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Rapid learning curve with telehealth; a clinical audit at the time of 'flattening the infection curve' during the coronavirus (SARS Cov-2) pandemic

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The current coronavirus pandemic has necessitated rapid and substantial changes to clinical practice in all areas of healthcare to protect patients, healthcare professionals, and administrative staff. Whilst telehealth per se, is not new, it is new for podiatry. Consulting online is still consulting, and it is important that in the flurry to connect a platform, adapt camera angles, audio and lighting, that the 'basics', i.e. consent, privacy, clinical records, and sound diagnoses-based plans, remain intact.

Keywords: telehealth, coronavirus, Covid-19

It is known that telehealth services may be as effective as face-to-face interventions [1], and that telehealth has the potential to address many of the key challenges to providing healthcare in a country like Australia, with its substantial land area and widely dispersed population [2], and yet e-health to address allied health needs of people living in rural and remote Australia, appears unrealised [3]. The internet has also opened new opportunities in health care, from remote diabetes glycaemia monitoring, to smart sensors for diabetic foot ulcers, and medical device integration [4].

History-taking is (almost) everything with telehealth

Thorough history taking is always the primary information source of consultations, with an estimated 80% of information relevant to the clinical encounter may be derived from gaining a good history (5). Telehealth may further enhance the importance of history taking, given that some physical cues and the opportunity for direct clinical examination are diminished. This is fundamental to all clinical consulting, and the message here, is to spend time on an initial history, with a purposeful, methodical and reasoned manner, active listening, and simultaneously build online rapport with patients, who will be variably familiar with screen-based communication. Using a basic SOAP structured history method, it is helpful to summarise the consult verbally with patients, and ensure that all SOA-**Plans** are complete, understood, and shared decisions.

Whilst instrumentation treatment is not availed using telehealth, do not underestimate a patient's capacity to imitate your on-screen methods, e.g. apply a basic taping for heel pain. Similarly, coached self-examining and provocation tests are very feasible, e.g. percussion of posterior tibial nerve at medial ankle, palpation of lateral ankle ligaments, range of motion. It is useful to demonstrate, as well as verbally guide. Foot posture, lower limb stance positions, gait and footwear, are all easily visible. In my paediatric patients, there is always a parent to assist with balance and strength tests, as well as gait-based neuromotor assessments. Exercises can be demonstrated, and then watched to fine-tune the imitation as needed. More

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specific details can be accessed from the listed resources.

Results

Patients of all ages to be very appreciative of availing telehealth as safe access to clinical care, and everyone has been immensely cooperative, punctual, and engaged with this novel consultation experience. Postage of items to patients reduces physical contact. If sending any form of insole or foot orthoses, an emailed/SMS photo/tracing of the sock-liner (and shoe size) enables trim-to-fit, prior to post/delivery.

Given the necessary physical distancing, it is even more important to provide clear guidelines as to what is expected, what is acceptable, and what is not (e.g. ingrown nail resection will be sore initially, should subside over 24 hours, should not have increased pain, redness, or purulence). It is also important for communication access (email, phone, follow up telehealth appointments) to be provided, as people are often anxious amid this pandemic. As always, if there are doubts or suspicions, arrange to check-in after a few days, this can be very important as the following case illustrates.

Case synopsis

Day 2 of telehealth, and 12-month review of a 14.5 year-old girl with an intellectual disability, with her mother. A patient since age seven years, with very flatfeet, which were painful before use of prefabricated foot orthoses and better shoes. She had been schooling at home, barefoot consistently, and complaining of heel pain for the last month, limiting walking. Generally, an active girl, participating in Special Olympics soccer, and swimming.

Listen: the girl described heel pain most of the time, not liking to walk at all, and finding shoes and orthoses uncomfortable (previously relieving foot pain).

Think: what is probable here? Too old for apophysitis, less active with school at home, unusual location for juvenile arthritis symptoms, possibly plantar strain given flatfeet and increased barefoot time, verruca unlikely given pain when non-weight-bearing (although worse with weight-bearing).

Look: location is plantar-mid heel pad, nil to see re: redness/swelling, the mother was asked to compare left/right for temperature (assessed as same); mother said skin 'drier/harder' – mother was asked to squeeze skin area – not provoked, tender adjacent), asked for close up photo re: skin striations.

Listen further: the child was asked more about the pain and responses included: it hurts at night, is mild when wakes up in the morning, it hurts to touch, and it hurts to wear shoes

List diagnostic probabilities for heel pain presentation – the main suspicion was infection, given constant pain and location, with the main concerns being osteomyelitis, sepsis, and bone tumor. Whilst one of the least frequent etiologies of pediatric heel pain, it is crucial that abnormal and unusual clinical patterns are recognized. The following 'diary' outlines

- Day 1: advised to see the GP regarding pain, suggest blood tests, imaging, medication
- Day 2: the GP prescribed antibiotics (five-day course, bd); x-rays nil, sonography detected 'fluid area adjacent to, and larger than, the painful site'
- Day 10: the mother called as the child was no better; advised to return to GP regarding blood tests, medication review, further imaging (e.g. MRI)
- Day 12: GP prescribed another antibiotic (7-day course, qd)
- Day 17: follow-up via phone, and the mother reported the child as 'grumpy', the heel less red, pain static; advised to return to GP (offered to liaise with GP; acknowledging that GPs are also adapting to pandemic circumstances)
- Day 20: follow-up via phone as agreed, had seen GP who ordered another sonographic scan, with review in three days. Mother reported that the child's foot-leg appeared more 'swollen' and pain remained, child 'out of sorts'; mother concerned (and me). Discussed and advised mother to take child to children's hospital outpatient department; provided a letter summarizing presentation and main clinical concerns, i.e., cellulitis, osteomyelitis, sepsis.
- Day 21: Mother sent a text, thanking for referral and letter. Blood tests normal, awaiting MRI. Significantly, L foot/leg now cool to touch, hence complex pain also now considered.

