

Digital Health

Converting Your Clinic from in-Person to Online Type

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Corresponding Author: Suhail Chughtai**Email:** suhailzb@gmail.com**Introduction**

The recent Covid pandemic necessitated a faster revolution in most service industries, including medical practices. To continue providing care, the healthcare workers conformed to their methodology of delivery of outpatient care, leveraging the true potential of Telemedicine. In this article, the author presents a brief audit of his multi-centric private Orthopaedic Practice in England, adjusted to the challenge of social distancing and lockdown through several waves of the Covid 19 pandemic.

The author has been conducting Virtual Orthopaedic Examinations and Teleconsultations over his self-designed Clinical Telemedicine Software for more than 5 years. Complying with the UK Government's Social Distancing law, he converted his pre-Covid outpatient practice at 15 Medical Examination venues across England to an Online Video Medical Examination version since April 2020, an experience which he shares in the form of a brief practice audit for the purpose of education and record.

This brief audit summarises the author's Orthopaedic Injury Assessment workload taken up during various lockdowns necessitated by the Covid-19 pandemic from April 2020 onward to 31st December 2021.

Adjusting in the Face of the Covid Challenge

The practice management team comprised three office-based staff members, who had their tasks converted to a digital mode to enable them to work from home.

Even before the pandemic began, most of the medical records were being sent electronically via email. However, for about 20% of the medical records still being received in the traditional post, one staff member was deputed to visit the office once a week to scan and upload the paper medical records and radiology CDs to ensure the availability of all paperwork in digital format. The author's support team consisted of staff members with



the following roles:

The Orthopaedic Practice Manager

- Setting up online and In-person clinics
- Creating online and in-person appointments
- Coordination hub providing telephone line cover over 9:00 am till 5:00 pm Mon-Fri
- Dispatching & Storing Medical Consultation Summaries with invoices

The Medical Records Manager

- Sorting and preparing the Medical Records for the Orthopaedic Surgeon
- Typing the Medical Records Summaries for the Consultation Letters
- Preparing the Radiology CDs for the review of the Orthopaedic Surgeon for imagery review (MRI, CTs etc.)
- Archiving the Medical Records and Radiology CDs

The Medical Summary Transcriber

- Transcription of the Consultation Notes into Letters and Summaries

- Insertion of the relevant anatomical illustrations for concept elaboration
- Insertion of the appropriate images of Clinical Findings during the Examination
- Formatting and Proof-reading the Consultation Summaries before dispatch
- Naming and Coding of the Consultation Summaries for systematic archiving

The clinic team made full use of the company's proprietary software packages as listed below, designed by the author who being a Microsoft Certified Specialist and Telehealth Expert, already had developed relevant software solutions well before the pandemic:

- Medical Appointment & Practice Management Software
- Consultation Summary Software, for Specialist Orthopaedic Examinations
- Clinical Telemedicine Software for Orthopaedic/ Medical examinations

The third-party Software used on the Microsoft Windows platform were as follows:

- Professional Dropbox account for storing Medical Records, Images, Consultation Summaries and relevant documents
- Online Adobe Word to PDF group-conversion platform
- Microsoft Office Word - Professional Suite
- QuickBooks Online for Invoicing and Bookkeeping

The other third-party non-Windows Software used were as follows:

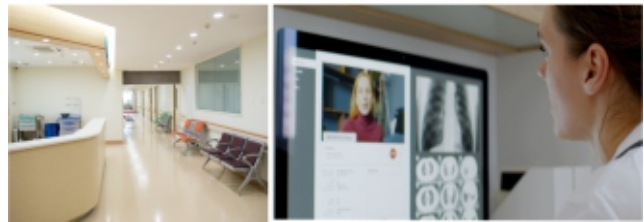
- **Notability app over an iPad** (apple) during the Consultations to create notes on a pre-templated consultation sheet
- **Adobe Scan app over a smartphone** (android) to transfer the filled-out consultation sheets to the document transcriber soon after the clinic.



Hybrid Orthopaedic Examination Practice Statistics for the period: 1st April 2020 - 31st December 2021

Orthopaedics Specialist Examinations: Personal Injury & Medical Negligence Cases

Total Number of Appointments:	1922	91.52 appointments/month
Total Patients who attended	1756	(166 did not attend – 8.63%)
Virtual Medical Appointments:	1033	(58.79% of total workload)
Physical Medical Appointments:	723	(41.21% of total workload)



Locations of Medical Examination Venues for 723 Physical Medical Appointments

- | | |
|---------------------|------------------|
| • London, Harley St | • Brighton |
| • Milton Keynes | • Ilford-Barking |
| • Leicester | • Birmingham |
| • Manchester | • Brentwood |
| • Croydon | • Guildford |
| • Luton | • Peterborough |
| • Cambridge | • Chelmsford |
| • Slough | • Chatham |

