

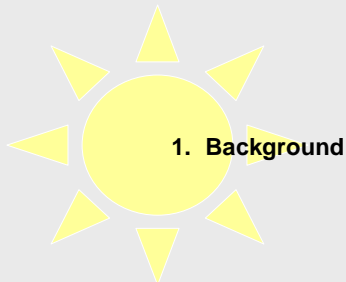
Telemedicine in the humanitarian field

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Overview

1. telemedicine -- background
2. telemedicine in the developing world -- review of the literature
3. Swinfen Charitable Trust (SCT) system
4. MSF system and clinical cases
5. conclusion



What is telemedicine?

(or telehealth, online health, e-health, connected health, etc)

... medicine at a distance

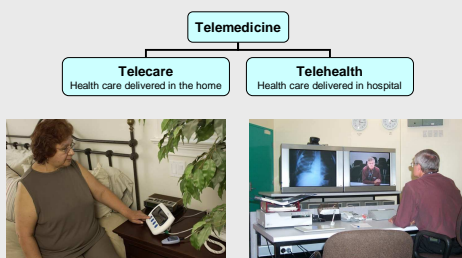
i.e. any kind of medical activity where distance is involved

- diagnosis
- treatment
- education (staff or patient or general public)

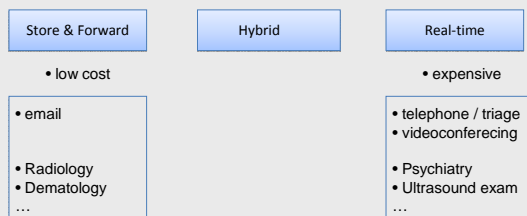


Alfred Traeger's pedal radio, 1929

Semantics – what do we mean by "telemedicine"?



Telemedicine is a wide field



World experience

- initial enthusiasm of the 1990s
- many unsustained pilot projects
- little routine activity on enterprise scale



The curate's egg – good in parts

Systematic reviews

... show that evidence for telehealth is weak

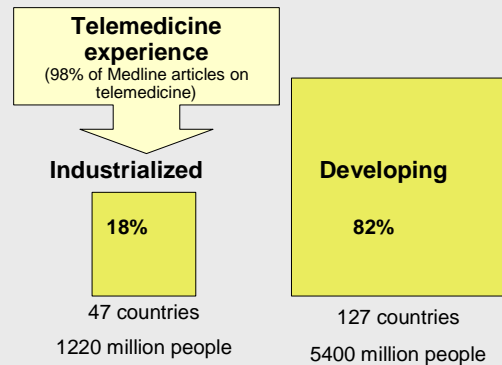
e.g. systematic review of the literature*

- 66 studies included a comparison with a non-telemedicine alternative
- 37 studies (56%) suggested that telemedicine had an advantage

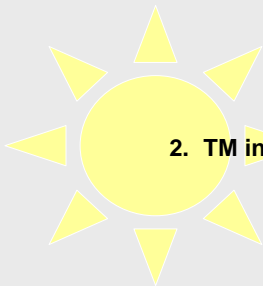
*Hailey D, et al. Systematic review of evidence for the benefits of telemedicine. *J Telemed Telecare* 2002; **8** (Suppl 1): 1-30

Evidence for telemedicine

- almost all studies have taken place in the industrialized world
- most convincing evidence found for
 - teleradiology
 - telepsychiatry
 - transmission of echo studies
 - teledermatology



2. TM in the Developing World



WHY is TM worth considering in DC

- **REAL NEEDS** in terms of Health care access
 - major inequities in access
 - shortage of doctors, staff and specialist doctors
- Worldwide satellite communication available at **REASONABLE COST**
- Reaching the **BEST POSSIBLE Health Care**: an ethical concern
 - BEST
 - the most up-to-date medicine in each speciality
 - the expertise of the specialist (based on their clinical experience)
 - POSSIBLE: taking into account the patient environment

Recent literature review*

TM in developing countries

- From a total of 202 potential articles, 38 relevant papers
- 38 studies. Study Quality rather weak (median score 3 over 9)
- literature - weak evidence in favour of telemedicine
- great potential for TM in the developing world

*Wootton R, Bonnardot L. In what circumstances is telemedicine appropriate in the developing world? *JRSM Short* 2010; 1: 37

What kind of report?

