

TB in the Workplace

Risks in Prisons in Europe

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**17th Tuberculosis Symposium
Muenchenwiler
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Prison Population rate 2007

Prison populations grew 66% in Europe over last 18 months

KING'S College LONDON
International Centre for Prison Studies
World Prison Population List (seventh edition)
Roy Walmsley



Prisons:

extreme risk environment for infectious diseases

- limited access to health care
- poor nutrition
- overcrowding
- continued drug use
- unsafe injection practices
- unprotected sex
- tattooing

Risk factors

- proximity
- high risk sexual behaviour
- injection drug use

Niveau, 2006



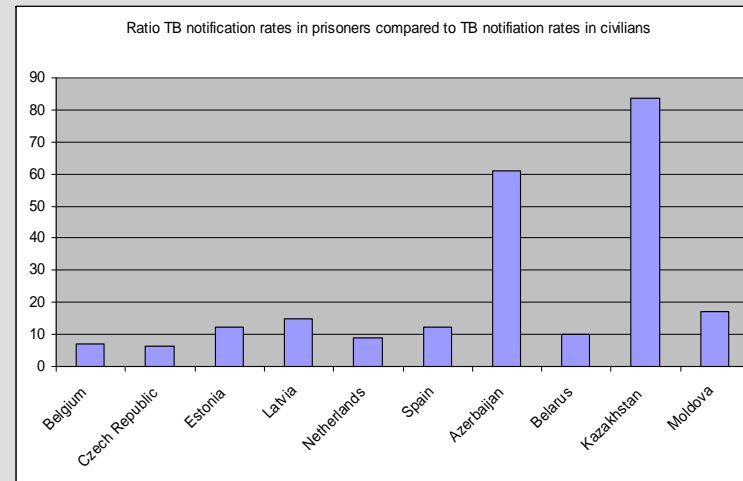
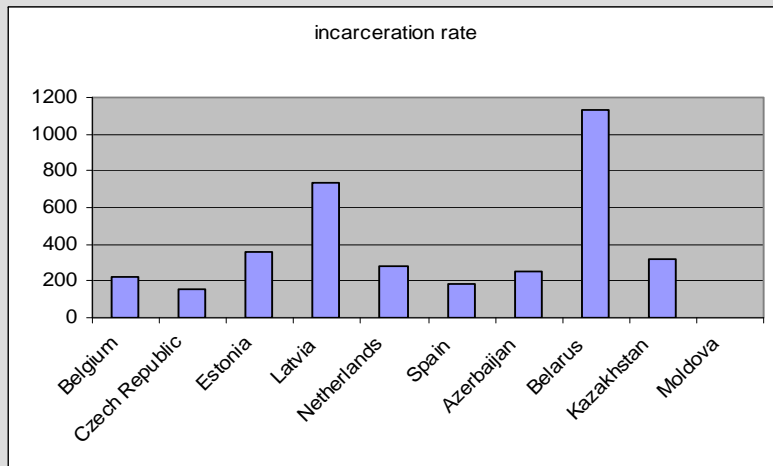
Median rates of incarceration and TB in Europe in 2002

Aerts et al, 2006

Total prison population in Europe in 2002: 2.1 million
Passing through every year: 10.5 million

Incarceration rate
239/100,000 (17-1128)

TB Notification rate
232/100,000 (0-17,808)



**Prisons are bad for TB and TB is bad for
prisons**

H.Reyes, 1997

TB is Public Health problem

Western Europe:

- Foreign born
- Homeless people
- Drug addicts
- Prisoners

Eastern Europe

- General high burden
- Growing HIV epidemic
- Prisoners



What drives the epidemic?

