



# CAN ZERO DEATHS BECOME A REALITY?

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## LESSONS FROM TOMSK, RUSSIAN FEDERATION

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CASCADES – IMPROVING TB CARE  
PARIS, FRANCE  
NOVEMBER 1, 2013

# BACKGROUND



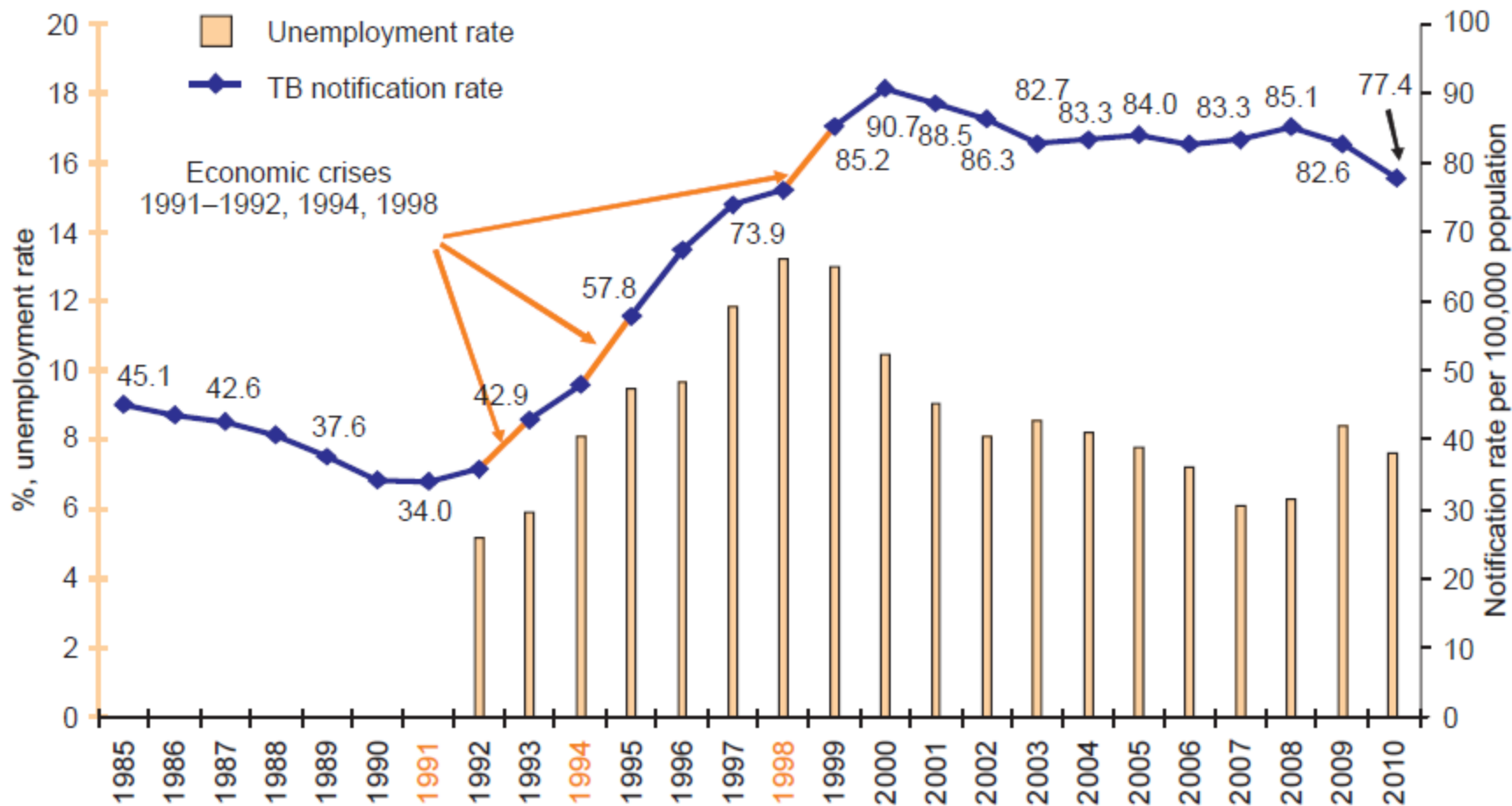


Fig. 2.1. Notification rates for new TB cases and unemployment in the Russian Federation, 1985–2010, all sectors (Sources: Form No. 8 and [29, 38], population data: Forms No. 1 and No. 4)