- of the 38 studies
 - 23 clinical (60%)
 - 3 educational (8%)
 - 11 both (30%)
 - 1 autre (2%)
- => Clinical purpose mainly

What modality?

- of the 38 studies
 - 22 store-and-forward (59%)
 - 11 real-time (29%)
 - 4 both (11%)
 - 1 autre (2%)
- => email was the most common modality (half of all studies)

Examples of TM in the developing world

- Inst Tropical Medicine HIV network
- iPath online case discussion system
- outsourced teleradiology (Bangalore)
- the use of Mobile phone in TB HIV
- electronic medical records..
- email for second opinion...

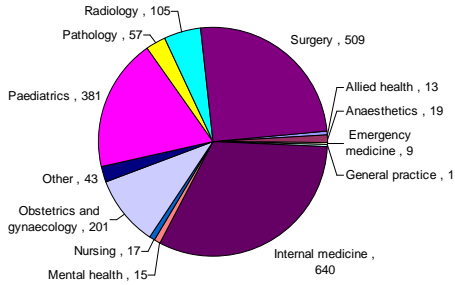
3. Swinfen Charitable Trust

Swinfen Charitable Trust

- UK-registered charity, founded in 1998 by Lord and Lady Swinfen
- Aim: assisting poor, sick and disabled people in the developing world
- Method: Store and Forward telemedicine (e-referrals) low-cost telemedicine system based on email
- Provide Specialists advice from a panel of about 400 English-speaking volunteer consultants spread over 13 countries
- TM System fine tuned by 12 years experience

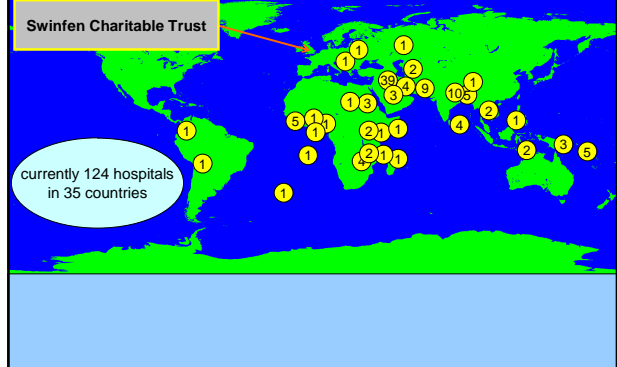


Type of cases 1999-2007 (no of queries=2010)

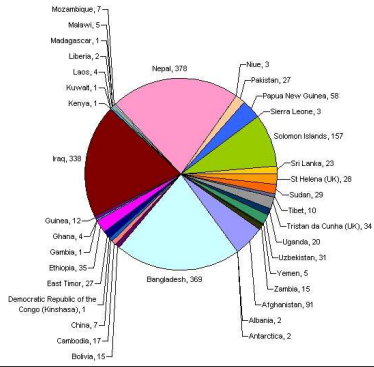


Global e-referral network

(numbers of hospitals at Feb 2008)



Origin of cases 1999-2008 (n=1763)



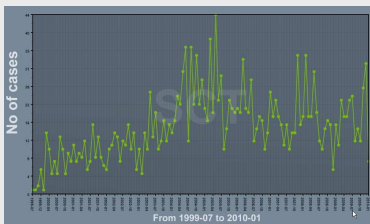
Summary

- the Swinfen Charitable Trust network has dealt with >2000 cases over the last ten years
- the experience shows that low-cost telemedicine is
 - feasible
 - clinically useful*
 - cost-effective

*Wootton R, Menzies J, Ferguson P. Follow-up data for patients managed by store and forward telemedicine in developing countries. *J Telemed Telecare* 2009; 15: 83-88

Network activity

for the last ten years we have received about 20 referrals/month ...



4. MSF Telemedicine System and clinical cases

MSF – Swinfen System

- MSF SYSTEM (Memorandum Of Understanding signed in April 2010)
 - Duplication of Swinfen system in French and in English
 - Adaptation SCT system according to MSF specificities
 - working conditions (confidentiality / patient data base)
 - organisation (COMED – MED REF as referrer / copy to Medical dpt)
- **SPECIALIST PHYSICIAN**: network of 70 consultants (3/4 have MSF experience) in both French and English systems
- **REFERRER** : 60 logins Medical Coordinators / Field doctors (Eng/Fr)
- 2 coordinators (French / English) from Medical Department
- technical support from Swinfen Team and Pr R. Wootton
- 3-5 referrals / month

PRINCIPLE: Web messaging system

► email for notifications (non-confidential information)

- A new referral has been received.

