

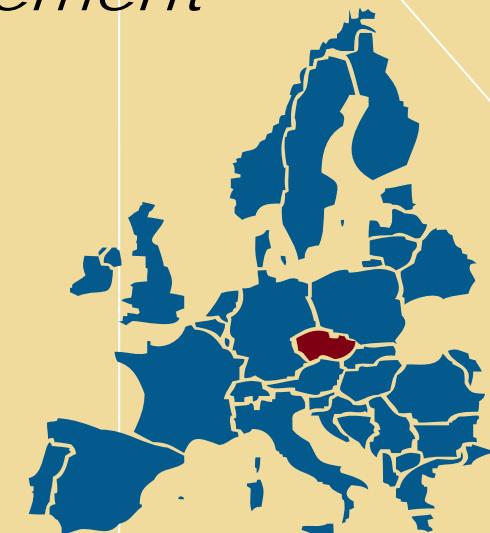


# Advocacy of comprehensive cancer care and prevention based on recent trends In CRC epidemiology

*European Colorectal Cancer Days, Brno, April 26 – 27, 2013*

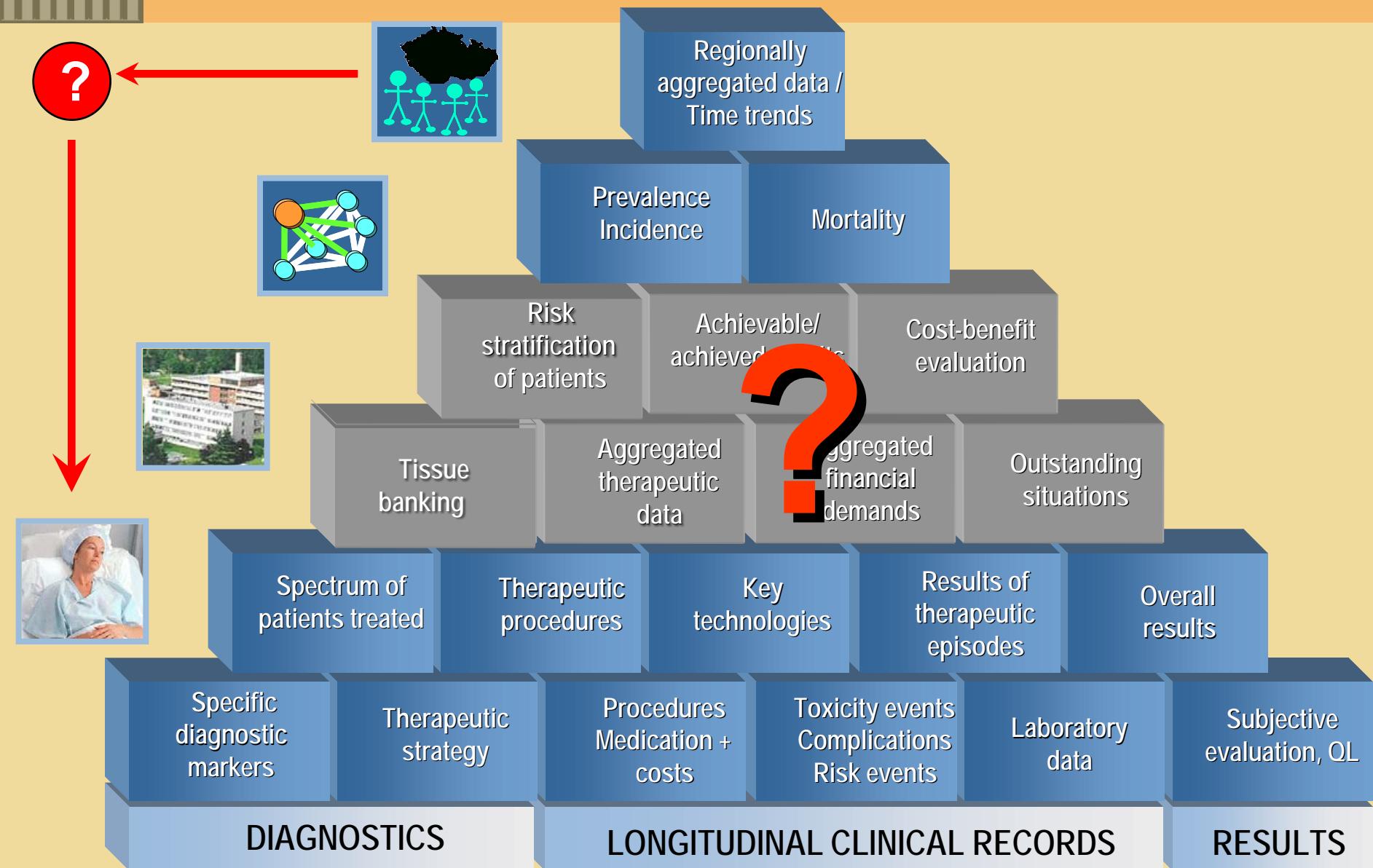


*Can epidemiological data  
contribute to improvement  
in cancer care?*





# Can epidemiological data help in cancer care management?



# Where to find the Czech National Cancer Registry? A

SVOD - Mozilla Firefox  
Soubor Úpravy Zobrazení Historie Záložky Nástroje Nápověda  
<http://www.svod.cz/?sec=analyzy&lang=en> Google

The screenshot shows the SVOD website interface. On the left, a sidebar lists navigation links: About project, News, Epidemiological analyses (highlighted in red), Publications, reports, Software SVOD, and Analytic tools tutorial. The main content area features a header 'EPIDEMIOLOGY OF MALIGNANT TUMORS IN THE CZECH REPUBLIC' with a map of Europe and the Czech Republic. Below this, a section titled 'EPIDEMIOLOGY OF MALIGNANT TUMORS - ANALYSES' is divided into several categories: INCIDENCE AND MORTALITY, TIME TRENDS, AGE OF PATIENTS, COMPARATIVE ANALYSIS, REGIONAL OVERVIEWS, CLINICAL STAGES, COMPARISON COUNTRIES, SUMMARY PR, and COMPREHENSIVE OVERVIEW. Each category contains a small icon and a brief description. A red arrow at the bottom points to the URL 'http://www.svod.cz'.

ISSN 1802-8861

EPIDEMIOLOGY OF MALIGNANT TUMORS IN THE CZECH REPUBLIC

ABOUT PROJECT

NEWS

SOFTWARE SVOD

EPIDEMIOLOGICAL ANALYSES

ANALYSES WIZARD

Publications

Scientific events

WWW links

Related links

Web portal of epidemiology of malignant tumours in the Slovak Republic

www.nor-sk.org

Login user

INCIDENCE AND MORTALITY

Time trends in cancer incidence and mortality in Czech Republic.