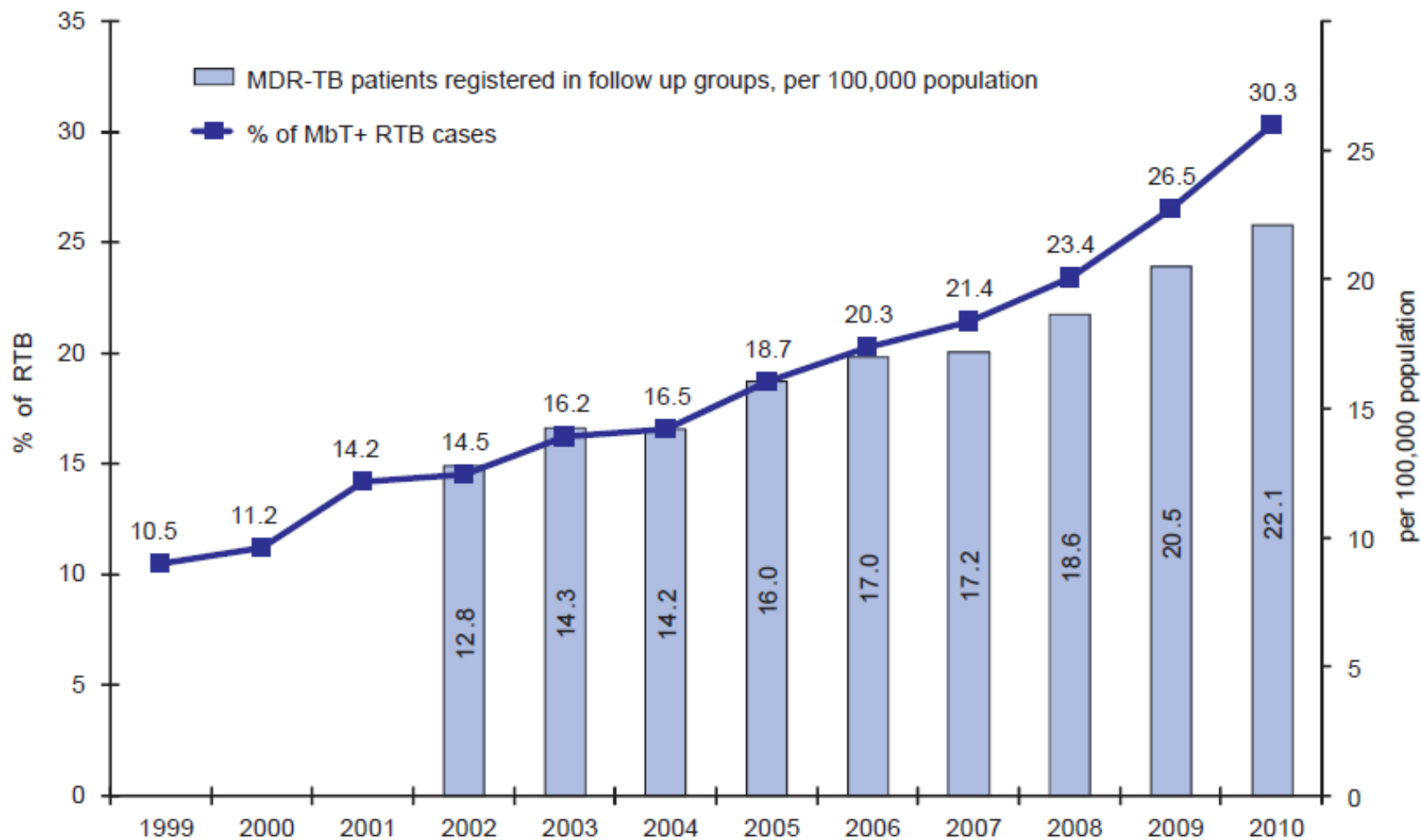
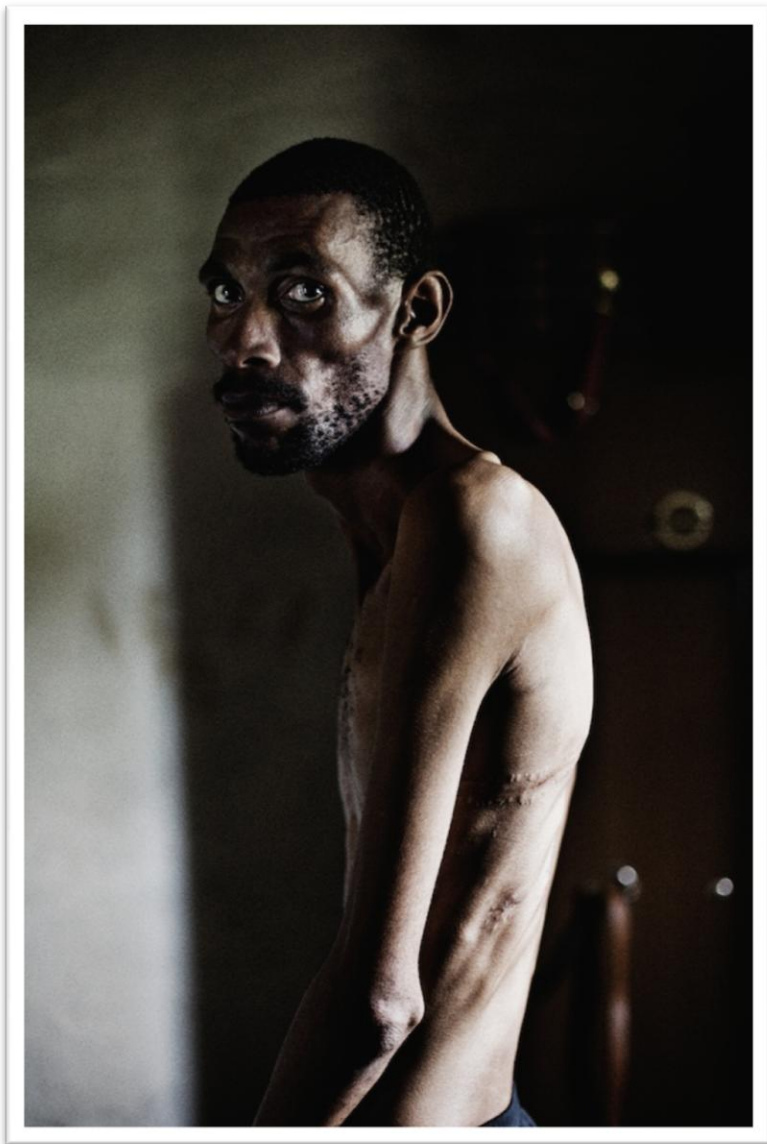
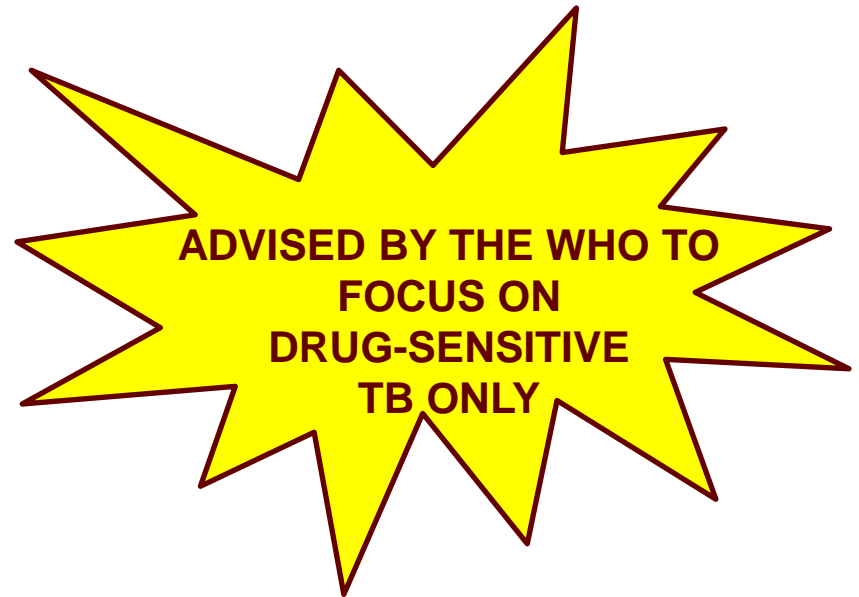


Fig. 10.7. Multidrug resistance in all groups of RTB MbT+ patients with respiratory tuberculosis: the share in RTB patients and the number of MDR-TB cases registered per 100,000 population (the indicator of registered MDR-TB prevalence in the population), the Russian Federation (Source: Form No. 33)



“ MDR-TB is too expensive to treat in poor countries; it detracts attention and resources from treating drug-susceptible disease. ”

