# **Business case for using the London National Video Observed Therapy (VOT) Service for supporting TB patient adherence in Y&H**

## 1 The issues and current guidance

Successful treatment of active tuberculosis requires a patient to complete at least 6 months of daily medication with a very high level of adherence. Even the simplest regimens involve swallowing multiple tablets, observance of dietary restrictions and enduring a range of mild to moderate side effects while being vigilant for rarer severe adverse reactions. Any patient who is unable to negotiate the Anti Tuberculosis Therapy will risk failure to recover, a relapse of TB disease and possible development of drug resistance. As these outcomes may result in ongoing infectiousness, increased transmission of TB and the need for complex treatment regimens there is increased likelihood of negative consequences for the community.

With variance in the likelihood of non-compliance but with significant consequences the risk can be mitigated by the TB case manager providing an individual plan of care as part of Enhanced Case Management (ECM).

Using guidance available from The National institute of Health and care institute (NICE 2016) and World Health Organisation (WHO 2017) it is recommended that all patients should be supported to successfully complete active TB treatment. Those assessed as at greatest risk of noncompliance should be offered daily observed therapy (DOT) as per guidance stated in appendix –specific guidance.

This guidance is manifest in priorities 4 and 5 of the UKHSA’s TB Action Plan for England, 2021-2026 (UKHSA 2021) (also in appendix).

However, in-person observation of treatment can pose challenges for both patients and caregivers. The daily visits involve transportation costs, take time for patients, and entail a heavy workload for health providers, are associated with logistic issues and possible loss of income, carry the risk of stigma if frequent visits are noticed, and increase the risk of disease transmission (WHO 2020). Video-observed therapy (VOT), recorded or live-streamed remote interaction between patient and care provider via internet-enabled smartphones, tablets or computers is a WHO recommended solution that addresses the challenges posed by DOT to professionals and affected communities.

TB treatment outcomes are improved with the use of adherence interventions and when used with continued patient education and counselling the flexibility of VOT has been shown to provide better engagement and ultimately better health outcomes for patients and the wider community (Storey 2019)

## 2 Y&H TB region join clinical network meeting on DOT and VOT

To explore and understand the enablers and barriers to effective use of DOT and VOT in our region, The Y&H TB region held a joint meeting for the 3 TB Clinical networks – North/East Yorks and the Humber, West Yorks and South Yorks “The value of VOT in addressing inequalities”. This was held as a virtual workshop event on 9/2/2022 with a pre meeting survey, presentation from UKHSA on access to TB care for vulnerable groups, case presentations from TB clinical nurse specialist of experience with DOT/VOT, presentation about the National VOT Service given by Joe Hall, VOT lead from UCLH Find and Treat and break out room group discussions.

### 2.1 Survey & Group Discussions

A DOTS/VOTS survey was sent to all 65 of those who registered to attend the event. 18 responded, including 13 TB nurses and 5 physicians with equal representation from across the three networks.

3 virtual round table discussions were held during the meeting and a ‘Jam-board’ used to collate comments and experiences that were then fed back to the whole meeting.

A presentation was given at the meeting by Joe Hall, VOT lead from UCLH Find and Treat and UCLH National VOT Service.

The meeting concluded with a general discussion on potential for VOTS over DOTS and using the UCLH National VOT Service.

**Findings**

DOTS use was almost universal but only half reported ever using VOTS. Up to 20% of TB patients need one or other of these support interventions while on TB treatment, most commonly the groups (pre-defined in the survey) it was used for were those non-adherent to treatment, with psychiatric or memory disorders, with resistant (Mono/MDR/XDR) TB, with prior TB treatment (and relapse) and those too frail to self-administer treatment. DOTS/VOTS was used to a lesser extent for the homeless, those with drug dependency and recent prisoner groups.

DOTS was most often provided by 3x weekly TB nurse visits (using a higher 3x weekly dosing schedule) or daily by a family member. A minority used daily TB nurse visits and only very few used community pharmacy or district nurses.

The most often cited barriers to use of DOTS were insufficient nursing capacity and patient non engagement. Safety concerns (for nursing staff), wide geographical coverage and the costs for patients were also regularly cited as barriers. For the minority using pharmacy administered DOTS the key barriers were the time and effort required to set up bespoke DOTS for a patient and the high charges levied by the pharmacy.

