Patients and TB: Improving treatment outcomes through a patient centred approach and access to new treatments

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and Médecins Sans Frontières

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Video-DOT implementation in Armenia

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MEDECINS SANS FRONTIERES

MINISTRY OF LABOUR, HEALTH AND SOCIAL AFFAIRS OF GEORGIA

DOT in TB treatment

What is DOT?

- Not only the observation of swallowing pills by a HW
- Also means evaluating patients progress on TB treatment through :
  - adequate monitoring of drug's side effects
  - Aggressive and rapid management of side effects
  - Identification of factors challenging the patients compliance to treatment
  - Support for patients facing challenges

DOT is still widely used For DRTB due to:

- No fixed dose combinations,
- Very toxic treatment: fear of drug selection by patients and resistance amplification
- First treatment is best chance: resistance amplification reduces cure rate

But...in-person DOT poses problems:

For the patient:

- Undermines patient autonomy, dignity and integrity
- Extra burden and cost on socially disadvantaged groups (eg daily transport, time)
- Convenience: interrupts work and social committments

=> Therefore may increases risk of treatment interruptions resulting in poor outcomes and further spread of infections

=> Social deteriminant should be considered an integral part of the TB care

For the program:

- Labor-intensive
- Time consuming

V-DOT in literature

V-DOT Landline based System

ophone DOT Experiments

n (1998-2000)
Or up to 6 months
rence
nt satisfaction; ease of use
10/pt in staff and miles

San Diego (2004)
- 33 patients over 9 month period
  - High patient acceptance
  - Saved 27,840 travel miles ($10,161)
  - Saved 795 staff hours ($15,000)

Disadvantages:
- Limited to business hours
- Patient must be at home
- Fewer patients have landline phones
- Problem for San Diego's mobile binational patients

DeMaio, *CID* 2001;33:2
Bethel and Moser, ATS Conference, San Diego, CA,

Pilot study 2010-2012 ,university of California San-Diego (V-DOT Smart Phone)

Cost Analysis

- VDOT costs based on pilot study data
  - Included staff salaries, transportation, phones and service
  - No charge for use of VDOT application included in costs
- In-person DOT costs based on TB program records
  - included staff salaries and transportation

	In-Person DOT		VDOT	
Site	Cost	(95% CI)	Cost	(95% CI)
San Diego	$4,167	($3,634-$5,780)	$1,293	($700-$1,937)
Tijuana	$458	($336-$652)	$174	($111-$600)

EUROPEAN RESPIRATORY *journal*

Video directly observed therapy for treatment of tuberculosis is patient-oriented and cost-effective

The Network for Public Health Law
Ideas. Experience. Practical answers.

Video Directly Observed Therapy for Tuberculosis: Legal and Practical Issues

Feasibility of tuberculosis treatment monitoring by video directly observed therapy: a binational pilot study.

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SHORT COMMUNICATION

Videophone utilization as an alternative to directly observed therapy for tuberculosis

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SUMMARY

To demonstrate whether the use of videophone technology is an effective alternative method to direct observation of tuberculosis (TB) medication administration, a retrospective chart review and data analysis were performed through 2006. A total of US$139 546 was saved in staff salaries, benefits and travel costs. The average cost savings per patient was US$2145. The use of videophone technology is a cost-effective alternative to in-home di-

conjunction with the University of California San Diego to help improve the policy and reimbursement environment for the use of telehealth to control tuberculosis and other infectious

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Feasibility of tuberculosis treatment monitoring by video directly observed therapy: a binational pilot study

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TB Reach 5: to compare the efficacy of video observed treatment (VOT) versus directly observed treatment (DOT) in supporting adherence in patients with active tuberculosis

VDOT Study Results: Acceptance

		San Diego (n=41) n (%)	Tijuana (n=9) n (%)
Did you find VDOT more or less confidential than in-person DOT?	More	**33 (80)**	**7 (78)**
	No Difference	6 (15)	0 (0)
	Less	2 (5)	2 (22)
Did you ever fail to record a video because you were worried that someone else was watching?	No	**40 (98)**	**9 (100)**
	Yes	1 (2)	0 (0)
If you had to redo your TB treatment, would you choose VDOT or in-person DOT?	VDOT	**38 (93)**	**8 (89)**
	No Preference	2 (5)	1 (11)
	In-Person	1 (2)	0 (0)
Would you recommend VDOT to other TB patients?	Yes	**41 (100)**	**9 (100)**
	No	0 (0)	0 (0)
As a result of participating in the study, are you more comfortable using a smart phone?	More	**28 (68)**	**8 (89)**
	No Difference	13 (32)	1 (11)

Pilot Study: Medication Doses by VDOT

Medication doses by VCP-DOT	San Diego n=37	Bi-national n=6	Tijuana n=9
	Mean (range)	Mean (range)	Mean (range)
Total medication doses expected	88.4 (10-202)	107 (40-107)	92.5 (2-168)
Total medication doses observed	84 (3-200)	96.1(21-153)	88.4 (2-165)
Proportion of total medication observed/ total medication expected (%)	94% (50-100)	84% (52-96)	95%(88-100)

Video-DOT advantages/limitations

Advantages :