- World Health Organization  
Groups At Risk, 1996





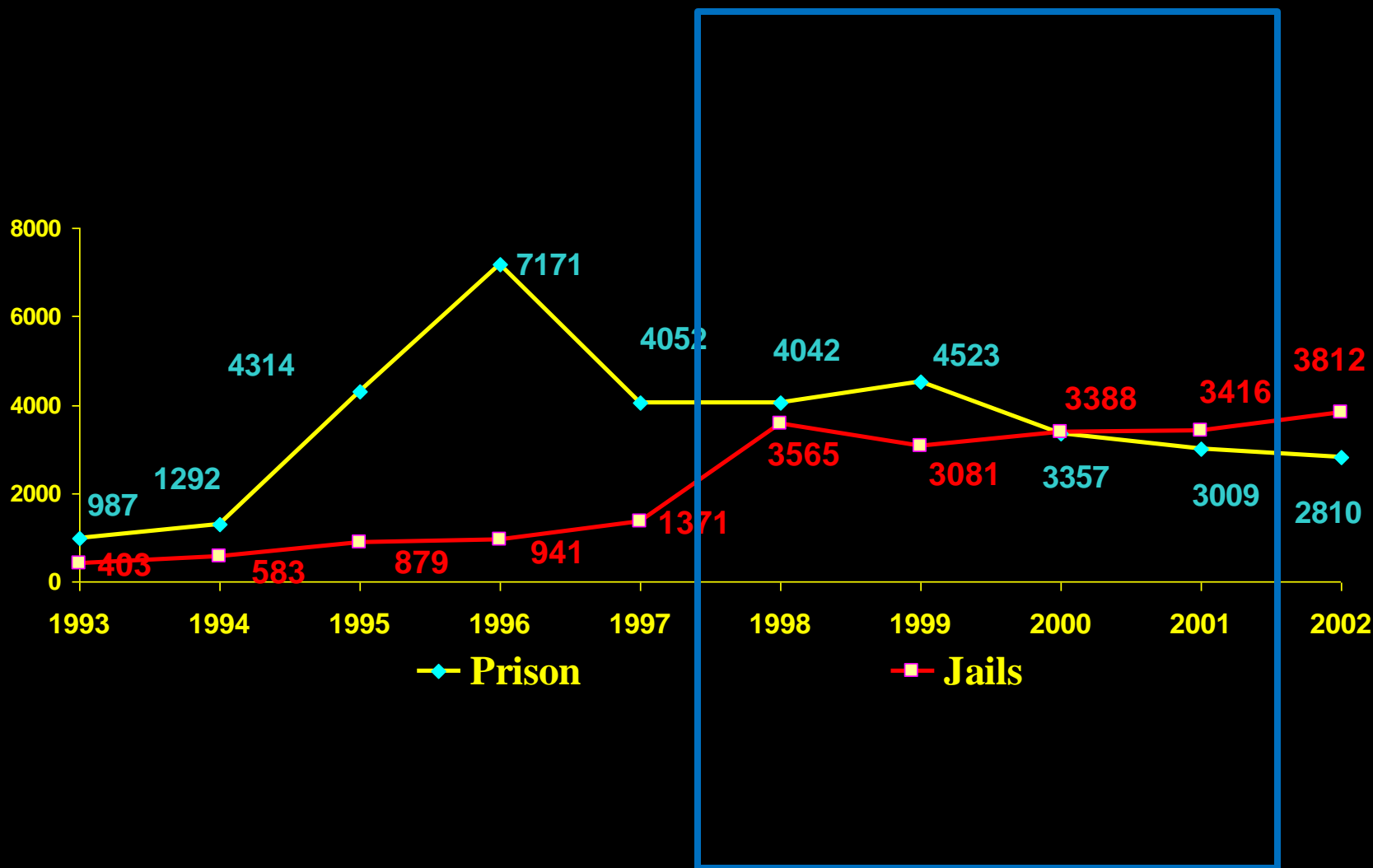
**Saint-Petersburg**

**Moscow**

**Toms Oblast**  
**Population: 1,073,600**  
**Area = 317,000 km<sup>2</sup>**

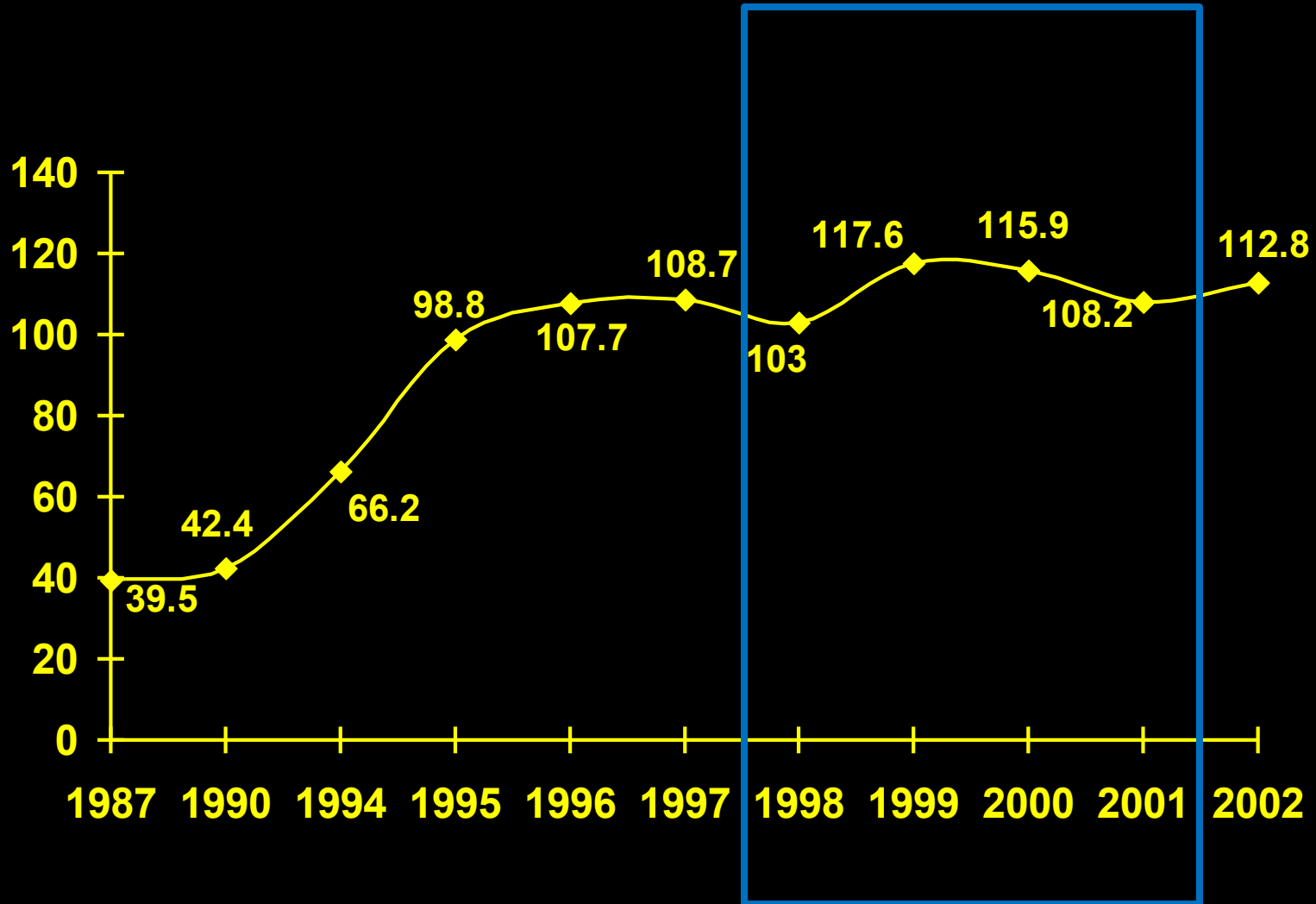


# TB Incidence per 100,000 – Tomsk Prison Sector





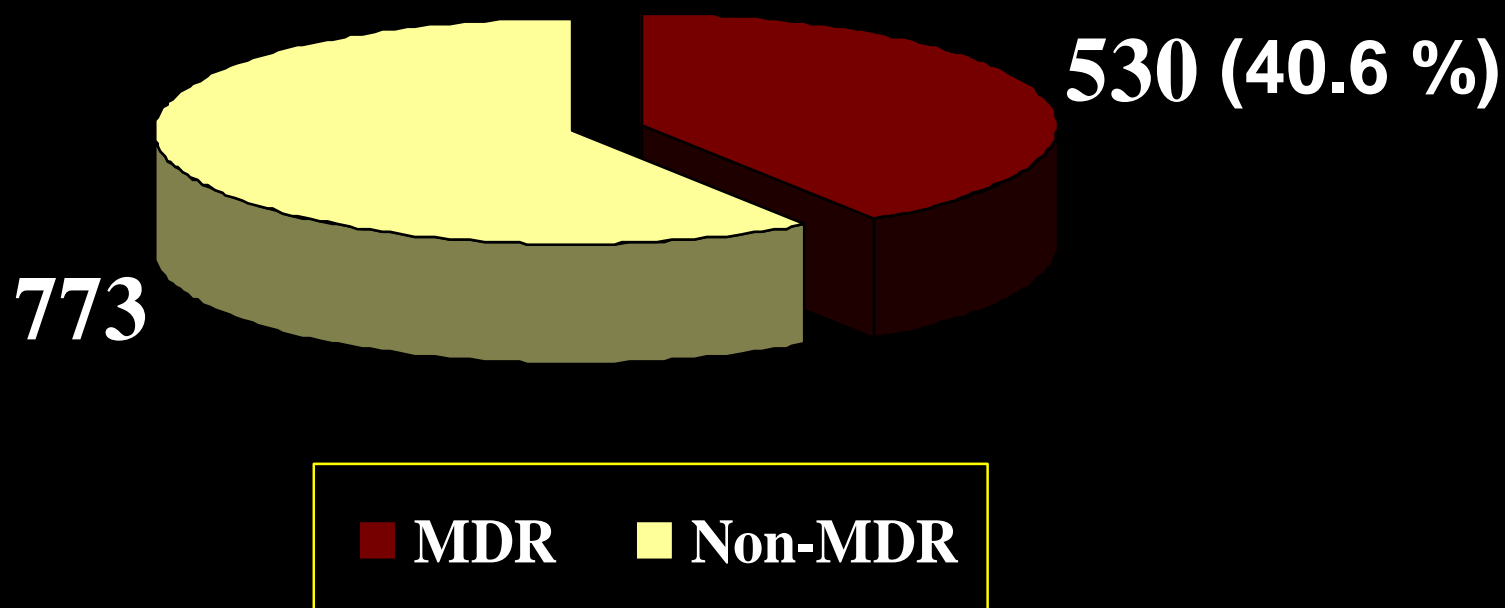
# TB Incidence per 100,000 – Tomsk Civilian Sector