- Day 23 (today): phoned to follow-up with mother; awaiting results of MRI, and specialist appointment. Foot infection, and complex pain are current medical considerations.

- This is clearly an unusual presentation, and one not to dismiss. The main diagnostic information was provided with the history taking via telemedicine, reducing likelihood of more usual conditions, and increasing clinical suspicion of more serious factors. The circumstances amid the novel coronavirus pandemic, coupled with a stoic child with communication limitations, required diligent follow up.

Discussion

This audit has shown that whilst patient numbers have diminished, the usual range of presentations has continued. Of the 49 patients seen in the three weeks of reduced consulting hours, 32 were telehealth consultations, and 17 were direct clinical consultations. Using telehealth, effectively enabled 29/49 patients to stay at home, and observe the Australian Government's physical distancing advice. The 17 telehealth consultations which then required direct clinical consultations, were mostly adult patients with foot pain (12/17). Telehealth consultations were dominated by painful presentations (18/32), followed by pediatric reviews and follow up (11/32). The pediatric list (age range 2 - 16 years) included: musculoskeletal and elite sports, hypermobility (hypotonia), intellectual disability, developmental delay, Marfan syndrome, LHONs (mitochondrial disorder), CRPS (complex pain), ingrown nails, heel infection. Adult presentations (age range 16 to 71 years) have been mostly musculoskeletal, neurological, diabetes, foot pain (see Table 1).

Whilst telehealth has been enabling, it has been far from '*business as usual*' (see Table). Overall, my case-load has dropped to less than 50%, admittedly, facilitated by encouraging non-essential visits to be deferred. My decision has been to physically see patients, only if they will be worse off without doing so, e.g. infections, pain. In this extraordinary time of a novel virus, it is important to be aware for Covid-19 foot signs; it may not be a common chilblain: https://metro.co.uk/2020/04/15/bruises-feet-sign-coronavirus-12557291/.

Given this novel experience, and that of my patients, telehealth has been invaluable, and enabled good consultation with patients of all ages, presenting with a wide range of conditions, and requiring podiatry care during this globally unprecedented time. I suspect that telehealth will remain part of clinical practice post this coronavirus pandemic.

References

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Further Resources

1. Blog link: https://angelaevanspodiatrists.com.au/telehealth-a-few-tips-for-consulting-during-the-coronavirus-pandemic-april-2020/
2. Australian Podiatry Association telehealth-podiatry: https://www.podiatry.org.au/about/news/telehealth-for-podiatrists
3. Royal Australian College of General Practitioner telehealth guidelines: https://www1.racgp.org.au/newsgp/professional/new-guidelines-for-telehealth-consultations

ID no.	Age	Gender	With parent	Old/New	Visit purpose	Assessment	Diagnosis	Action	Attend clinic	Comments
	years	*M/F/O*	*Y/N*	*O/N*	*Review*	*Foot*	*Ok*	*Review*	*Y/N*	*(specific to ID)*
					complaint	*Shoes*	*Pain*	*Refer*		
						Gait	*condition*	*postage*		
						Fos				
						Lesion				
						imaging				
AGE										
ave	19.4	12 – M	22 – Y	4 – New	Paed review – 8		Msk – 16 (* 13)	Review 1m – 14	Y – 3	
min	2	20 – F		28 – Old	Pain – 18		JH/S – 9	Review 6-12m – 12	N – 29	
max	71				Referred – 3		NDIS – 4	Footwear – 9		
					Follow up – 3		Dev delay – 5	Exercises – 19		
0 – 5	6						Marfan – 1	Refer – 1		
6 – 10	7						LHONs – 1	Postage – 6		
11 – 15	4	*17 paed*					CVA – 1		Orthoses (9):	
16 – 30	6						CRPS – 1		prefabricated – 7	Patient total – **49**
31 – 50	5						*RA – 1		bespoke – 2	**Telehealth consults – 32**
51 – 70	3						*Rural – 1			Clinical (2 paed) – 17
>70	1	*15 adult*					elite sport – 3			. Diabetes risk - 1
							Infection – 1			. Msk/orthotic/pain – 12
							* *adults*			. Ingrown nails – 4

Table 1 Summary of 49 consultations, 1-24, April 2020. Telehealth consultations comprised 32/49 patient cases. Abbreviations: Msk - musculoskeletal, JH/S – joint hypermobility/syndrome (painful), NDIS – National Disability Insurance Scheme funded, Dev delay – developmental delay, Marfan – Marfan syndrome, LHONs – Leber's Hereditary Optical Neuropathy, CVA – cerebrovascular accident or 'stroke', CRPS - complex regional pain syndrome, RA – rheumatoid arthritis.