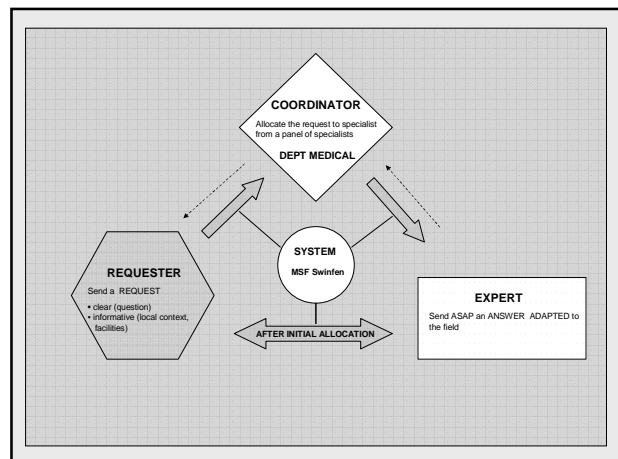
Click on this link

<https://french.swinfencharitabletrust.org/>
<https://english.swinfencharitabletrust.org/>
 to review recent referrals. Thank you

► log in to secure server for patient data (username+password)

Simple procedure

- => Local doctor (MEDCO/ MED REF) working in the field sends a request (clinical case report) to the server
- => Case coordinator receives the request and allocates it to the appropriate specialist
- => Specialist doctor answers within few hours
 - If any delay in answering occurs, the case coordinator reallocates the request to another specialist
 - Secure web-messaging allows the referrer to directly contact the specialist for further dialogue



Clinical case 1(MSF)



Clinical case 1(MSF)

REFERRER

Date: 17-Juin-2010 21:22:51

- A male full-term child was born tonight with an important macroglossia
- On exam, the mass is round, without irregularities ..
- After reading on different possibilities, lymphangioma does not seem a real option with this type of mass ...
- All suggestions are welcomed and I thank you warmly in advance.

Coordinator / WEBMASTER

Date: 17-Juin-2010 21:35:55

Dear Colleague,
 Thanks to give to Dr X your opinion about this case sent from « X » hospital...
 Best regards, LB

Clinical case 1(MSF)

SPECIALIST

Date: 17-Juin-2010 22:42:09

- This tumor is paramedian developed on the dorsal surface of the mobile part of the tongue
- The spherical form is more suggestive of a liquid content. I would entertain an **embryonic cyst** (dermoid or bronchogenic for example)
- In case of obstruction of the Airways, a **traction thread** could be placed on the tongue to pull down on it and to place a Mayo canula
- The ultrasound will allow to confirm if it is a liquid or a solid mass and to confirm the presence of a cervical thyroid.
- If the content is liquid, I would suggest to **puncture** with a fine needle
- In a second phase, a **surgical excision** seems necessary under GA with anticipation of a difficult Airways by lack of visibility

Your Sincerely,
Dr U (maxillo-facial surgeon)

Clinical case 1(MSF)



Clinical case 1(MSF)

SCT - MSF e-Referral System

Bienvenue Laurent Bonnardot (Système Opérateur) (système opérateur) | [Déconnexion](#) | [Aide](#)

Tous les messages pour le cas Numéro 1005

Cette liste montre en haut les messages les plus récents.
Vous pouvez cliquer l'icône en cliquant sur la flèche de la tête de chaque colonne.
Vous pouvez lire les messages en cliquant sur le lien approprié ou HTML.
Vous pouvez envoyer une réponse concernant le cas en cliquant sur "Message SyOp" (zone en bas de la page).

