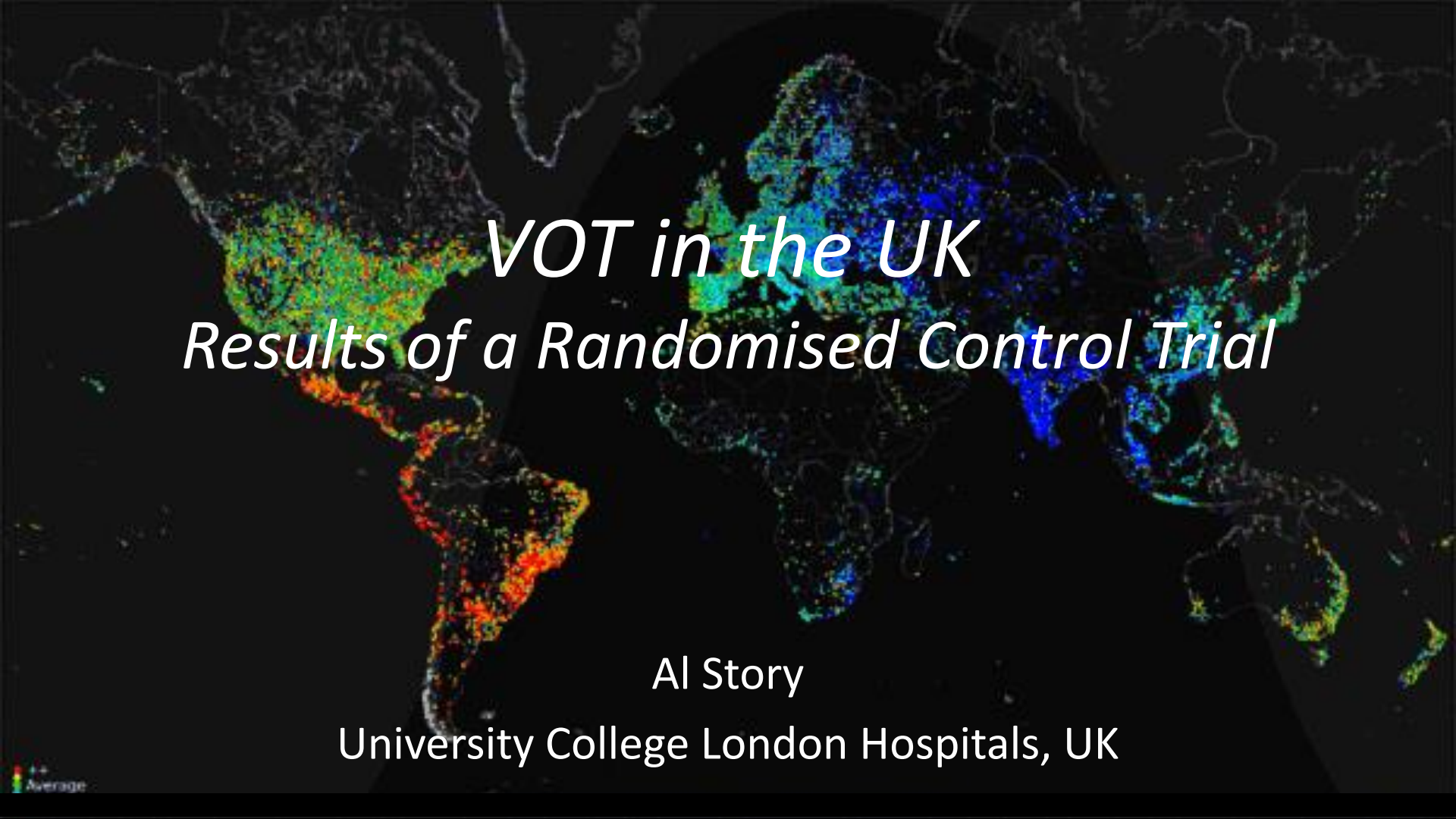
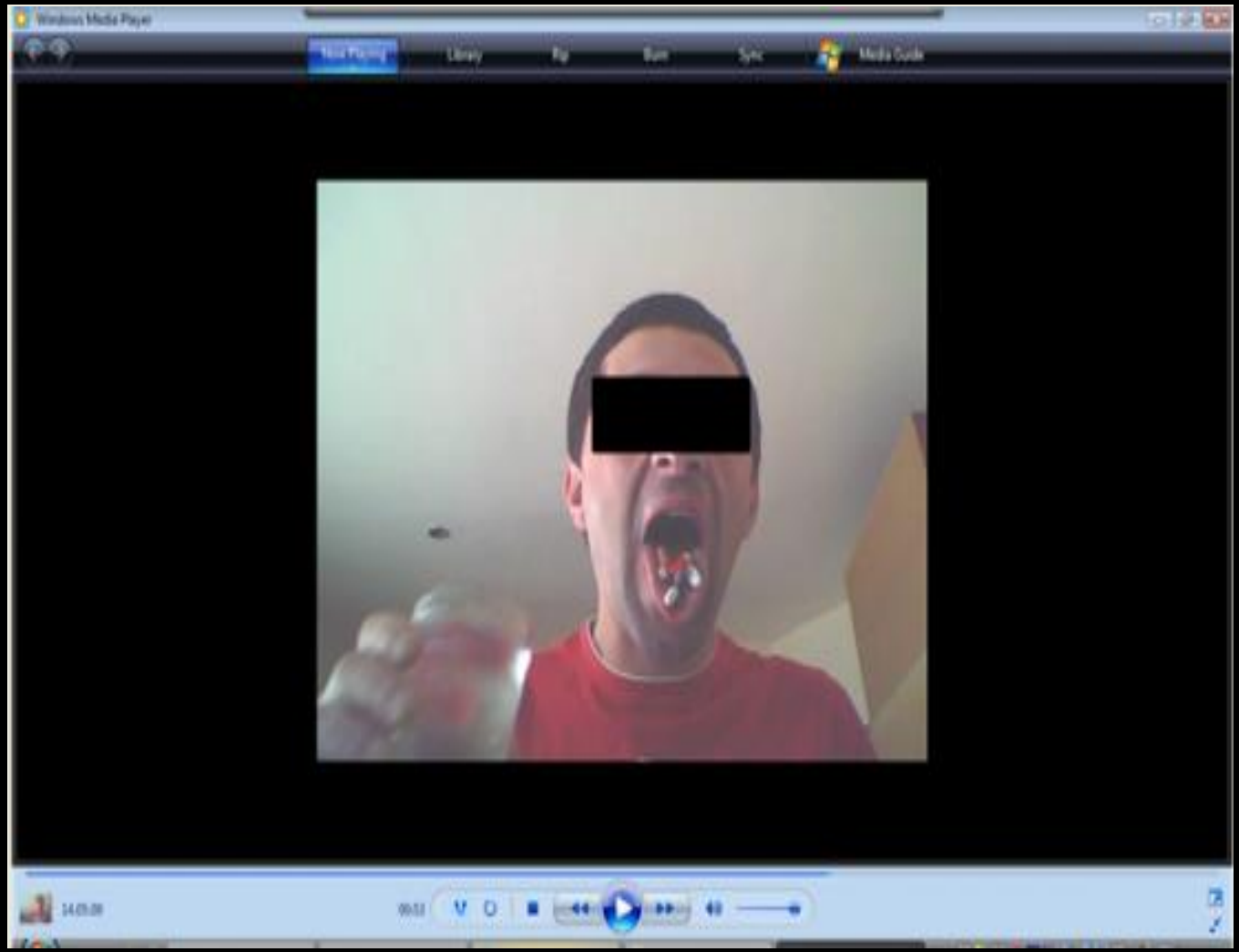