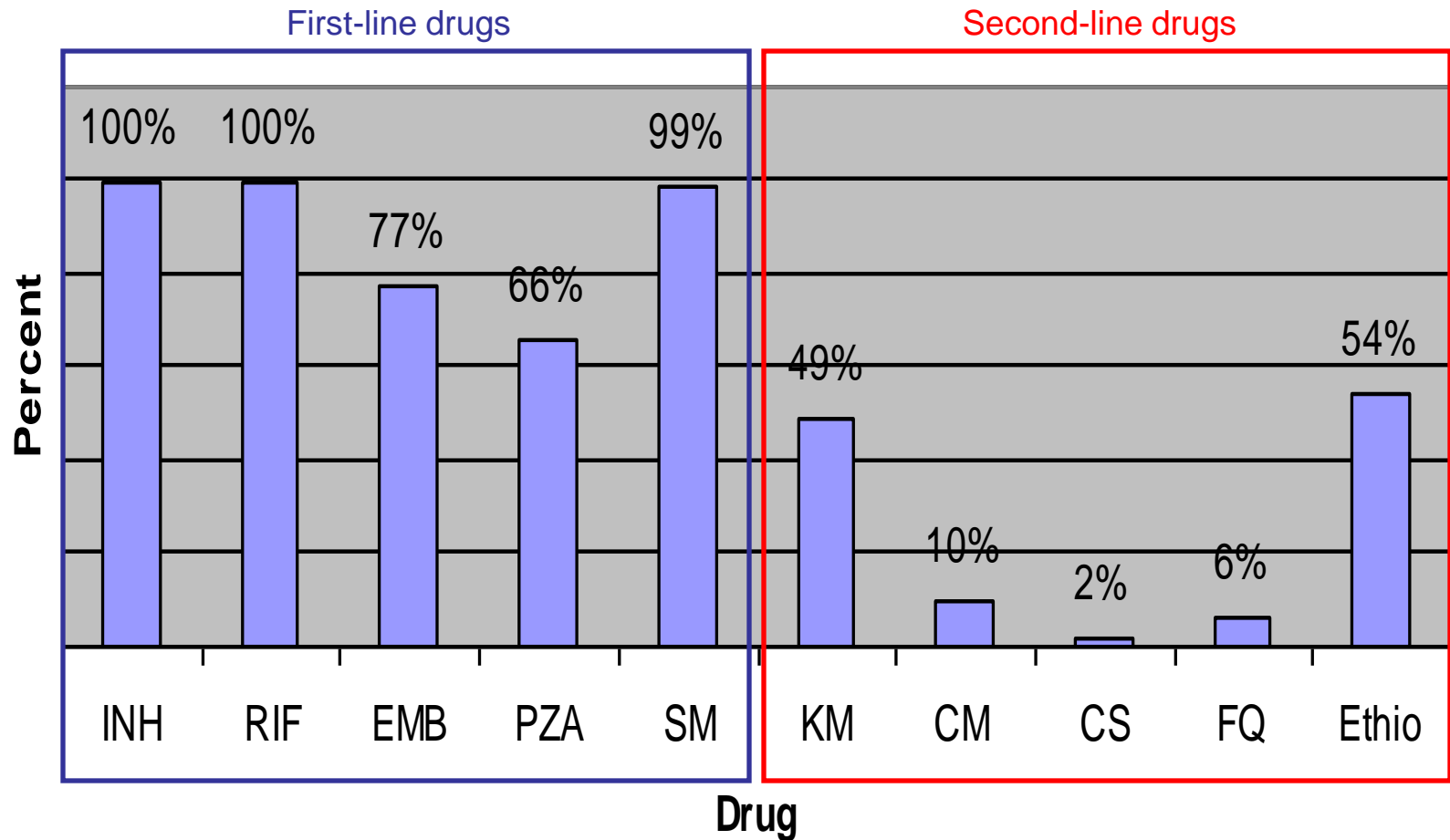
# TB Incidence, Prevalence, and Mortality in Tomsk, Russian Federation Penal Sector, 1998

Holding Section TB case notification/100,000	3,565
Holding Section TB Prevalence/100,000	3,743
Prison TB case notification/100,000	4,042
Prison TB Prevalence/100,000	21,581
TB Mortality/100,000	353
<b>Percentage of MDR-TB among new cases</b>	<b>28</b>
<b>Percentage of MDR-TB among re-treatment cases</b>	<b>54</b>

# MDR-TB prevalence among all smear-positive new and re-treatment cases 2001, Tomsk Oblast (n=1303)



# Resistance patterns of Tomsk Cohort (244)



# Selected characteristics of first cohort of patients in Tomsk, Russian Federation (N=244)

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• Age (mean)	32	• TB contact	67%
• Male	86%	• HCW	2.5%
• <b>Prison</b>	<b>45%</b>	• <b>Previous prison</b>	<b>64%</b>
• Civilian	55%	• <b>Low BMI</b>	<b>42%</b>
• Employed	17%	• Co-morbidity	
• Married	38%	– Abnormal LFTs	18%
• Disability	42%	– <b>Substance abuse</b>	<b>50%</b>
• <b>Homeless</b>	<b>3.3%</b>	• <b>Alcohol hx</b>	<b>35%</b>
• Previous treatments:	2 (1-6)	• <b>Alcohol during Rx</b>	<b>32%</b>
• Yrs with TB before		• <b>IVDU</b>	<b>18%</b>
MDR Rx	3.3 (0.1-28.3)	• Tobacco use	88%
		• Cavitory and bilateral disease	66%



If the patient has the *right to care* (as is legally the case in the Russian Federation), what needs to be done in order to ensure that they receive care?

Find programmatic solutions for all barriers to care.





# DIAGNOSIS & MEDICINES





# TREATMENT



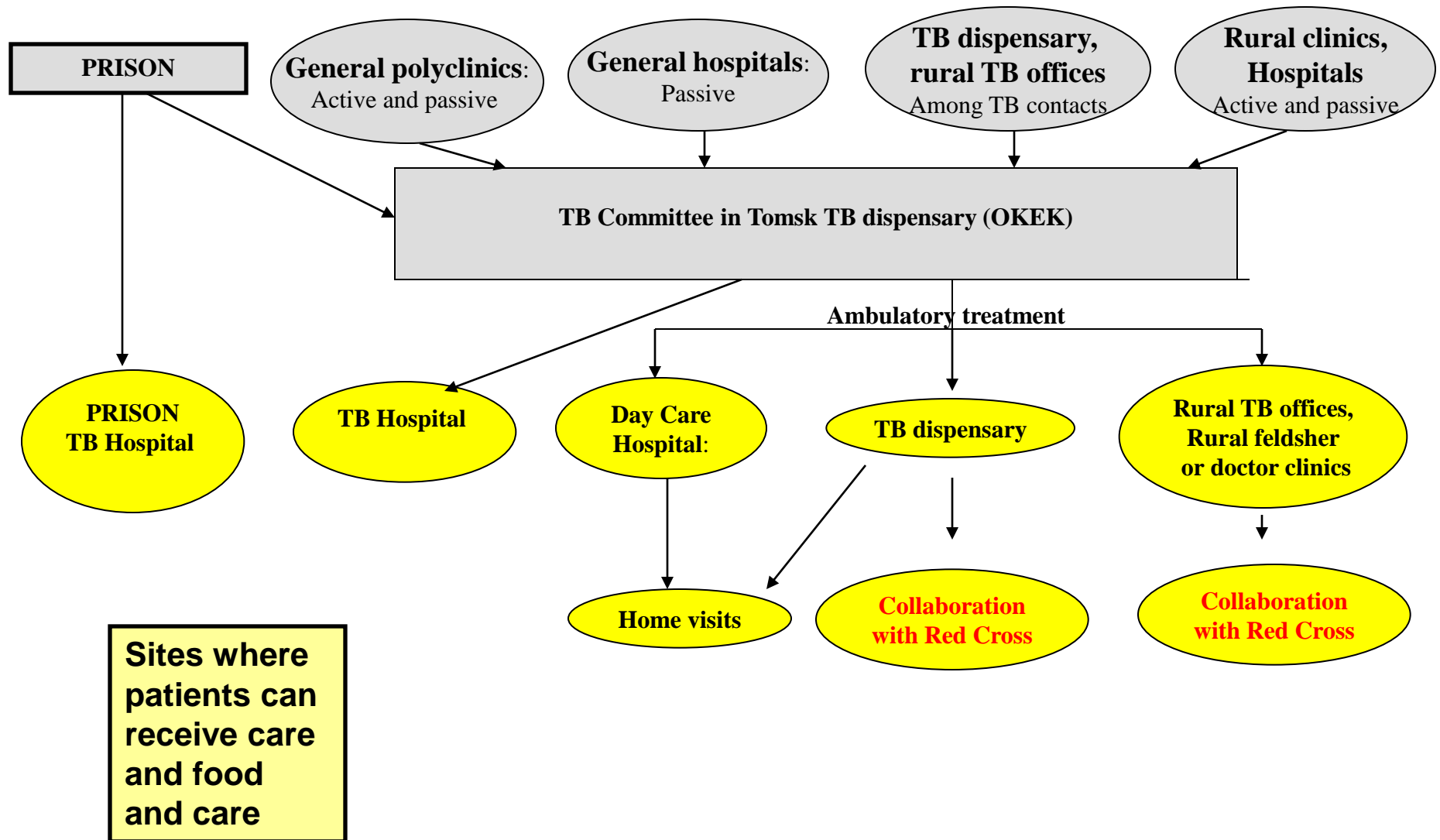
# SOLUTIONS

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- Improvement of facilities
- Transportation assistance for patients and health workers
- Choice of treatment site
- Food assistance for patients
- Aggressive management of adverse events
- Treatment at home for patients who are unable to ambulate or who live too far
- The use of enablers and incentives
- Social assistance for patients



