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The Telehealth Ten: A Guide for a Patient-Assisted Virtual Physical Examination



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“The only problem with communication is the assumption it occurred.”

George Bernard Shaw

Listening to patients’ stories is an essential clinical skill. When combined with caring and clinical expertise, patients report confidence in clinicians with strong communication skills.¹ Given the coronavirus disease 2019 (COVID-19) pandemic and the need to keep vulnerable patients (and clinicians) at home and away from health care facilities to decrease risk of virus transmission, there has been a rapid increase in use of virtual, or telehealth, visits.² A new reliance on telehealth requires many clinicians to develop skills to obtain objective information from these types of visits.³ Although eliciting a complete history and adjudicating medication lists and allergies are foundational activities of virtual visits, additional information from a telehealth physical examination can be useful. A targeted physical examination either confirms clues suggested by the history or provides data that can direct specific clinical tests or treatments. Our experience is that patients respond positively to these maneuvers. Thus, performance of a telehealth physical examination may be considered as an essential element in the context of postpandemic payment policies for telehealth visits.

Astute physicians start the physical examination as the patient walks into the room because this provides immediate clues about patients’ characteristics. Observing the

patient’s gait and level of effort to walk into the room and to sit up on the examination table can be useful to assess his or her functional performance. How can clinicians obtain this and other similar information in a telehealth visit?

Use of virtual visits requires physicians to think proactively about what information they wish to obtain from the examination that can be performed remotely. While video can provide visual clues that one may also obtain on an in-person examination, it is possible to elicit additional valuable clinical information through various patient-assisted maneuvers. Thus, a trained clinician can purposefully facilitate the focused clinical examination by directly asking the patient, his or her caregiver, or both, a set of questions. This evaluation can be enhanced using digital devices such as wearables for heart rate and electrocardiogram, and home monitoring devices (scale, blood pressure cuff, and pulse oximeter), which are potentially available to patients. We propose the “Telehealth Ten,” which is a patient-assisted clinical examination to help guide clinicians through this new territory (Figure). This is not a comprehensive list, but focused primarily for chronic disease patients with an emphasis on cardiovascular disease management.

TEN STEPS FOR A PATIENT-ASSISTED VIRTUAL PHYSICAL EXAMINATION

Step 1: Vital Signs

We recommend that patients use a validated, digital, upper-arm blood pressure (BP) cuff to measure their BP and heart rate and an electronic scale for measuring daily body weight. On the day of the telehealth visit, patients should be asked to weigh themselves in the morning. We advise patients to take an accurate basal BP.⁴ Patients should sit quietly for 5 minutes with the cuff fitted appropriately to their arm size without looking at any screens, talking, or writing. They should take the BP and heart rate twice, stand, and then after 1 minute, take a standing BP and heart rate. While some patients omit writing down the heart rate,

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	Step 1: Vital Signs -Weight, blood pressure, pulse, oxygen saturation, temperature
	Step 2: Skin assessment -New bruises, rash, swelling
	Step 3: Head, Eyes, Ears, Nose, and Throat -Assess vision, hearing, sense of smell; observe throat, swallowing
	Step 4: Neck -Assess pain with rotation, jugular venous distension, Corrigan's pulse
	Step 5: Lungs -Deeply inhale and hold; observe wheezing and tachypnea
	Step 6: Heart -Assess pulse; incorporate data from wearables
	Step 7: Abdomen -Assess if abdomen is firm, tender, or distended
	Step 8: Extremities -Press thumb into pre-tibial area and assess edema; perceived temperature
	Step 9: Neurological -Speech, gait, Romberg, stand from seated position
	Step 10: Social Determinants of Health -Diet, physical activity, sleep, stress, housing, transportation, safety, mood

Figure Ten-step checklist for a patient-assisted physical examination.

it is essential in determining whether a significant postural decrease in BP is associated with a compensatory increase in heart rate or not, which can be an early clue to autonomic causes of orthostatic hypotension.^{5,6} Temperature checks and pulse oximeter readings are especially useful in identifying patients in whom COVID-19 might be suspected. The patient can be guided through these measurements by a medical assistant or nurse prior to the virtual visit.

Step 2: Skin

Instruct patients to perform a self-assessment and identify any new bruises, rashes, lacerations, psoriasis plaques (look on elbows, knees especially), or swelling. Ask if there are areas where they have scratched repeatedly as a clue to dermatitis. Ask patients to look at their face, neck, arms including elbows, chest, abdomen, and legs.

Video clue. Have the patient show you what they have found. If there is a trusted person with them, ask them to show you their back.

Step 3: Head, Eyes, Ears, Nose, and Throat

Ask about hearing to be sure the patient hears you! Are they wearing their hearing aids? Ask if vision or sense of smell is acceptable or has changed, including anosmia, which can be caused by COVID-19.

Video clue. Have patients close their eyes and look for xanthelasma. After patients open their eyes, ask them to look up and see if there is a prominent corneal arcus, an oft-overlooked clue to familial hypercholesterolemia in a younger person under age 45 years. As patients look up, you can quickly see if their pupils are symmetrical and whether they are constricted or dilated. Assess the sclera and evaluate for icterus. Also note any ptosis.