VOT in the UK
Results of a Randomised Control Trial

Al Story

University College London Hospitals, UK


Windows Media Player
Now Playing
Library
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Media Guide

Hypothesis

- **Primary outcome**
  - VOT increases the proportion of patients who have >80% of doses observed during a 2 month period compared to DOT
- **Secondary outcomes**
  - Adherence over planned treatment course
  - Loss to follow up - Treatment completion
  - Culture conversion - Acquired resistance
  - Impact on transmission - Quality of life
  - Cost effectiveness

Inclusion criteria

- Any patient 16 years of age or older eligible for DOT at participating clinics (16 London, 3 outside capital)
- Exclude
  - Can't charge phone
  - <2 months treatment remaining
- Non-Randomised arm
  - MDR / Children / 'last chance saloon'

Selective DOT

- Non-adherence
- Previous TB treatment
- Homelessness, drug or alcohol misuse
- In prison, or have been in the past 5 years
- Major psychiatric, memory or cognitive disorder
- Denial of TB diagnosis
- MDRTB
- Request DOT
- Too ill to self administer

Interventions

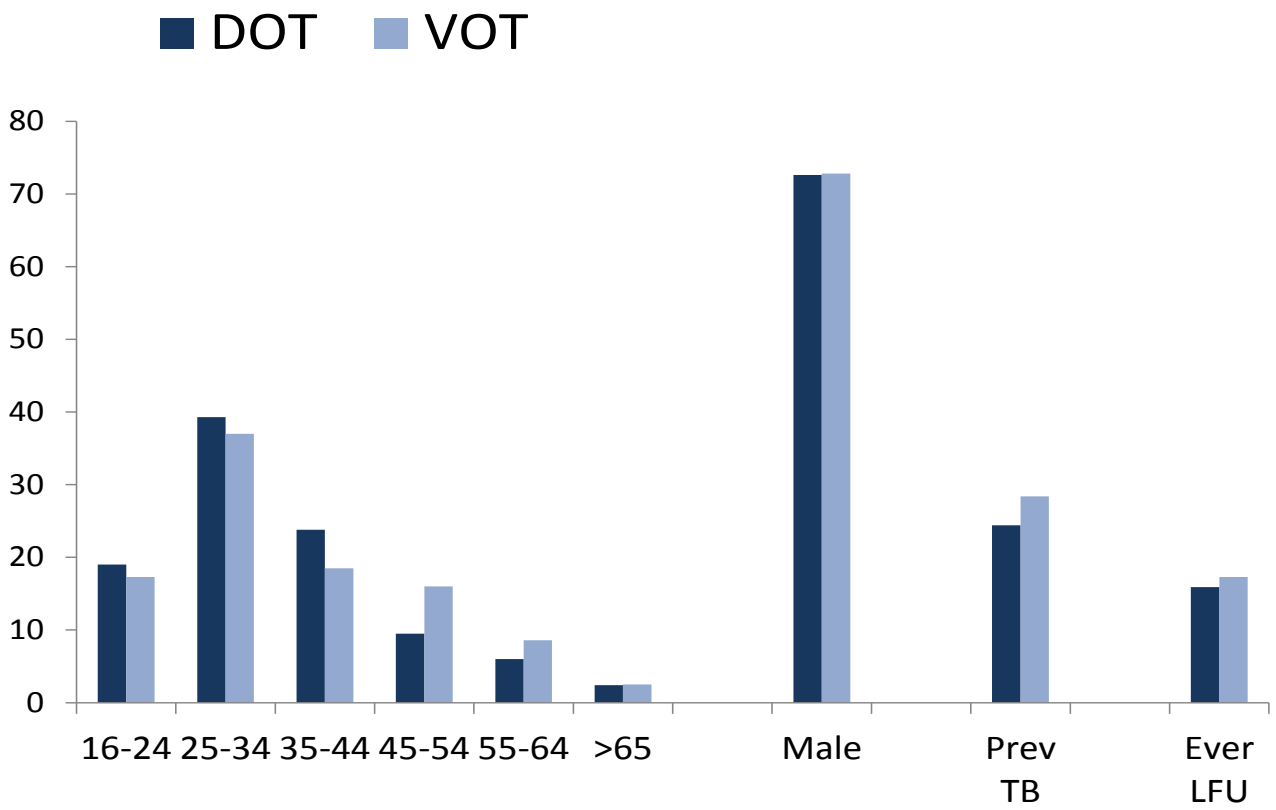
VOT

- Initial training and follow-up as required
- Daily VOT clip, SMS reminder, Telephone contact if missed
- Standardized smartphone device and App with unlimited data
- No further incentives

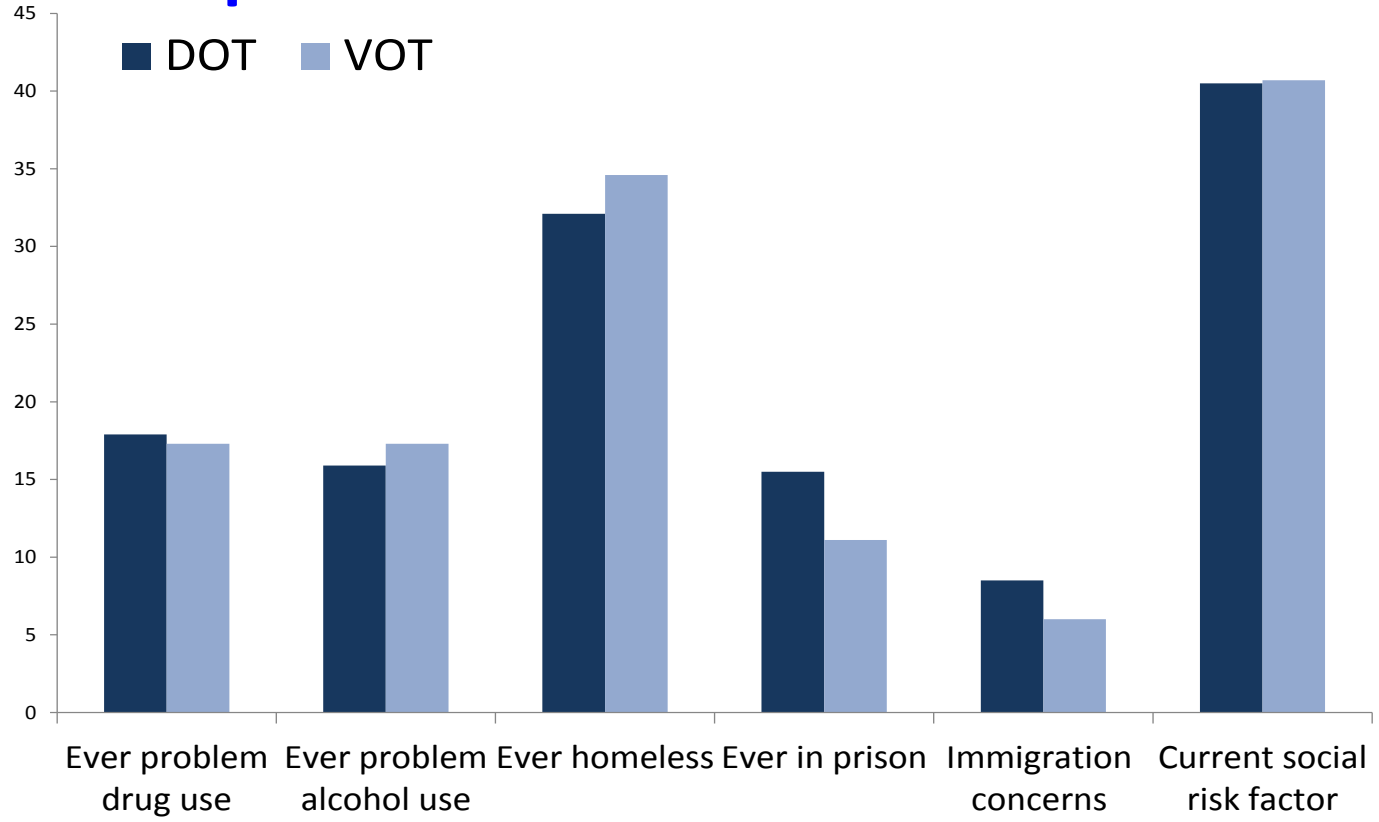
DOT

- 3 or 5 in-person clinic or community observations per week
- Incentives and enablers as per local protocols

