Summary

- Introduction

- TB in Geneva (clinical and social characteristics)

- TB in Europe
  - Use of DOTS
Swine flu: 20 deaths

Tuberculosis kills 1.5 million people worldwide per year
(WHO World Health Report 2009)

9 million incident cases per year
Estimated TB incidence rate, 2007

Estimated global prevalence, mortality and incidence rates, 1990-2007

Prevalence

Mortality

Incidence
Tuberculosis: who is concerned in Switzerland and in Geneva?

**TB in Switzerland**

- Incidence of TB in Switzerland: $7 \times 10^5$
- Incidence of TB in Swiss subjects: $3.6 \times 10^5$
- Incidence of TB in foreigners: $15 \times 10^5$
- Incidence of TB in Geneva: $20 \times 10^5$
- Population of Geneva: 440,000
Illustration 1
Déclarations annuelles des cas de TB confirmés par culture de 1990 à 2004, par nationalité

Illustration 2
Nombre de cas par tranche d’âge et par nationalité de 2001 à 2004
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Outcome of Tuberculosis (TB) in a low incidence area: a 4-year study in Geneva, Switzerland

O Kherad, F Herrmann, JP Zellweger, T Rochat, JP Janssens

SSP Lugano 2007
ERS Stockholm 2007
Objective: to describe the clinical and social characteristics of patients with active TB and their outcome in an environment with a low incidence for TB

Setting: Outpatient section of the Division of Pulmonary Diseases (CAT, Geneva University Hospital)
- This section follows >80% of the TB cases treated in Geneva

Methods: Retrospective study over a 4 year period (Jan. 1999-2003)
- Based on a computerized database and subsequent review of medical records of all patients with TB (positive culture and/or histology)


- 252 subjects:
  - 120 M, 132 F
  - Prior TB: 10 (4%)
  - 16% swiss, 84% foreigners (OFSP 64%)
  - 30% asylum seekers, 6% diagnosed through screening at the border, 5% with no legal status
  - Median age of Swiss cases: 61 yrs
  - Median age of foreigners: 34 yrs
  - 11% (n=28) HIV+ (OFSP: 4% of cases [4.5% of foreigners, 2.6% of Swiss nationals]) (Euro TB: 2.7%)
Origin of patients with TB in Geneva: 99-03

Fifteen countries with the highest estimated TB incidence rates per capita and corresponding incidence rates of HIV-positive TB cases, 2007
17 cases of Swiss HIV patients <50y, (47%), p=0.01

TB intra-thoracique
n=152 (60%)

TB extra-thoracique
n=31 (12%)

50% adenitis

n=68 (28%)
Table 2 Clinical and disease-related characteristics of patients

<table>
<thead>
<tr>
<th></th>
<th>N= 252 (%)</th>
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<tbody>
<tr>
<td><strong>Pulmonary TB</strong></td>
<td></td>
</tr>
<tr>
<td>Smear +/- Culture +</td>
<td>158 (63)</td>
</tr>
<tr>
<td>Smear - / Culture +</td>
<td>93 (59)*</td>
</tr>
<tr>
<td>Smear - / Culture -</td>
<td>58 (37)*</td>
</tr>
<tr>
<td>Cavitary disease</td>
<td>7 (4)*</td>
</tr>
</tbody>
</table>

| **Adenitis** | 74 (29) |
| **Pleuritis** | 18 (7) |
| **Abdominal** | 17 (7) |
| **Osteo-articular involvement** | 17 (7) |
| **Urogenital tractus** | 16 (6) |
| **ENT involvement** | 4 (2) |
| **Others** | 21 (8) |

TB = tuberculosis; ENT = ear, nose and throat; *: percentage of pulmonary TB

Smokers had 6-fold increase risk of developing cavitary TB

Table 3. Adjusted odd ratios for clinical presentation of TB according to socio-demographic characteristics of patients