Step 4: Neck

Instruct patients to look over their right shoulder and then look over their left shoulder. Do they endorse any pain or limitation with motion? Ask patient to swallow and see if

there is any pain with swallowing, which can be a clue to a goiter. Ask if they note a bounding pulsation in the neck?

Video clue. While sitting, ask patients to turn their head to the left and observe the neck veins while sitting. Distension of neck veins above the clavicle while sitting is a clue to volume overload. If the patient sits next to a window, then natural lighting may make observing patients' neck veins easier.

Clinical Pearl: Have patients inhale to observe if the neck veins collapse. If they consistently swell with inspiration, then you have diagnosed Kussmaul's sign, a clue to constrictive pericarditis and other right heart diagnoses.⁷ Look for giant "a" waves of tricuspid stenosis⁸ or the presence of a regular rapid-pounding sensation that increases the likelihood of a specific type of tachycardia, for example, atrioventricular nodal reentry tachycardia.⁹

Step 5: Lungs

Ask patients to deeply inhale and exhale through an open mouth. Listen for cough or wheezes. Ask patients to deeply inhale again and hold their breath while you count to 10 and listen again.

Video clue. Watch for tachypnea and accessory muscle use as signs of impaired respiration.

Step 6: Heart

Ask if the patient or caregiver can take the pulse at the wrist. Have them count out the beats they feel. Ask if there are any skips or pauses or if the pulse is irregular in nature, which can be a clue to atrial fibrillation, atrial flutter with variable block, or atrial or ventricular ectopy. If the BP cuff has the visual pulse indicator, ask if they noticed irregularity to the rhythm.

Video clue. Ask if patients can show you the output from an Apple Watch (heart rates and electrocardiogram) or similar smart phone technology, including AliveCor from Kardia.^{10,11} This may be displayed via the monitor during the visit or uploaded by the patient to his/her chart prior to the visit.

Step 7: Abdomen

Ask patients if their abdomen is soft, nontender, and normal in size. If tender or distended, and especially if coughing causes tenderness, then an in-person clinic visit may be required. Ask if any abdominal scars are present, and if so, what they were from.

Step 8: Extremities

Ask if patients' hands or feet are colder than usual, or just the fingertips and toes. If cold distally, ask questions about cold sensitivity and color changes to diagnose Raynaud's phenomenon. Have patients feel their lower legs and ankles

and use the thumb to note any pitting edema. Ask patients to put hands around the calves and say whether one calf is more swollen than the other. For those with high cholesterol, have them feel the Achilles tendon and see if it feels lumpy or bigger than their thumb, which can be a clue for an Achilles tendon xanthoma seen in familial hypercholesterolemia.

Video Clue. Confirm impression of lower leg swelling, especially if one leg is more swollen.

Have them show you the lower legs near the window so you can see more clearly.

You can direct where patients sink their thumb into the skin to determine pitting. If they have a measuring tape, then they can measure the calves a fixed distance up from the ankle.

Step 9: Neurological

Ask patients to hold their arms out with elbows straight, spread their fingers, and turn their hands up as if catching rain. Ask patients if they have noticed a tremor (or if tremor when using utensils to eat) or if one arm is weaker than the other. If so, then ask if shoulder problems cause them to keep one arm lower than the other when they extend their arms. Ask patients to rise up from a seated position with arms folded across chest to detect proximal weakness. Ask if light-headed when arising. If so, you will want to get blood pressure and heart rates sitting and standing. Ask them to walk to the door and back. Ask whether their gait is steady and whether they use a cane or walker at times.

Video clue. Observe for pronator drift, indicative of more subtle unilateral weakness. Watch patients arise from a chair with arms folded to gain a clue to the severity of proximal muscle weakness. This examination finding provides a useful clue to an underlying muscular disorder or in some cases, statin-associated muscle weakness that should lead to testing of serum creatine kinase.

Step 10: Social Determinants of Health

Inquire about issues regarding changes in diet, physical activity, sleep, stress, and social support. Ask about if they have insecurities related to food, medicines, and supplies, if they have adequate housing and transportation, and if they feel safe at home.

Video clue. Observe patients' surroundings and interactions with caregivers. Assess their mood and facial expressions during the visit.

Future Direction

Important issues to be studied include: 1) adapting telehealth visits to different populations, including the elderly, individuals with cognitive impairment, or individuals with low health technology literacy; 2) rates of feasibility, acceptability, and fidelity of patient-assisted virtual examinations; 3) integration

of virtual examinations with interpreters; 4) meeting patients' psychosocial needs; and 5) gaining and maintaining trust through a virtual interface.

Increasingly, patients and clinicians will use telehealth services during the COVID-19 pandemic, and likely for years in the future. Adapting to this new reality takes time for both parties. Physicians likely understand the tradeoffs involved in telehealth visit availability in the absence of an in-person examination, including the decision of when an in-person clinic visit cannot be deferred because of an urgent medical problem. However, during the current pandemic, when it is critical to restrict hospital and clinic visits to reduce viral spread, telehealth visits represent the best option to balance individual- and public health-related safety and clinical effectiveness for ambulatory care. Indeed, listening to the patient and assembling a careful history to guide clues gathered from a limited, but potentially useful, patient-assisted physical examination can help patients and their clinicians address their medical problems to stay both safe and healthy.

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