Baseline characteristics



Complex cases



Any current social risk factor = Homeless, problem drug use, alcohol

Analysis - primary outcome

- **Primary analysis** – All randomized regardless of whether they ever took up either arm of the intervention.
  - 84 DOT vs 81 VOT
- **Secondary analysis** - All who started the randomized intervention and have primary outcome data
  - 45 DOT (54% started) vs 68 VOT (84% started)

Observation classification

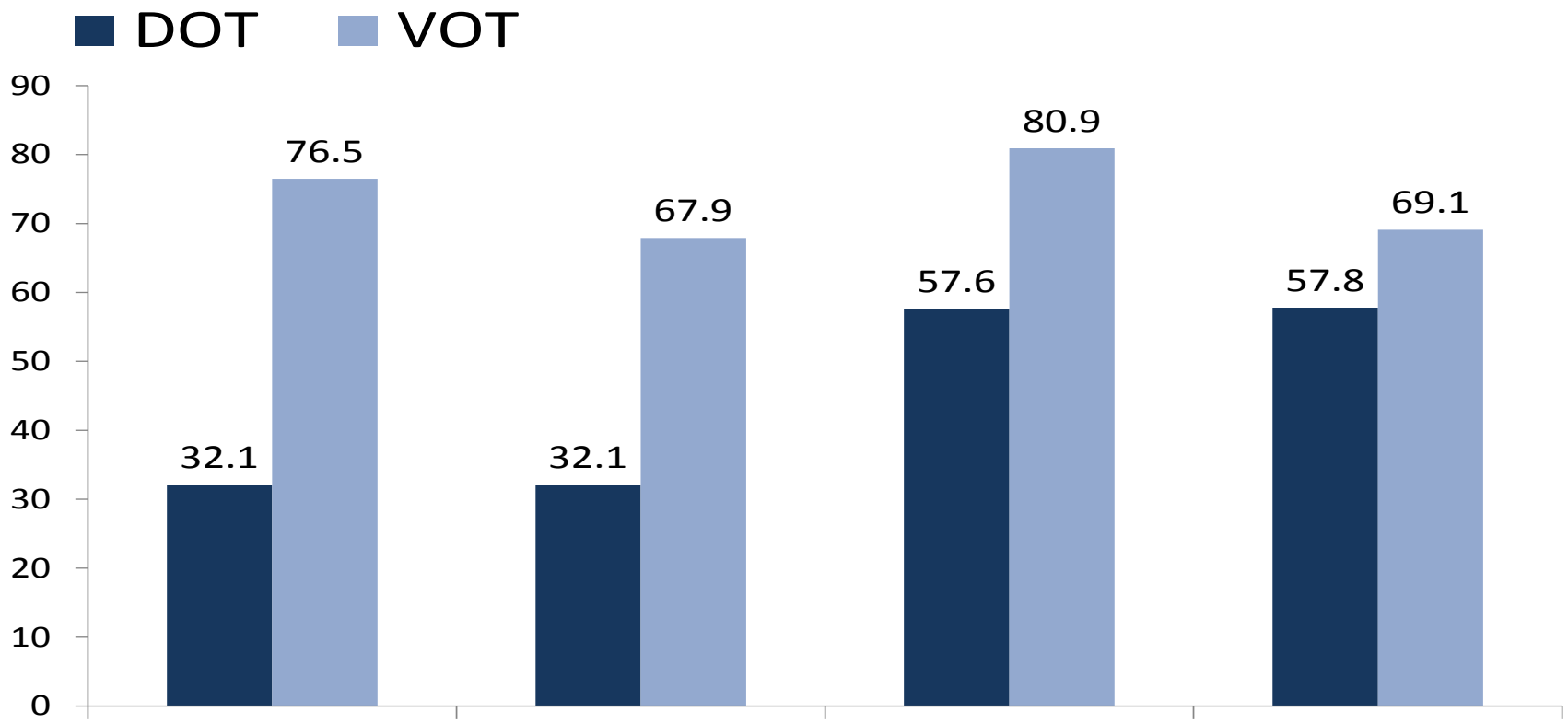
1. All meds observed
2. Some meds observed – out of shot
3. No meds observed – no clip
4. Unknown, unable to tell – too dark
5. Other – hospital admission
6. Probably took meds – not 100% clear
7. Technical issues with clip (VOT) – Self Administered (DOT)

Main analysis – High confidence

1. All meds observed
2. Some meds observed
3. No meds observed
4. Unknown, unable to tell
5. Other
6. Probably took meds
7. Technical issues with clip (VOT) – Self Administered (DOT)

Strict

1. All meds observed
2. Some meds observed
3. No meds observed
4. Unknown, unable to tell
5. Other
6. Probably took meds
7. Technical issues with clip (VOT) – Self Administered (DOT)

