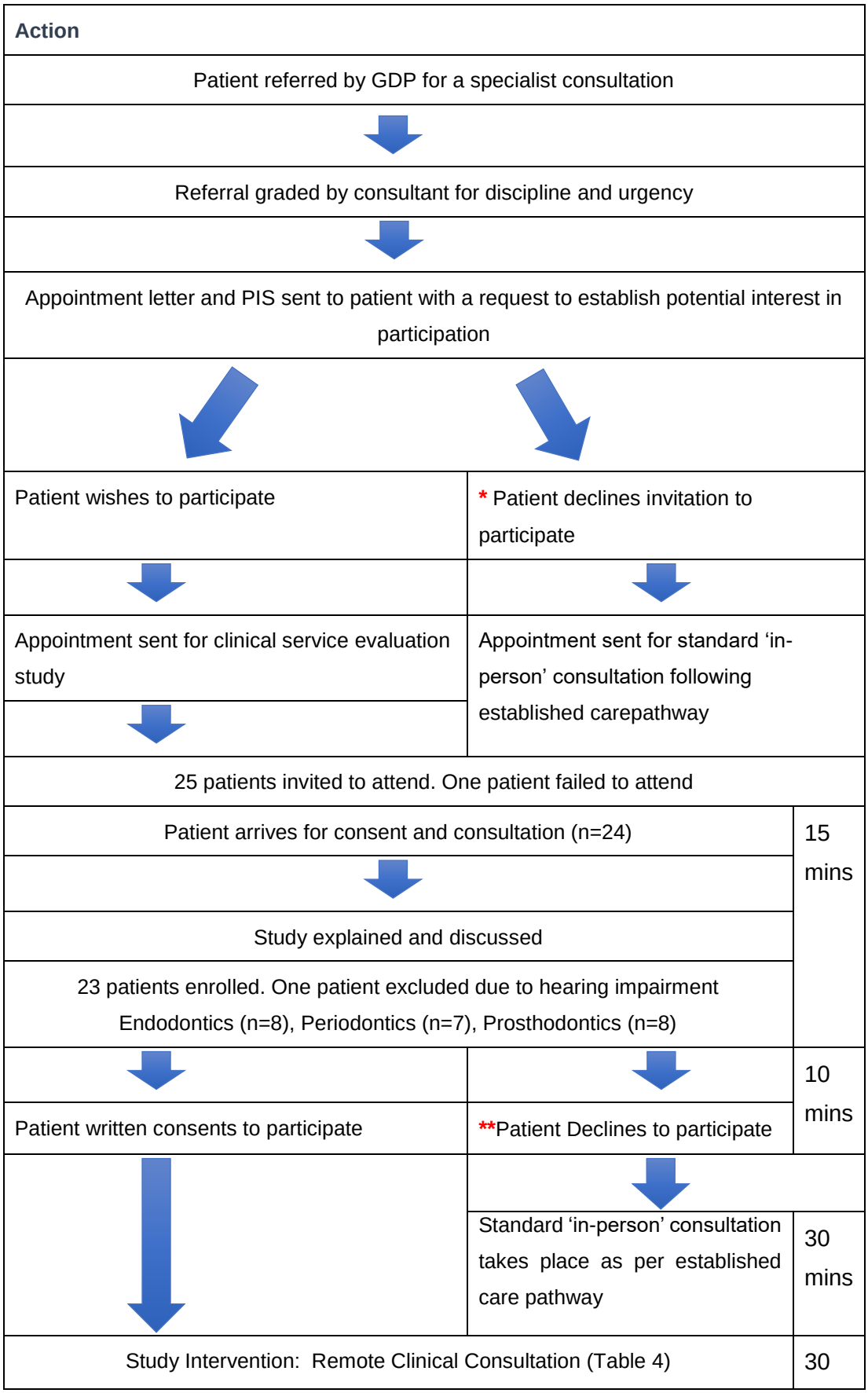
Article:
Martin, N., Sharhbaf, S., Towers, A. et al. (2 more authors) (2020) Remote clinical consultations in restorative dentistry: A clinical service evaluation study. British Dental Journal, 228 (6). pp. 441-447. ISSN 0007-0610

https://doi.org/10.1038/s41415-020-1328-x

RCC – Tables and Figures

Figure 1: Flow-chart for intervention pathway



<table>
<tr><td colspan="2"></td><td>mins</td></tr>
<tr><td>  </td><td>  </td><td></td></tr>
<tr><td>Remote Clinical Consultation is completed</td><td colspan="2">*** STOP Criteria is trigered</td></tr>
<tr><td rowspan="2">  </td><td colspan="2">  </td></tr>
<tr><td colspan="2">Intervention is stopped immediately and the Standard ‘in-person’ consultation takes place as per established carepathway</td></tr>
<tr><td colspan="2">Control Intervention: ‘in-person’ Clinical Consultation</td><td>20 mins</td></tr>
<tr><td colspan="3">  </td></tr>
<tr><td colspan="3">Arrangements for patient’s ongoing care</td></tr>
<tr><td colspan="3">  </td></tr>
<tr><td colspan="3">Participants (Patient, Consultant GDP and observer)
to complete study questionnaires</td></tr>
<tr><td colspan="3">  </td></tr>
<tr><td colspan="3">Discharge patient from clinics</td></tr>
</table>

Three different exit points from the study:

* Following invitation letter, the patient declines participation.