<table>
<thead>
<tr>
<th></th>
<th>Ectuberculosis Tb</th>
<th>Cavitary Tb</th>
<th>Disseminated Tb</th>
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<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>OR</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;35y</td>
<td>1.00</td>
<td>-</td>
<td>1.00</td>
</tr>
<tr>
<td>35-60y</td>
<td>1.80 [0.91-3.53]</td>
<td>0.24 [0.03-0.73]</td>
<td>0.89 [0.31-2.97]</td>
</tr>
<tr>
<td>&gt;60y</td>
<td>1.48 [0.57-3.90]</td>
<td><strong>0.13 [0.03-0.62]</strong></td>
<td>0.69 [0.25-1.80]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.64</td>
<td>0.31 [0.42-0.89]</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.46 [0.31-6.25]</td>
<td>0.82 [0.21-3.11]</td>
<td>1.34 [0.26-6.95]</td>
</tr>
<tr>
<td>Black</td>
<td>1.47 [0.29-7.17]</td>
<td>0.76 [0.23-2.48]</td>
<td>1.34 [0.30-5.94]</td>
</tr>
<tr>
<td>Swiss born</td>
<td>1.05 [0.37-2.92]</td>
<td>2.93 [0.30-10.72]</td>
<td>0.91 [0.17-4.78]</td>
</tr>
<tr>
<td>HIV co-infected</td>
<td>2.20 [0.86-5.90]</td>
<td><strong>2.11 [0.91-4.80]</strong></td>
<td><strong>2.25 [1.45-3.49]</strong></td>
</tr>
<tr>
<td>Active smoker</td>
<td>0.38 [0.14-1.03]</td>
<td><strong>0.50 [1.85-1.81]</strong></td>
<td>0.82 [0.20-3.91]</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>0.52 [0.10-2.05]</td>
<td>0.56 [0.19-3.04]</td>
<td>+</td>
</tr>
</tbody>
</table>

CI = confidence interval, OR= odds ratio, * dropped products failure perfectly
Treatment and side effects (n=252)

- Resistance to at least INH: n=20 (8%)
  - OFSP CH 01-04: 7.1%
  - Previous ttt (OR 14; 95% IC 2.01-19.2)

- MDR-TB: n=5 (2%)
  - OFSP CH 01-04: 1.8%
    - HIV and previous ttt (p<0.05)

- Side effects: n=75 (30%)
  - Severe enough to stop ttt n=53 (21%)
    - Female (OR 4.8; 95% IC 1.9-12.5)

- Directly observed therapy (DOT): n=47 (19%)

Mean time to diagnosis: 2.1 ± 3.1 months
Asymptomatic: 10%, no general symptoms: 35%
Diagnostic procedure for pulmonary TB

13 cases (28%) diagnosed by bronchoscopy only
12 cases (8%) time saving procedure
113 cases (72%) diagnosed by sputum analysis

Targets for global TB control (WHO)

- 70% of incident smear positive should be detected and treated in DOTS programmes
- 85% should be successfully treated
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World wide dimension of migration

- Asylum seekers in industrialised countries: 5 Mio
- Irregular migrants in Europe: 3 Mio
- Irregular migrants in Switzerland: 1-200'000
- Irregular migrants in Geneva: 10'000

Incidence rate in Europe

EuroTB data:
Norway, Denmark, Sweden, Ireland, Italy

TB among native subjects and TB among young foreign-born subjects (Italy, DK, Ireland)

Overall TB notification rates have increased (UK, Sweden, Norway)
Completion rate in Europe

Map 2. Total TB notification rates, WHO European Region, 2006

Completion rate in Europe

Faustini et al, Eur respir J, 2005
Treatment success in WHO regions 2006

- Russian Federation 58%
- China 94%

Causes of unsuccessful outcome

Ditah et al, Thorax, 2007
Five components of the DOTS strategy

1. Sustained political commitment
2. Access to quality-assured sputum microscopy
3. Standardized short-course chemotherapy for all cases of TB under proper case management conditions, including direct observation of treatment
4. Uninterrupted supply of quality-assured drugs
5. Recording and reporting system enabling outcome assessment of all patients and assessment of overall programme performance

DOTS coverage by WHO region, 2007
Conclusions I

- TB in our area is overwhelmingly a disease of foreign-born subjects
- Successful treatment rate is satisfactory in agreement with WHO target of 85%
- Time to diagnosis remains too long
- Rate of TB-HIV coinfection in the Swiss population is surprisingly high
- Smoking seems associated with cavitary disease
- Resistance and MDR-TB rate are stable
Conclusions II

- TB incidence rates in Europe are in general stabilizing but increasing in some area (role of migrations, HIV)
- Completion rates are below WHO targets and lower than other WHO regions
- DOTS coverage in Europe is still low
- "Think TB"

Thank you