TIME TRENDS

Changes in trends in cancer incidence and mortality over time (growth index and year-on-year changes).

AGE OF PATIENTS

Age structure of living and deceased cancer patients.

COMPARATIVE ANALYSIS

comparison to reference

REGIONAL OVERVIEWS

Comparison of cancer incidence and mortality in individual regions of Czech Republic

CLINICAL STAGES

Time trends in clinical stages

COMPARISON COUNTRIES

Correlation of Czech Republic with other countries (source: IARC 2002)

SUMMARY PR

Correlation of Czech Republic with other countries (comprehensive analysis of diagnoses)

Epidemiological analyses

Incidence and mortality

Time trends

Regional overview

Age analyses

Clinical stages

International data

Comparative standards

Comprehensive overview

<http://www.svod.cz>

# svod.cz - interactive analytic tools

## Nádory rekta (diagnóza C20) - výběr epidemiologických analýz

### Incidence, mortalita a prevalence v čase

- Vývoj incidence a mortality v čase
- Vývoj prevalence v čase

### Věkově specifické analýzy

- Věková struktura pacientů a zemřelých na nádor
- Věkově specifická incidence a mortalita

### Diagnostika nemoci v datech

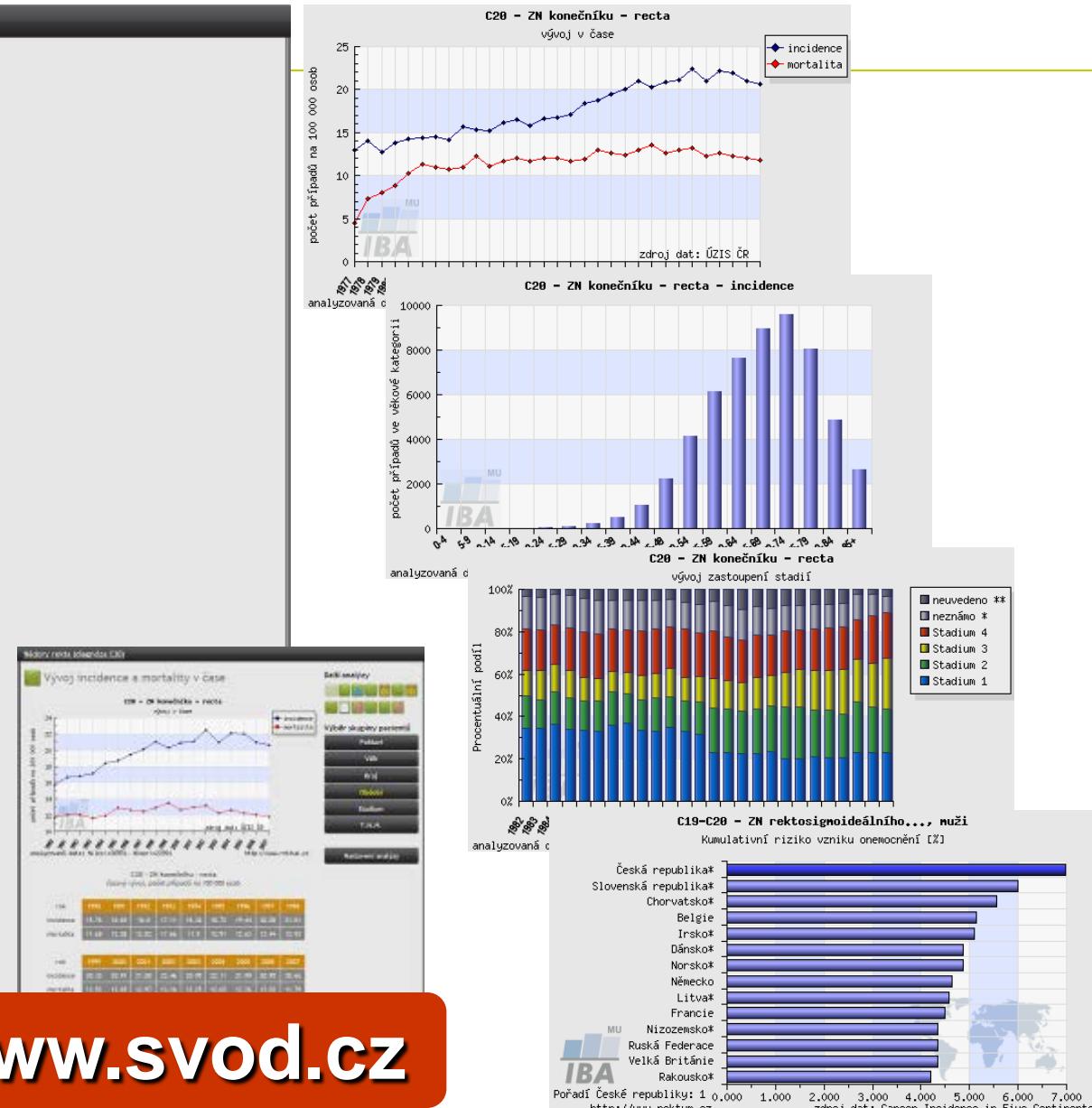
- Zastoupení stadií onemocnění
- Vývoj incidence dle stadií onemocnění
- Zastoupení stadií onemocnění dle věku
- Srovnání incidence stadií dle věku

### Morfologie nádorů

- Morfologie nádorů - přehled

### Mezinárodní data

- Srovnání incidence s údaji onkologických registrů evropských zemí
- Srovnání věkové struktury s údaji onkologických registrů evropských zemí
- Srovnání věkově specifické incidence s údaji onkologických registrů evropských zemí
- Srovnání kumulační incidence onkologických registrů evropských zemí