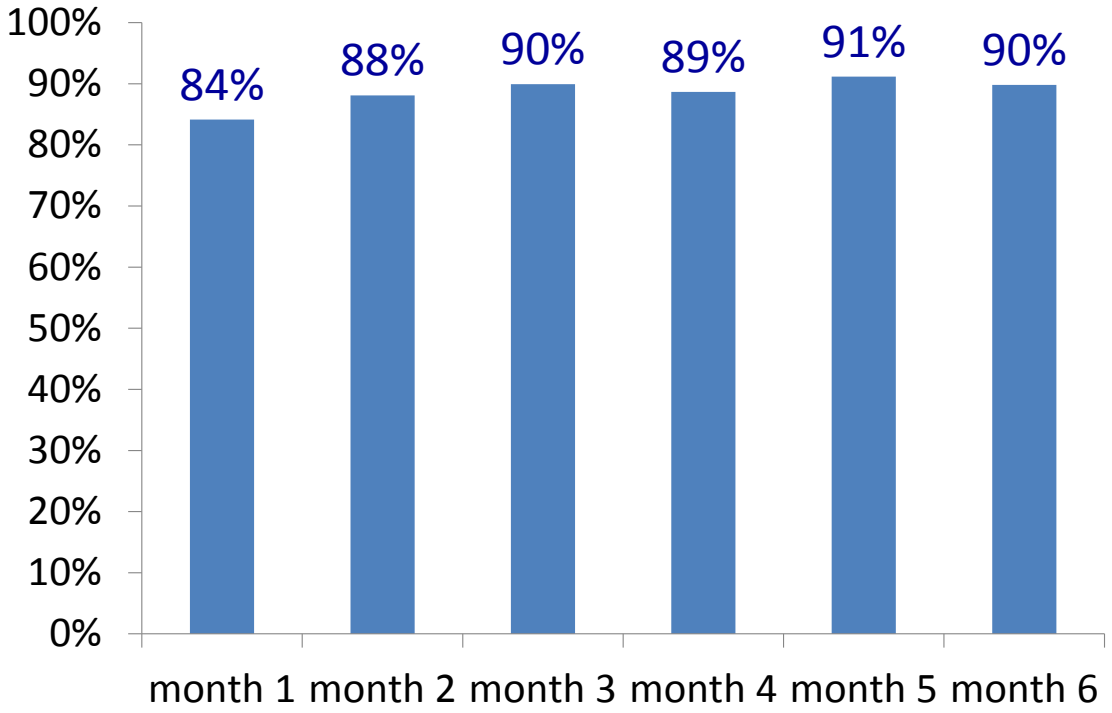


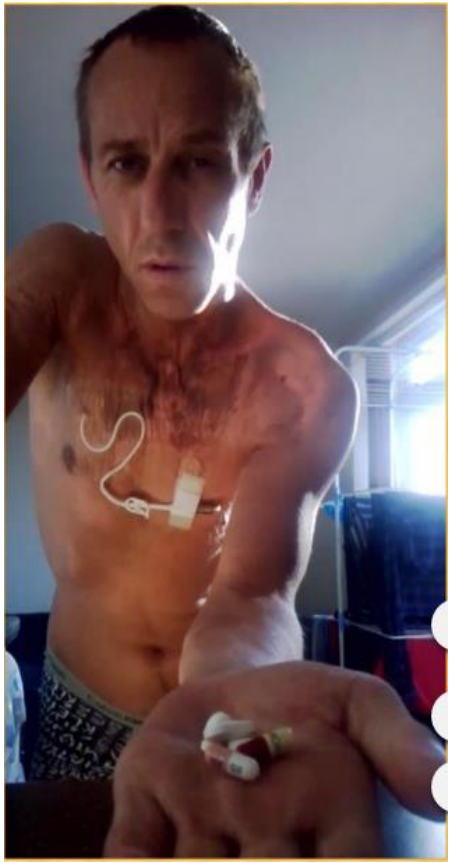
AOR **7.27** (3.36-15.8) **4.59** (2.05-10.3) **3.54** (1.68-7.5) **2.03** (1-4.1)

p<0.001 **p<0.001** **p<0.001** **p=0.05**

OR adjusted for age, sex, clinic and time on treatment

VOT adherence over time





Current status

- Closed: Total recruited = 251 (NR= 26 R=225)
  - DOT = 114 (5 switched to VOT)
  - VOT = 111 (6 switched to DOT)
- Secondary outcomes end March 2017

IMPACT - Real world

- >200 VOT patients treated since 2009
- 41 MDR and 7 XDR
- Youngest 8
- Socially complex patients
- 90% completed or on target to complete

How did you feel when VOT was suggested?

- *I was getting a bit tired of DOT – I thought I would be a lot freer to continue with my daily life, without having to wait around for someone – all that time and effort you've saved me – I didn't need much convincing…"*

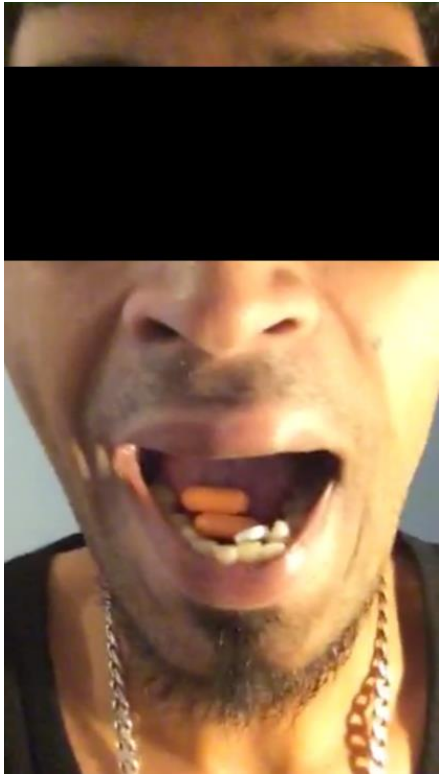
How does VOT compare with DOT?

