Controversies and challenges tackling illegal drug related communicable diseases (CD)

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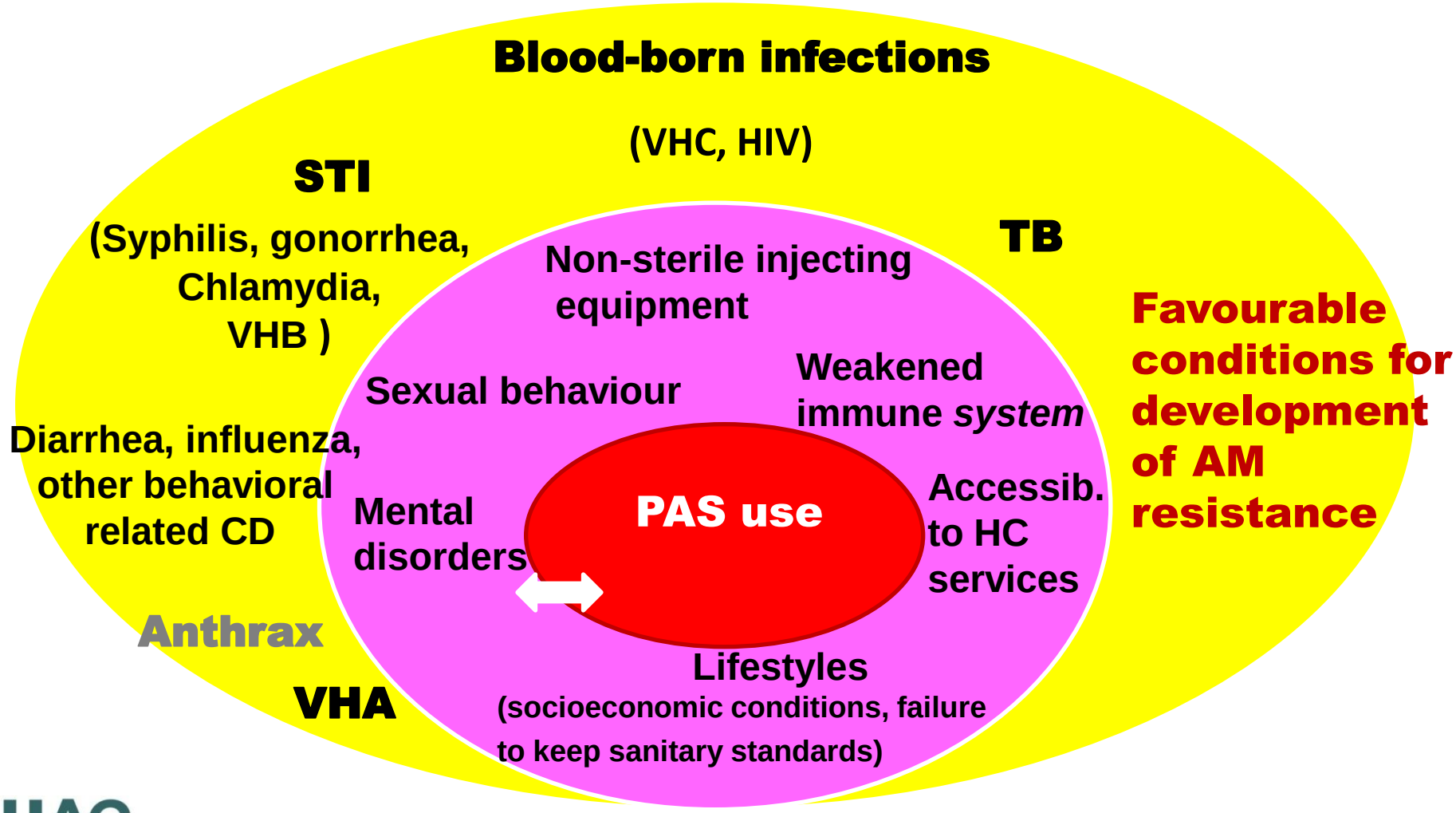
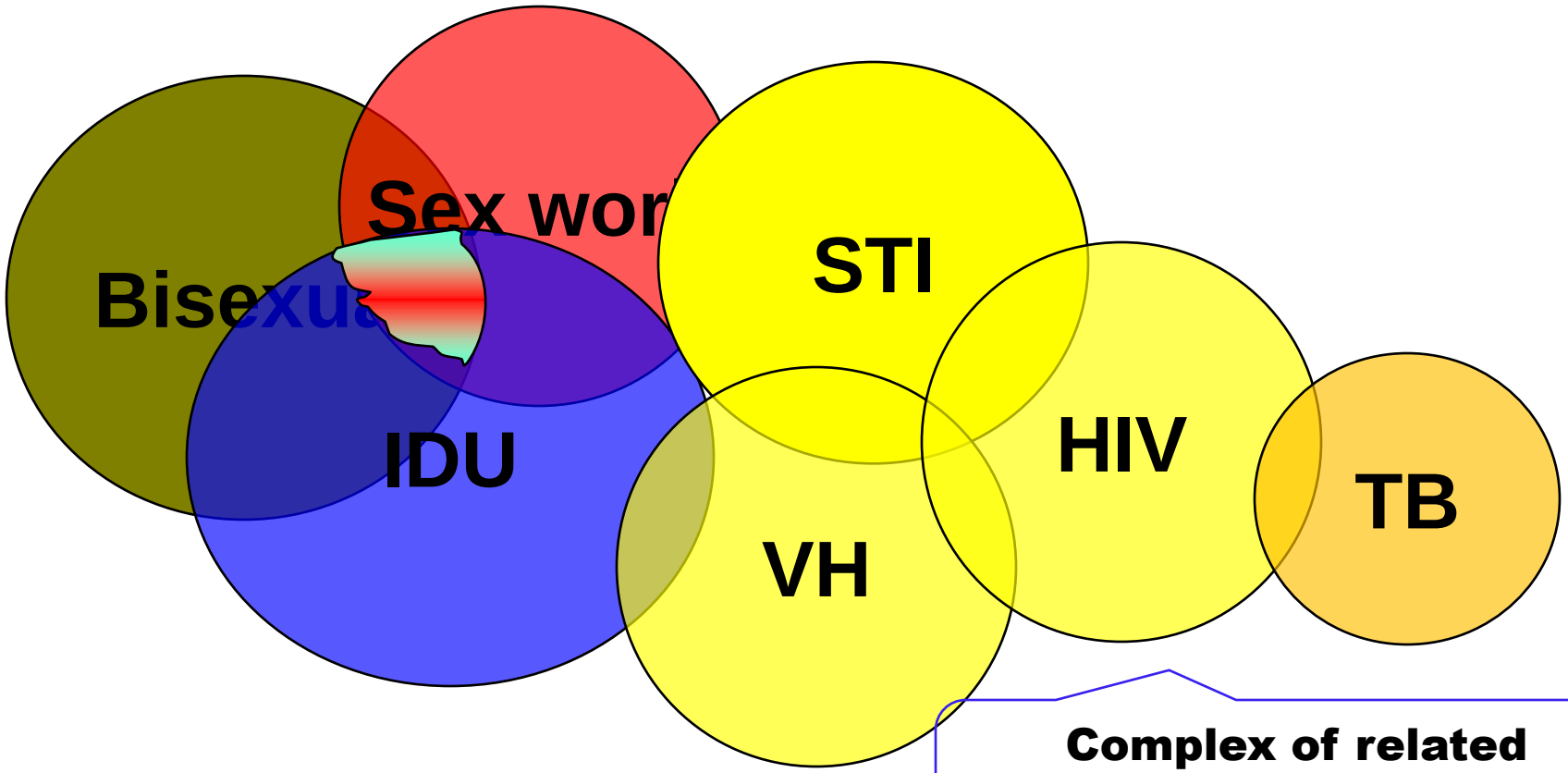
What do we know about the incidence and tendensys of psychoactive substance (PAS) use (or drug use) related communicable diseases (DRCD)?

Psychoactive Substance Use Related CD Transmission Scheme



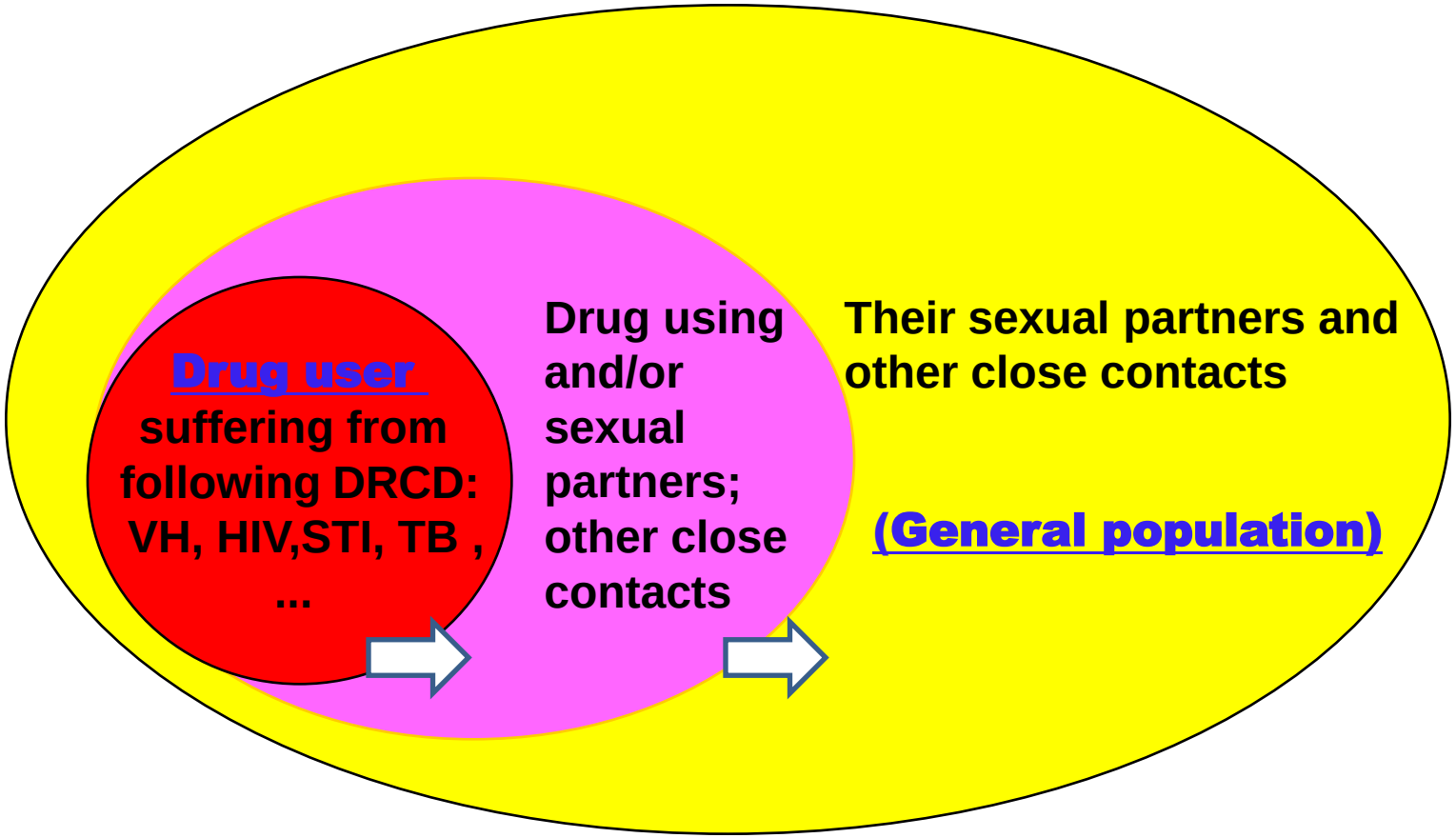
Interface of Overlapping Risk Groups and Epidemics