<http://www.svod.cz>



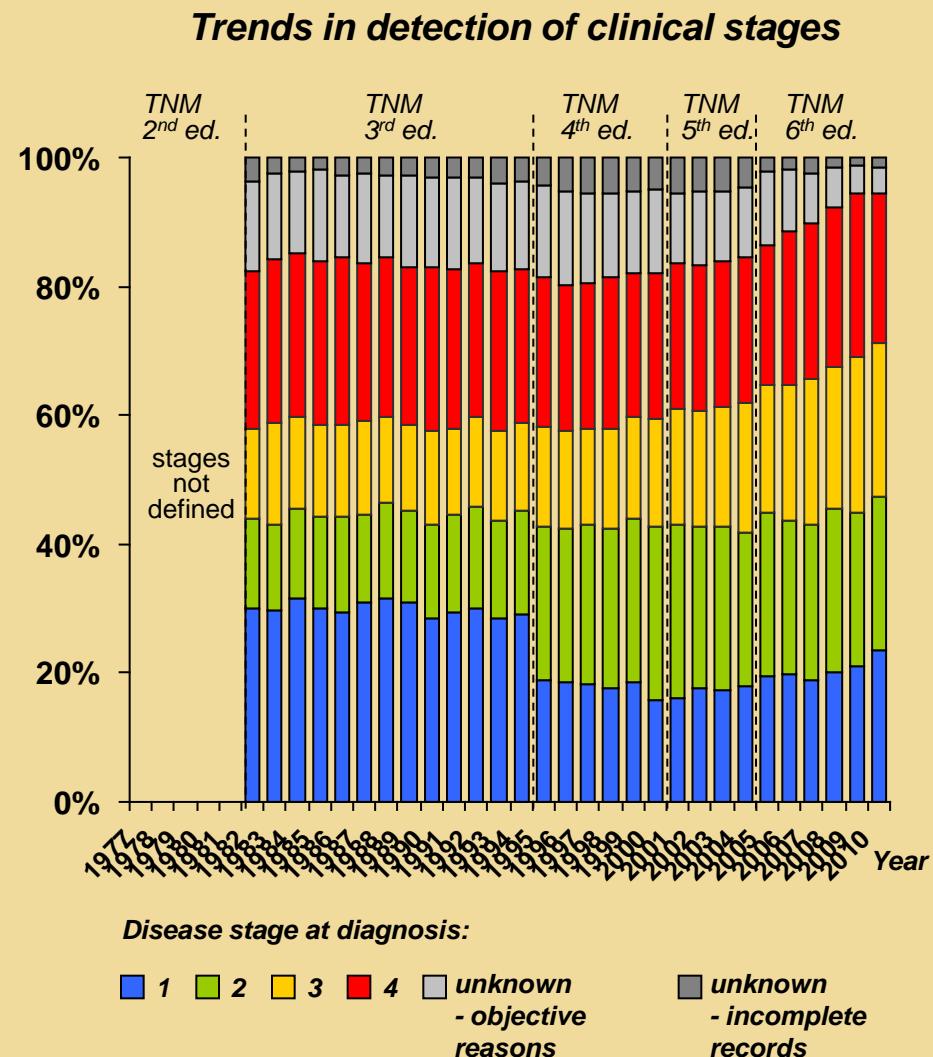
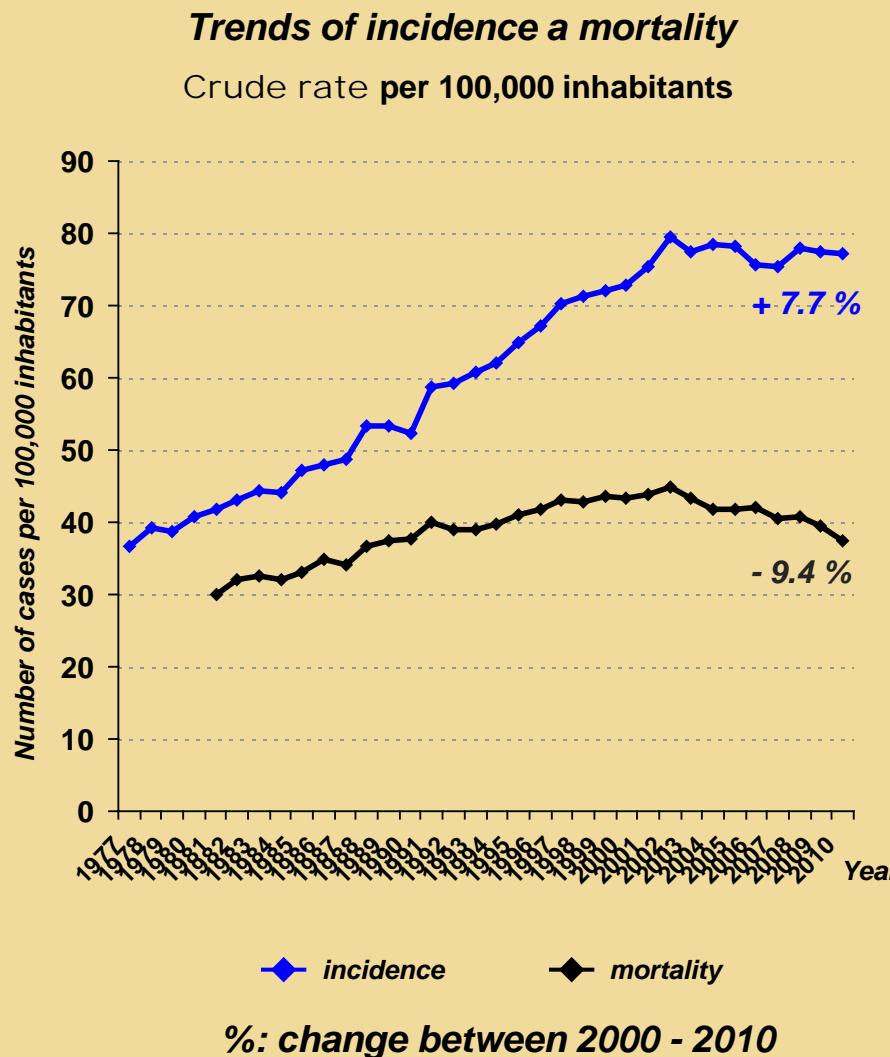
## *CRC epidemiology and its information potential*