** Following explanation, the patient fails to consent.

*** A STOP criteria (**Error! Reference source not found.**) is trigered and the intervention is immediately terminated.

Figure 2: Set up of the consultation process using AV communication as detailed in Table 3

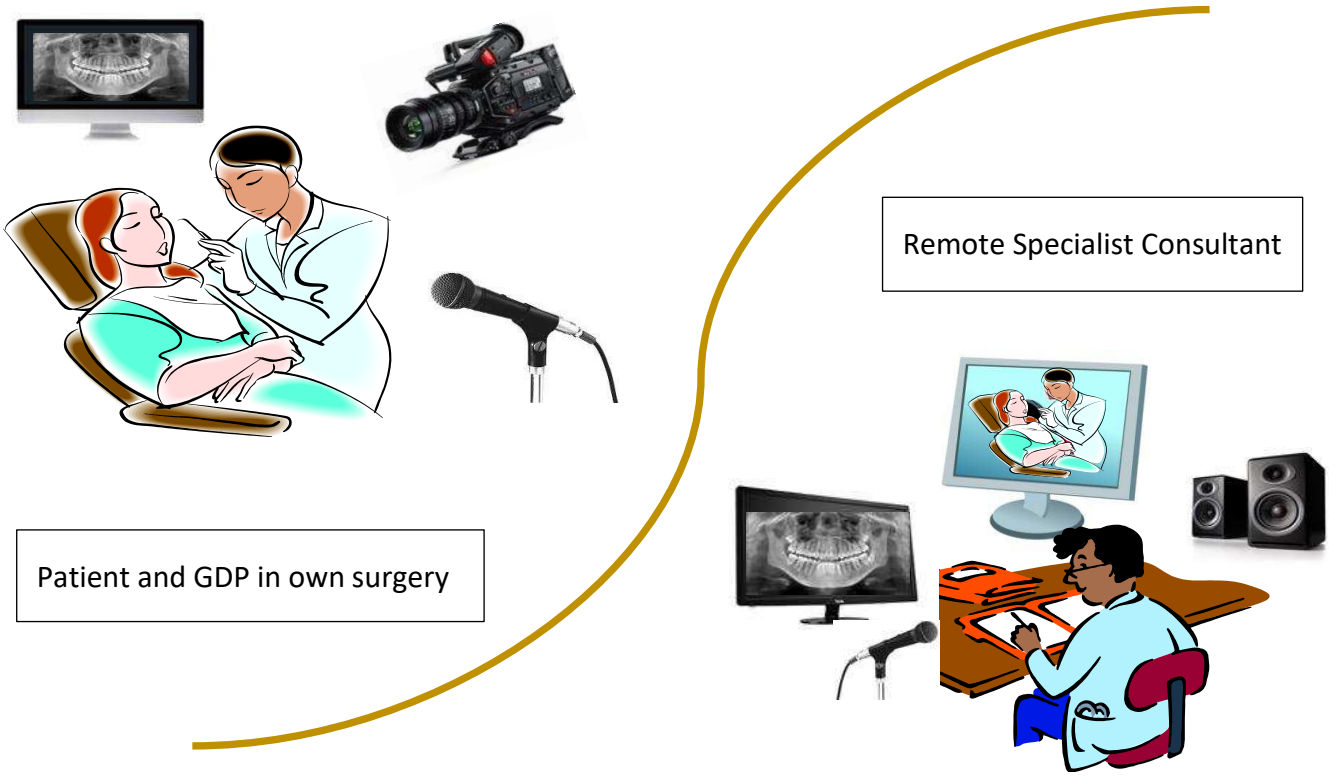


Table 1: Sequence of events that take place during an in-person clinical consultation

1	A primary care practitioner requiring specialist advice refers the patient to a consultant in the NHS by means of a letter. The referral may also include additional information, such as dental study casts, photographs, radiographs, or the results of other tests.
2	If the referral is accepted, the patient is given an appointment at the convenience (location and time) of the specialist in a designated secondary care referral centre, often a teaching or district-general hospital.
3	The patient travels to see the consultant at the referral centre for an 'in-person' consultation appointment.
4	The consultant undertakes a comprehensive clinical assessment, including any further specialist tests and then proceeds to establish the appropriate diagnoses, prognoses and a treatment strategy.
5	The consultant's findings and recommended decisions are reported back to the referring clinician by means of a written letter-report, which is also copied to the patient and stakeholders.
6	The patient may have treatment provided in the secondary care centre, but mostly she/he will return to the referring clinician to discuss the outcome of the consultation and its findings, consider its practical and financial implications and agree on a pragmatic action plan.

Table 2: Relative merits of the current 'in-person' consultation system.