Patient name: NI Age: 1 day
Sexe: M Médecin demandeur: Dr Laurence Buchet
Hôpital: HSC_10 Délé De Première Réponse: 0:05 (min)
Date de la référence: 17-Juin-2010 Message numéro: 4
Demande numéro: 1
Statut des données: (actuel)

Status	Demande	Date	Expéditeur	Type de message	
	1	17-Juin-2010 22:42:09	Dr Pierre Care	Réponse - à Dr Laurence Buchet	Lire Le Message
	1	17-Juin-2010 22:42:09	Dr Pierre Care	Réponse - à Dr Laurence Buchet	Lire Le Message
	1	17-Juin-2010 21:35:55	Laurent Bonnardot (Système Opérateur)	Absolu à Dr Pierre Care	Lire Le Message
	0	17-Juin-2010 21:25:51	Dr Laurence Buchet	New referral, patient NI	Lire Le Message

[Accueil](#) | [Retour](#) | [Message SyOp](#)

Clinical case 2 (MSF)



Clinical case 2 (MSF)

REFERRER

Date: 16-Nov-2010 11:04:54

- A 4 years old boy with voluminous eye tumor growing for 2 months with extra-orbital exteriorization and contralateral leucocoria
- bleeding at contact with no skin or bone invasion ...
- Diagnosis? Management ? Prognosis?

COORDINATOR / WEBMASTER

Date: 16-Nov-2010 11:19:22

Dear Colleague,
Thanks to give to Dr X your opinion on this case coming from « X » center...
Best regards, LB

Clinical case 2 (MSF)

SPECIALIST

Date: 16-Nov-2010 12:30:42

- It looks like Sarcoma but as you said, the contralateral leucocoria makes the hypothesis of Retinoblastoma possible
- He needs to be operated (exenteration) quickly with adjuvant treatment (chimiotherapy)
- The prognosis is not so bad if...
- In this area, the only Reference Center that can manage this kind of case is Kolofata (Cameroun). Otherwise, I can try to organise a management here in France..

Clinical case 2 (MSF)

SCT - MSF e-Referral System

Bienvenue Laurent Bonnardot (Système Opérateur) (système opérateur) Déconnexion Aide

Tous les messages pour le cas Numéro 1025

Cette table montre en haut les messages les plus récents. Vous pouvez changer l'ordre en cliquant sur le flèche de sélection de chaque colonne. Vous pouvez lire les messages en cliquant sur le lien approprié du côté droit. Vous pouvez envoyer une réponse concernant ce cas en cliquant sur "Message SysOp" (système opérateur) en bas de la page.

Patient name: Ned 003 Age: 4 yr
 Sexe: F/M Médecin demandeur: Dr François Charles Téboux
 Hôpital: SUD/243 Datal De Première Réponse: 0:05 dn(5)
 Date de la référence: 16-Nov-2010 Messages numéro: 4
 Demande numéro: 1
 Suivi des données: (succès)

Statut	Demandeur	Date	Expéditeur	Réponse	Type de message	
	1	17-Nov-2010 04:12:40	Dr François Charles Téboux	Réponse - à Dr Bruno Cisneros		Lire Le Message
	1	16-Nov-2010 12:30:42	Dr Bruno Cisneros	Réponse - à Dr François Charles Téboux		Lire Le Message
	1	16-Nov-2010 11:19:22	Laurent Bonnardot (Système Opérateur)	Adressé à Dr Bruno Cisneros		Lire Le Message
	0	16-Nov-2010 11:04:54	Dr François Charles Téboux	New referral - patient Ned 003		Lire Le Message

Accueil Retour Message SysOp

Clinical case 3 (MSF)



Clinical case 3 (MSF)

REFERRER
 Date: 29-Sept-2010 02:00:55

- 5 weeks old girl...past medical history of umbilicus infection
- After the antibiotic treatment the patient left the hospital and showed up again in about two weeks later with a **massive swelling of her left thigh**. X-ray of the left lower extremity bilaterally was performed
- My clinical findings and conclusion:
I believe that what I see in the X ray is acute osteomyelitis. However, the girl hasn't had any fever...
- After her arrival we put her on Paracetamol and Cloxacillin 100mg i.v. 3x per day because we don't have any Chloramphenicol i.v.

=> Is there anything else that I can do for this little girl. Any surgical treatment. What about Antibiotics..