- **Provides an alternative solution:** if in-person DOT is not feasible for practical reasons.
- **Not labour-intensive**
- **Cost effective:** HR resources + time
- **Patient friendly (comfort)**
- **Enhances patient autonomy** (reduce pts travel time/costs , flexibility of schedule)
- => ensure better level of adherence.
- **Reduction of stigma,** reduce unnecessary visits to HF.
- **High acceptance rate:** as per limited pilot studies

Limitations :

- **Dependent on modern technology:** access to smart phone and internet, internet quality, patients ability
- **Potential risk of confidentiality breach:** requires a secure internet based system

Comparison Live V-DOT versus Recorded V-DOT

	Live Video DOT	Recorded Video DOT
Defintion	HW observes DOT during live video link, in real time	Patient record video which is sent and can be reviewed by HW convenience
Advantage	Drugs digestion observed by HW (real time) Real time ensures interaction Pts/HW Real time streaming no records kept	DOT session flexible to pt and HW schedules No real time internet access needed Can manage big cohorts
Limitations	DOT session not flexible to pt and HW schedules Real time internet access needed Suitable for small cohort	No real time Observation of drugs digestion No immediate Pt-HW interaction (can be organized later)
Requires (Feasibility constraint)	secure server (privacy and security) smartphone, cellular/Wi-Fi connection	secure server (Privacy and security) smartphone,cellular/Wi-Fi connection

DOT Strategy in Armenia

Hospital-DOT

(7 IPD structures)

Admission Criteria:

DRTB S+

MSF's obs. cohort:

Nb. pts: 38 (17%)

Ambulatory-DOT

(60 TB cabs + HPs)

Criteria:

DRTB S-,C+

MSF obs. cohort :

Nb. pts:140 (63%)

Home based-DOT

Criteria:

-DRTB S+ eligible for HBC,

-DRTB with 2nd dose Imp

-DRTB Pedia..(Lzd)

Nb. pts: 42 (19%)

Video-DOT(LV)

Criteria :

-DRTB S- ,C+ under Dlm (Skype)

Nb. pts: 3 (1.3%)

Why V-DOT in Armenia?(Pilot)

Rational:

- DOT points closed after 4pm.
- Avoids unnecessary hospitalization.
- Home-Based DOT not cost effective.
- Convenient for Pts /HW

Implemenation steps:

- Endorsed by NTCC for pilot under endTB project in Feb 2016
- Eligable patients:
  - Dlm patients for second daily dose /Sunday doses
- Skype chosen as video method

Prospective V-DOT :

- Pts under Home-Based DOT
- Seasonal labor migrants with TB

Eligibility Criteria for V-DOT in Armenia

Inclusion Criteria's for V-DOT	Criteria's for exclusion
• Under Dlm Containing regimen. • In-Person DOT Adherence rate > 80%. • Not severely ill . • Psycho-socially stable. • Willing to receive V-DOT . • Able to accurately identify each medication. • Demonstrate proficiency for using smartphone. • Good network coverage in residence place .	• In-Person DOT adherence rate < 80% • No Unwillingness for V-DOT • Incapacity to receive V-DOT (visual, hearing incapacity) • Paediatric patients • Homeless patients • Psycho-socially unstable (history of drug or alcohol abuse) • Current history of mental illness • No or bad network coverage at residence place.

V-DOT Flow Diagram

MSF's tech support team

- ✓ Assessing feasibility for V-DOT at pts residence place.
- ✓ Identify and solve connection problem after alert.
- ✓ Supply of V-equipment

AP's DOT Nurse

- ✓ Do morning DOT session 6 days a week
- ✓ Provide to the pts the evening dose of Dlm (and Sunday doses).
- ✓ Explore for any missed V-DOT and give feedback to NTCC/MSF Nurse.
- ✓ Alert the MSF nurse if any problem with patients , equipment or internet

Alert for missed V-DOT

Video-DOT by skype

Patient

4G

- ✓ Patients receive a training Video equipment 1 week prior discharge .
- ✓ Given a smart phone ,charged with credit.
- ✓ If remains adherent SP given as bonus.

Call alert to patient before Skype session

NTCC's Nurse on Night Duty

- ✓ V-DOT for Dlm (evening dose and Sunday doses).
- ✓ Record V-DOT monitoring card
- ✓ Inform the duty doctor if any advice is needed to support the patient or if any AEs
- ✓ Send the V-DOT card to AP's Nurse monthly
- ✓ Alert AP Nurse by SMS if V-DOT is missed.
- ✓ Alert if problem with video equipment or internet,

o-DOT by skype

4G

Patient

V-Equipment

Locked smartphone with capabilities only doing skype
and making calls + SMS

Conclusions

- V-DOT could be an alternative to in-person DOT:
  - Could improve patient acceptability of treatment and adherence and outcomes
  - Could be cost effective for programs
  - Provides an alternative when in person DOT not possible

- V-DOT highly relies on modern technology
  - May impact on feasibility of implementation in all settings

- Possible next steps:
  - Evening doses allowing split doses for patients with adverse events?
  - replace Home-DOT?
  - consider labour migrants and mobile populations?
  - Patients who live remotely?
  - Adherent patients with employment?

Thanks for your attention !