Those that used VOTS had either used WhatsApp (Wakefield, Rotherham), NHS attend anywhere (Bradford), SysmOne (Leeds, Hull) or MS Teams (Leeds). The main barriers to VOTS specifically were that there was no funding or budget to support it, a lack of commissioner support, concerns about data protection requirements, patient access to smart phones, lack of mechanisms for managing non-English speakers. Importantly, as VOTS using these ‘live’ platforms has to be done in real time it did not address the need for observing out of hours or during weekends when TB nurses weren’t on duty. Most community TB services are only commissioned 9-5 Monday to Friday. It was also noted that the nursing time needed for VOTS remained substantial as it needed to include scheduling with patients and documenting /recording as well as the actual observation time.

In the wrap up discussion there was agreement with the findings of the survey and points made in the round table discussions. There was enthusiastic support for adopting the UCLH National VOT Service across the region as the primary VOTS approach.

### 2.2 Examples of cases from Y&H region who would have benefited from VOT

1. 58 yr old Russian man, MDR-TB. Required IV treatment 3x week initially with amikacin, resented having to go the IV service when not getting IV’s and was desperate to go back to work (shift work in a factory, very ad hoc pattern and short notice). Poor compliance with attendance at DOT, only better when pharmacy that is open late arranged and 3x week
2. 40 yr old West African man with MDR-TB. Personality disorder and very picky about community pharmacies. Aggressive with pharmacy staff and has gone through 4 pharmacies in this time. Unable to attend on several occasions due to travel for work / having COVID.
3. 32 yr old East African man with severe spinal TB. Poor compliance with unsupervised treatment initially, switched to daily DOT but back pain limited ability to get to community pharmacies, 3x week DOT done as least worst option, still complaining of issues around mobility.

# 3. Advantages and disadvantages of VOT use and why it might be considered as an option within a wider menu of options

### 3.1 Disadvantages of DOTS

* expensive and time consuming (for patients and service)
* usually amounts to max 71% of doses observed (5 x week)
* only option is once daily dosing
* still using thrice weekly regimens which are no longer recommended by guidelines
* evidence of effectiveness is weak
* patients don’t like it - high rate of refusal, high rate of drop out, maybe associated with perceptions of low autonomy, inadequate confidentiality & stigma
* in Y&H appears not being used for all groups that might benefit
* Often delegated to untrained family members to perform

### 3.2 Disadvantages of existing VOTS options

* Live observation still required – not convenient for patients and not possible OOH or weekends
* Significant administrative time
* Available platforms not designed for this (SysmOne) and GDPR risks persist with Whatsapp, MS Teams
* Requires patient to have phone or device that is compatible

## 3.3 Advantages of UCLH National VOT Service

**VOT is recommended by World Health Organization (WHO) (1)**

* it supports remote management and observation of TB treatment

**Smart Phone App**

* Uses the Sureadhere(SA) V2 VOT app (iOS and Android)
* Easy to use, safe, secure & meets GDPR
* application supports notification features that remind patients to take their pills
* application integrates visual aids and user-friendly manuals to facilitate proper ingestion of medicines
* Phone can be provided for patient by service

**Asynchronous recording provides convenience and flexibility for both patients and care providers**

* no requirement for OOH / weekend nurse time for live VOTS
* films reviewed subsequently by UCLH VOT team
* patient autonomy and privacy maintained
* films recorded by patient so can take medication when suits them
* supports submission of multiple recordings through the day for those on split dosing
* avoids thrice-weekly dosing

**Cost** **Saving**

* no loss of patient time and income for DOTS visits (either at home or to health care facilities) or ‘live’ VOTS
* conserves resources for patients and reduces catastrophic costs
* conserves resources for TB staff
* lower system costs and more efficient allocation of resources
* daily tariff is £8.04 / £9.54 (with VOT phone)

**Dedicated VOT team**

* National reach
* VOT team available to respond to patient queries
* 100+ films per 24 hours
* Client management system interfaces between patient, VOTS team and local TB service/nurses

**Feedback**

* high approval ratings from both patients and providers
* Effective at increasing adherence vs DOTS (2)
* VOT increased the proportion of patients who have >80% of doses observed during a 2 month period compared to DOT- OR 5.48 (95% CI 3.5 – 9.68, p<0.001)
* Increased adherence over entire planned treatment course (180 days) vs DOT, 77% vs 39% of doses observed respectively

## Recommendation

That TB services across the 3 Yorkshire and Humber TB control board clinical networks adopt the UCLH National VOT Service as their primary VOT delivery platform.