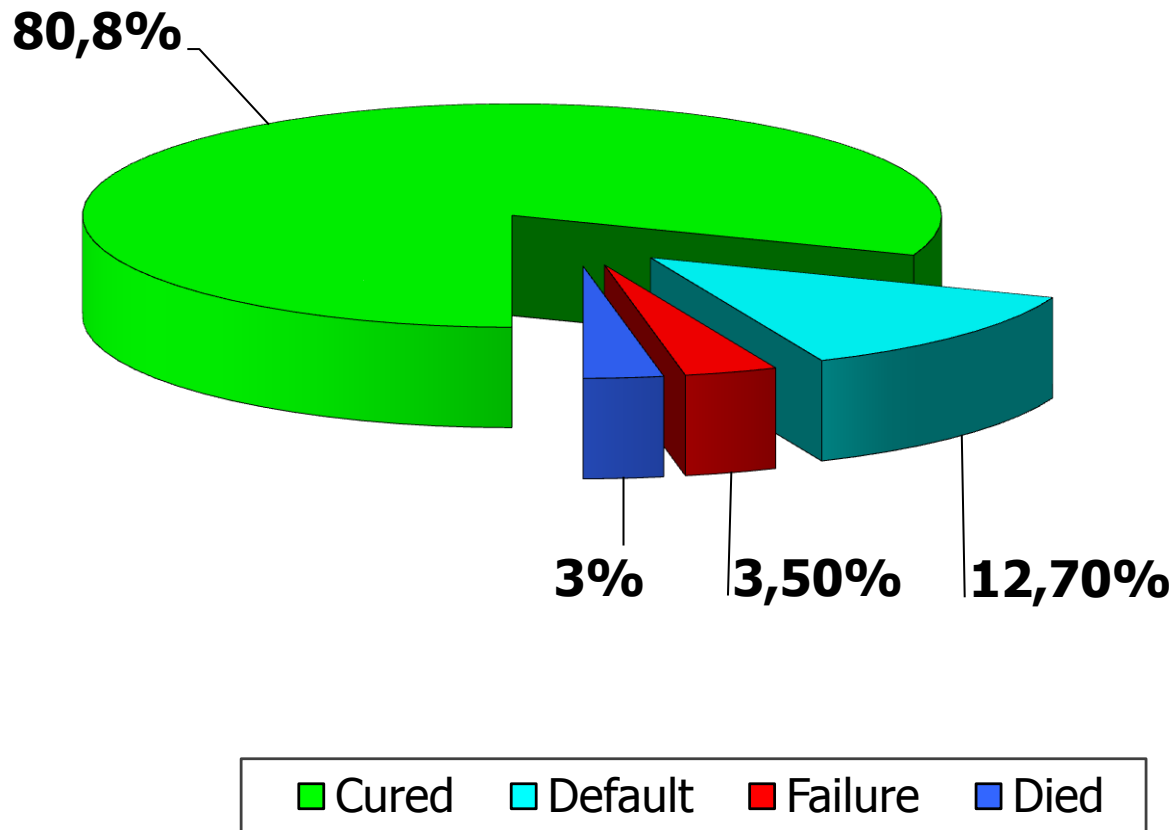
# Case detection and management of TB and MDR-TB in Tomsk Oblast