Advantages	Disadvantages
Allows the consultant to meet and examine the patient first-hand to establish direct ownership of the information gathered.	The duration of the whole process, from initial referral to a return specialist report, can be very lengthy.
Allows the consultant to make full use of senses during the in-person encounter: Visual, hearing, olfactory and tactile.	The patient needs to travel to the consultation site; causing inconvenience and a major contribution to NHS carbon footprint.
Direct control and ownership establish a clear line of responsibility for the decision-making process.	Indirect communication can lead to misinterpretations in the expectations and capabilities of the stakeholders.
Provides a powerful environment for specialist training grades to develop these skills.	Requirement for extensive clinical and administrative support in the form of a surgery, nurse and clerical assistance.
Provides a personal 1:1 interaction between patient and consultant, that may be perceived as important.	Lack of direct 1:1 interaction between GDP and consultant; that potentially limits the effectiveness of the process.
	The alien and potentially intimidating environment of the consultation setting may impede the feasibility of patient participation.

Table 3: AV communication configuration between surgery (patient, GDP and nurse) and remote consultant data exchange

One-way stream from clinical surgery to consultation room • Full surgery view: 2 cameras + sound, to allow the consultant to pick up on subtle patient queues (mobility, mood, disposition, anxiety…etc) and interaction with GDP. • Full patient face and mouth from an overhead camera attached to the surgery overhead light. • Detailed high-resolution intra-oral view with an intra-oral camera (Carestream CS1500) operated by the GDP.
Two-way stream between clinical surgery and consultation room • Tablet (13”) positioned on a stand at face height when seated, for direct communication between the patient and the GDP with the consultant. • Radiograph simultaneous viewing by means of access to a shared server. • Desktop visualiser for showing items such as study models, dentures…etc.

Table 4: Procedure for RCC in sequential order

Surgery configuration	Clinical activity
All cameras set up with live AV stream as per table 1	GDP in surgery ready to receive and welcome the patient.
One-way viewing through two room-cams	Patient escorted into the surgery by nurse.
Two-way dialogue through tablet on stand.	GDP welcomes patient Patient is seated upright in dental chair GDP reviews and explains nature of process – Obtains consent GDP introduces consultant through tablet, each greet each other.
	Consultant in dialogue with patient: Takes history of condition (presenting complaint, relevant dental and medical history, expectations…etc) from patient
Two-way dialogue through overhead surgery light camera and intra-oral camera.	Patient is reclined in dental chair. Consultant in dialogue with GDP GDP undertakes a full and systematic clinical extra-oral and intra-oral examination. GDP highlights to consultant specific features Consultant guides GDP to view specific features and undertake specific special investigations (e.g. Percussive test, mobility, periodontal assessment, restorative status…etc.)
Two-way dialogue through tablet on stand.	Patient seated upright in dental chair Consultant, patient and GDP in three-way dialogue. Consultant explains findings, diagnoses, prognoses and discusses treatment strategy options Review and agree outcomes End of RCC
In-person 'verification' clinical consultation	Consultant enters surgery Consultant confirms findings and outcomes from RCC.

Table 5: Study participants and a description of their individual role in the study.

Stakeholders	Description
Consultants	Two (NM and CS) consultants participated in the study. They conducted 12 and 11 consultations respectively.
General Dental Practitioner (GDP)	Two trained dentists in CCDS performed the role of a referring GDP. GDPs were fully trained in the use of all AV equipment and the clinical procedures to be followed prior the commencement of the study. Quality assurance discussions were held after each consultation.
Clinical Nurse	Trained clinical nurse provided the required clinical support during each of the consultation interventions, as per normal patient-care.
Research Nurse	A trained and certified research nurse assisted with the conduct and governance of the study, including consenting, study management and data collection.
Independent Observer	An observer (clinician or nurse) that is independent from the intervention, observed the conduct of each consultation for the duration of the whole study

Table 6 – Thematic distribution of responses from each of the stakeholders: Consultant; patient; GDP; Nurse; Observer.

Theme	Survey Questions formulated to ascertain…
Feasibility and acceptability of communication between Consultant, patient, GDP and nurse	Feasibility, acceptability and clarity of communication between each and every participant during the RCC. Including effective transmission and receipt of instructions. Feasibility of working with each other during the RCC.
Comparison of in-person vs RCC	Subjective perception of the effectiveness of the RCC. Consultation preference: in-person vs RCC
Feasibility and acceptability of participation in the RCC process	Feasibility and acceptability of participation between each and every participant during the RCC. Subjective perception of the dynamics of participation between each and every participant during the RCC. For GDPs, included views of their role as an intermediary clinician and the responsibilities associated with this.
Clinical feasibility of maintaining patient safety	[GDP only] – Feasibility of working with each other to achieve the desired outcome of the consultation. Ability for each of the participants to fulfil their individual role in the team. Confirmation of whether patient safety was compromised at any stage?
Value for professional development	[GDP only] - Ability of a RCC to provide an educational experience?
Use of AV technology	Feasibility of the set up and use of the technology used during the RCC?