Stats for 723 Physical Medical Appointments

Female patients (296):	41%
Male patients (427):	59%
Minor claimant, accompanied by an adult guardian (25):	03.40%
Follow up Appointments (67):	09.21%
Interpreter needed - In person or over phone (21):	2.90%
Did not attend (57):	07.85%

Stats for 1033 Virtual Medical Appointments

Female patients (434):	42%
Male patients (599):	58%
Minor claimant, accompanied by an adult guardian (30):	02.92%
Follow up Appointments (117):	11.32%
Assisted by Online Interpreter (20):	01.94%
Did not attend (54):	05.25%

Virtual Examination Software used for 1033 Tele-consultations

Conducted on the company's Telemedicine Software:	93%
Conducted on WhatsApp Video Call:	6%
Conversion from Telemedicine Software to WhatsApp:	0.50
Teleconsultations abandoned due low connectivity:	0.33

Browsers and Devices used for 1033 Virtual Orthopaedic Consultations

The most commonly used browser by the patients was Chrome (by Google), followed by Mozilla (by Firefox), Internet Explorer Edge (by Microsoft) and Safari (by Apple), in the decreasing order of preference. The medical examiner used only Chrome browser on a standard domestic wifi internet connection.



Devices used by the Medical Examiner

- Desktop PC, i7, 8 GB RAM, Windows 10, Brother NW1000 Webcam: (96%)
- Laptop, i5, 4 GB RAM, Windows 10, Logitech 920 Webcam: (4%)

Devices used by the Patients

- Android Smart Phone: 58%
- iOS Smart Phone: 22%
- Windows PC: 17%
- iPad: 2%
- Apple PC/Laptop 1%

Location of the Medical Examiner for 1033 Virtual Orthopaedic Consultations

- UK based home in Southeast of England: (96%)
- From a point outside of the UK (UAE, Pakistan): (4%)

Locations of the Patients for 1033 Virtual Orthopaedic Appointments

Choices in descending order

1. Home (most common)

2. Workplace
3. Relative's home
4. Car (parked or moving if passenger)
5. Agency or Solicitor's office
6. Hotel room
7. Outdoors (park, gym)
8. Airport lobby

Physical Distance of Patients from the Examining Clinician (South East of England)

Patient's locations - Distance more than 200 miles within the UK (213 appointments)

- Edinburgh
- Dundee
- Cornwall
- Liverpool
- Leeds
- Glasgow
- Cardiff
- New Castle
- Manchester

Patient's locations - Outside the UK (21 appointments)

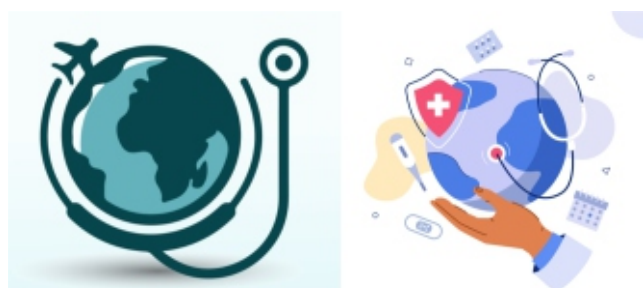
- Poland
- UAE
- Pakistan
- Bangladesh
- Spain
- France
- Turkey
- Saudi Arabia
- India
- Portugal
- Italy
- Israel

Clinician's locations, outside the UK (45 appointments)

- Pakistan
- UAE

Locations of Interpreters based outside the UK for our Video Tele-consultations

- Turkey
- Rome
- Poland
- Saudi Arabia



Reasons other than Social Distancing suitable for Virtual Orthopaedic Consultations

The patients responded to the above question as below:

- No special travelling involved
- No waiting room time loss
- No particular change of daily plan
- No need to take time off work
- No need to have an escort to reach the clinic
- No dependency on public transport or car availability

- No need to arrange child-care support for the day (Single parents)
- No need to place elderly care support for the day (Carers)
- Protected from common transmissible infections through the air
- Cheaper and Economic as no travel cost
- No need to cancel or reschedule holidays
- Was comfortable as if it was a Doctor's home visit



Patients level of comfort and ease during the Virtual Orthopaedic Consultations

The level of comfort and engagement with the examining clinician was felt similar to the Doctor's home visit scenario. Some of the actions performed by the patients during the Teleconsultations are shared below:

- Taking a cup of tea
- Answering the doorbell
- Holding a pet in the lap
- Smoking a Cigarette
- Assigning a task to a work colleague
- Parking car safely to take the Teleconsultation
- Managing young children or older people as Carer

Difficulties faced by the patients during the Virtual Orthopaedic Consultations

The range of issues faced are listed below:

- Non-availability of standard internet bandwidth, e.g., a home or work Wi-Fi
- Dropping signals of a 3G network coverage
- Using an incompatible browser (Internet Explorer version 10)
- Not being able to allow the camera
- Echo at the patient's end
- Not being able to raise the volume of the device's speakers
- Could not control the ambient noise at workplace or similar
- Lack of Privacy for conversation or visual Examination

- Not enough physical space for medical Examination



Most of the above issues, when faced, were resolved within 2-5 minutes by the clinician showing some pre-written on-screen messages or help-banners such as:

- Please use Chrome Browser
- Please reconnect and allow the camera
- Please unmute your microphone
- Please move to a better Signal Reception for Internet
- Please change to a more private or less noisy location
- Please use Headphones if available
- Let the light fall on your face, rather than coming from top or behind

Methodology of Orthopaedic Tele-Consultation

Acquiring the Information

Relevant information is gathered both before and during the Teleconsultation.