Clinical case 3 (MSF)

COORDINATOR / WEBMASTER
 Date: 29-Sept-2010 02:08:17
 Dear Colleague, thanks to give to Dr X your opinion about this case sent from « X » hospital...Best regards, LB

SPECIALIST
 Date: 29-Sept-2010 08:39:58

- I agree with the diagnostic, i think that there is no place so far for the surgical treatment as she seems to respond well to medical treatment (I guess you cant carry out any bacteriological analysis of any bone or soft tissues sample, it would have been the only surgical indication: to carry out sample)
- concerning the antibiotic treatment you can add fucidine p.o which is good against staph and keep cloxa iv as long as the PCR and ESR remain abnormal, the total duration for treatment is 3 months
keep me informed, cheers, Surgeon X

Clinical case 3 (MSF)

SCT - MSF e-Referral System

Bienvenue Laurent Bonnardot (Système Opérateur) (système opérateur) Déconnexion Aide

Tous les messages pour le cas Numéro 1019

Cette table montre en haut les messages les plus récents. Vous pouvez changer l'ordre en cliquant sur le flèche de sélection de chaque colonne. Vous pouvez lire les messages en cliquant sur le lien approprié du côté droit. Vous pouvez envoyer une réponse concernant ce cas en cliquant sur "Message SysOp" (système opérateur) en bas de la page.

Patient name: Bédé X Age: 5 wk
 Sexe: M/M Médecin demandeur: Dr Jan Trachta
 Hôpital: SUD/243 Datal De Première Réponse: 0:15 dn(5)
 Date de la référence: 29-Sept-2010 Messages numéro: 3
 Demande numéro: 1
 Suivi des données: (succès)

Statut	Demandeur	Date	Expéditeur	Réponse	Type de message	
	1	29-Sept-2010 18:39:58	Dr François Bollot	Réponse - à Dr Jan Trachta		Lire Le Message
	1	29-Sept-2010 00:28:17	Dr Jeanne Liu	Adressé à Dr François Bollot		Lire Le Message
	0	29-Sept-2010 00:00:55	Dr Jan Trachta	New referral - patient Bédé X		Lire Le Message

Accueil Retour Message SysOp

Case from Nepal (Swinfen)

- 11 yr old boy in Nepal. Snake bit 25 days before presentation at hospital.
- Mummified lower leg.
- Local doctor requested email advice about amputation ("...simply trim the bone back to where the tissue is viable,... or whether we disarticulate at the knee joint...")
- Advice from specialists at trauma centre in Germany: "Since the boy has probably acceptable knee function...with an intact looking tibial tuberosity (including the patellar ligament), the knee should be preserved under any conditions"
- Treatment provided, subsequently did well.



Case from Iraq (Swinfen)

REFERRER

•Would you please advice me about a 28 years virgin presented with **3rd degree utero-vaginal prolapse** since 5 years. Clinically she is normal apart from 3rd degree prolapse with small decubetal ulcer over the cervix.



•What is the **suitable type of surgery** for this lady provided that the fundus is about 1.5 cm below the vaginal introitus & she want her uterus to be kept? I am thinking to do ventrofixation do you support me or you advice for Manchester repair?
Regards, Dr Y

Case from Iraq (Swinfen)

SPECIALIST (Gobs. UK)

This is a very unusual case. Are you sure she has no collagen disorder?
It may be worth checking , also the family history.



For her the best option would be to do a **sacrohysteropexy with a posterior mesh extension**. In this procedure the mesh is attached to the cervix and the other end is attached to the anterior longitudinal ligament at the level of the second sacral vertebra. Then the mesh will have to be extended to the perineal body.

Future pregnancies should be managed by Caesarean section. Regards...Dr W

Case from Tristan da Cunha (Swinfen)

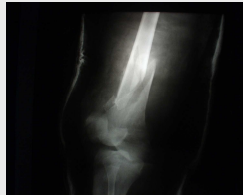
REFERRER

•Severely injured crewman after 10 m fall down, transferred to Tristan da Cunha from merchant vessel.

•Facial fractures, rib fracture, unstable compound femoral fracture, tibial fracture.

•«...He is in traction(10Kg) and the quality of X ray is the best we could get. I have no equipment for open reduction and the traction is suboptimal (patient slides down bed all the time). He has a full length back slab.

•Please advise us to further **management for the next 3 weeks** as the next ship is only due then.



Advice from specialists in the UK
Managed successfully with email advice -- traction, pinning etc.