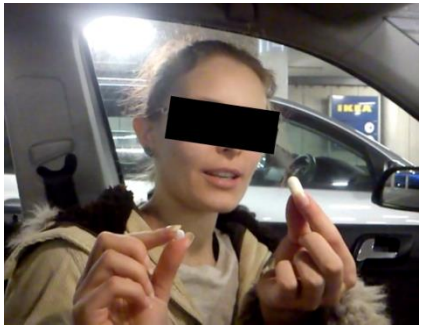
- *“With the DOT, it felt like you had a disease and you felt like there was some kind of stigma and for that reason they are monitoring you – It felt almost like being a criminal…I felt like probably they don’t trust me to take my own medication…but with VOT, it’s different…it’s definitely a welcome alternative.”*

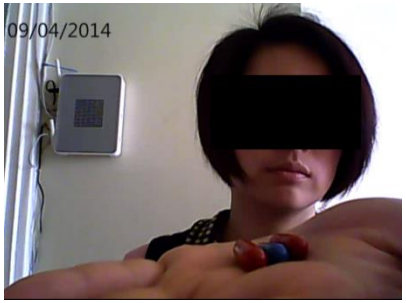
How do you feel about sharing your image?

- *“It’s important to know the person – if you forget to send the video, they can call you back and they will remind you. It’s much better to know who you are dealing with.”*