Breaking existing rules and social norms



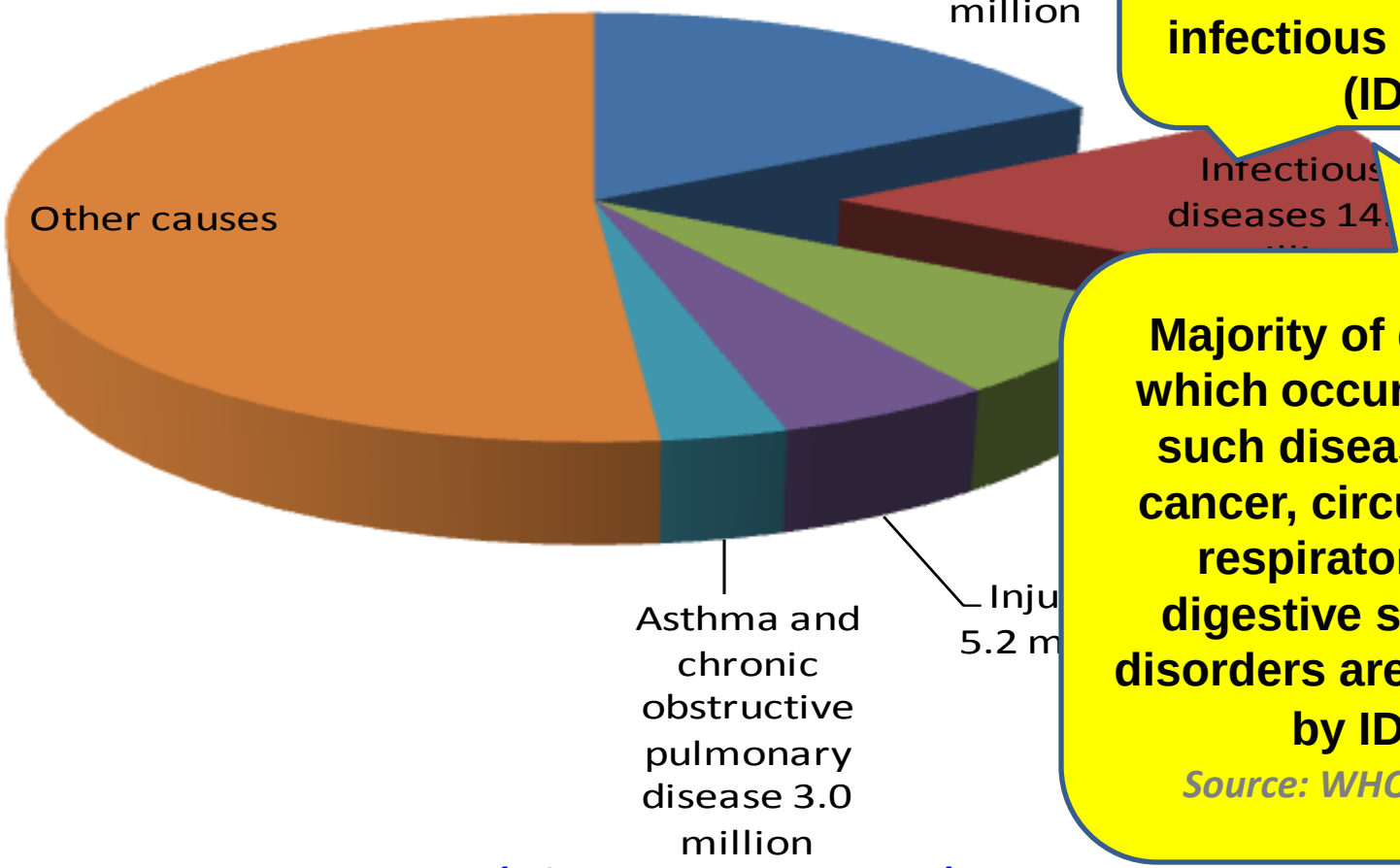
Complex of related diseases and social problems

Spread of drug-related communicable diseases (DRCD) in society



Main causes of death in the world

58 mln. Deaths each year



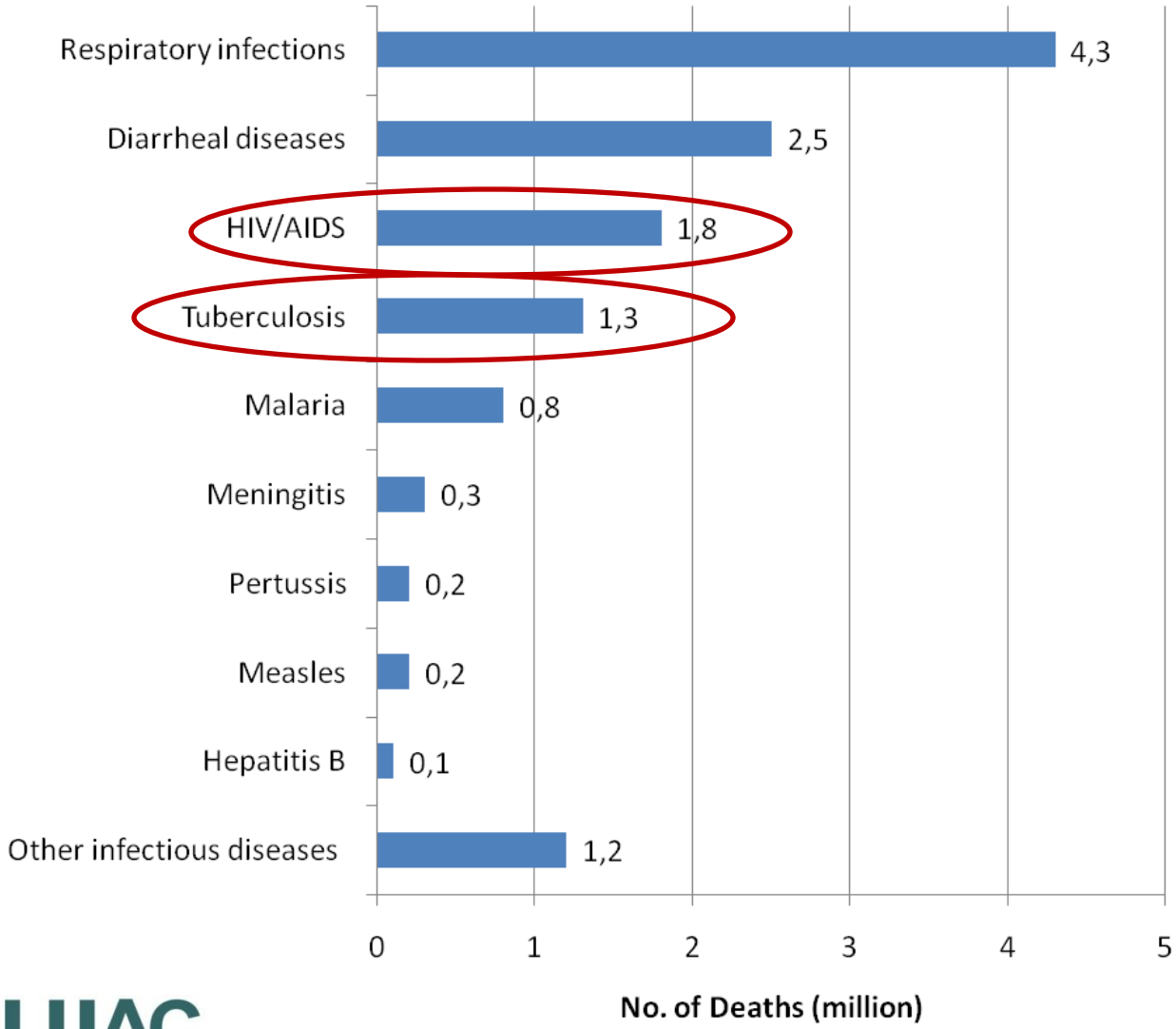
Of 58 mln. deaths each year about 15 million (> 25%) deaths occur due to infectious diseases (ID)

Majority of deaths which occur due to such diseases as cancer, circulatory, respiratory or digestive system disorders are caused by ID

Source: WHO, 1999

Source: www.ho.int/infectious-disease-report/index-rpt99.html,

Leading causes of global deaths from infectious diseases



Most HIV-affected countries in Africa

Rates of HIV positive individuals in the countries):

1 of 3

1 of 4

1 of 10

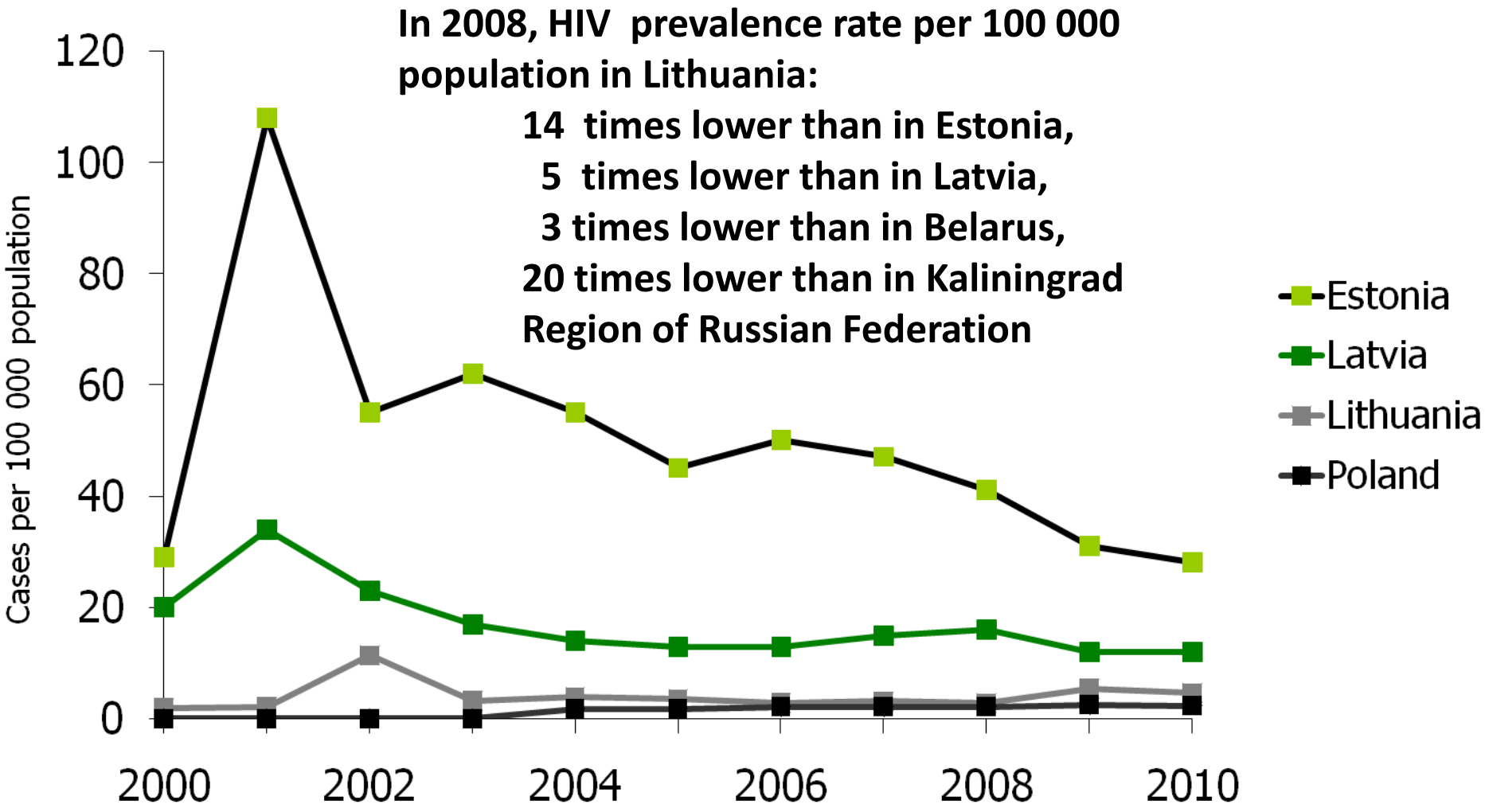
HIV prevalence and trends 1996-2001

Which country saw the highest reported HIV morbidity in the world in 2001?