# I. **CRC** – epidemiological burden



# Epidemiology of colorectal cancer in the Czech Republic

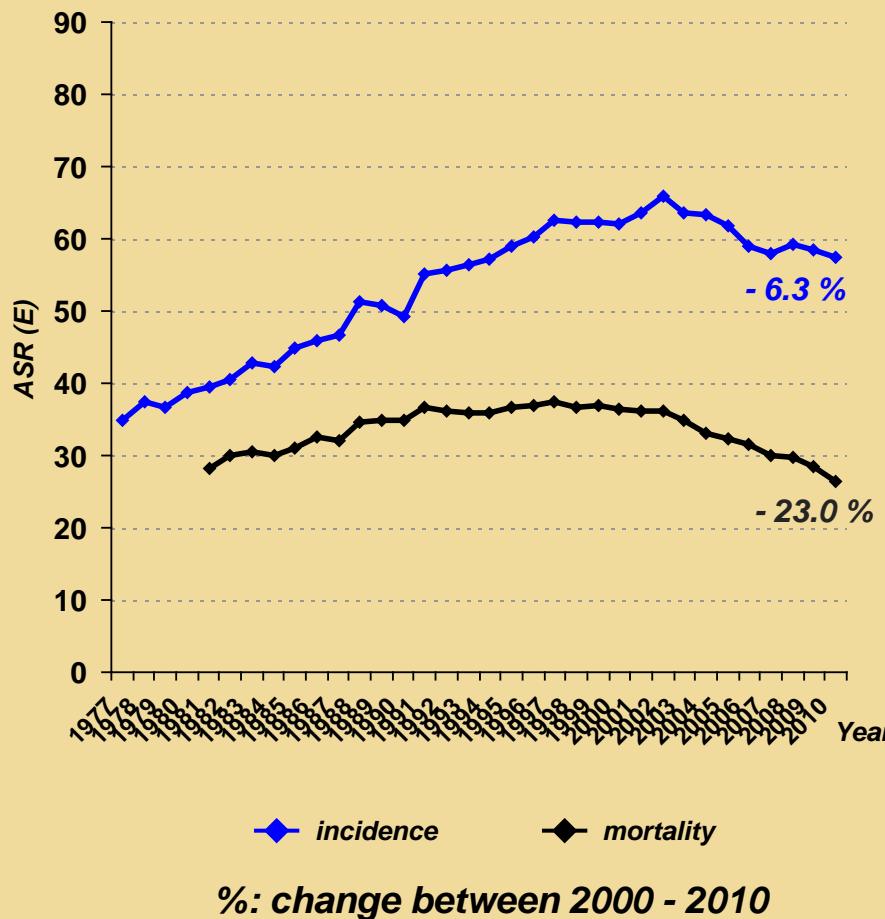




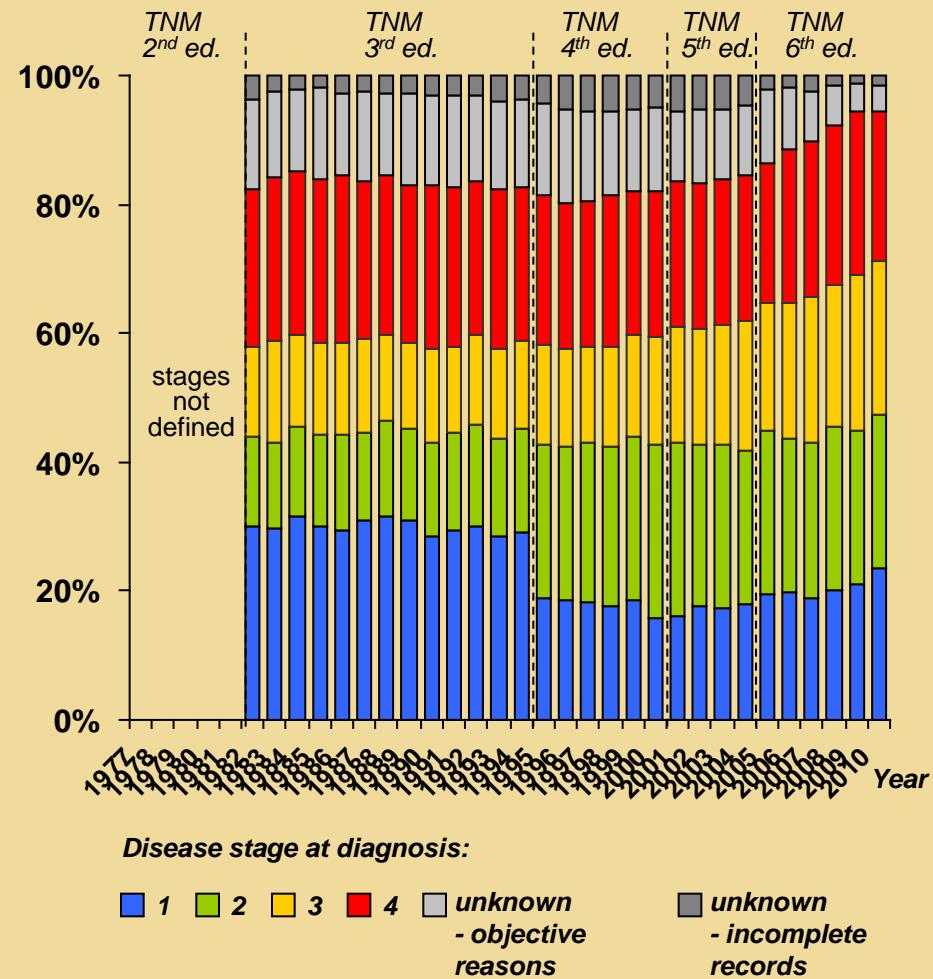
# Epidemiology of colorectal cancer in the Czech Republic

## Trends of incidence a mortality

ASR (E): number of cases per 100,000 inhabitants  
age standardized on European age standard