## References

NICE Tuberculosis guideline 2016 [nice.org.uk/guidance/ng33](http://nice.org.uk/guidance/ng33)

[Storey, A et al. Smartphone-enabled video-observed versus directly observed treatment for tuberculosis: a multicentre, analyst-blinded, randomised, controlled superiority trial. Lancet 2019. 393.10177: P1216-1224](https://ukc-word-edit.officeapps.live.com/we/VOLUME%20393,%20ISSUE%2010177,%20P1216-1224,%20MARCH%2023,%202019)

UKHSA TB Action Plan for England, 2021-2026 UKHSA available at <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/998158/TB_Action_Plan_2021_to_2026.pdf>

WHO Guidelines for treatment of drug-susceptible tuberculosis and patient care, 2017 update. Geneva: World Health Organization; 2017.

[WHO: Quick guide to Video supported treatment of tuberculosis (2020)](https://www.euro.who.int/en/health-topics/communicable-diseases/tuberculosis/publications/2020/quick-guide-to-video-supported-treatment-of-tuberculosis-2020)

## 6. Appendix – Specific Guidance

**NICE Guidance 2016**

150. The TB case managers should work with the person diagnosed with TB to develop a health and social care plan, and support them to complete therapy successfully. The TB case manager should: offer an incident risk assessment to every person with TB, to identify their needs and whether they should have enhanced case management including directly observed therapy

151. Offer directly observed therapy as part of enhanced case management in people who:

do not adhere to treatment (or have not in the past)

have been treated previously for TB

* have a history of homelessness, drug or alcohol misuse
* are currently in prison, or have been in the past 5 years
* have a major psychiatric, memory or cognitive disorder
* are in denial of the TB diagnosis
* have multidrug-resistant TB
* request directly observed therapy after discussion with the clinical team
* are too ill

**TB ACTION PLAN for England, 2021-2026**

Priority 4: Control TB disease

4.1 Improve and optimise diagnosis, treatment and patient-centred care in high and low incidence areas for:

• adult patients

• paediatric patients

4.1.1 All partners in TB diagnosis, treatment and patient-centred care in high and low incidence areas work to the national TB service specification including:

• provision of both doctor and nurse led clinics

• a consistent approach to enhanced case management (ECM)

Priority 5: Workforce

5.3.3 Appropriate service transformation to provide a people centred TB service that can sustain the management of people with active TB disease, the LTBI programme, meet the needs of incidents, outbreaks and surge capacity

**WHO Guidelines 2017**

1. Treatment of drug-susceptible tuberculosis

1.3. The effectiveness of intermittent dosing (thrice weekly) of TB medications,

both in the intensive phase and in the continuation phase of treatment, when

compared to daily treatment

Recommendation

In all patients with drug-susceptible pulmonary TB, the use of thrice-weekly dosing

is not recommended in both the intensive and continuation phases of therapy and

daily dosing remains the recommended dosing frequency.

2. Patient care and support

2.1. Cross-cutting interventions for drug-susceptible TB and drug-resistant TB: effectiveness of patient care and support interventions

Recommendations

2.1.1 Health education and counselling on the disease and treatment adherence should be provided to patients on TB treatment .

2.1.2 A package of treatment adherence interventions may be offered to patients on TB treatment in conjunction with the selection of a suitable treatment administration option.

2.1.4 The following treatment administration options may be offered to patients on TB treatment:

a) Community- or home-based DOT is recommended over health facilitybased DOT or unsupervised treatment.

b) DOT administered by trained lay providers or health-care workers is recommended over DOT administered by family members or unsupervised treatment.

c) Video observed treatment (VOT) may replace DOT when the video communication technology is available and it can be appropriately organized and operated by health-care providers and patients.