Evacuated to South Africa for definitive treatment after three weeks

Case from Tristan da Cunha (Swinfen)

Status	Query	Date	Sender	Message type
		14-Jul-2006 06:42:39	Dummy user	FORWARD 364 'SCT11908' - Reply from Dr J. Campbell*
		14-Jul-2006 06:55:30	Dr Carol van der Merwe	RE: SCT11908 - REPLY FROM DR J. CAMPBELL
		14-Jul-2006 23:06:54	Dr Carol van der Merwe	RE: SCT11908 - REPLY FROM DR J. CAMPBELL
		15-Jul-2006 00:13:36	Dummy user	Re: SCT11908 - REPLY FROM DR CAMPBELL
		24-Jun-2006 05:03:53	Dummy user	FORWARD 115 'SCT11908' - Reply from Dr Campbell*
		15-Jun-2006 21:31:00	Dummy user	FORWARD 115 'SCT11908' - Reply from Dr J. Campbell*
		13-Jun-2006 16:09:57	Dummy user	FORWARD 115 'SCT11908' - Reply from Dr J. Campbell*
		13-Jun-2006 01:28:11	Dummy user	RE: SCT11908 - ADDITIONAL IMAGE*
		13-Jun-2006 01:15:44	Dummy user	FORWARD 364 'SCT11908' - additional image*
		12-Jun-2006 22:56:52	Dummy user	Re: SCT11908 - REPLY FROM DR JAMES CAMPBELL
		06-Jun-2006 01:54:22	Dummy user	FORWARD 115 'SCT11908' - Reply from Dr James Campbell*
		06-Jun-2006 04:22:57	Dummy user	RE: SCT11908 - REPLY FROM DR J.JACOBSEN*
		03-Jun-2006 03:16:07	Dummy user	FORWARD 364 'SCT11908' - Reply from Dr J. Campbell*
		02-Jun-2006 04:48:08	Dummy user	FORWARD 115 'SCT11908' - response from the Swinfen*
		31-May-2006 11:05:25	Dr Steve Masterson	Re: SCT11908) - REQUEST FOR ADVICE ABOUT A PATIENT
		31-May-2006 08:19:30	Mr Stephen Wood	Re: SCT11908) - REPLY FROM DR JORRO JACOBSEN
		31-May-2006 05:15:56	Dummy user	FORWARD 201 'SCT11908' - Reply from Dr Jorrog Jacobsen*
		31-May-2006 01:35:05	Lord Roger Swinfen	RE: SCT11908) - REQUEST FOR ADVICE ABOUT A PATIENT
		31-May-2006 01:26:18	Dummy user	RE: SCT11908) - REQUEST FOR ADVICE ABOUT A PATIENT
		31-May-2006 01:01:12	Dummy user	RE: SCT11908) - REQUEST FOR ADVICE ABOUT A PATIENT
		31-May-2006 00:50:50	Lord Roger Swinfen	RE: SCT11908) - REQUEST FOR ADVICE ABOUT A PATIENT
		31-May-2006 00:38:04	Dummy user	RE: SCT11908) - REQUEST FOR ADVICE ABOUT A PATIENT
		31-May-2006 00:20:11	Dummy user	RE: SCT11908) - REQUEST FOR ADVICE ABOUT A PATIENT
		31-May-2006 00:04:07	Dummy user	RE: SCT11908) - REQUEST FOR ADVICE ABOUT A PATIENT
		30-May-2006 23:27:36	Dummy user	RE: ALLOCATE 275 'SCT11908' MSG ID:1006/02006 8:49:38 PH*****
		30-May-2006 22:53:27	Mr Stephen Wood	Re: SCT11908) - REQUEST FOR ADVICE ABOUT A PATIENT
		30-May-2006 20:59:50	Lord Roger Swinfen	ALLOCATE 201 'MSG ID:1006/02006 8:49:38 PH*****

Strength of system

⇒ Based on:

- The network of specialists who are well practised in giving advice (ADAPTED to the field) to doctors working with restricted means
- The use of secure web-based message-handling system
 - Easy to use
 - Fast (reply within 24 hours)
 - Reliable (no request lost)
 - Accessible from everywhere



- Store and Forward: TM application well adapted in DC (in terms of cost benefit)
- Useful and complementary system to MSF expertise for cases out of guidelines
- Way of supporting doctors in the field and spreading MSF expertise within the organisation
- Specialist advice more and more needed in the field (Chronic disease cases, forensic issue...)
- Pilot Study to evaluate benefit in MSF context
 - For doctors (educational value)
 - For patients (management improved)