

When thinking about telemedicine, it helps to remember that telemedicine is not itself a diagnostic procedure, but rather it is an alternative medium for patient/provider interaction. In order for this medium to be successful, certain methods, policies, and procedures must be carried out successfully.

First and foremost, in order to conduct telemedicine in any venue, including genetics and dysmorphology, the appropriate equipment must be available, usable, and working. Typically this involves ITV equipment, at both provider site and patient site, including a television, a Polycom unit with attached video camera, and microphone, as well as an ISDN connection with a minimum of 128 kbits/s. The better the kb/ps, the better the resolution and this can be important for an accurate genetic exam. Cameras used with the equipment are made to automatically focus on the person who is currently speaking and are controllable at each end. Cameras need to be able to zoom for accurate exams. There is a large range of available add-on equipment, such as otoscopes, electronic stethoscopes, and digital cameras. Since the equipment can be quite expensive to purchase, ideally a genetics service would not take on the full cost of the ISDN lines and the video units, but rather shares these costs, in addition to covering the costs of the line charges used during the visits. In many states the necessary equipment is in place, but has not been utilized for genetic services.

In addition to having the technology available, working, and in place, multiple people and multiple roles must be carried out to make the telegenetics appointment as successful as a face to face encounter. For example, someone on the patient end (nurse, genetic counselor, or sometimes a pediatrician) performs the physical examination under direction of the geneticist. Evaluations need to be diligent, appropriate, private, accurate, and timely. As in a face to face appointment, someone must also obtain and evaluate a 3 to 4 generation family history, typically this could be done by a genetic counselor on site, a genetic counselor over videoconference, or a specifically trained site nurse. The same person should also conduct an assessment and analysis of hereditary risk factors or ask poignant questions relevant to the reason for the referral. Verbal or written consent be obtained for necessary genetic testing. When a signature is required, someone at the patient site must be able to access requisition forms, consent forms, and obtain the necessary signatures. A plan should be made with the patient as to how they would like to receive the results of any genetic testing (i.e. over telemedicine, phone, letters, etc.).

Even before an appointment takes place, the nurse, genetic counselor, or practitioner at the patient site should prepare the family for what to expect from a telegenetics evaluation. Many will not have experienced this type of medical appointment before and won't be sure what to expect. In a telegenetics encounter, both patient and provider acceptance of this mode of care delivery is essential to its success.

Before and after the telegenetic evaluation case management should be assigned. This role includes support for patient and family regarding the implications of diagnosis and necessary follow-up, treatment, and effects on the family.

Some key components to the success of a telegenetics program include:

- ability to control costs for patient
- ability to prevent or treat a disease
- diagnostic accuracy
- diagnostic impact
- ease of use
- quality of transmission
- convenience
- ability to expand telegenetics to other forms of genetic encounters such as
  - prenatal and preconception counseling
  - dietitians for patients with metabolic disorders
  - cancer genetics counseling