Models of TB treatment in Karakalpakstan: a facet of the past, the present and the future

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The Past!

TB care was comprehensive!

- Treatment with TB drugs — 1st-line drugs: Isoniazid, Streptomycin, PAS;
  2nd-line drugs (backup drugs): Cycloserine, Ethionamide, Ethoxyde, Pyrazinamide, Kanamycin, Thybon
- Tuberculin therapy
- Preventive treatment
- Revaccination
TB incidence rates in 1990-1997:

- Karakalpakstan
- Uzbekistan
The Past! Patient follow-up

- Patients were ranged into 7 patient follow-up groups. Every patient was followed up for 5-6 years, which affected their social status.
- Morbidity rates were very high.
- Patients were taken off the register after their clinicoradiologic and bacteriological results improved.
The Past! 7 patient follow-up groups

Group I: Patients with active pulmonary TB: A) new patients; B) chronic patients.
Group II: Recovering patients with active pulmonary TB.
Group III: Clinically cured TB patients with residual effects.
Group IV: Healthy contacts of smear-positive TB patients.
Group V: Patients with extrapulmonary TB: A) active TB; B) recovering TB; C) clinically cured TB.
Group VI: Children with conversion of tubercular tests.
Group VII: A) patients at higher risk of TB relapse (Group III patients); B) new patients with inactive TB changes.
The Present! How did it all begin? (history of cooperation between MoH of Karakalpakstan and MSM)

2007-2010
Gradual expansion of DOTS-Plus programme aimed at detection and treatment of DR-TB to other districts of Karakalpakstan and implementation of the “Comprehensive TB treatment for all patients” programme

2003-2006
Pilot implementation of DOTS-Plus programme aimed at MDR-TB detection and treatment in two pilot districts of Karakalpakstan

2000-2001
Study on the prevalence of DR-TB in four pilot districts of Karakalpakstan and Turkmenistan

2000-2002
Expansion of DOTS Strategy to all Karakalpakstan districts

1998-1999
Pilot implementation of DOTS Strategy in two districts of Karakalpakstan (Kungrad and Muynak Districts)
The Present!
Stages of DOTS and DOTS-Plus implementation in Karakalpakstan districts
The Present continues!

- 2011: Ambulatory DR/DS-TB care from day 1
- 2013: Shorter MDR-TB regimen
- 2015: Shorter regimen for pediatric patients
- 2016: XDR-TB treatment with new TB drugs; Start of a clinical trial
TB incidence and mortality rates in Karakalpakstan, 2000-2018
Dynamics of MDR-TB decline, 2014-2018

- **2014**: Total number — 826
- **2015**: Total number — 634
- **2016**: Total number — 612
- **2017**: Total number — 575
- **2018**: Total number — 542
Today’s TB treatment regimens are standard, individual and empirical.

- Standard DS-TB regimen: 6 months
- Standard DR-TB regimen: 9 months and 24 months
- Ambulatory care from day 1
- Surgical + non-surgical treatment
- Consiliums
Methods of DR-TB (M/PDR-TB) care

- Inpatient
- Outpatient
- DOTS corners

Central health centres, rural family practice clinics, rural medical centres
Patients are enrolled in treatment after they give consent at Medical Consilium.

Patients are offered inpatient treatment and outpatient treatment as well.

Functions of Medical Consilium:

- Compose treatment regimen
- Calculate weight based drug dosages
- Decide on where to initiate TB treatment
- Fill in drug-resistance form, TB-01 form, bacteriogram and patient consent form
Indications and contraindications to outpatient TB treatment

- TB patients in relatively satisfactory conditions
- Pulmonary only TB
- Pulmonary TB with a mild co-morbidity
- Inpatient treatment is impossible for family reasons
- Smear-positive TB patients who can ensure proper isolation at home
- Smear-positive TB patients with no young children at home
- TB patients and their family members have signed written consent

- Severe and complicated TB
- Caseous pneumonia
- Tuberculous meningitis
- Pulmonary TB complications:
  - pulmonary heart disease grade III
  - hemoptysis, hemorrhage
  - spontaneous pneumothorax
- Patients co-infected with TB and HIV
- Pleural effusion, pleural empyema
- TB drug intolerance
- Severe co-morbidities and their complications
- Pediatric TB patients
- Pregnant TB patients
# Benefits of outpatient care

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<td>1</td>
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<td>Patients stay within their family, in a familiar home environment</td>
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<td>Patients eat home-cooked food</td>
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<td>Patients can take drugs at all reasonable time</td>
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<td>Family members can effectively monitor drug intake</td>
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<td>Patients have no negative emotions as compared to inpatient treatment</td>
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Cost efficiency of outpatient care

- Cost per a bed-day: 55,000 soms (~$788)
- Treatment duration: 180 days
- Total: 9.9 million soms (~$141,931)
Challenges in providing outpatient care!

Vast area and outlying locations present problems in the delivery of TB drugs

Monitoring of TB patients on outpatient care

TB patients on outpatient care are extra workload of TB doctors
ACTIVE TB RELAPSE RATES in Karakalpakstan, 2017-2018

- **2017**
  - Number of relapse cases: 441
  - S+ cases: 295 (66.9%)
  - Incidence rate per 100K population: 24.6

- **2018**
  - Number of relapse cases: 500
  - S+ cases: 297 (59.4%)
  - Incidence rate per 100K population: 27.5
Create conditions for managing adverse events in patients on outpatient care.

Engage a mental health specialist in TB treatment to support treatment adherence in MDR-TB patients.

Organize palliative care unit for MDR-TB patients.

Extend indications for surgical treatment in DR-TB patients.

Given the efficiency of surgery, review the duration of outpatient TB care.

Review functions and workload of TB doctors with due account for geography and population of health districts.

Develop incentives for healthcare professionals to encourage early TB detection.

Develop a tool for cooperation between healthcare professionals, workers of health inspection service, and TB doctors.

Improve sputum collection and delivery to laboratories.

Timely detect early symptoms and prevent adverse reactions of TB drugs (in particular new TB drugs).

Take patients off the register only after they achieve sustained smear conversion and regenerated lung cavities.

Given M/XDR-TB rates among children and adolescents, develop comprehensive measures of TB prevention, diagnostics and health promotion aimed at children and adolescents.