Prevalence among adults

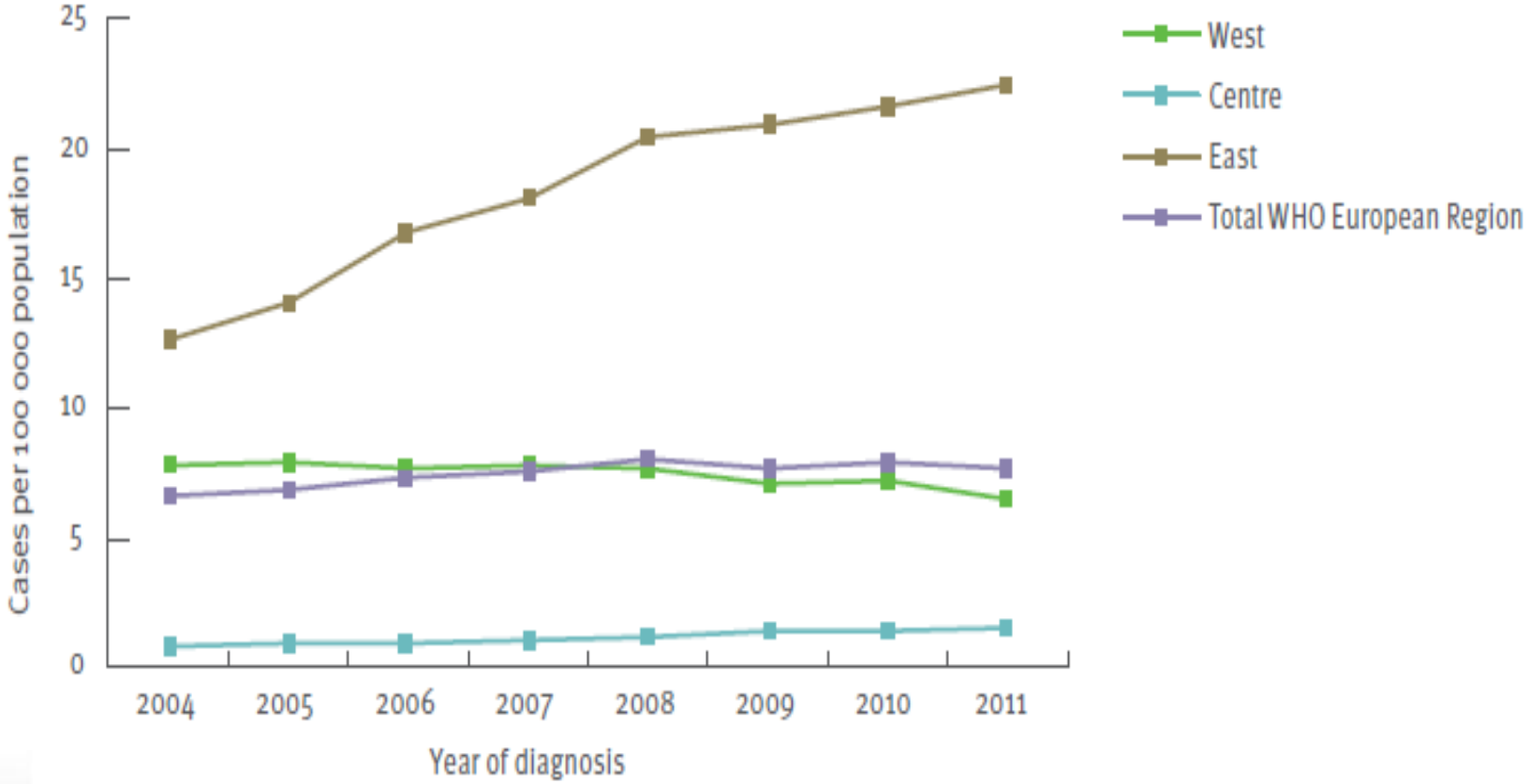
No data avalabble

Newly recorded HIV cases in the Baltic States and Poland in 2000–2010



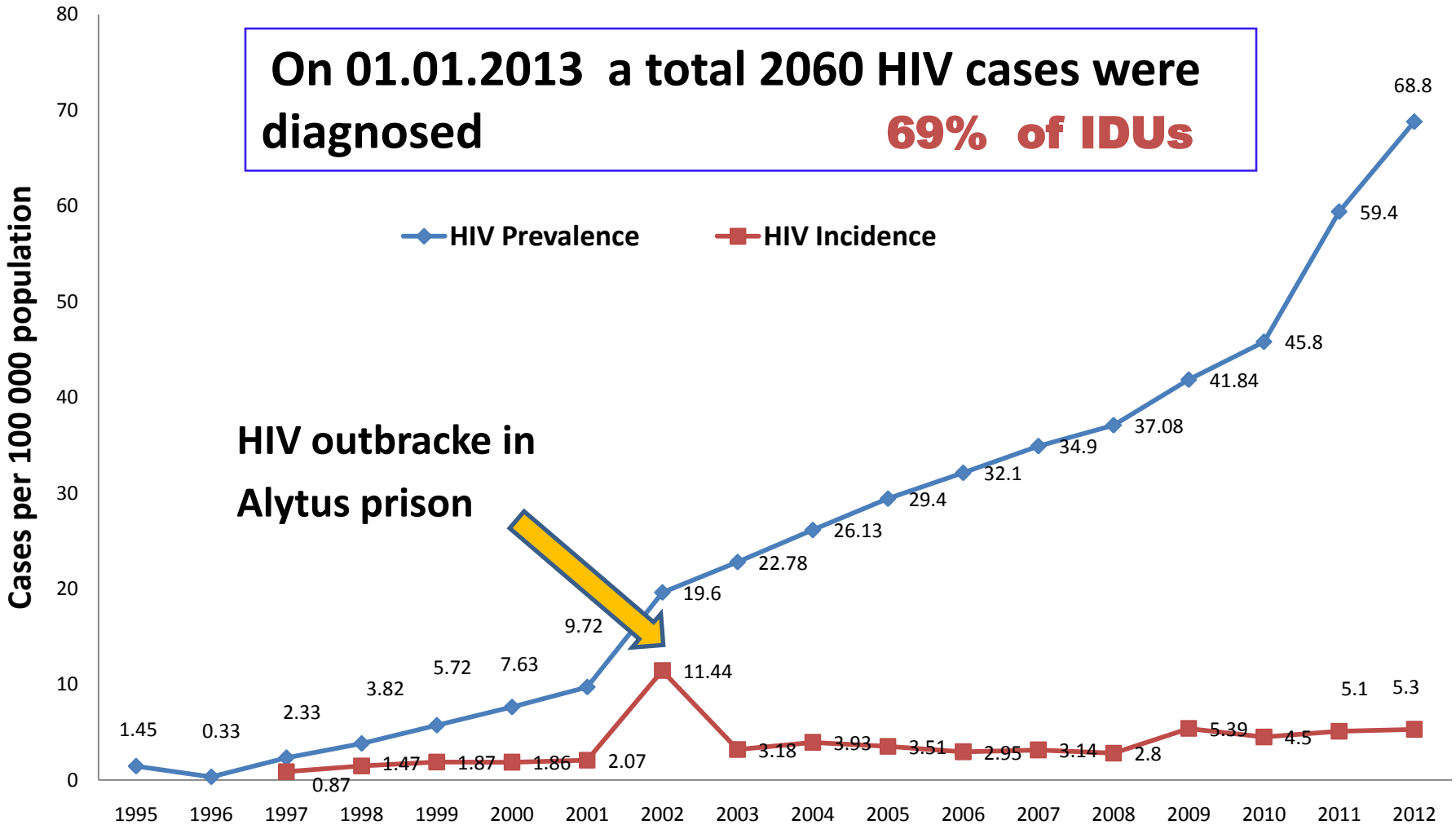
Source: ECDC

Incidence of HIV infection by the geographical distribution in the WHO European Region, 2004-2011



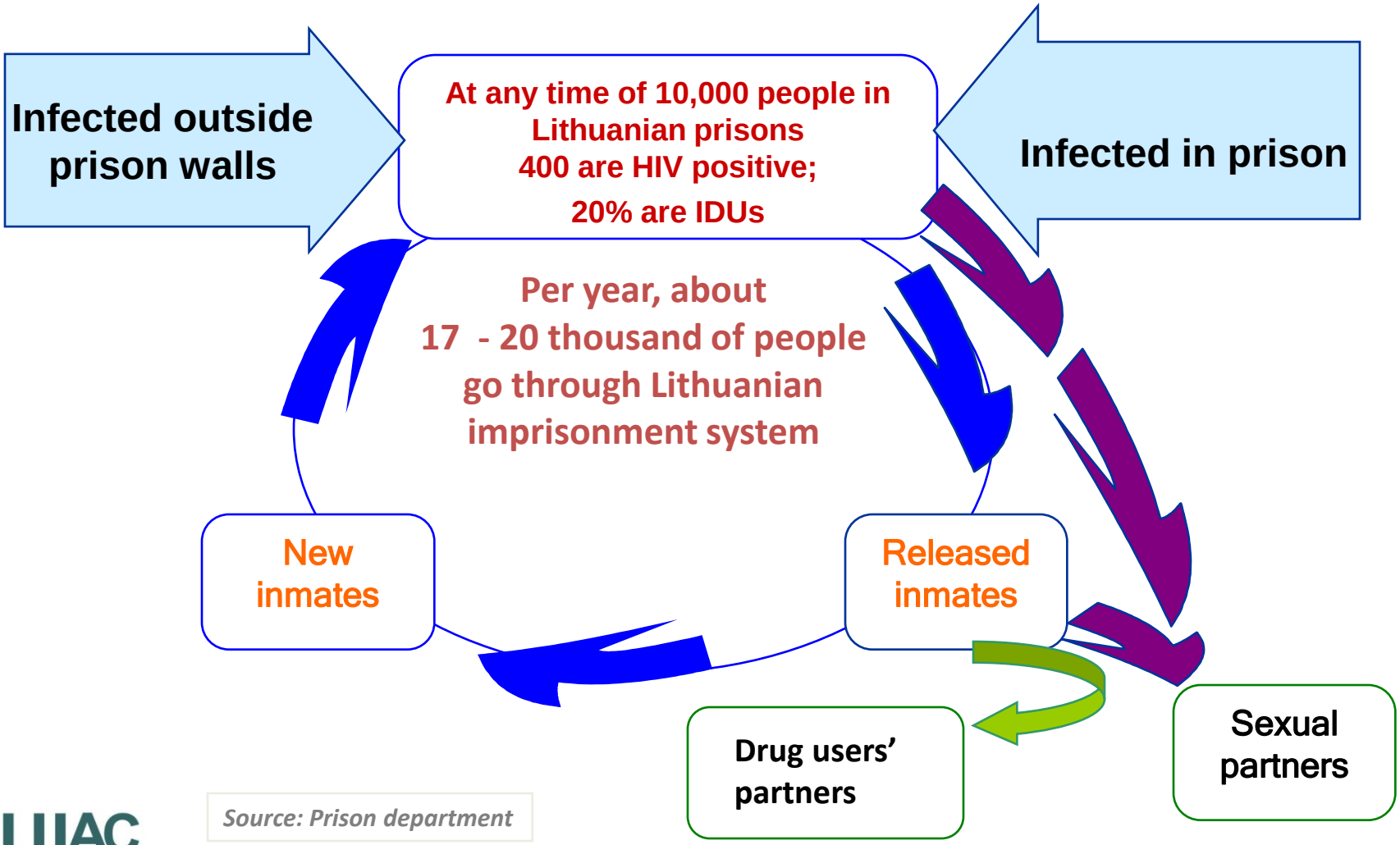
Source: ECDC

HIV prevalence and incidence rate in Lithuania (per 100 000 population)



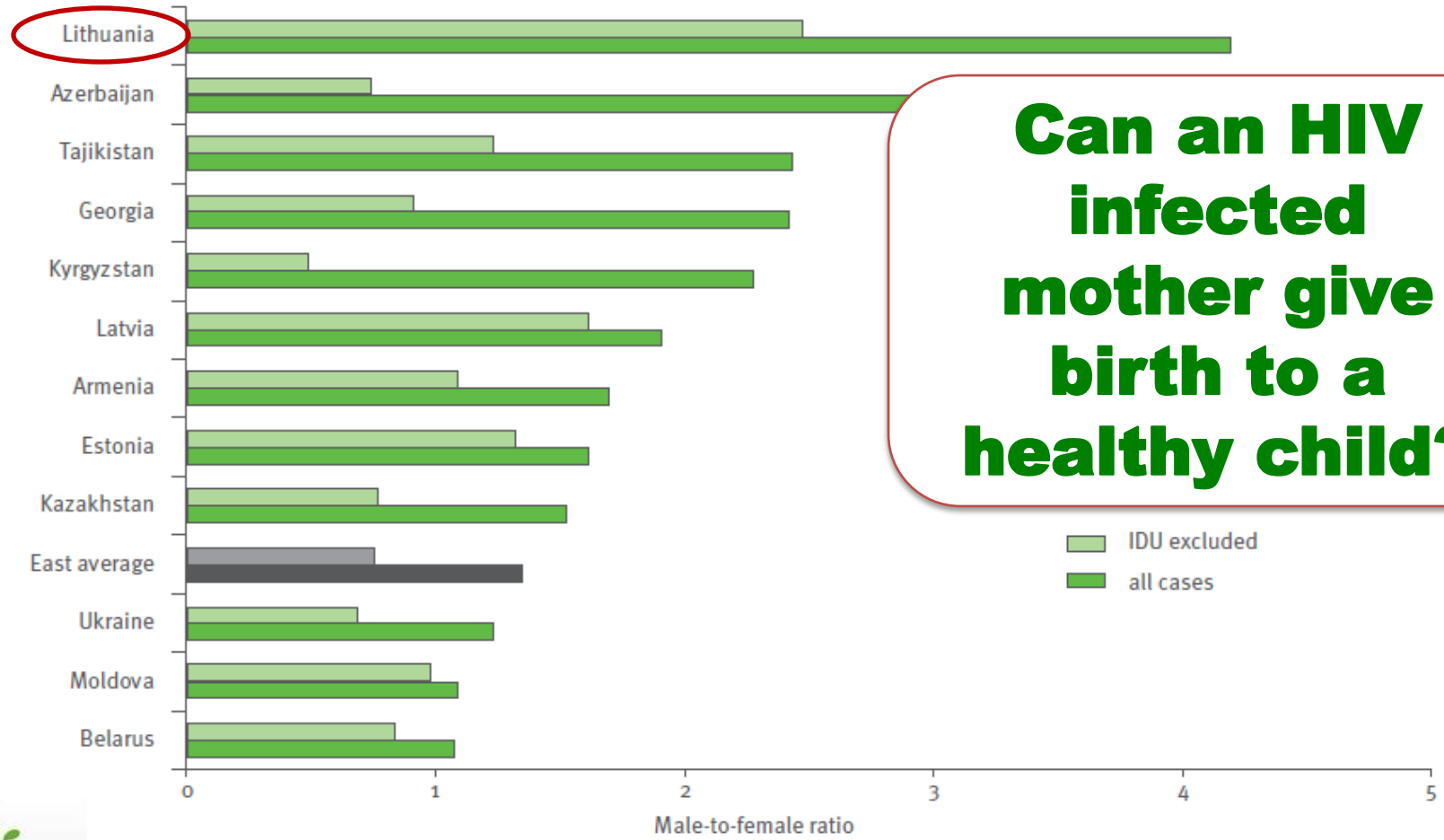
Source: Centre for Communicable Diseases and AIDS, 2013, www.ulac.lt

HIV / AIDS in Prisons: General Impact



Source: Prison department

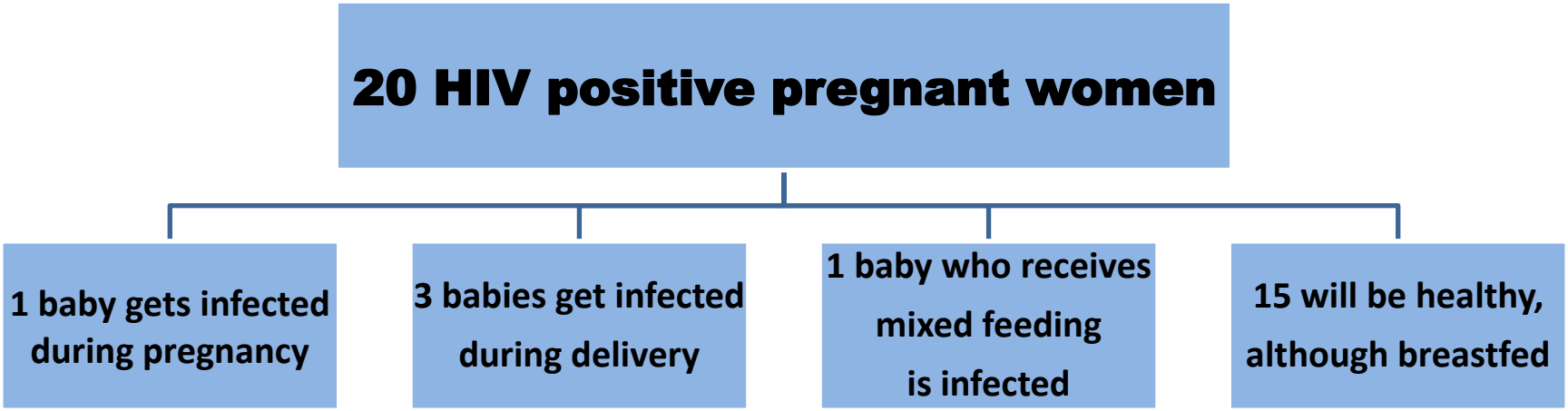
Men/ women ratio of new HIV infection cases and HIV cases excluding IDU's in the WHO European region (East) 2011 (N=24 773)



Can an HIV infected mother give birth to a healthy child?

Source: ECDC

Perinatal (Mother-to-Child) Transmission of HIV



Number of HIV Mother-to-Child Transmission Cases 01.01.2012

Lithuania	**2**
Latvia	**41**
Estonia (01.01.2011)	**40**
Poland	**146**
Belarus	**198**
Kaliningrad region	**70**

83 cases HIV positive woman delivery in Lithuania

(01.01.2013)

Source: Centre for Communicable Diseases and AIDS, 2013, www.ulac.lt

Changing natural history of HIV disease - integrated approach to HIV treatment

- **HIV can be suppressed with combined antiretroviral therapy (ART), using three or more anti-retroviral drugs (ARVs).**

Source: WHO Fact sheet N°360, November 2012

Fusion inhibitors

T-20

Entry inhibitors

NATI, NNATI

Reverse transcriptase inhibitors

Integrase inhibitors

Protease inhibitors

Proper use of ART

Reduces viral load in the body

↓

Reduces the likelihood of viral transmission

↓

TREATMENT for PREVENTION

- If an HIV-positive partner in a couple undergoes ART treatment, the likelihood of HIV uninfected partner becoming infected through sexual intercourse is greatly reduced.

rences Between ID an AIDS

ever increasing problem?

Ways to cure HIV:

- Virus eradication – "**a sterilizing cure**"
- Continuous suppression of viral replication without eradicating them– **"functional cure".**

nce)

Prevalence

X
Treatment

People living with AIDS

Asymptomatic Infection

Deaths

Treatment

People dying of AIDS

Started ART in Lithuania

Newly diagnosed cases of HIV

2010 – 43

24 (55.8%) - IDU

– 153

For 1 new ART patient there are–
2 - 3 newly diagnosed infections

2011 m. – 66

32 (48.5%) - IDU

Total number of ART:
226

– 166

2012 m. – 94

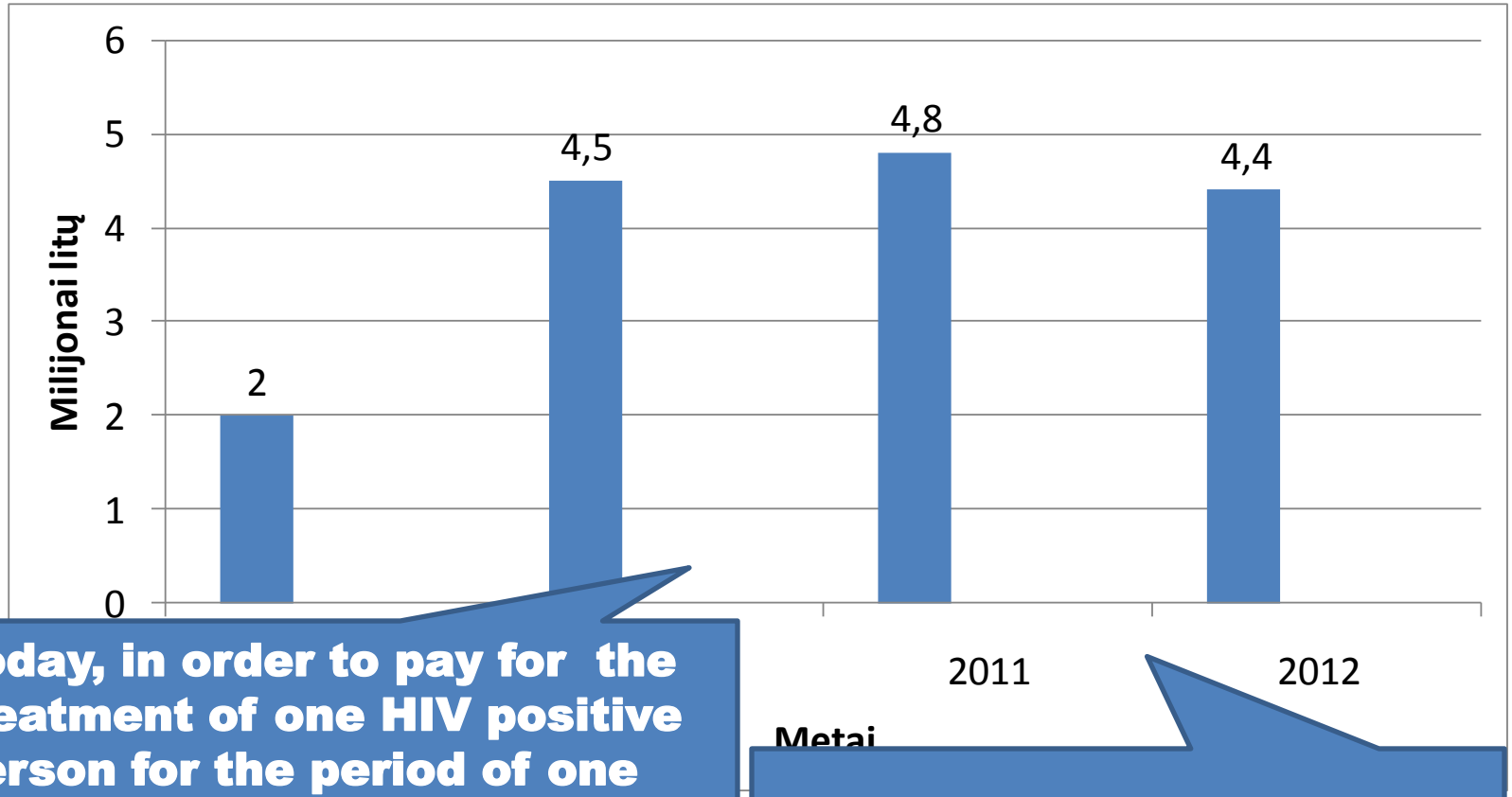
52 (55.3%) - IDU

Total number of ART:
291

– 160

Source: Centre for Communicable Diseases and AIDS, 2013, www.ulac.lt

NHIF expenditures on ARV in Lithuania *(mln. LTL)*



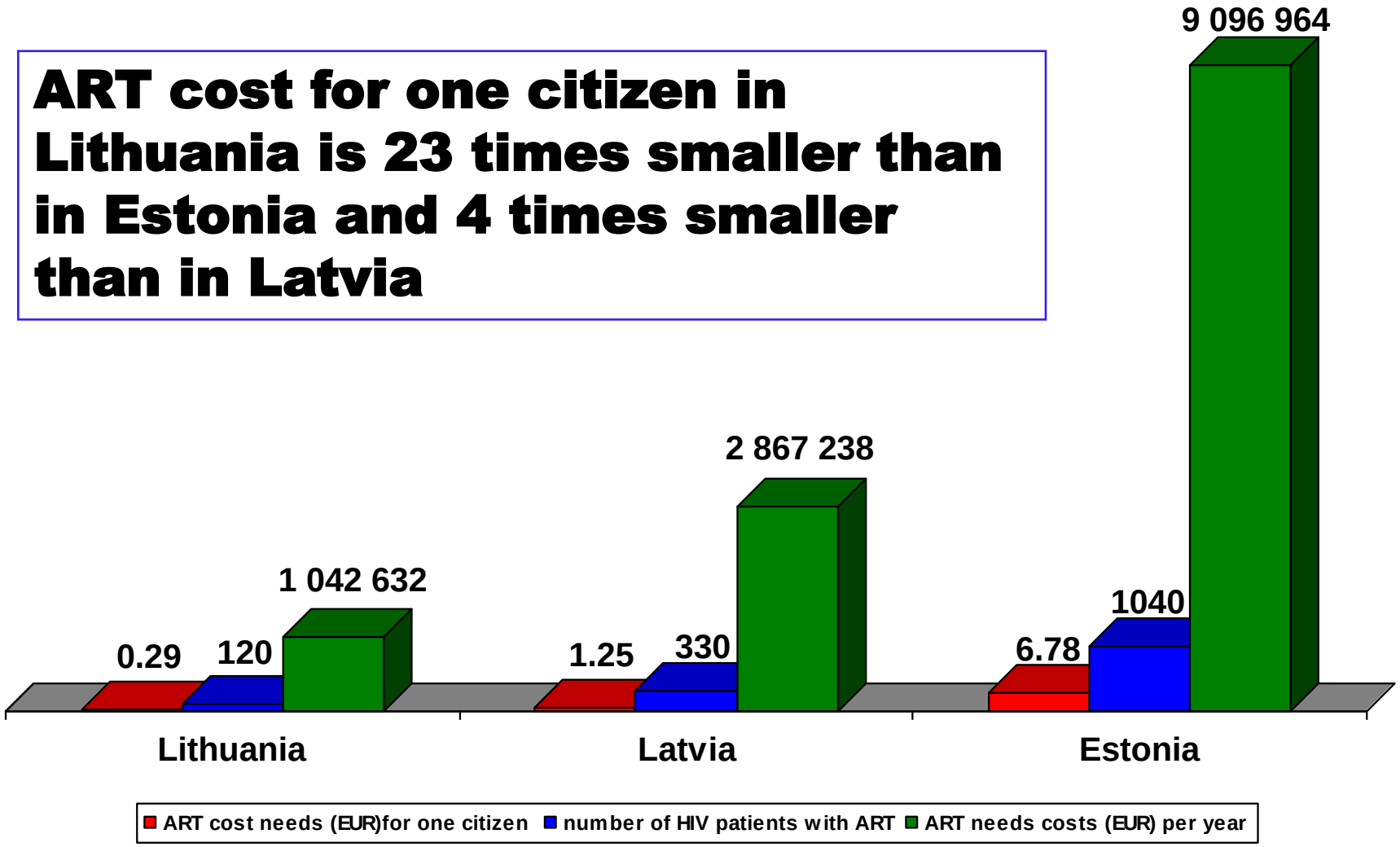
Today, in order to pay for the treatment of one HIV positive person for the period of one year in Lithuania two persons have to work all year round without falling ill

The treatment of 1 HIV patient in 20 years will cost the State Budget about 1 million litas

Source: NHIF, 2013

ART in Baltic Countries (end of 2008)

ART cost for one citizen in Lithuania is 23 times smaller than in Estonia and 4 times smaller than in Latvia



Source: Centre for Communicable Diseases and AIDS, 2013, www.ulac.lt

Causes of HIV spread:

- HIV is spreading due to a particular human behavior that can be changed
- A person with HIV can transmit the infection to other person, without even knowing about his/her disease
- Positive Prevention :
  - **HIV-infected IDUs**
  - **Sexually active HIV positive persons**

Source: AIDS. 2006 Jun 26;20(10):1447-50.

HIV transmission risk

- HIV is not a highly contagious pathogen
  - HIV transmission occurs when 0,001 ml. of HIV-infected human blood gets directly into the bloodstream through the mucous membranes or the injured skin

Source: HIV Medicine 2006

- Risk of transmission of **VHC 10 times higher**
- Risk of transmission of **VHB 100 times higher**

Source: HIV Medicine 2006

Expanding Network for Coordinated and Comprehensive Actions on HIV/AIDS Prevention among IDUs and Bridging Population

Prevalence of Infection Markers among IDUs in the Baltic States, 2008

Serological Marker (%)	Tallinn	Riga	Vilnius
HIV Prevalence	55,3	22,6	8
HCV Prevalence	93,4	74,2	94,8
HBV Prevalence antiHBVcor	76,8	55,7	82
Coinfection HIV+HBV+HCV	47,4	15,6	6,8

8% had tuberculosis (Vilnius patient data)

Source: Irma Caplinskienė, RDS study 2008, supported by EU

Expanding Network for Coordinated and Comprehensive Actions on HIV/AIDS Prevention among IDUs and Bridging Population

Vilnius injecting drug use characteristics

Duration of injection career (years)	N	%	HCV+ (n/%)	Crude OR 95% CI	Fisher exact test p-value 0,0901	Adjusted OR 95% CI**
<=2	14	4	12 **85.7**	1		1
3-5	47	12	43 **91,5**	1.8 (0.1-14.2)		2.0 (0.3-12.3)
>5	339	85	324 **95,6**	3.6 (0.4-18.5)		3.4 (0.7-16.7)

Source: Irma Caplinskienė, RDS study 2008, supported by EU

Seropositive donations in Blood Centers in Baltic States 2011

Country	HIV ½	HBV	HCV
Lithuania	1 : 5 252	1 : 609	1 : 191
Latvia	1 : 3 619	1 : 732	1 : 244
Estonia	1 : 19 791	1 : 5 398	1 : 1 413

Resource: Report of Blood donation institutions 2011

Is This the Whole Picture?

Acute Hepatitis C

Asymptomatic infection

How many people are infected with hepatitis B or C virus ?

Chronic hepatitis C infection

The prevalence of viral hepatitis

VBH

Worldwide:

- 350 mln. of infected (about 6%)
- infection becomes chronic
  - in 30% of children
  - in 5% of adults

In Lithuania:

- prevalence rate is about 1-3%
- up to 100 of acute cases diagnosed
- estimated number of infected 30 000 - 90 000

VCH

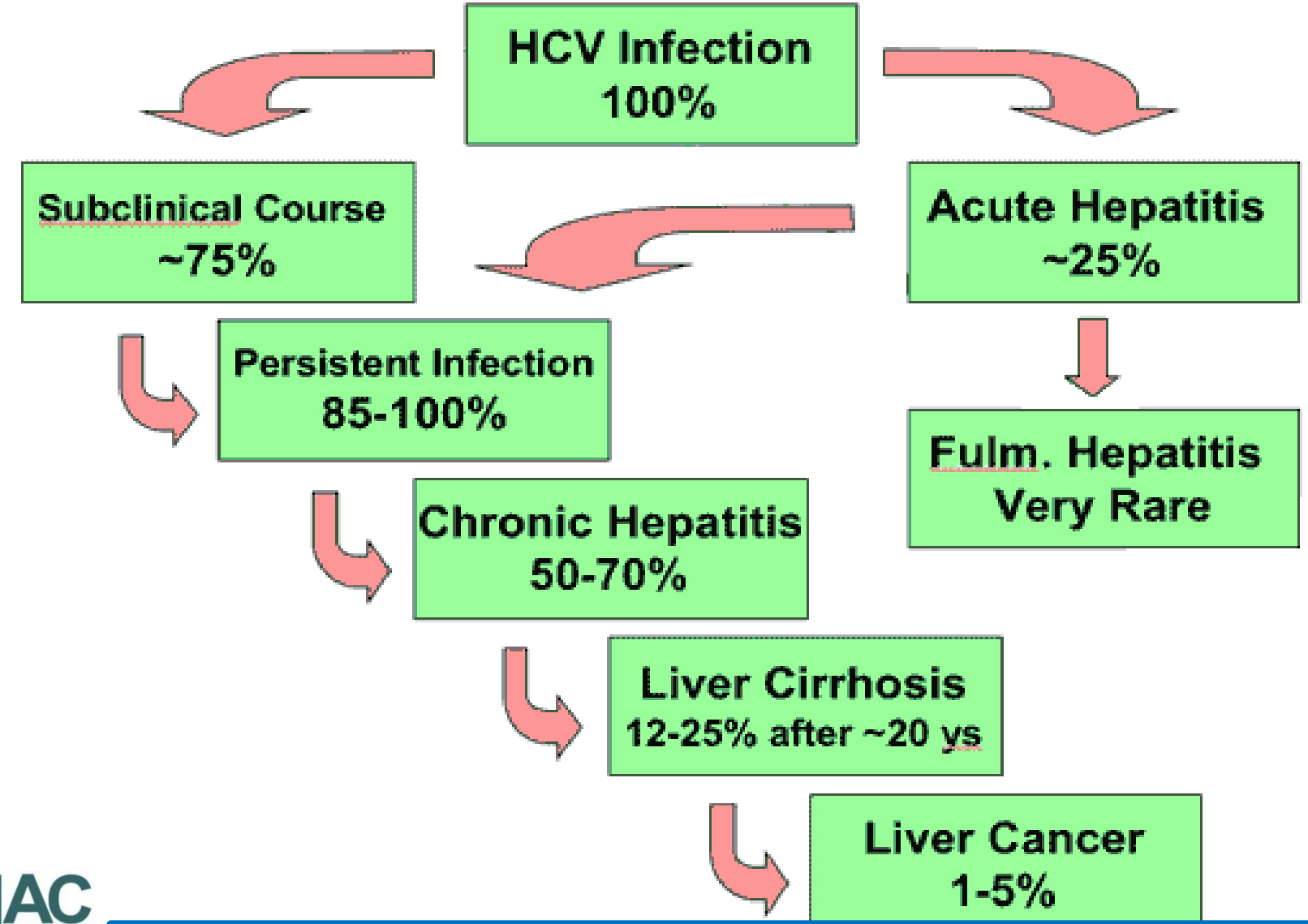
Worldwid:

- 200 mln. of infected (3%)
- about 3-4 mln. get infected each year
- 60-70% develop chronic infection

In Lithuania :

- prevalence rate is about 3%
  - (according to anti-HCV)
- up to 50 of acute cases diagnosed
- estimated number of infected 100 000

Outcome of HCV Infection



HBV routes of transmission

Perinatal transmission

Nosocomial infection

Household **contacts**

Sexual transmission

Intravenous injection

Nonparenteral drug abuse

Interaction of HIV and STI :

Most common cause of transmission is unprotected sex

Common in persons with risky behaviour

Sometimes are not even aware that they themselves or their sexual partners engage in risky behavior

The infections can be avoided - preventive measures are the same

STI incidence trends - a convenient indicator of sexual behavior

Sexually transmitted infection	The incubation period
Gonorrhea	2 - 7 days.
Genital herpes infection	2 - 7 days.
Chlamydia	7 - 14 days.
Syphilis	10 - 90 days.
Hepatitis B	40 - 160 days.
HIV infection	3 - 24 weeks.

Source: WHO

Interaction of HIV and STI :

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STI incidence trends - a convenient indicator of sexual behavior

Patients with STIs are more likely to become infected with HIV

- In case of genital inflammation ca form microscopic wounds, ulcers, through which the body gets easily infected with HIV
- In blood, as well as in the genitalia a number of white blood cells needed for virus to multiply increases

HIV infection in turn has an impact on other STIs

The treatment of persons with HIV and other STI's is much more difficult

If a patient visits a doctor he/she can be treated from sexually transmitted infections and given a help in behaviour change

- To avoid contracting HIV in the future, and for HIV-infected to avoid transmitting the infection to others
- Early diagnosis and treatment of STIs slows down the spread of HIV

Secondary prevention of STIs is a primary prevention of HIV

ULAC

Source: WHO

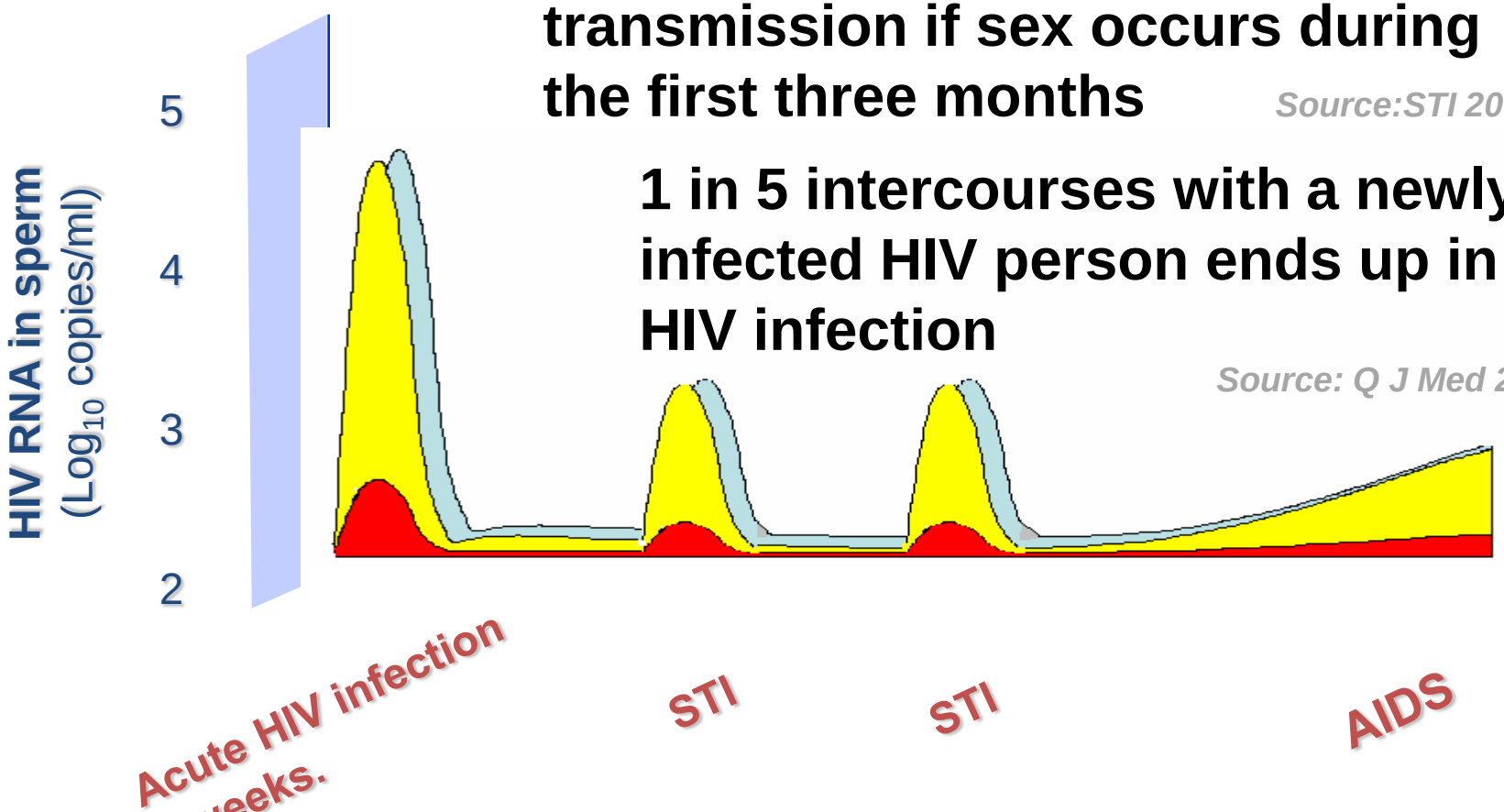
Acute HIV infection and STI co-infection increases the likelihood of HIV transmission

200 times greater likelihood of HIV transmission if sex occurs during the first three months

Source:STI 2001

1 in 5 intercourses with a newly infected HIV person ends up in HIV infection

Source: Q J Med 2001



Source: Cohen and Pilcher, JID, 2005

HIV spread through sexual contact

- The risk when having an unprotected anal intercourse - from 0.8 to 3%
- The risk of transmission through man to woman anal intercourse 20 times higher than through vaginal intercourse

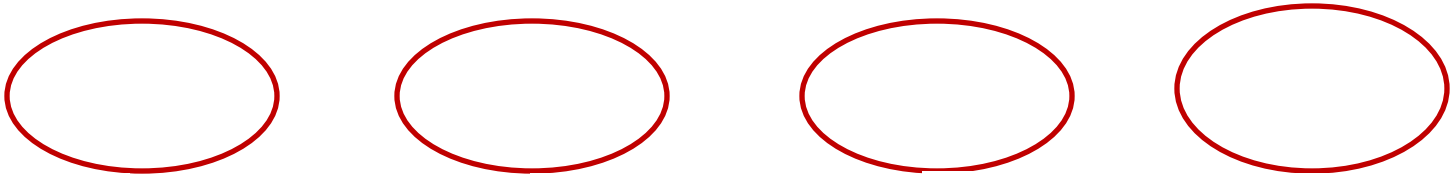
Am J Epidemiol 1998

- It is estimated that up to 8% gays contracted HIV during oral sex in England and the United States

Reuters Healths 2003-10-09

Condom use among infecteed with STI in Lithuania, 2011 (%)

Percent (%)



Diagnosis: HIV Syphilis Gonorrhea Chlamydia

Condom use: Always Often From time to time Rarely Do not use Did not indicate

Source: Centre for Communicable Diseases and AIDS, 2013, www.ulac.lt

Trends in STI incidence in Lithuania, 1996-2012

(cases per 100, 000 population)

Cases per 100,000 population

Source: Centre for Communicable Diseases and AIDS, 2013, www.ulac.lt

HIV and STI incidence in Lithuania, 2007-2012 (cases per 100,000 population)

Cases per 100 000 population

In which European country the highest incidence of syphilis was reported in 2010?

Source: Centre for Communicable Diseases and AIDS, 2013, www.ulac.lt

The incidence of syphilis in Europe in 2010

- **In 2010**, incidence rate in Lithuania (**10.3** cases per 100 thousand pop.) **was more than twice as high as the EU average (4.4** cases per 100 thousand pop.).
- **In 2011,** incidence rate in Lithuania - **8.5** cases per 100 thousand. pop. (EU average - **4.9** cases per 100 thousand pop.).
- **In 2012**, incidence rate in Lithuania - **7.6** cases per 100 thousand. pop.

Source: ECDC

Incidence of gonorrhea in Europe in 2010

Source: ECDC

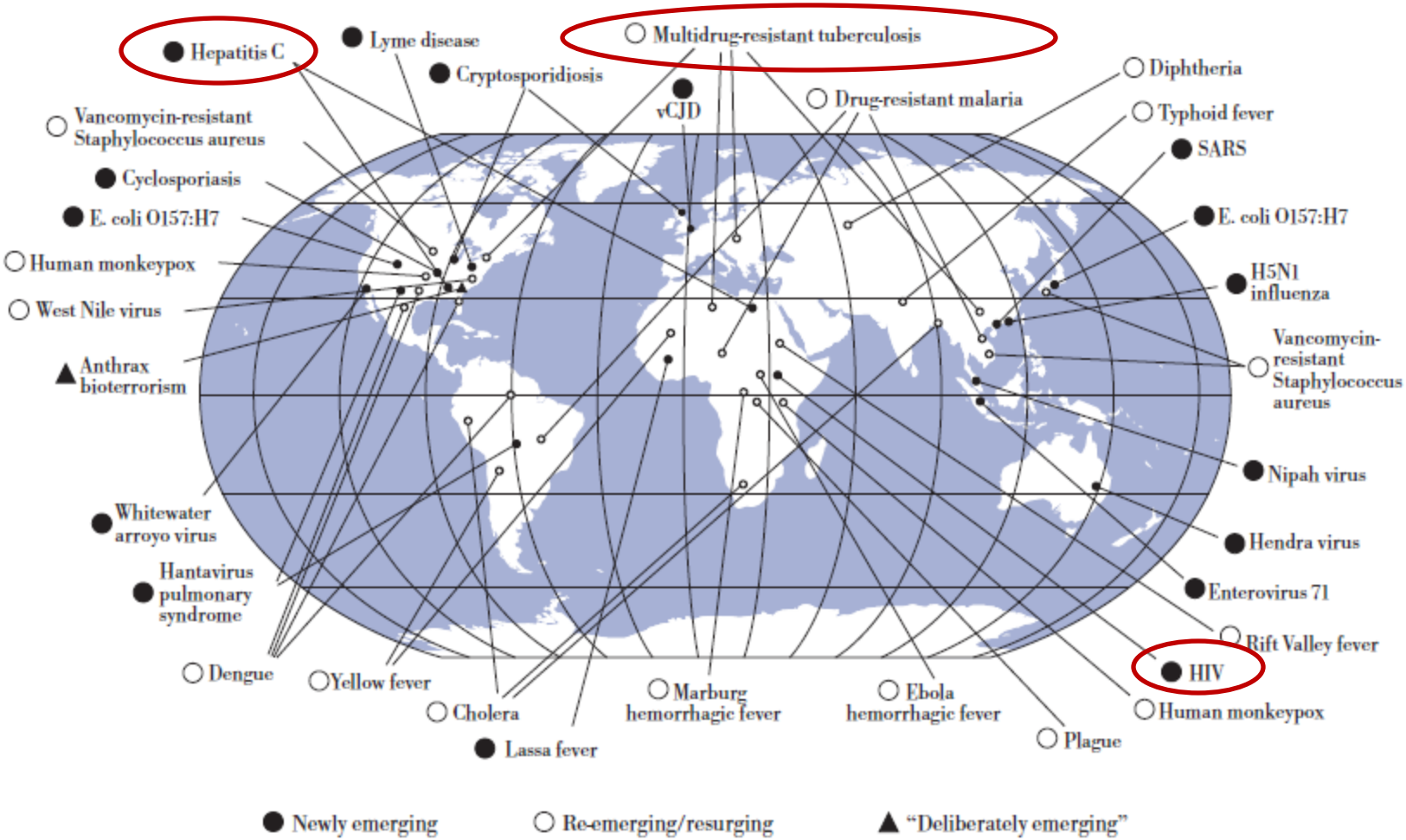
The number of reported cases of gonorrhea over 2009-2012 compared to laboratory study data in Lithuania

Year	Reported cases	Nr. of tests	Laboratory-confirmed cases *
2009	391	198 331	519
2010	315	179 300	543
2011	248	187 715	327
2012	219	197 715	326

*** microscopically diagnosed cases of gonorrhea in men are included**

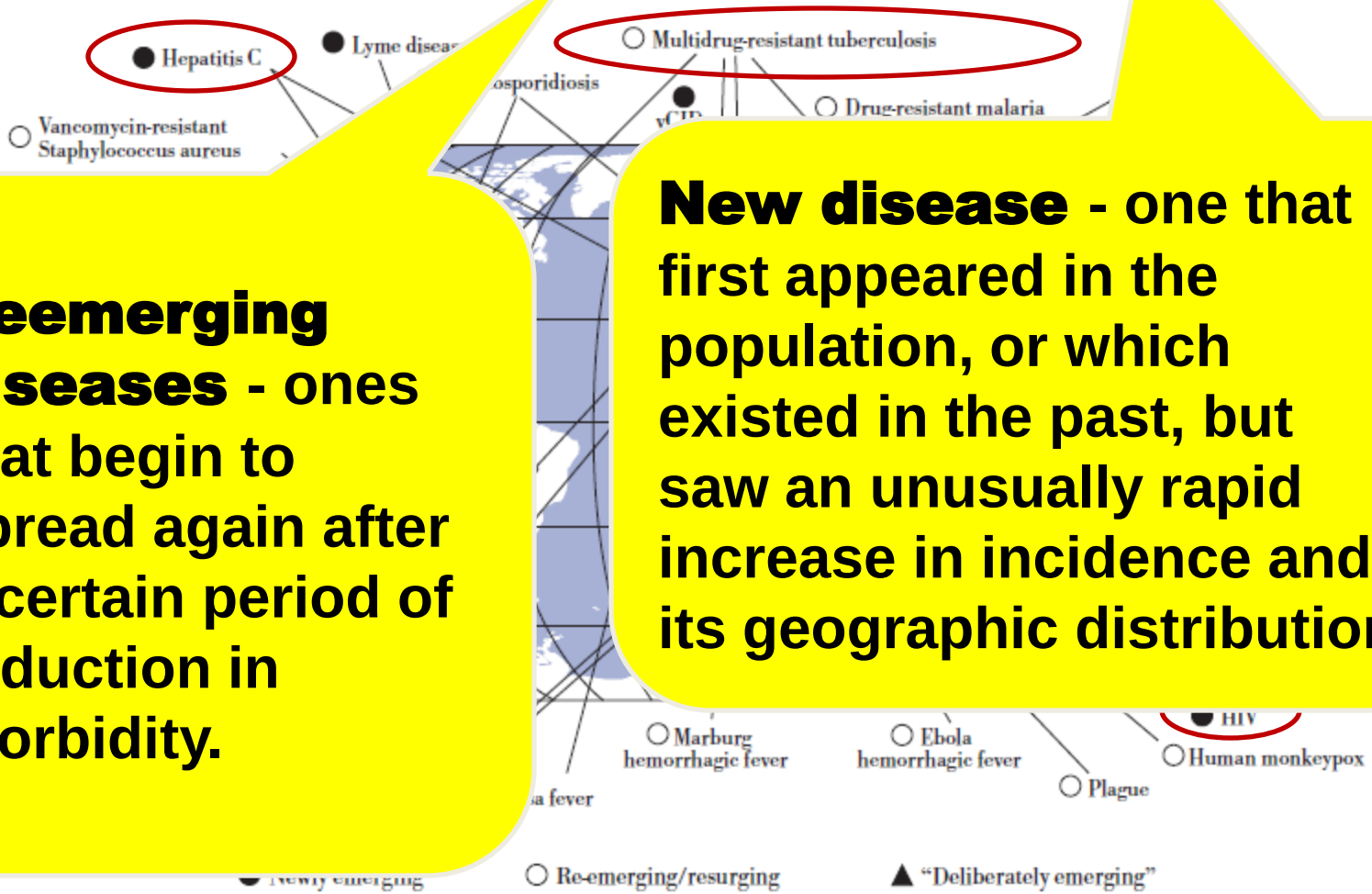
Source: Centre for Communicable Diseases and AIDS, 2013, www.ulac.lt

The examples of globally reemerging and new infectious diseases



Source: Goldsmith, C.. Invisible Invaders: Dangerous Infectious Diseases. Minneapolis, MN: Twenty-First Century Books, 2006

The examples of globally reemerging and new infectious diseases

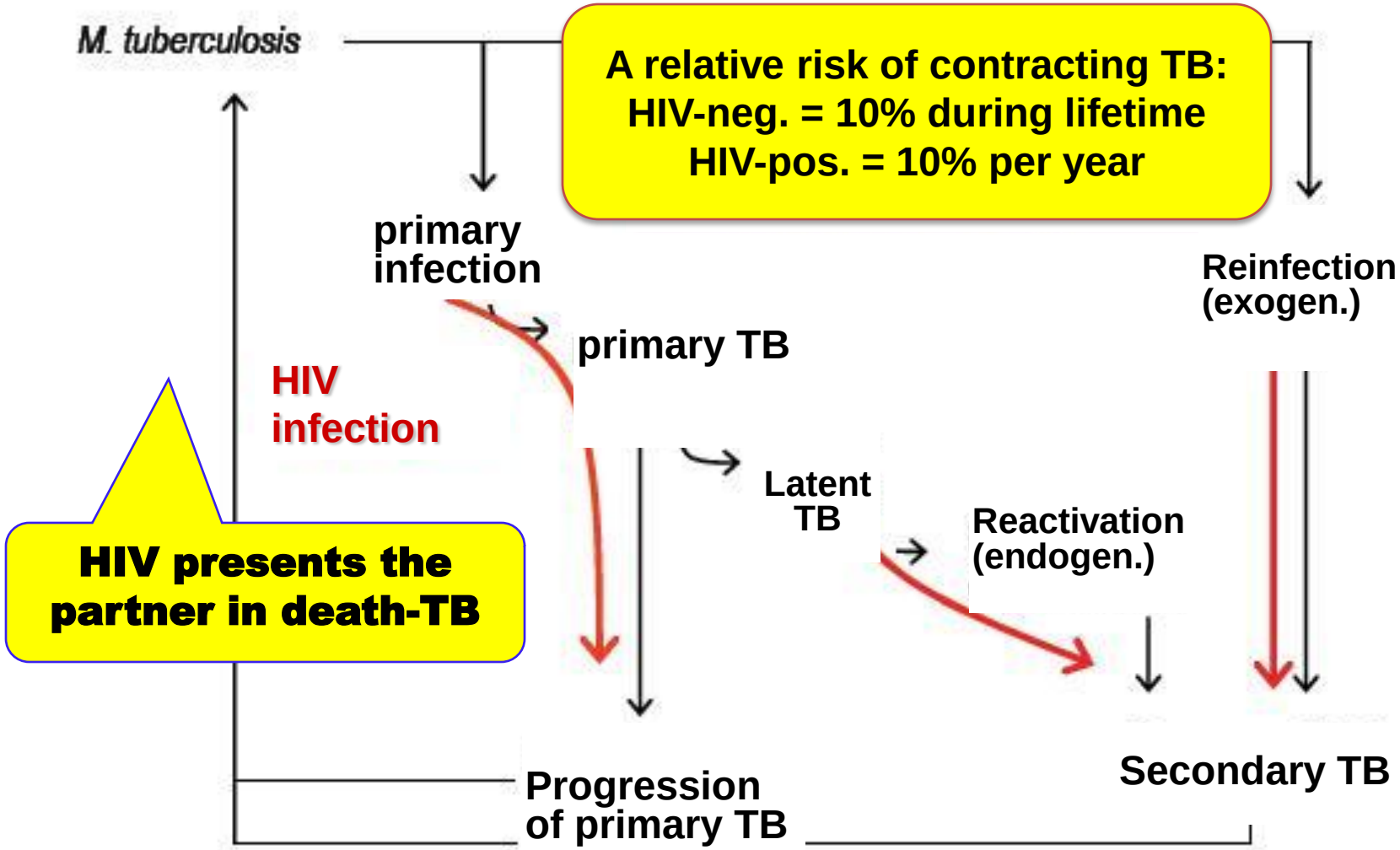


Reemerging diseases - ones that begin to spread again after a certain period of reduction in morbidity.

New disease - one that first appeared in the population, or which existed in the past, but saw an unusually rapid increase in incidence and its geographic distribution.