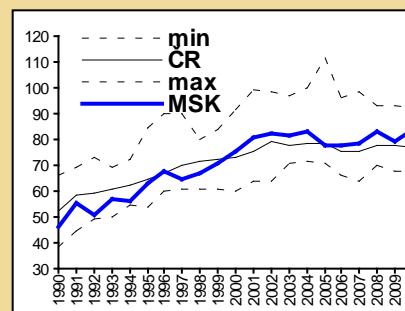
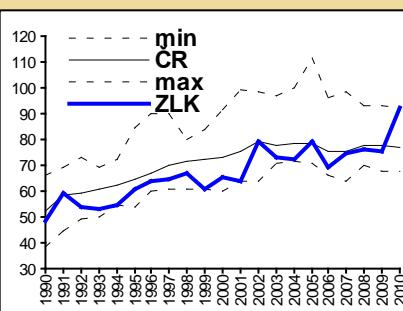
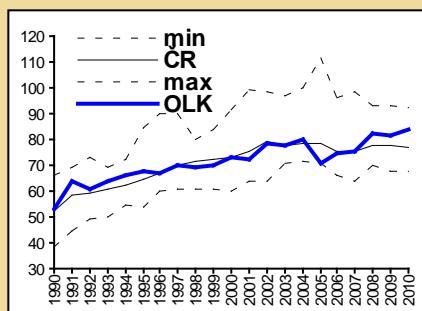
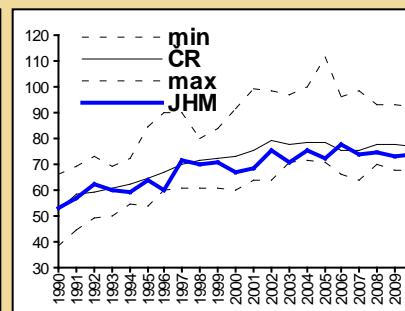
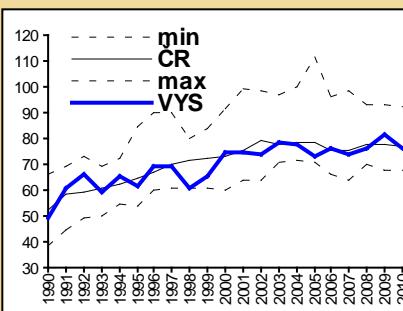
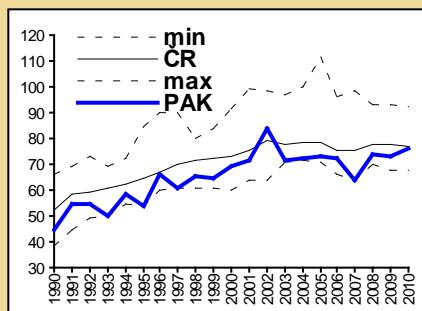
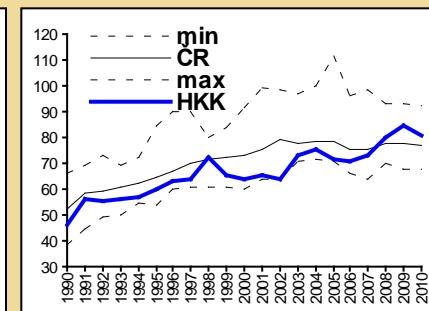
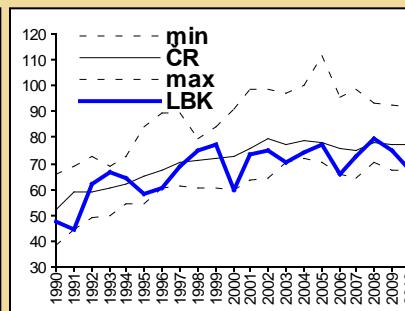
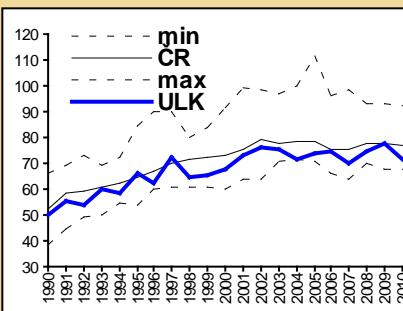
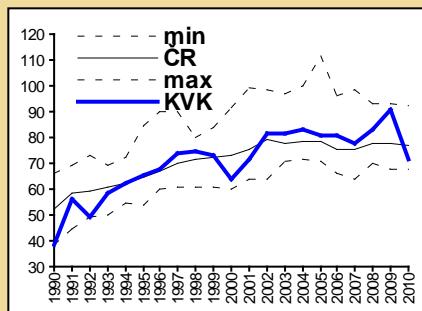
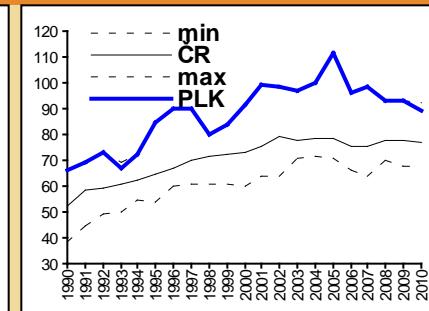
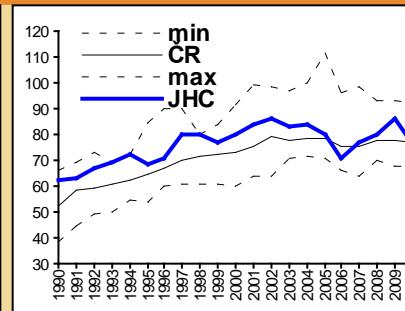
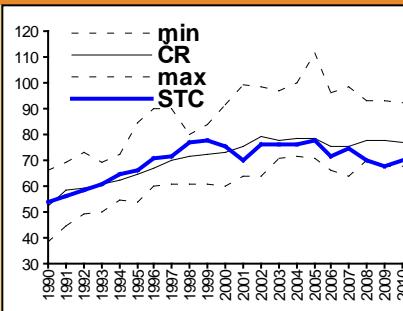
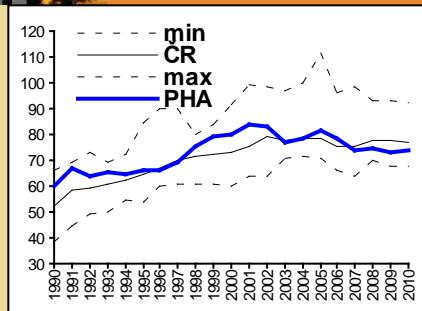


## Trends in detection of clinical stages



# Regional benchmarking of trends in CRC incidence

Number of cases per 100,000 inhabitants



**CR:** Czech Republic  
**max:** maximum in regions  
**min:** minimum in regions  
**PHA:** Prague  
**STC:** Central Bohemia  
**JHC:** South Bohemia  
**PLK:** Plzen  
**KVK:** Karlovy Vary  
**ULK:** Usti nad Labem  
**LBK:** Liberec  
**HKK:** Hradec Kralove  
**PAK:** Pardubice  
**VYS:** Vysocina  
**JHM:** South Moravia  
**OLK:** Olomouc  
**ZLK:** Zlin  
**MSK:** Moravia-Silesia

Source: Czech National Cancer Registry

# Regional profile of CRC incidence and prevalence

## INCIDENCE period 2006-2010

Number of cases per 100,000 inhabitants

0 20 40 60 80 100

Plzen	94.0
Karlovy Vary	80.8
Moravia-Silesia	80.5
Olomouc	79.4
South Bohemia	78.0
Hradec Kralove	77.8
Zlin	77.5
Vysocina	76.8
Czech Republic	76.7
Prague	74.6
South Moravia	74.5
Usti nad Labem	73.6
Liberec	72.2
Pardubice	71.8
Central Bohemia	70.8

