Teledermatology and Teledermscopy: Diagnosis from “Afar”

Aaron Mangold, M.D.
Assistant Professor of Dermatology
Mayo Clinic Arizona

Goals and Objectives:
• Define teledermatology/telemedicine
• Define teledermscopy
• Identify the potential uses
  • Case 1: Atypical pigmented lesion
  • Case 2: A growing mole
• Identify the potential pitfalls
  • Case 3: A blurry blob
  • Case 4: Seborrheic Dermatitis and Skin Rash
• Closing the gap of healthcare disparity

What is Teledermatology:
• The practice of dermatology at a distance
  o Connecting a local provider and/or patient with a remote physician
• The need for teledermatology is driven by the increased demand for dermatology services
• Telemedicine dates back to the early 1900s
  o NASA used telemedicine in the 1950s at the Papago Indian Reservation in Arizona
• 2 forms- real-time & store and forward
• Objectives
  o Improve access to care
    ▪ Teledermatology shortens the time from consultation to face to face visit (41 days vs 127 days)¹
  o Reduce healthcare costs
    ▪ To be cost effective requires a significant distance between providers
    ▪ Requires few face to face consultations
  o Improve efficiency and increase the value in medicine
    ▪ Requires few face-to-face consultations

Forms of Telemedicine:²
• Live video, “Real-time” with feedback
  o Has the advantage of superior clinical information and instant clarification
  o Inconvenient, time consuming, more expensive
  o More commonly used in neurology with tele-stroke
  o Will avert 1:2 face to face consultations³
• Store and forward with or without feedback (most commonly used)
With more complex disease more key clinical information may be lost & there is a delay in the diagnosis.

- Very convenient, quick, less equipment, less expensive
- Must make an effort to educate PCP or GP
- Will avert 1:5 to 1:3 face to face consultations

### Key issues in Telemedicine:

- Inter-rater agreement telemedicine vs face-to-face consultation (50%-80% agreement) and face to face vs face to face consultation (54%- 94% agreement) \(^2,^4,^5\)
- Time taken for teleconsultation with real-time analysis can exceed the time for a face-to-face consultation \(^4\)

### Teledermatology - when is it most successful:

- Teledermatology tends to perform best with benign and non-melanocytic lesions and may be inferior to face-to-face consultation when examining pigmented lesions and skin rashes \(^5\)
- Teledermatology of all of the above can be improved with guided histories

### Key principles to success: \(^6^-10\)

- Effective preselection of patients
- Key historical elements
- High quality images
- Dermoscopy for pigmented lesions
- Effective infrastructure to implement teledermatology recommendations

### What is teledermoscopy?

- Dermoscopy is the use of polarized or non-polarized light and magnification to examine a skin lesion
- Dermoscopy has been shown to increase the sensitivity and specificity of skin biopsies
- Dermoscopic attachments can be used to acquire and transmit dermoscopic images
- Teledermoscopy is INFERIOR to face-to-face dermoscopy for pigmented lesions \(^9\)
- KEY: one must understand the pitfalls of teledermatology

### Case 1 (Atypical Pigmented Lesion): Take Home

- The proper infrastructure for teledermatology is essential and can streamline healthcare
- The time from diagnosis to excision was 2 business days
- No face-to-face consultation was required
- This patient was able to be treated with 1 office visit

### Case 1: New Solution- Tele-Referral Network

- Our research group is current work on using the teledermatologist as the telereference source for accurate referral based upon geographical location as well as specialty interest
Case 2 (A Growing Mole): Take Home
- Understanding the scope of practice of the referring providers is essential
- A good working relationship with your referring providers can save time and money
- Providing routine feedback to referring providers will increase the efficiency of your practice

Case 3 (A Blurry Blob): Take Home
- High quality photos are essential for accurate teledermoscopy
- Teledermoscopy for pigmented lesions is inferior to a face-to-face consultation
- Proper training for photo acquisition is essential for rendering accurate diagnosis
- Routine Feedback on photo quality (using a template) will improve your tele-consultations

Case 4 (Seborrheic Dermatitis and Skin Rash): Take Home
- Preselection is key for effective teledermatology
- Key clinical history is needed to make the correct diagnosis
- Store and forward WITHOUT feedback can lead to misdiagnosis and mistreatment
- If you are uncertain, call the referring dermatologist

Case 4 (Seborrheic Dermatitis and Skin Rash): Solution
- Templated History of Present Illness can increase the likelihood of essential data capture

Teledermatology: Healthcare Disparity
- The ACA has created a larger number of individuals needing access to care
- Urban underserved communities have longer wait times and less access to specialty care
- Dermatologists in urban areas are less likely to accept Medicaid and the uninsured
  - ½ of Medicaid and 2/3 of uninsured have no access to dermatology care\(^{11}\)
  - In Arizona, less than 40% of dermatologists accept Medicaid

National Efforts: AAD - AccessDerm
- The AAD has an initiative for teledermatology consultation in healthcare disparate areas
- Established in 2007
  - 2007-2015 approximately 1600 consults
  - No connection to local providers or local care network
  - Less than 29% of cases being benign and malignant neoplasms\(^6\)
    - Suggests a need for a teledermatology in a wide variety of diseases

Teledermatology: Healthcare Disparity- Why It’s Important?
- Ethnic minorities are 2-3 times more likely to die of melanoma compared to whites\(^{12-14}\)
- The incidence of melanoma has been on the rise for white non-Hispanics (WNH) as well as for White Hispanic (WH) women
There has been no decrease in distant metastasis at initial diagnosis in African American (AA) and WH
There is a need improved primary prevention in WH and WNH as well as improved secondary prevention in AA and WH

Conclusion:
- Teledermatology has a tremendous potential to improve access to care
- A proper understanding of teledermatology is required to use it effectively
- Key principles
  - Effective preselection of patients
  - Key historical elements
  - High quality images
  - Dermoscopy for pigmented lesions
  - Effective infrastructure to implement teledermatology recommendations

References:

