

Telemedicine Training Outline

This training programme is aimed at both health workers who will be using Telemedicine techniques as part of their clinical practice and key support personnel working in the field of telemedicine or telehealth. It is intended that the training programme will be flexible and modular allowing units to be selected and combined depending on the participating target group.

Mission

To develop a workforce with a practical working knowledge of Telemedicine and competence in the ethical use of Telemedicine and Tele-education.

Objectives

By the end of the Training the participants should be able to competently:

- Access and search for information on the internet
- Send and receive emails (including attachments)
- Take and forward high quality digital photographs
- Demonstrate the ability to perform basic picture editing
- Demonstrate skill in the use of digital scanning equipment
- Demonstrate skill in the use of a document camera
- Use programs such as Skype or similar VOIP software
- Apply various techniques involved in synchronous telemedicine
- Apply various techniques involved in store and forward telemedicine
- Understand how to design and set up a telemedicine consultation venue
- Understand how to design and set up a tele-education videoconference venue
- Understand how to use and troubleshoot videoconferencing equipment
- Be able to set up point to point and multipoint videoconference using ISDN, IP and mixed ISDN and IP links
- Demonstrate the use of video camera technology, camera placement, lighting, angles and framing.
- Demonstrate an understanding and the use of; microphone technology; the range of available microphones; microphone set up; and solving audio problems associated with videoconferencing.
- Understand the use of peripheral diagnostic equipment (tele-stethoscopes, ophthalmoscopes, dermascopes, ENT scopes, hand-held cameras and ultrasound probes)
- Demonstrate skill in use of peripheral diagnostic equipment (tele-stethoscopes, ophthalmoscopes, dermascopes, ENT scopes, hand-held cameras and ultrasound probes) where appropriate
- Apply any Telemedicine activity according to relevant ethical and clinical guidelines
- Demonstrate an understanding of ethical issues relating to telemedicine
- Demonstrate an understanding of ethical issues relating to the practice of telemedicine
- Demonstrate an understanding of relevant local and regional legislative issues
- Demonstrate an understanding of financial and administrative issues relevant to the practice of telemedicine in their region

Pre-requisite

A basic level of computer literacy (see outcomes listed in unit 1). If participants do not meet these basic criteria – the pre-module Unit 1 has to be completed.

Teaching Methodology

A mixture of information sessions / lectures and practical sessions

Units

The programme is made up of units, which can be combined depending on the learning needs of the target groups. The programme also has key strands, which thread through all the modules and require reflection at the end of each module:

- Ethics in Telemedicine
- Computer skills

The units, including the introduction to computing, total up to 21 hours and can be put together to create workshops ranging from a half day to 3 days depending on the target group and the purpose of the training.

In addition, specialist Telemedicine Units can be made available in the specialist areas of:

- Telepsychiatry
- Teledermatology
- Teleradiology
- Ultrasonography
- Ophthalmology

Unit	Outcomes	Training Strategies	Resources
<p>Unit 2</p> <p>Introduction to Telemedicine</p> <p>1 hour</p> <p>Prerequisite: Unit 1</p>	<p>On completion of the unit participants will be able to:</p> <ul style="list-style-type: none"> • Differentiate between telemedicine, tele-education and teleconferencing • Differentiate between synchronous and asynchronous Telemedicine • Describe the features of synchronous telemedicine • Describe the features of store and forward telemedicine • Identify core obstacles to the implementation of Telemedicine in their own country • Identify the cost and administration implications of Telemedicine • Discuss the requirements of a needs assessment • Discuss the requirements of programme evaluation 	<p><u>Information Session:</u> 1 hour</p> <ul style="list-style-type: none"> • History of telemedicine • Concepts, Definitions / acronyms • Features of synchronous telemedicine • Features of store and forward telemedicine • Types of Telemedicine • Costs and administration • Images, DICOM and PACS • Tele-education • Strengths and Weaknesses of telemedicine – what evidence? • Telemedicine needs assessment • Telemedicine evaluation • Ethics, law and standards as issues • Medical informatics and the Electronic patient record • Specialties: Radiology, Dermatology, Home-based Care, Ultrasound, Psychiatry • The Future 	<p>PowerPoint Slides Data projector Computer Resource manual</p>

Unit	Outcomes	Training Strategies	Resources
<p>Unit 3</p> <p>Ethics and Law in Telemedicine</p> <p>1 hour</p> <p>Prerequisite: Unit 1</p>	<p>On completion of the unit participants will be able to:</p> <ul style="list-style-type: none"> • List and discuss the key ethical issues in Telemedicine • Identify the relevant Health Legislation that governs the practice of Telemedicine • Identify issues relating to international practice of telemedicine 	<p><u>Information Session:</u> 1 hour</p> <ul style="list-style-type: none"> • Patient physician relationship • Informed Consent • Confidentiality and privacy • Quality of care • Standards - adequacy and quality of data • Continuum of care • Data security • Liability • Licensure • Record keeping • Protocols • Tele-medical Law • Prescriptions and electronic signatures 	<p>PowerPoint Slides Data projector Computer Resource manual Case studies</p> <p><u>Readings</u> Ethics Legislation</p>

Unit	Outcomes	Training Strategies	Resources
<p>Unit 4</p> <p>Setting up venues</p> <p>2 hours</p> <p>Prerequisite: Unit 1</p>	<p>On completion of the unit participants will be able to:</p> <ul style="list-style-type: none"> • Set up a telemedicine consultation venue • Set up a tele-education videoconference (VC) venue • Use and troubleshoot VC equipment • Set up point to point and multipoint VC using ISDN, IP and mixed ISDN and IP links • Demonstrate an understanding of: the use of video camera technology; camera placement; lighting; angles and framing. • Demonstrate an understanding of the : the use of microphone technology; the range of microphones; microphone set up; and solving audio problems associated with VC • Understand the connection of peripheral diagnostic equipment (tele-stethoscopes, ophthalmoscopes, dermoscopes, etc) 	<p><u>Information Session:</u> 1 hour (In the absence of equipment)</p> <p><u>Practical Session:</u> 2 hours</p> <ul style="list-style-type: none"> • Set up a Telemedicine venue and discuss <ul style="list-style-type: none"> ○ Location ○ Access ○ Equipment as per small clinic ○ Physical characteristics (sound proofing, lighting) ○ Equipment (video conference equipment, accessory video-camera, portable microphone) ○ Telemedicine diagnostic equipment ○ Room layout ○ Connect available tele-diagnostic equipment ○ Basic trouble shooting • Set up Tele-education venue and discuss <ul style="list-style-type: none"> ○ Location ○ Access ○ Size of target group ○ Equipment as per teaching ○ Physical characteristics (sound proofing, lighting, acoustics) ○ Equipment (video conference equipment, external speakers, radio microphones, data projector, audiomixer) ○ Room layout ○ Basic trouble shooting 	<p>PowerPoint Slides Data projector Computer Resource manual</p> <p><u>Reading:</u> Telemedicine & Tele-education venue design principles</p> <p><u>Equipment</u> <i>Telemedicine and Tele-education rooms</i> - VC equipment, Accessory video-camera - Portable microphone - Document camera - Phone - Fax - Computer - External speakers, Radio microphones, - Data projector, Audiomixer - Tele-diagnostic equipment</p>

Unit	Outcomes	Training Strategies	Resources
<p>Unit 5</p> <p>Basic Telemedicine Skills - demystifying the world of technology.</p> <p>1 hour</p> <p>Prerequisite: Unit 1</p>	<p>On completion of the unit participants will be able to:</p> <p>:</p> <ul style="list-style-type: none"> • Identify the different computer options available and the relevant advantages and disadvantages of each • Identify the different kinds of access to Internet and email available locally • Discuss different communication options • Discuss the latest ICTs such as mobile phones, PDAs 	<p><u>Information Session and demos:</u> 1 hour</p> <ul style="list-style-type: none"> • How do you get access – communication options <ul style="list-style-type: none"> ○ Dial up, broad band, wireless, phone cards, phones ○ Modem, LANs, VPN • What skills are needed • Computers <ul style="list-style-type: none"> ○ Desktops vs Laptop vs Tablets vs PC vs Smart Phone • Basic requirements for PCs <ul style="list-style-type: none"> ○ Sound ○ Memory ○ Monitor ○ Resolution ○ CD/DVDs • Storage <ul style="list-style-type: none"> ○ Hard drives ○ Flash-cards, CD/DVDs • Good Practice <ul style="list-style-type: none"> ○ Back up, Virus protection, Security • mHealth <ul style="list-style-type: none"> ○ Smart Phones ○ PDAs • Health Information Systems and Medical Informatics 	<p>PowerPoint Slides Data projector Computer Resource manual</p> <p><u>Readings</u></p> <p><u>Equipment:</u> Flash cards Laptop Tablets Smart Phone PDA Wired LAN connection Wireless connection 3G/GPRS card</p>

Unit	Outcomes	Training Strategies	Resources
<p>Unit 6</p> <p>Basic Skills – Use of the Internet (1)</p> <p>1 hour and 30 minutes</p> <p>Prerequisite: Unit 1 Unit 5</p>	<p>On completion of the unit participants will be able to:</p> <ul style="list-style-type: none"> • Understand how the internet work • Select an appropriate browser option • Access the internet to: <ul style="list-style-type: none"> ○ Do a literature search ○ Download software ○ Use an IP based educational software package 	<p><u>Information Session with demos:</u> 30 minutes</p> <ul style="list-style-type: none"> • Internet history • How the internet works <ul style="list-style-type: none"> ○ Browser options ○ Search engines ○ Protocols • What is available <ul style="list-style-type: none"> ○ Literature search ○ Internet distance learning ○ Web pages ○ E-learning packages ○ Downloading software ○ IP based internet educational software (Breeze, Illuminate) ○ Blogs ○ Future of Internet <p><u>Practical Session:</u> 1 hour</p> <ul style="list-style-type: none"> • Individual activity • Access internet and do the following: <ul style="list-style-type: none"> ○ Do a literature search on Telemedicine on Pubmed, Google, Google Scholar and Wikipedia ○ Do an online educational activity ○ View a blog 	<p>PowerPoint Slides Data projector Computer Resource manual</p> <p>- Computer: 1 per participant - Internet access - email address - web access - web browser - sound card - headphones - Online Educational Package loaded</p>

Unit	Outcomes	Training Strategies	Resources
<p>Unit 9</p> <p>Practical use of Store and Forward</p> <p>3 hours</p> <p>Prerequisite: Unit 1 Unit 2 Unit 3 Unit 5 Unit 6 Unit 7</p>	<p>On completion of the unit participants will be able to:</p> <ul style="list-style-type: none"> • Using a digital camera, save an image on a computer and send it as an email attachment to a consultant at a different site. • Identify the indications for store and forward technology • Recognize and address the ethical issues in store and forward. 	<p><u>Information session:</u> 1 hour</p> <ul style="list-style-type: none"> • Definition/explanation of store and forward telemedicine • Indications for use. • Special Telemedicine Software • Guidelines / contract for response time • File size (picture image) and compression • Ethics <ul style="list-style-type: none"> ○ Confidentiality ○ Security of internet ○ Clinical photography <p><u>Practical Session:</u> 2 hours</p> <p>Small groups (2-3 people)</p> <p>Activities</p> <ul style="list-style-type: none"> • Take photographs of “skin condition” and a macro of the eye • Save image on computer • Edit and compress picture • Email to given address. 	<p>PowerPoint Slides Data projector Computer Resource manual</p> <p><u>Equipment</u></p> <ul style="list-style-type: none"> - Computer: 1 per participant - Internet access - email address - web access - web browser - Cameras - Photo Editor

Unit	Outcomes	Training Strategies	Resources
<p>Unit 10 Tele-education 2 hours</p> <p>Prerequisite: Unit 1 Unit 2 Unit 3 Unit 5 Unit 6 Unit 7</p>	<p>On completion of the unit participants will be able to:</p> <ul style="list-style-type: none"> • Understand the use of teleconferencing equipment for the use of tele-education. • Demonstrate skill in use of teleconferencing equipment for the use of tele-education • Understand the benefits of using Scorm compliant learning objects • Understand key principles of Learning Management Systems 	<p><u>Information session:</u> 1 hour</p> <ul style="list-style-type: none"> • Reasons for using Tele-education • Criteria for Tele-education implementation • Administration models for implementation • Finance models for implementation • Evaluation methodology • Economic evaluation • Change management • Learning management systems • Interoperabilibty – Scorm 1.2 	<p>PowerPoint Slides Data projector Computer Resource manual</p>

Unit	Outcomes	Training Strategies	Resources
<p>Unit 11 Telemedicine and homecare introduction 2 hours Prerequisite: Unit 1 Unit 2 Unit 3 Unit 5 Unit 6 Unit 7</p>	<p>On completion of the unit participants will be able to:</p> <ul style="list-style-type: none"> • Understand the use of peripheral diagnostic equipment (tele-stethoscopes, ophthalmoscopes, dermascopes, ENT scopes, hand-held cameras and ultrasound probes) • Demonstrate skill in use of peripheral diagnostic equipment (tele-stethoscopes, ophthalmoscopes, dermascopes, ENT scopes, hand-held cameras and ultrasound probes) where appropriate. • Apply various techniques involved in the synchronous and store and forward telemedicine according to the relevant clinical guidelines. • Recognise and address ethical issues in the practice of Telemedicine 	<p>(Still to be developed)</p>	