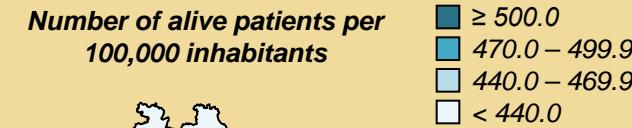


## PREVALENCE at 31/12/2010

Number of alive patients per 100,000 inhabitants

0 200 400 600

Plzen	517.3
Zlin	508.0
Vysocina	506.1
Olomouc	503.5
South Bohemia	502.1
Moravia-Silesia	501.4
South Moravia	479.6
Pardubice	478.4
Czech Republic	469.7
Karlovy Vary	458.6
Hradec Kralove	451.3
Prague	441.6
Liberes	434.4
Usti nad Labem	424.4
Central Bohemia	418.7





## *CRC epidemiology and its information potential*

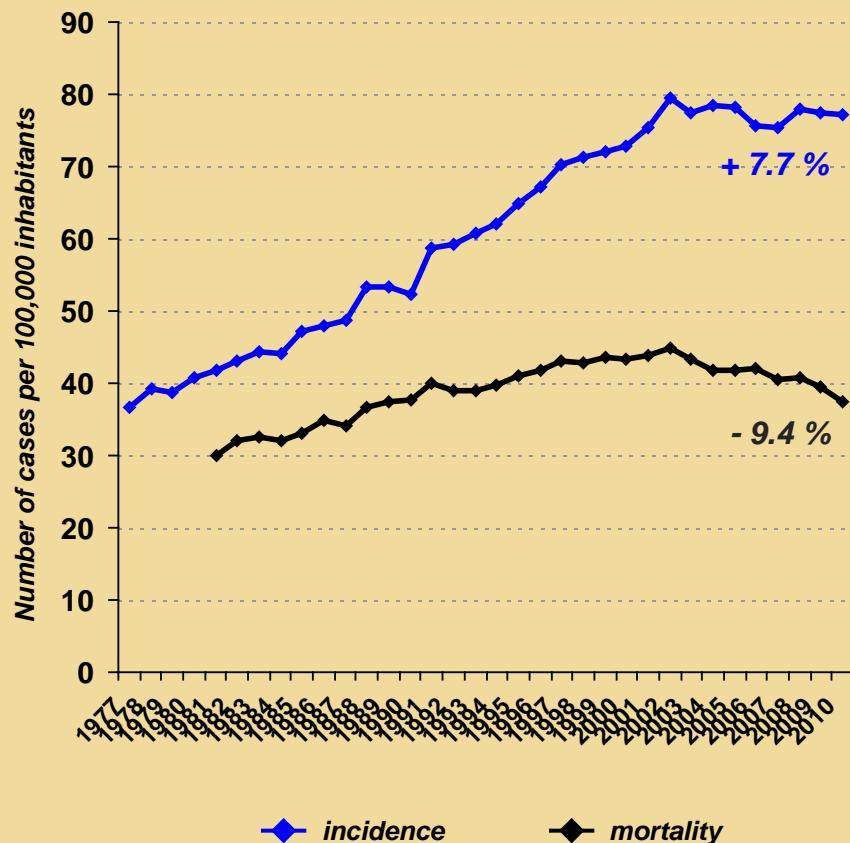


II.  
**CRC**  
– prediction of  
population and  
therapeutic burden

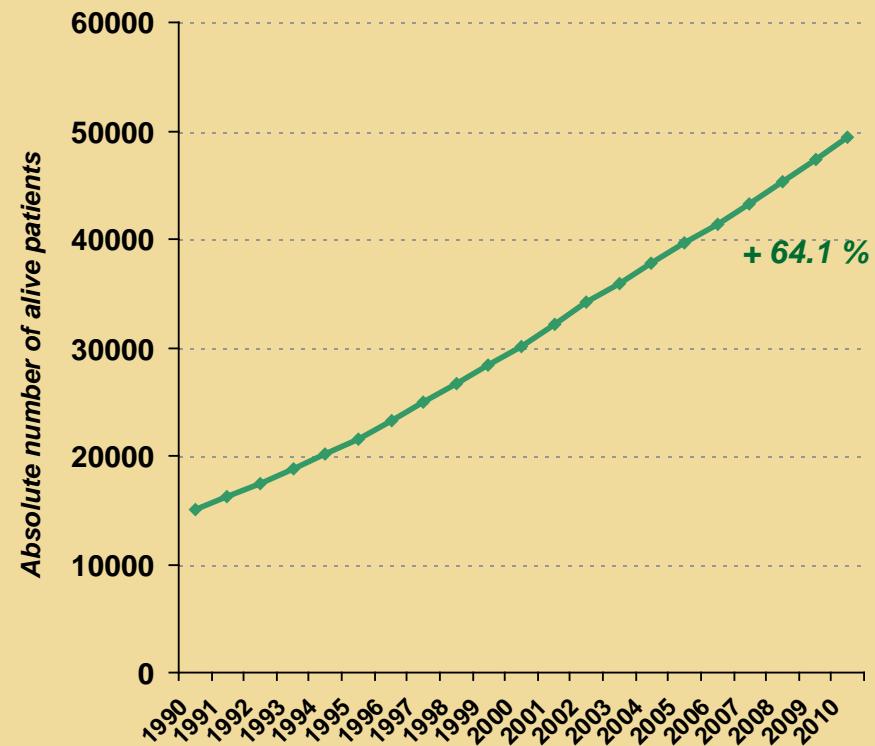


# CRC in the Czech Republic: therapeutic burden increases

*Trends of incidence a mortality*



*Trends of prevalence*



**%: change between 2000 - 2010**

Source: Czech National Cancer Registry



# CRC in the Czech Republic: predicted burden in 2013

## INCIDENCE

Colorectal carcinoma (C18 - C20)	Predicted values for 2013	
	Incidence	(90% CI)
Stage I	1980	(1808; 2150)
Stage II	1939	(1797; 2081)
Stage III	2222	(2070; 2373)
Stage IV	2177	(2022; 2332)
Stage unknown due to objective reasons	360	(237; 483)
Stage unknown without reported reason	86	(56; 115)
<b>TOTAL</b>	<b>8764</b>	<b>(7990; 9534)</b>

## PREVALENCE

Colorectal carcinoma (C18 - C20)	Predicted values for 2013	
	Prevalence	(90% CI)
Stage I	18 152	(17 843; 18 461)
Stage II	16 643	(16 356; 16 930)
Stage III	12 237	(11 986; 12 488)
Stage IV	7557	(7361; 7753)
Stage unknown due to objective reasons	2661	(2543; 2779)
<b>TOTAL</b>	<b>57 250</b>	<b>(56 089; 58 411)</b>

Pavlik et al. BMC Public Health 2012, 12:117  
http://www.biomedcentral.com/1471-2458/12/117



## RESEARCH ARTICLE

Open Access

### Estimating the number of colorectal cancer patients treated with anti-tumour therapy in 2015: the analysis of the Czech National Cancer Registry

Tomáš Pavlik<sup>1</sup>, Ondřej Májek<sup>1</sup>, Jan Mužík<sup>1</sup>, Jana Koptíková<sup>1</sup>, Lubomír Slavíček<sup>1,2</sup>, Jindřich Finek<sup>1,3</sup>, David Feltl<sup>1</sup>, Rostislav Vyzula<sup>1,5</sup> and Ladislav Dušek<sup>1\*</sup>

#### Abstract

**Background:** Colorectal cancer (CRC) represents a serious health care problem in the Czech Republic, introducing a need for a prospective modelling of the incidence and prevalence rates. The prevalence of patients requiring anti-tumour therapy is also of great importance, as it is directly associated with planning of health care resources.