Liberating – Flexible - Empowering







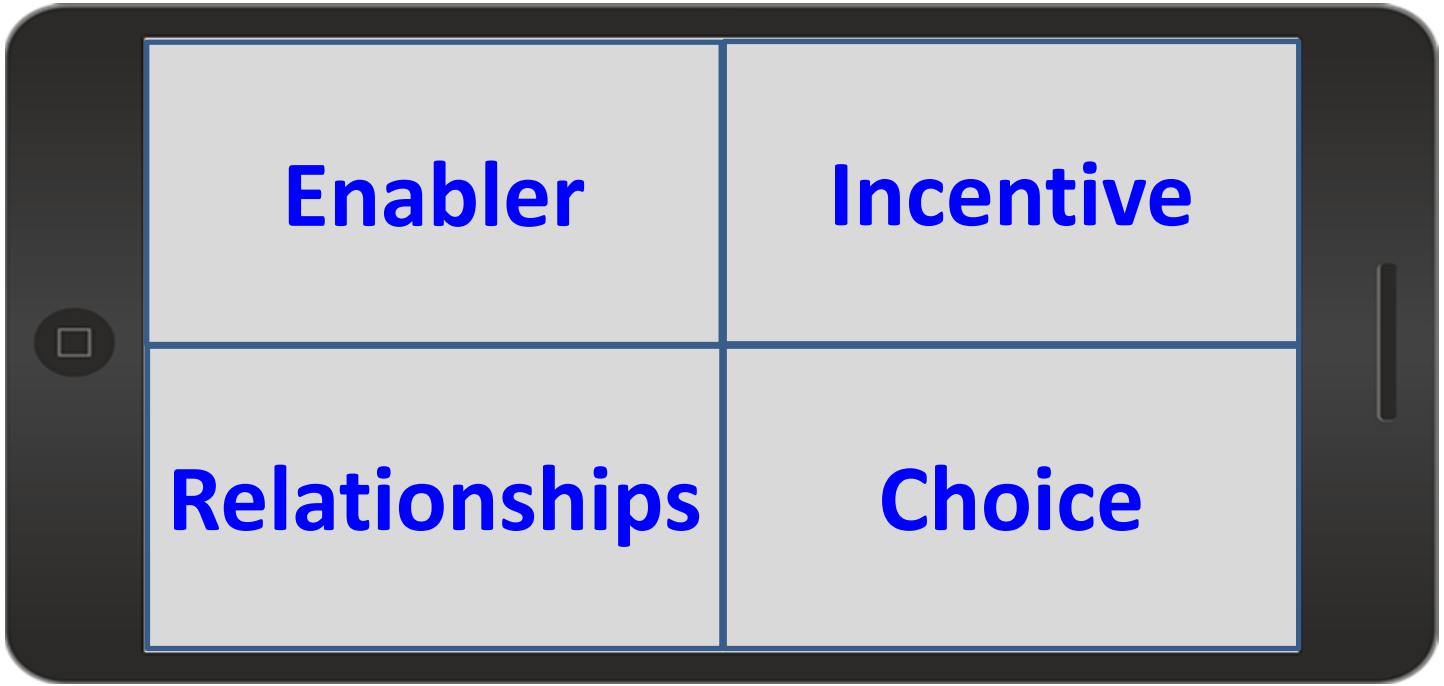
BBC NEWS

3 February 2017

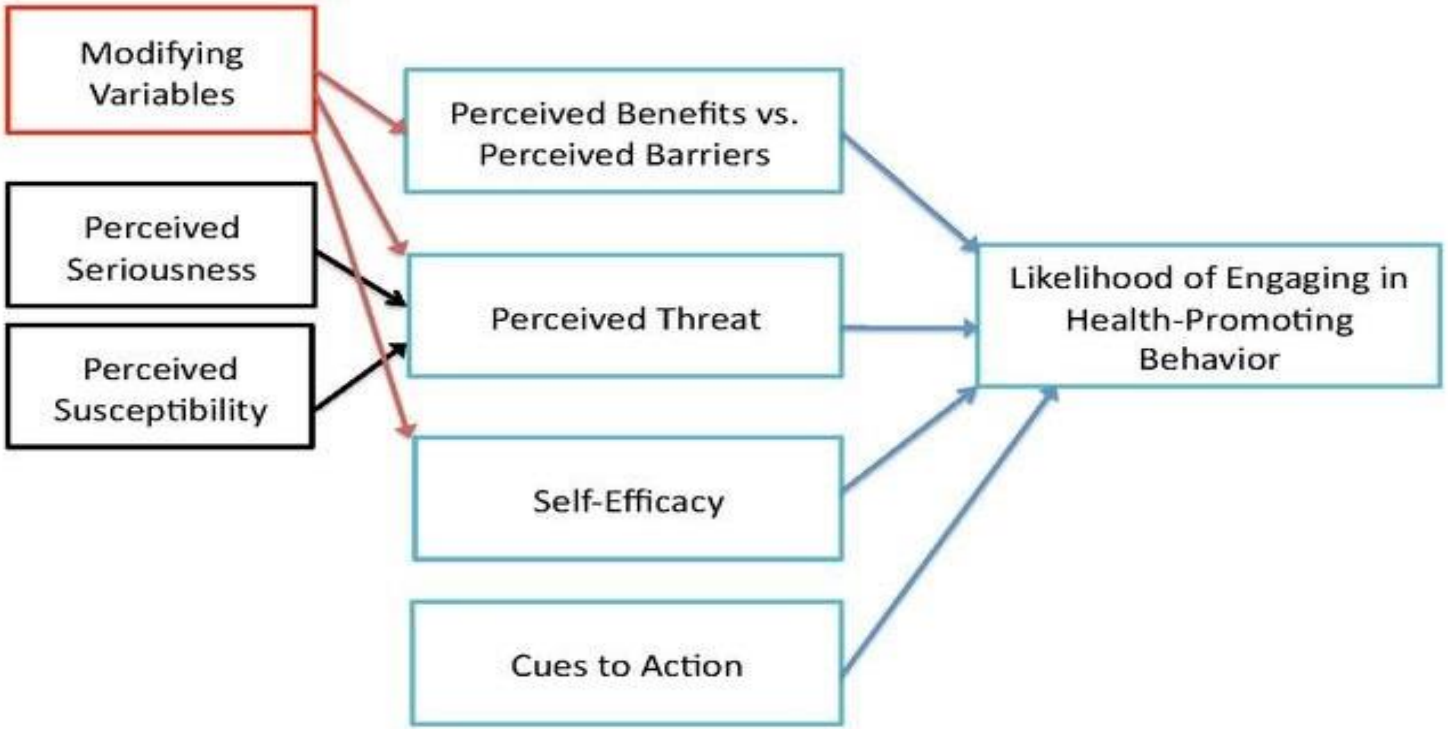
'I have tuberculosis in my brain'

Factors influencing treatment adherence

- **Economic and structural**
  - Poverty. Unstable accommodation. Poor social networks
- **Patient-related**
  - Ethnicity, gender and age. Knowledge and beliefs. Cultural belief systems. Altered mental state. Substance abuse. Stress
- **Regimen complexity**
  - Pill burden. Toxicity and side-effects. Treatment duration
- **Supportive providers / Good patient relationships**
  - Patient satisfaction. Empathic professionals
- **Pattern of health care delivery**
  - Service organisation, access and flexibility. Professional expertise. Patient support systems


Enabler
Incentive
Relationships
Choice

Health Belief Model



Concorde

Adhere

Take

Video Observed Treatment

~~Video Observed Treatment~~

Video Supported Care

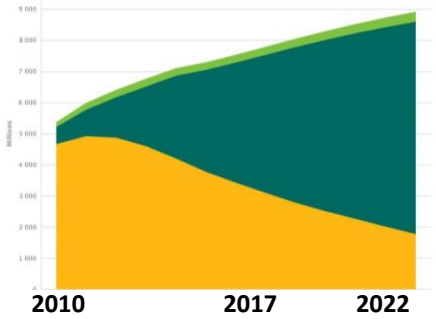
VS Care - Conclusion

- At least twice as effective as DOT
- More acceptable to patients than DOT
- More acceptable to providers than DOT
- Cheaper
  - Less than half the cost of clinic DOT and one third cheaper than community DOT

Next steps

- **Role out - Scale up**
  - Centralised model with clinical networks
- **Technical development**
  - Real-time consultation
- **Wider applicability**
  - LTBI – HCV – OST - ???
- **International collaboration**
  - high burden – MDR/XDR – RCT (SAT/SMS/VS-Care/DOT)