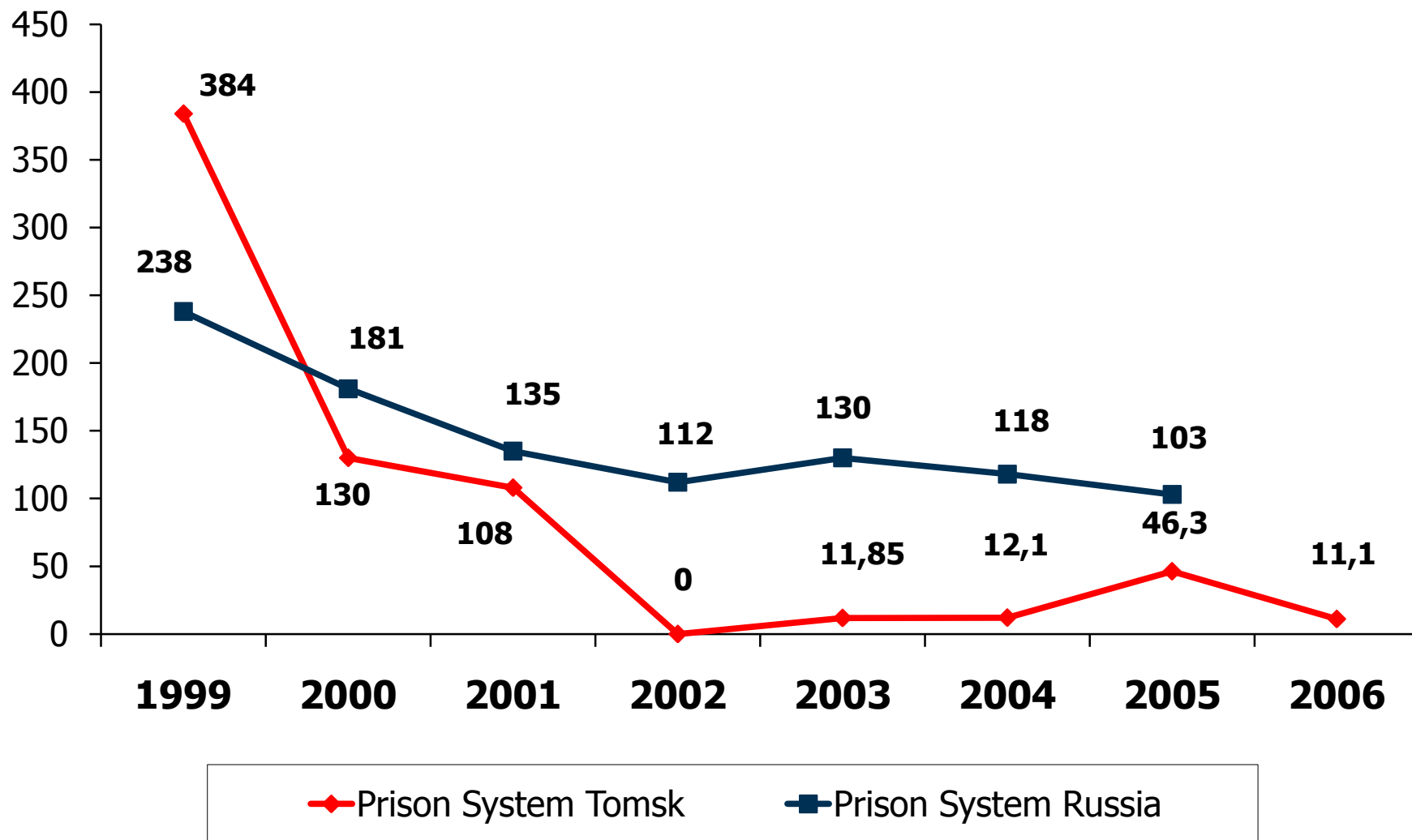
# OUTCOMES



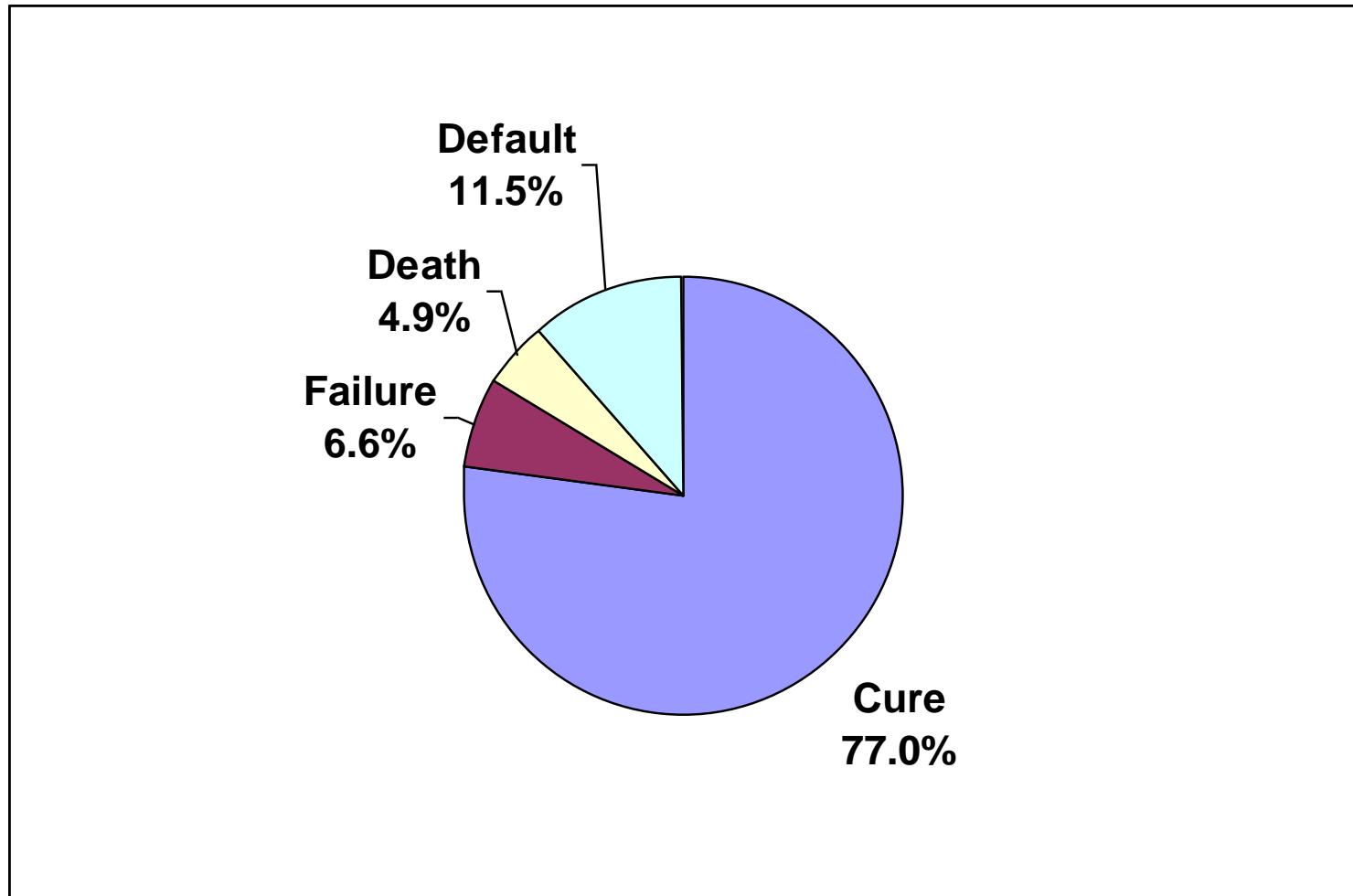
# MDR-TB Patient Treatment Outcomes Tomsk Oblast Prison Sector (2000 – 2004) N=110



# TB mortality in the Tomsk Penitentiary System (1999 – 2006; per 100,000 population)



# TREATMENT OUTCOMES OF FIRST COHORT (N=244) TOMSK, RUSSIA



# Treatment of extensively drug-resistant tuberculosis in Tomsk, Russia: a retrospective cohort study



Salmaan Keshavjee, Irina Y Gelmanova, Paul E Farmer, Sergey P Mishustin, Aivar K Strelis, Yevgeny G Andreev, Alexander D Pasechnikov, Sidney Atwood, Joia S Mukherjee, Michael L Rich, Jennifer J Furin, Edward A Nardell, Jim Y Kim, Sonya S Shin

	XDR TB (N=29)	Non-XDR TB (N=579)	Total number	p value
Favourable outcome	14 (48%)	386 (67%)	400 (66%)	0.04*
Cured	13 (45%)	366 (63%)	379 (62%)	
Treatment completed	1 (3%)	20 (3%)	21 (3%)	
Poor outcome				
Failure	9 (31%)	49 (8%)	58 (9%)	0.0008†
Death	2 (7%)	29 (5%)	31 (5%)	0.65†
Default	4 (14%)	115 (20%)	119 (20%)	0.42†

Total number of patients=608. Data are numbers (%). MDR=multidrug resistant tuberculosis. XDR TB=extensively drug-resistant tuberculosis. Non-XDR TB=non-extensively drug-resistant tuberculosis. \*This value refers to the comparison between favourable and poor outcome. †This value refers to the comparison between each outcome (ie, failure, death, or default) and all other outcomes.

**Table 2: Treatment outcomes of patients with MDR tuberculosis**







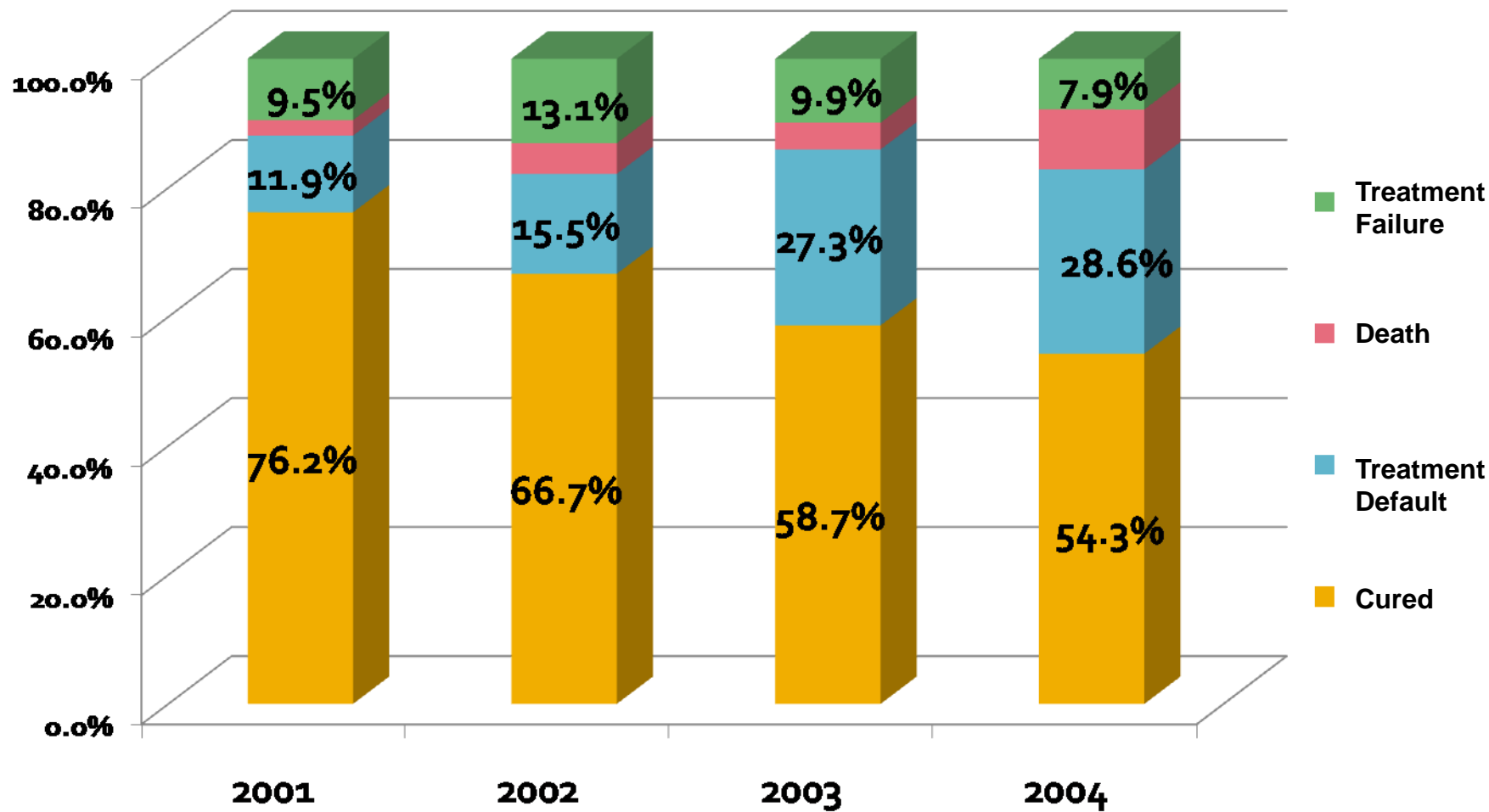
Photo: PIH Kazakhstan



# KNOW YOUR EPIDEMIC



## Treatment Outcomes, Civilian Sector Tomsk Oblast, Russian Federation



# “Sputnik” program

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- Some patients require assistance to finish treatment
- Need a system of accompaniment to help overcome barriers to treatment (this is different from simple DOT)
  - Social supports
  - Nutritional supports
  - Family support
- One *Sputnik* will look after five to seven patients
- Changes the onus of responsibility for adherence from the patient (“non-compliant”) to the program (programmatic failure)