**Methods:** This work proposes a population-based model for the estimation of stage-specific prevalence of CRC patients who will require active anti-tumour therapy in a given year. Its applicability is documented on records of the Czech National Cancer Registry (CNCR), which is used to estimate the number of patients potentially treated with anti-tumour therapy in the Czech Republic in 2015.

**Results:** Several scenarios are adopted to cover the plausible development of the incidence and survival rates, and the probability of an anti-tumour therapy initiation. Based on the scenarios, the model predicts an increase in CRC prevalence from 13% to 30% in comparison with the situation in 2008. Moreover, the model predicts that 10,074 to 11,440 CRC patients will be indicated for anti-tumour therapy in the Czech Republic in 2015. Considering all patients with terminal cancer recurrence and all patients primarily diagnosed in stage IV, it is predicted that 3,485 to 4,469 CRC patients will be treated for the metastatic disease in 2015, which accounts for more than one third (34-40%) of all CRC patients treated this year.

**Conclusions:** A new model for the estimation of the number of CRC patients requiring active anti-tumour therapy is proposed in this paper. The model respects the clinical stage as the primary stratification factor and utilizes solely the population-based cancer registry data. Thus, no specific hospital data records are needed in the proposed approach. Regarding the short-term prediction of the CRC burden in the Czech Republic, the model confirms a continuous increase in the burden that must be accounted for in the future planning of health care in the Czech Republic.

#### Background

The Czech population, with an annually diagnosed 78,7 colorectal cancer (CRC) patients per 100,000 inhabitants (2008), presently occupies an undesirable 3rd position in international statistics of age-standardised CRC incidence rates [1]. Moreover, the number of newly diagnosed cases is supposed to be high in the future as well,

namely due to population ageing. This health care problem is further worsened by the fact that a large proportion of colorectal carcinomas are primarily diagnosed in a metastatic stage (25% in 2008) [2].

Thus, there is a strong need for a prospective modelling of CRC incidence and prevalence rates, as these measures are necessary for monitoring of the overall cancer load and its dynamics [3]. The prospective estimates should also enable us to quantify the resources necessary for the health care system [4], provided that we are able to adjust the rates for patients untreated for

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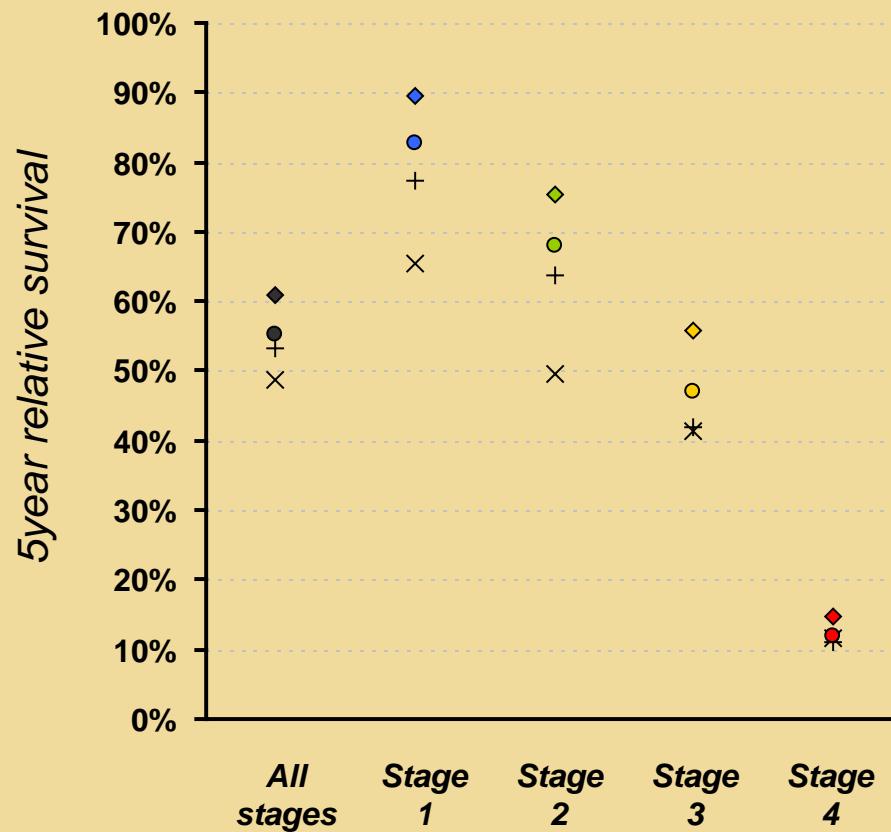
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# Outcome of the care: 5-yr relative survival of CRC patients

## Colorectal carcinoma (C18 – C20)

*Patients with anti-cancer treatment and with complete information about disease stage*