Subscriptions by device

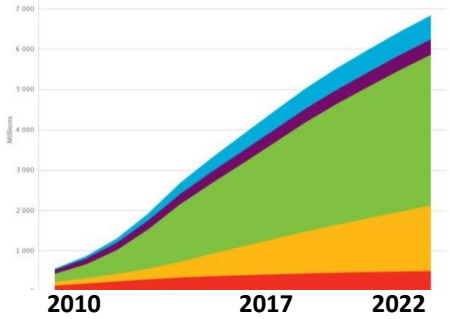


Mobile PC

Smartphone

Basic phone

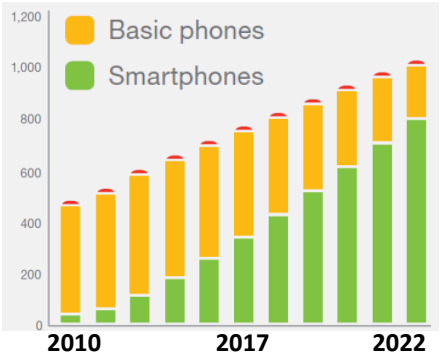
Smartphone Subscriptions by Region



LAM (Latin America)
NAM (North America)
APAC (Asia Pacific)
CEMA (Central Europe, Middle East, Africa)
WE (Western Europe)

Mobile subscriptions in Sub-Sa Africa

Mobile penetration 105% by 2022



Basic phone

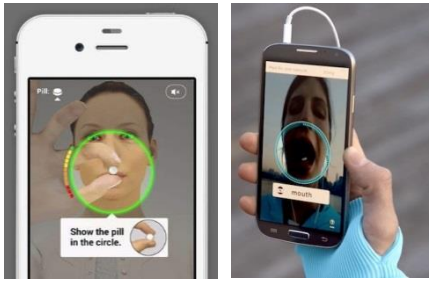
Smartphone

Global Smartphones

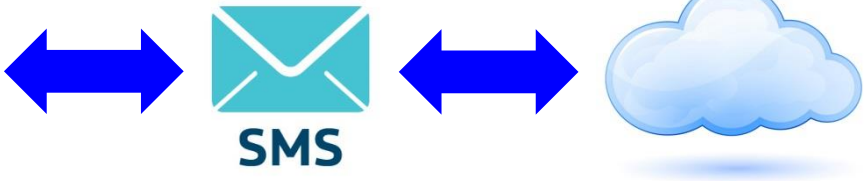
- 55% of all mobile subscriptions in 2016
- 80% of all mobile phones sold in 2016
- 90% percent of all subscriptions by 2022
- 75% of mobile data traffic video by 2022

Source: Ericsson Mobility Report Nov 2016
https://www.ericsson.com/mobility-report

Overcoming the connectivity challenge



AiCure



On device processing
Facial recognition
Pill recognition
Swallowing confirmation

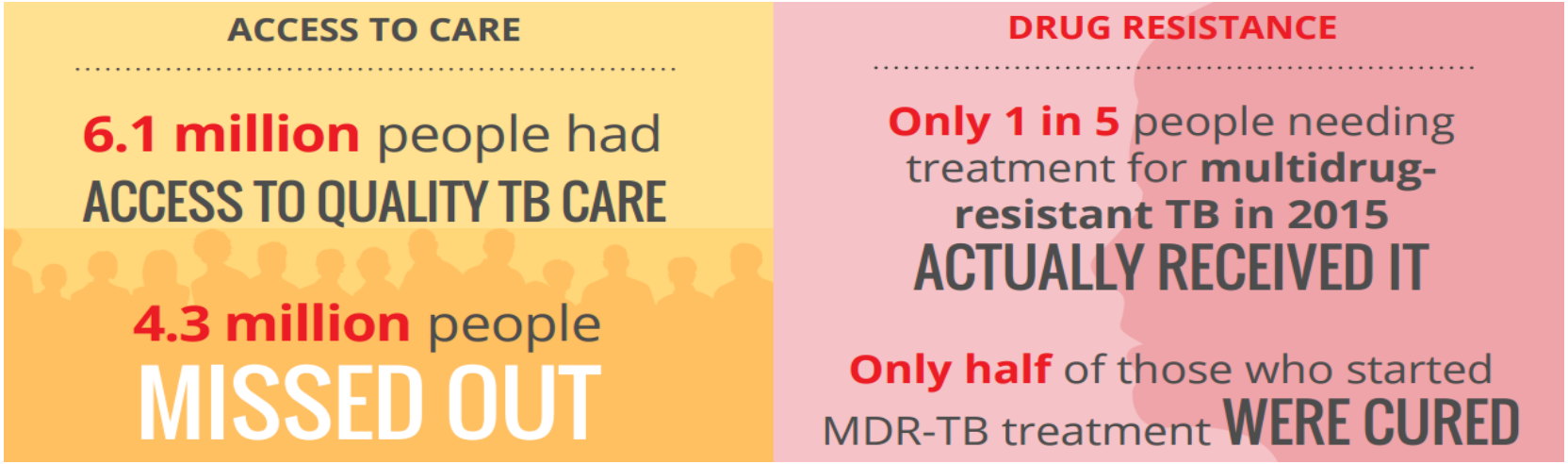
Video’s stored on device for QA when meds collected / clinical review

VS-Care

A new option

Better patient choice

= improved treatment delivery



Fox W. *The problem of self-administration of drugs, with particular reference to pulmonary tuberculosis.*

Tubercle. 39: 269-274. 1958

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- Collaborating Clinics

Thank you

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