# “SPUTNIK” Program

53 non-adherent patients were enrolled on Sputnik program from December 17, 2006 to November 30, 2008

2 patients refused to participate

**51 patients stayed on Sputnik program**

5 patients restarted new treatment course with 83% adherence [baseline adherence 0%]

46 patients continued previous treatment. Adherence increased from 52% before enrolment on the program to 81% while on Sputnik,  $p < 0.0001$

**Table 3** Treatment outcomes for all patients referred to the Sputnik program ( $n = 53$ ) divided by MDR-TB vs. all others

	Patients receiving treatment for MDR-TB ( $n = 38$ ) $n$ (%)	All other patients ( $n = 15$ ) $n$ (%)	Total ( $n = 53$ ) $n$ (%)
Cured/treatment completed*	27 (71.1)	9 (60.0)	36 (67.9)
Failure	2 (5.3)	1 (6.7)	3 (5.7)
Died†	2 (5.3)	1 (6.7)	3 (5.7)
Transfer out	1 (2.6)	1 (6.7)	2 (3.8)
Default‡	6 (15.8)	3 (20.0)	9 (17.0)

Note: No deaths were due to TB; most were due to violent crimes

“Default” includes the 2 patients who refused to participate in the program

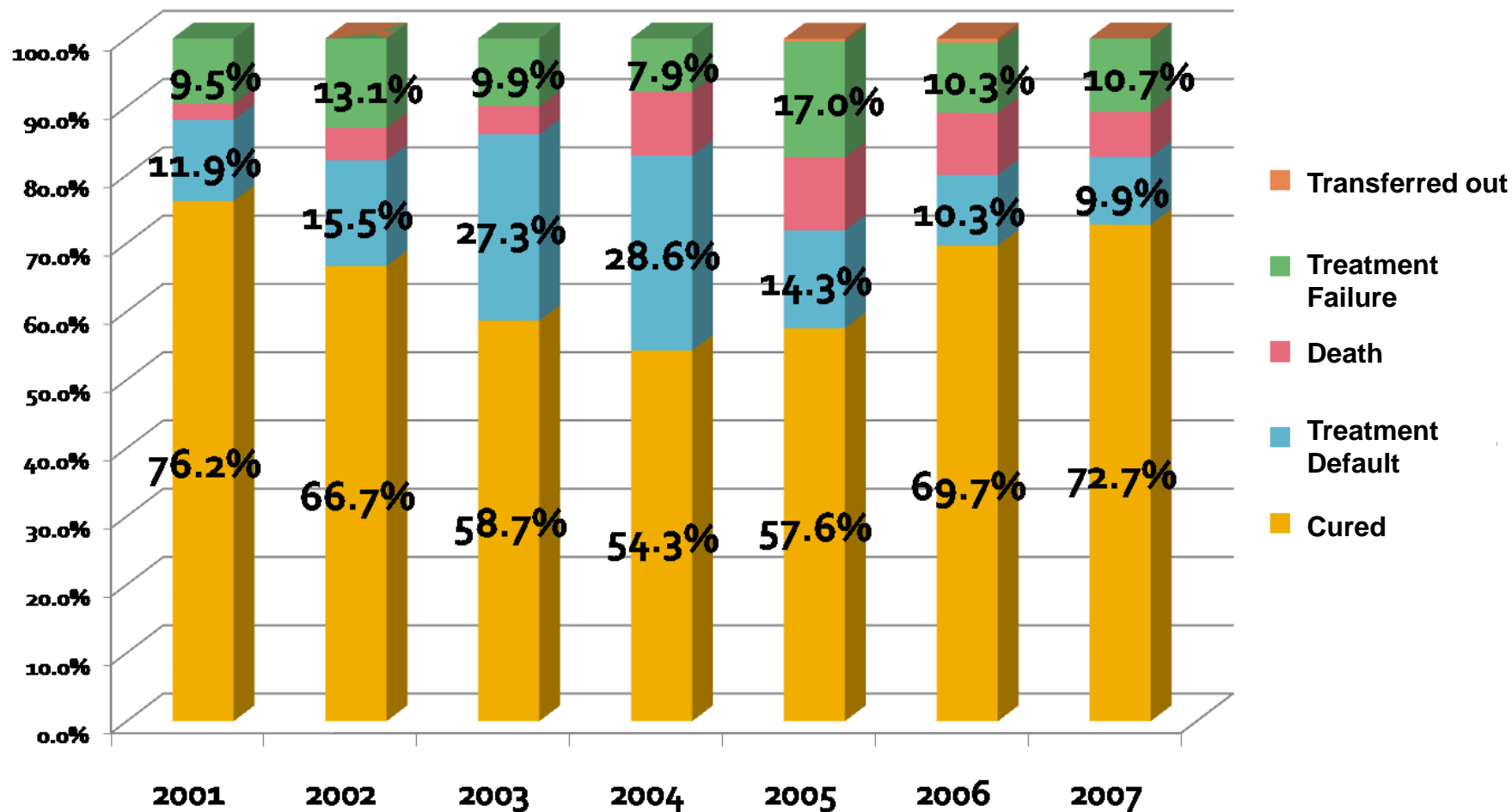




Photo: PIH Russia



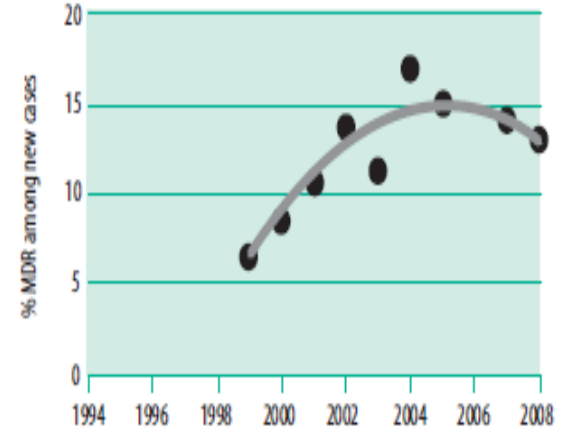
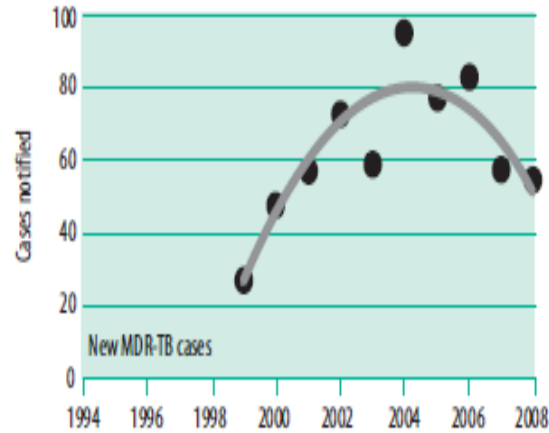
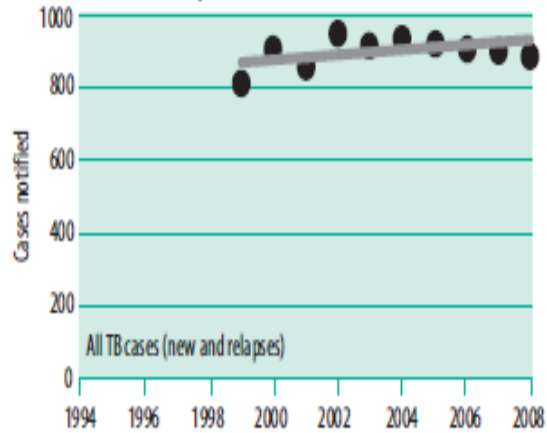
## Treatment Outcomes, Civilian Sector Tomsk Oblast, Russian Federation 2001-2007