Source: Goldsmith, C.. Invisible Invaders: Dangerous Infectious Diseases. Minneapolis, MN: Twenty-First Century Books, 2006

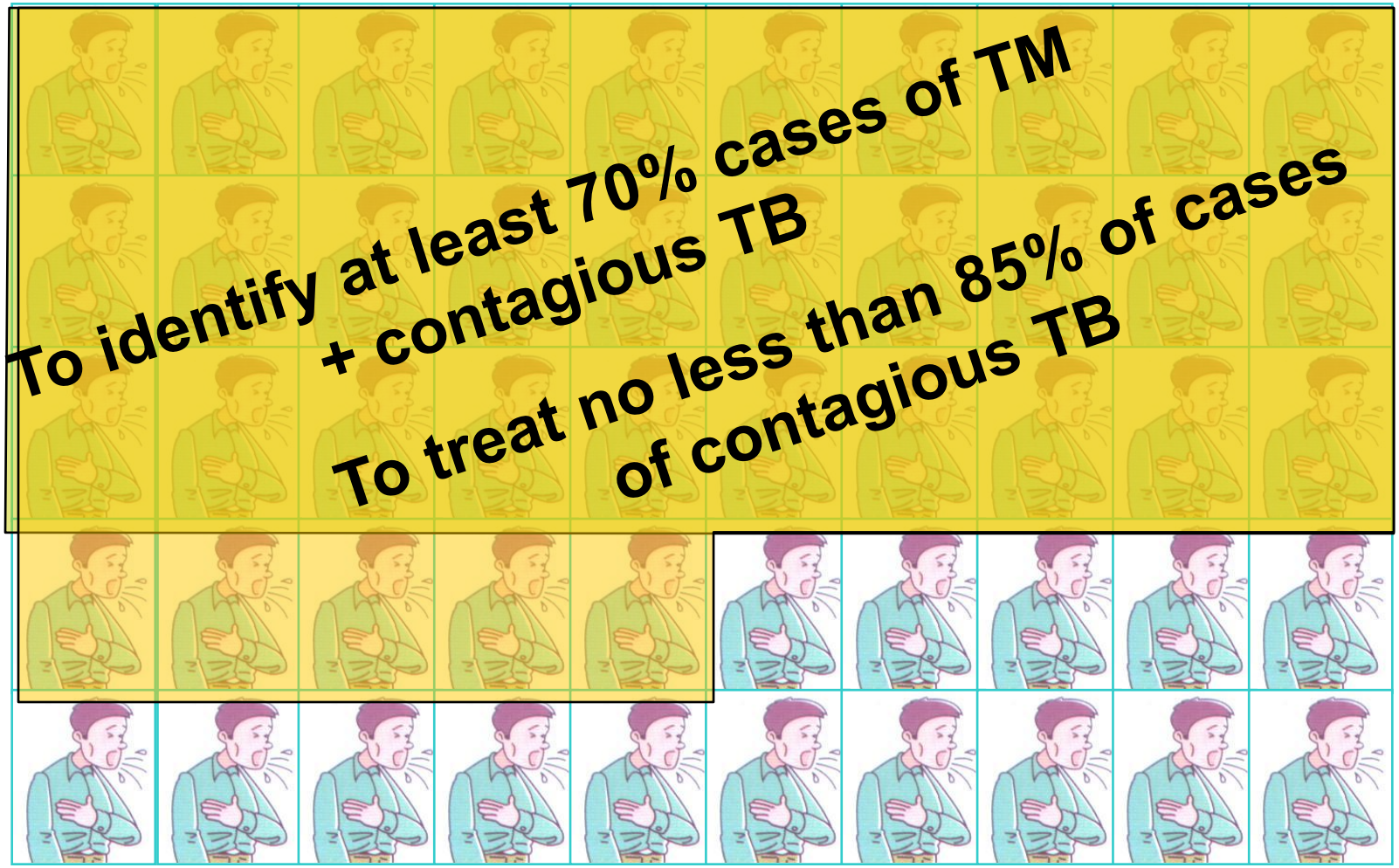
The risk of contracting TB



SITUATION WORLDWIDE

- One person can transmit an infection **to 25-30 people,**
- Every YEAR, **8 million** people contract an infection,
- **Every 20 seconds** one person dies,
- About 1.7 million people **die every year**,
- It is estimated that **one third** of the world's population - is infected.

REALITY - to identify and treat as many as possible people with TB



Source: Doc. dr. K.Miškinis pagal F.Luelmo, T.Frieden. Toman's Tuberculosis. WHO, 2004 a

MDR-TB incidence rate in some countries (territories) in 2008

No.	Country (territory)	MDR-TB incidence rate
1.	Azerbaijan (Baku)	22.3%
2.	Moldova	19.4%
3.	Ukraine (Donetsk)	16%
4.	Russia (Tomsk)	15%
5.	Uzbekistan (Tashkent)	14.8%
6.	Estonia	13.3%
7.	Russia (Mary El)	12.5%
8.	Latvia	10.8%
9.	Lithuania	9,8%
10.	Armenia	9.4%

Source: Guidelines for the programmatic m
2011 update. WHO, Geneva, 2011

What are the dangers of MDR-TB?

Treatment is protracted from 6 month to 2-5 years;
Treatment costs increase tens /hundreds times;
Poor treatment results;
XDR TB (extensively drug resistant TB) occurs and TB treatment becomes complicated, practically incurable;
Requires huge resources (financial, material, human), which may be avoided otherwise.
Poor treatment outcome.

IDU - TB – HIV - VH

The medical care of an IDU patient with TB and HIV co-infection requires a lot of effort due to a number of factors:

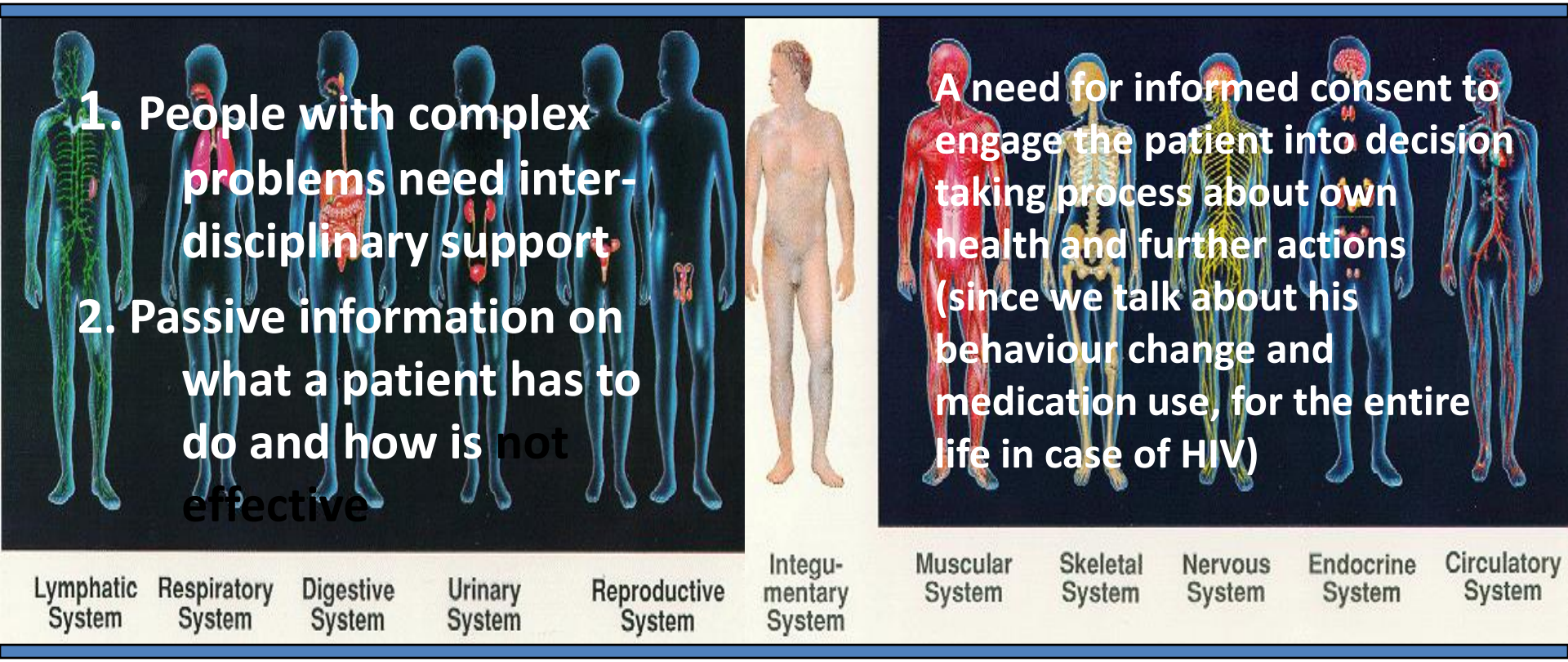
- Anti-TB and ART **interactions with illegal drugs;**
- **Increased likelihood of hepatotoxicity** in IDUs receiving OST;
- Rifampicin reduces methadon load in plasma (33–68 %), therefore the symptoms of withdrawal can occur;
- **Infection with VHB and/or VHC;**
- **Failure to comply with treatment regiments.**

The importance of adherence to HIV treatment regiment

- To make HIV treatment a success at least *95*% adherence with therapy is required
- One missed dose per week amounts to 93% adherence
- In case of two daily dose treatment regimen, it means that you can forget to take no more than 2-3 doses per month
- <80% adherence to treatment prescriptions is almost always ineffective
- 'Good' adherence to treatment prescriptions, when "a majority" of doses are not missed will be unsuccessful
- Only rarely missed dosing is tolerable – **adherence means strict adherence**

Paterson D.L., Swindells S., Mohr J. et al. Adherence to protease inhibitor therapy and outcomes in patients with HIV infection. Ann Intern Med, 2000; 133 (1): 21-30

The Emerging Role of the Drug related CD Casemanagement



Psichological and Social support

Infection Prevention and Adherence Counseling

Infectologist, Pharmacologist and Addiction Specialist, etc...

Drug related CD Case Management Approach

Management

Management is the process of getting work done through others - done properly, on time, and within budget

Source:

Gustafson, David, "The functions of a nurse manager in a health care setting", Chapter 3 in Sullivan, E., and Decker, P., Effective Management in Nursing, 3rd Ed., Addison-Wesley, Redwood City, CA., 1992, pp. 38-59.

- **When a person is incapable to take responsibility for own behaviour harmful for himself, his environment and population**
- **Somebody has to take some responsibility for this individual behaviour and take action for some time**
- **Rights and responsibilitys**

What is harm reduction?

"Harm reduction can be viewed as the prevention

of adverse consequences of illicit drug use without

necessarily reducing their consumption."

Source: Costigan, Crofts & Reid, 2003, p. 35

UNITED NATIONS
Office on Drugs and Crime

Comprehensive approach versus HR approach

Prevention

Primary prevention – to prevent disease (don't start using drugs, prevent infections).

Secondary prevention – rapid diagnosis and cure (abstain from drug use, cure infectious disease).

Tertiary prevention – to prevent complications (reduce drug-related harm, prevent OI)

Drug Policy and the HIV Movement

- HIV Movement lobbies quickly and develops activities of harm reduction – pragmatic approach
- Long term goals – to have less peoples dependent on drugs – others have to develop
- Otherwise, it will be disbalanced

What is future?

- Society may not be able to cope with much beyond 2% to 3% of its population addicted to hard drugs.
- Containment may not be enough.

Neil McKeganey
Professor of Drug Misuse Research
University of Glasgow

Causes for infectious diseases and their reappearance

Cause	Explanation	Example and related disease
The emergence of new technologies	Changes in food production, marketing, and air ventilation systems	Bovine spongiform encephalopathy, Legionnaires' disease
Intrusion into wildlife areas, changes in ecosystems and the use land resources	New farm land, mineral resource mining and afforestation areas	Ebola fever, drop fever, hantavirus
International travel and international trade	Increased flows of travellers and goods transported by air	Severe acute respiratory syndrome, cholera, meningitis, Nile virus
Climate change	Increase of some disease carrying organisms in ecosystem	Malaria, dengue fever, yellow fever
Weakening of PH infrastructure Failure to apply sanitary measures	The confusion of natural and healthy lifestyles - the increase of ungrounded scientific info; monetary policy, weakening health systems; the 90-ies, the decrease of shelters, providing vaccination in sub-Saharan Africa	Diphtheria (outbreaks in Russia ...), pertussis, cholera, hepatitis, malaria
Wars, terrorism, and mass migration	Environmental pollution, and destruction of infrastructure	Cholera, anthrax, leishmaniasis
Changes in demography and behaviour	Concentration of the population in urban areas, sexual practices, drug use	AIDS, syphilis, Hepatitis B and C
Weakening of immune system	Excessive use of antibiotics	Multidrug-resistant tuberculosis
Microbial resistance	Antibiotic and insecticide resistance	Tuberculosis, AIDS, gonorrhea

No matter how you look at it, the future in terms of infectious diseases looks ominous!

Šaltinis: Department of Health, Kimball, 2000 m., Morse, 1995; Pasaulio sveikatos organizacija, 1999 m.

It is important to have similar sheet music and sing one song – in one or several voices

Thank you for your attention!

www.Saulius.Caplinskas.lt