Pre-consultation Questionnaire – FORM I

The author's team sent out a pre-consultation questionnaire, titled as Form-I to the physical clinic appointments before the consultation date, asking them to fill in beforehand and bring along at the clinics. For online appointments, these forms were filled during the Live Teleconsultation by the clinician.

This pre-consultation questionnaire collected following information:

- Personal Status and ID confirmation (Live Face Screenshot of Patient's face taken with consent as a confirmation of virtual attendance)
- Accident/Injury Type and Description
- Occupation related Effects & Losses
- Domestic and Family Life related Effects & Losses
- Social and Leisure Activities related Effects & Losses
- Past Accidents and Orthopaedic Injuries
- Current Significant Long Term Co.morbidities
- Pre-existing Long term ongoing Orthopaedic symptoms

Photographs are taken with the claimant's consent to

A close-up photograph of a medical professional's workspace. A silver stethoscope is placed on a clipboard that holds a medical form. A black pen lies next to the stethoscope. The form contains various fields for patient information, including name, date of birth, and medical history. The scene is lit with warm, golden light, creating a professional and focused atmosphere.



Additional Steps for the Clinical Telemedicine centric Virtual Medical Examination System

- Consent for Online Medical Examination (Special Consent Form)
- Patient's face screenshot embedded as an additional ID with the summary
- History of the Injury, Losses, Treatment over two-way online video
- Visual Medical Examination using Clinical Telemedicine Techniques
- Snapshots of the Clinical Findings wherever necessary (with patient's consent)
- Education and engagement of the patient using illustrative images within the Telemedicine Software

Sharing screenshots of our Clinical Telemedicine Software



Invite Colleague
View Patient's file
History Form
Lab Reports
Misc Images
Vital Signs
Video Examination
Stop Video
Doctor's Input
Brief Notes
Initial Diagnosis
Further Tests
Write Prescription

• Was the seat belt on ? ☒ Yes ☐ No
• Head restraints properly positioned ? ☒ Yes ☐ No
• Protective Air bags ? ☒ Fitted ☐ Not fitted If fitted, did they inflate?: ☒ Yes ☐ No

This box only for motor bike drivers/passengers ONLY:
☐ Helmet ☐ Upper body protection on ☐ Lower body protection on

My Awareness about the impact
☐ I was hit unawares (no warning of the impact) OR
☒ I got a split second warning ...
☒ Brakes applied ☐ Notice too short to apply brakes

My body position at impact
☐ Sitting upright and looking ☐ straight ☐ right ☐ left
☐ Other (took a bracing position etc)

Primary movement type
Please leave blank for the Expert: ☒ Front ☐ Behind ☐ Sideways

Logout
End Consultation
Capture Screen & Save
Patient Education
Send Diagrams
Check Past Visits
Preview Summary
Check ePrescriptions
Send Prescription

The Conclusions

The author believes that converting a medical practice into a Hybrid model has several benefits, such as the continuation of healthcare delivery service despite challenges like a pandemic or similar situation where social distancing or restriction is mandatory. The benefits are summarised as below:



Patient Comfort Factors:

- Least or no travelling
- Minimal waiting time
- No risk of cross-infection
- Comfort and confidence of a home visit by a doctor
- No travelling cost or social dependence on someone to take to the appointment
- Can travel and yet be able to attend the appointment
- Can plan the day as usual and still attend the medical appointment etc

Clinician Comfort Factors:

- Least or no travelling
- Freedom to choose a time of practice
- Freedom to travel yet continue outpatient service
- A wider radius of the medical practice
- Online interpreters do not need to travel either
- Collection of image-based evidence more accessible

(screenshots)

General Plus Points:

- Government policies of social distancing more effective
- Less Carbon Foot Print
- Cost-effective for an institutional version of Telemedicine service
- Governance (Management and Clinical), both easily possible wherever needed such as Healthcare Service Quality Standards, Insurance Claims Authenticity etc
- Training opportunities for the young doctors, such as Virtual Observerships

Recommendations by the Author

Medical Teleconsultations can be as effective as face to face physical Doctor-Patient meetings provided specific criteria are met, such as:



Doctor Factors:

- Clinician's belief in Telemedicine based outpatient service
- Clinician's training and confidence in using the Telemedicine Software Platform
- Clinician's ability to engage the patient during Live Teleconsultation
- Adding value by providing image-based education