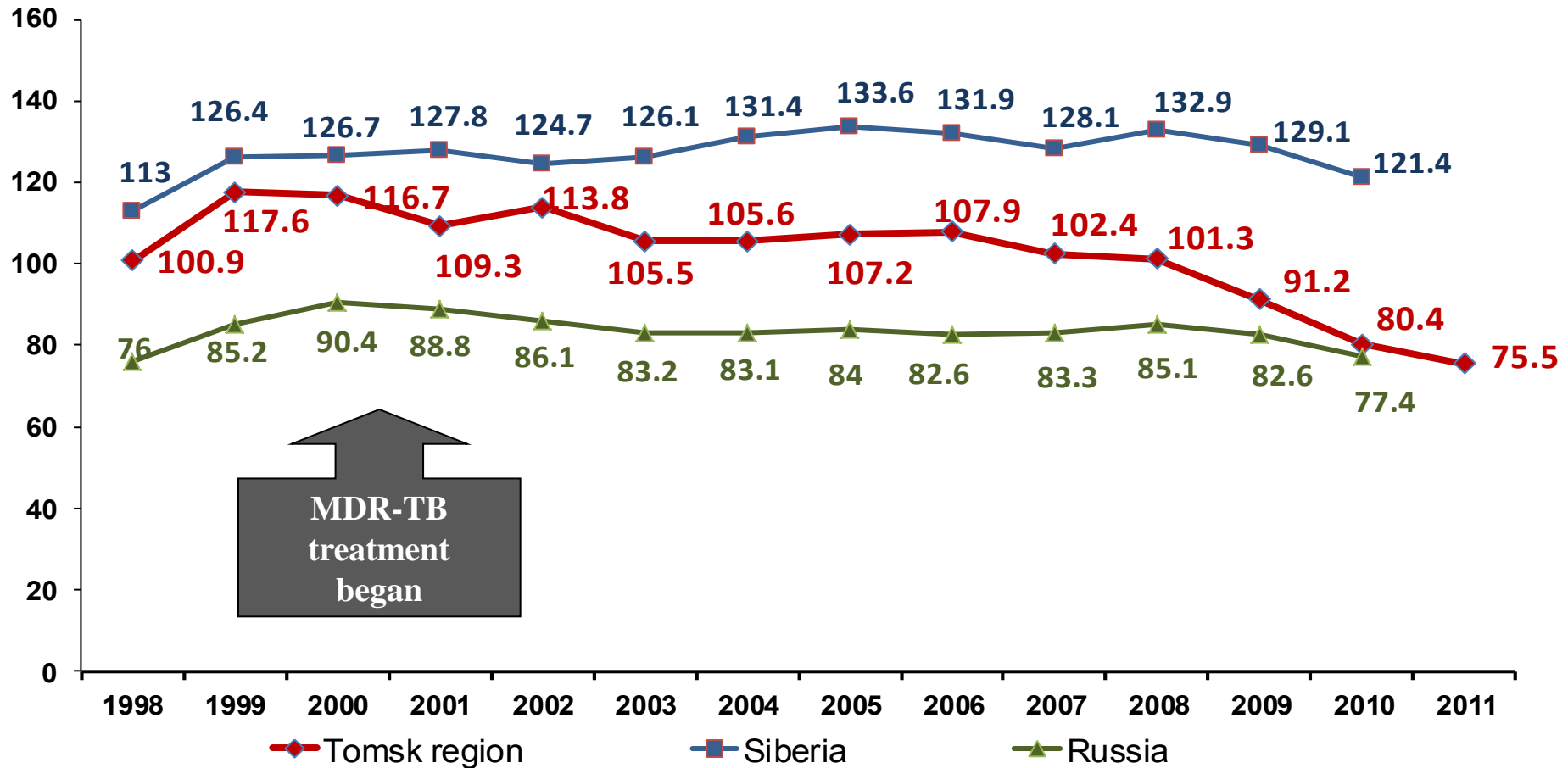
## Interrupting transmission: treatment of all patients

Russian Federation, Tomsk Oblast

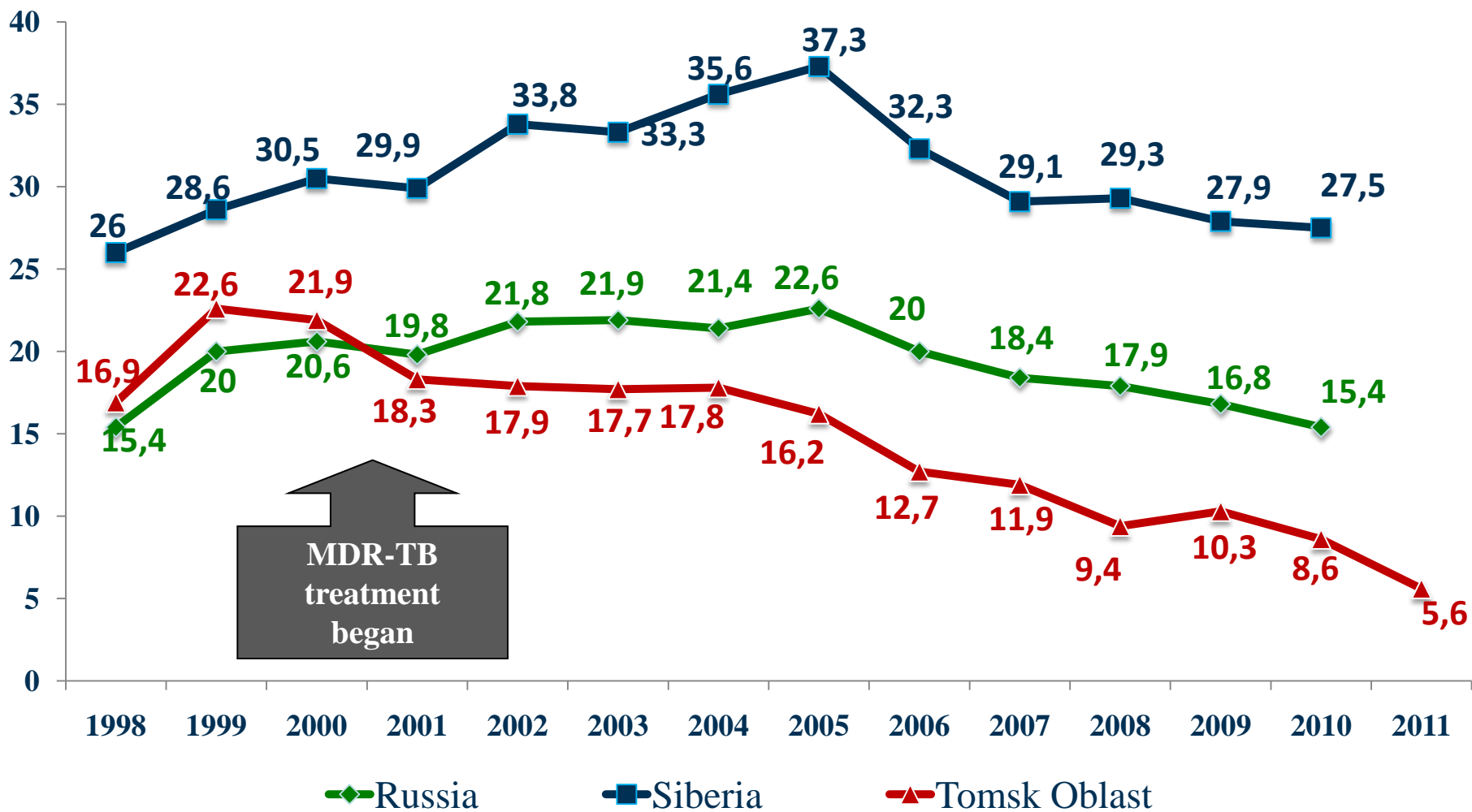


Ambulatory care and community based approaches provide a way to treat large numbers of patients rapidly, and safely

# Dynamics of Tuberculosis notification rate in Tomsk Oblast, Siberia, and Russian Federation (per 100,000 population)



# Dynamics of Tuberculosis mortality in Tomsk Oblast, Siberia, and Russian Federation (per 100,000 population)



WE ASPIRE TO A WORLD WITH  
**ZERO TB DEATHS**

**Thank you**

**JOIN US**