USA

- Number of admissions
- Age > 30 years
- Length of stay (Bellin, 1993)

Hongkong

- > 2 year incarceration
- Not having CXR < 2 years (Leung, 2005)

Italy

- Age
- Foreign born
- Education
- Length of detention – risk ↑ 11% per year (Carbonara, 2005)



Complications

Multi Drug Resistant TB:

- On average 1 out of 2-3 patients in Eastern Europe can not be treated by the usual drugs

TB/HIV

- A rapidly approaching epidemic that will kill the majority of TB/HIV infected prisoners



Multi Drug Resistant TB:

Samara, Russia

	New	Previously treated
civilian	19.8%	45.5%
prison	37.3%	55.3%

Drobniewski,
2005

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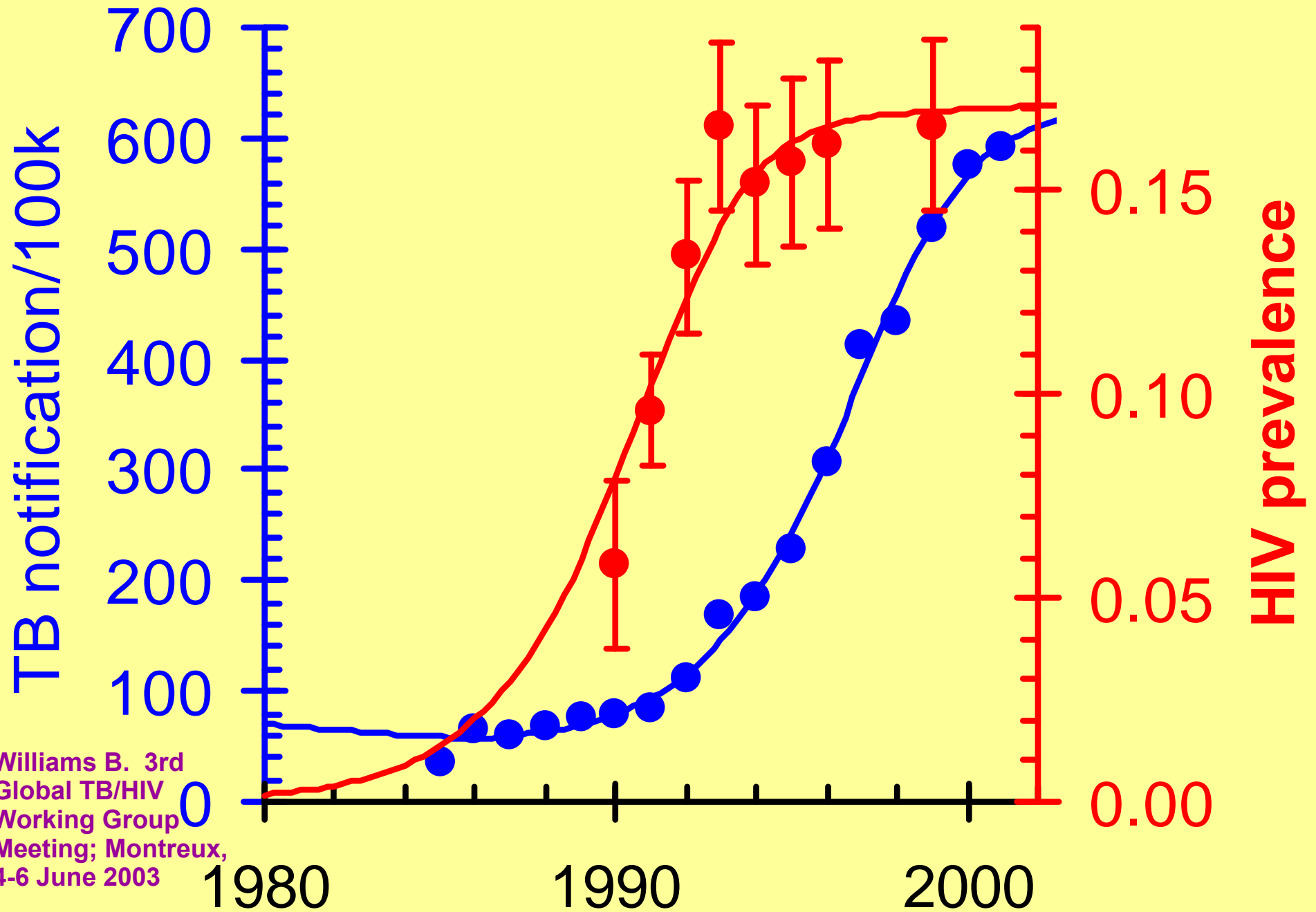
Multi Drug Resistant TB:

	New SS +	Retreatment SS +	Chronic TB
Any resistance	73,6%	94,6%	100,0%
MDR	19/72 26,4%	78/108 72,2%	45/53 84,9%
Poly resistance (incl. MDR)	66,7%	92,6%	98,2%
<ul style="list-style-type: none"> • <i>to 2 drugs</i> • <i>to 3 drugs</i> • <i>to 4 drugs</i> 	<p>20,8%</p> <p>22,2%</p> <p>23,6%</p>	<p>11,1%</p> <p>19,4%</p> <p>62,0%</p>	<p>3,8%</p> <p>20,8%</p> <p>73,6%</p>

Drug resistance survey in Pavlodar, Kazakhstan, KNCV 2003



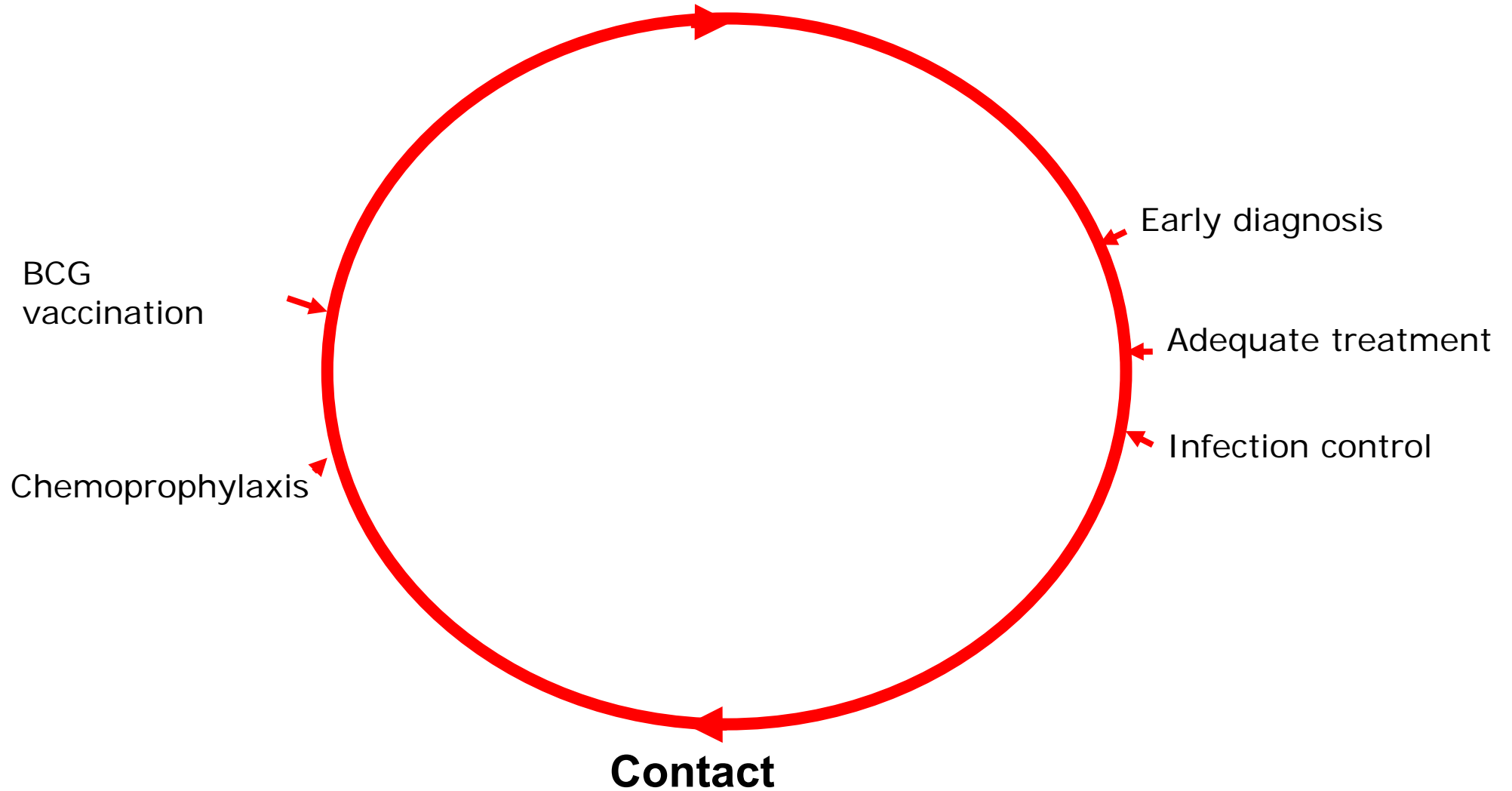
TB / HIV



Williams B. 3rd
Global TB/HIV
Working Group
Meeting; Montreux,
4-6 June 2003

Tuberculosis Control

Cycle of transmission
Source of Infection



How to prevent nosocomial infection

Early diagnosis of TB in prisoners

- Screening at entry
- Screening at periodic intervals

Methods:

- Tuberculin Skin Tests / (IGRA)
- Chest X-ray
- Questionnaires
- Self-referrals

Table 2 TB screening strategies in prisons of the WHO European Region, 2002

	On entry <i>n</i> (%)	During imprisonment <i>n</i> (%)
TST and CXR on tuberculin positives	4 (18.2)	3 (13.6)
CXR alone	2 (9.1)	2 (9.1)
CXR and bacteriology for suspects	11 (50.0)	7 (31.8)
Symptom screening and CXR for suspects	2 (9.1)	1 (4.5)
Symptom screening and bacteriology for suspects	1 (4.5)	1 (4.5)
Screening not done	1 (4.5)	7 (31.8)
Information not available	1 (4.5)	1 (4.5)
Total	22 (100.0)	22 (100.0)

TB = tuberculosis; WHO = World Health Organization; TST = tuberculin skin test; CXR = chest X-ray.

Aerts et al, 2006



How to prevent nosocomial infection

Early and adequate treatment

Drug intake under observation (DOT)



How to prevent nosocomial infection

Infection control

- engineering
- administrative guidelines
- personal protection

TB as Occupational Health Risk

New York State prison 1997:

- 30% of new infections in staff due to occupational exposure (Steenland K, 1997)

Botswana

- minimum point prevalence among prison guards 2662/100,000 (CDC, 2003)

TB as Occupational Health Risk

Samara (Russian Federation)

- Incidence general population
69.3/100,000
- Incidence medical facility staff
741.6/100,000
- Proportions:
 - PHC staff 29%
 - Hospital staff 39%
 - TB facility staff 47% (Drobniewski, 2008)



Security vs occupational health

Guidelines for

- Prison administration

- Security

- Transfers between institutions
 - Punishment

- Medical administration

- Occupational Health

- Segregation of patients
 - Screening/protection of staff



Occupational Health in European prisons

TB/LTBI screening of staff in 2002

- annually 50%
- occasionally 23%
- Never 14%

Availability of

- Health Education 60%
- Guidelines 69%

Aerts et al, 2006



DUBLIN DECLARATION ON HIV/AIDS IN PRISONS IN EUROPE AND CENTRAL ASIA

Good Prison Health is Good Public Health

Dublin, Ireland. 2004

Principle 4:

Protecting the health of prisoners, and reducing the transmission of disease in prisons, also protects the health of prison staff

Prison staff benefits from enhancing the health status of prisoners, and reducing the incidence of disease in penal institutions. Therefore, improving health care and prevention programmes for prisoners is an integral part of enhancing workplace health and safety for prison staff.



TB as Occupational Health Risk

Simple interventions:

- early diagnosis
- segregation of infectious cases
- education/ training staff
- low cost engineering controls:
 - exhaust ventilation
 - improved natural ventilation
 - sunlight
- administrative controls



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