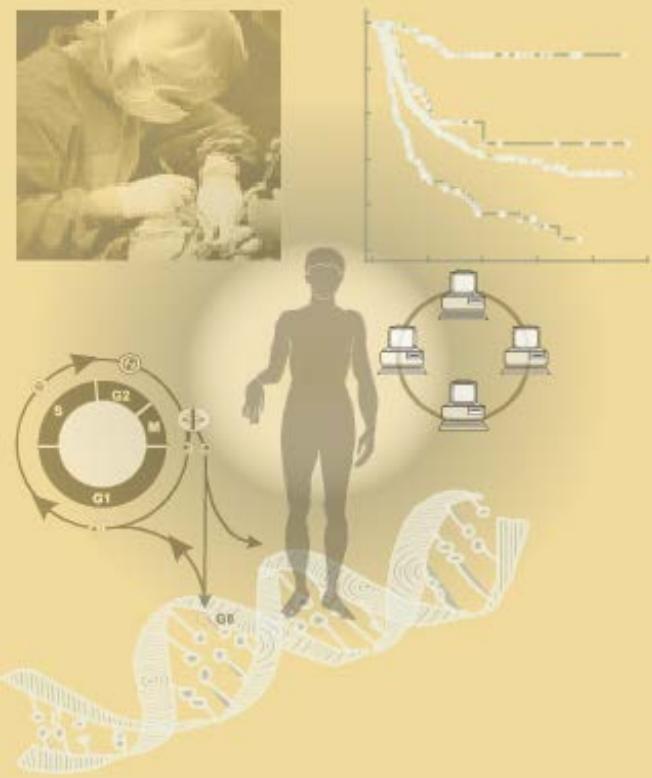


	Cohort analysis 1990-1994	Cohort analysis 1995-1999	Period analysis 2000-2004	Period analysis 2005-2009
Stage 1	65.4%	77.4%	82.8%	<b>89.4%</b>
Stage 2	49.5%	63.9%	67.9%	75.5%
Stage 3	41.5%	42.0%	46.9%	55.9%
Stage 4	11.7%	10.9%	11.9%	<b>14.6%</b>
All stages	48.9%	53.3%	55.3%	60.8%

- ◆ *Period analysis 2005-2009*
- *Period analysis 2000-2004*
- + *Cohort analysis 1995-1999*
- × *Cohort analysis 1990-1994*



## *CRC epidemiology and its information potential*

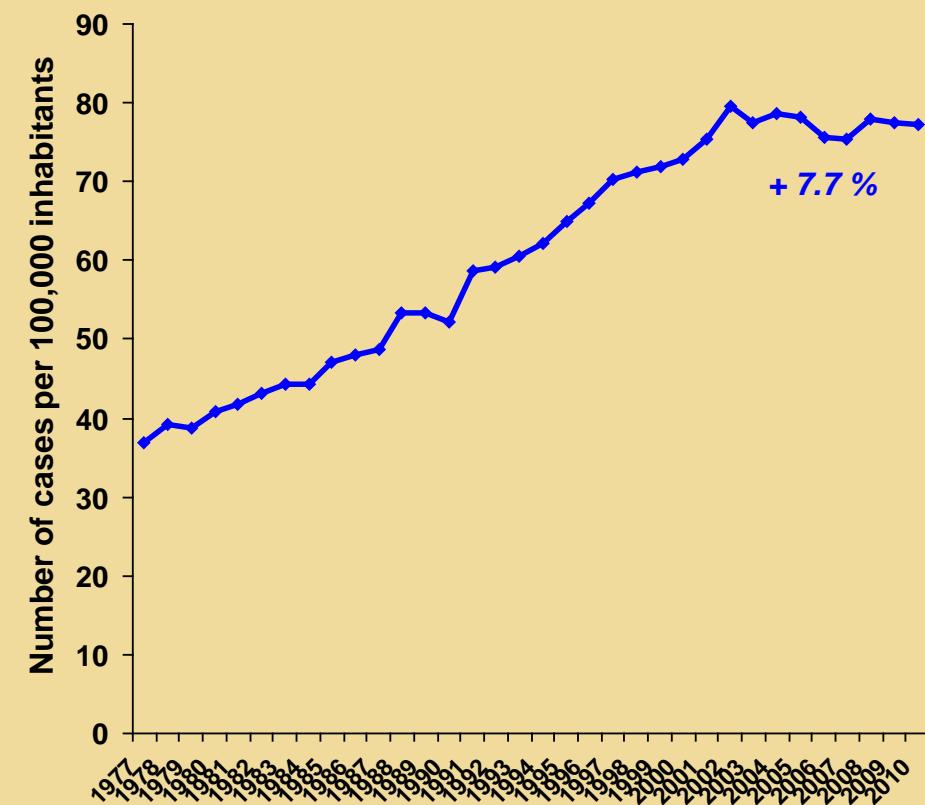


# III. **CRC** – epidemiology in optimization of cancer care

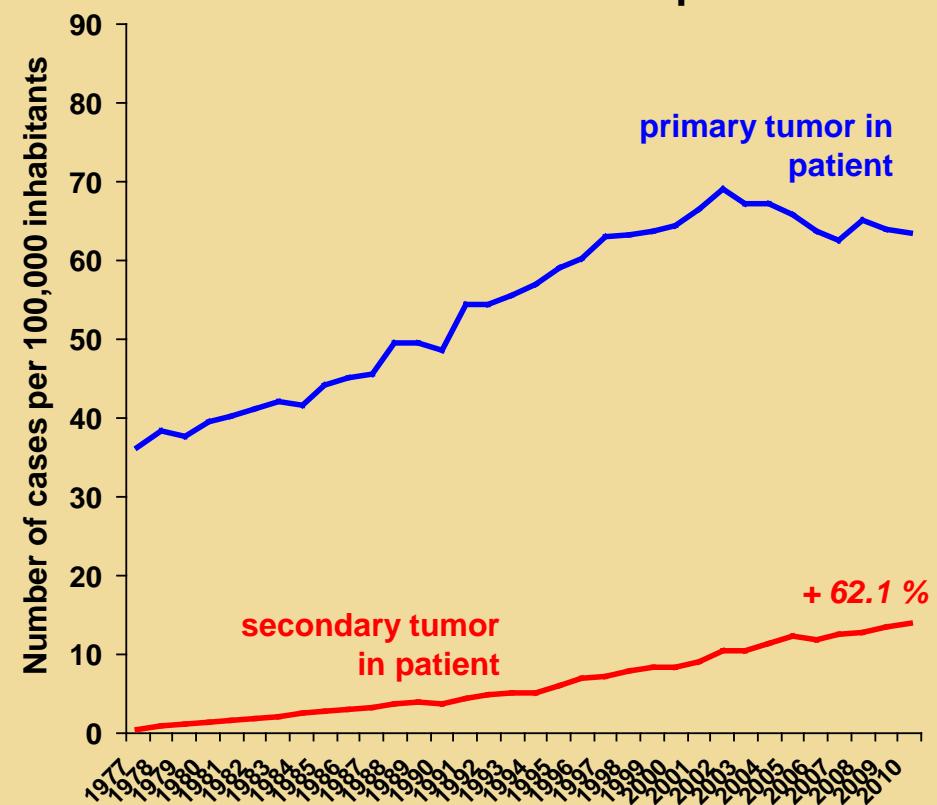


# Incidence of CRC in the Czech Republic: detailed view

Trend of CRC incidence



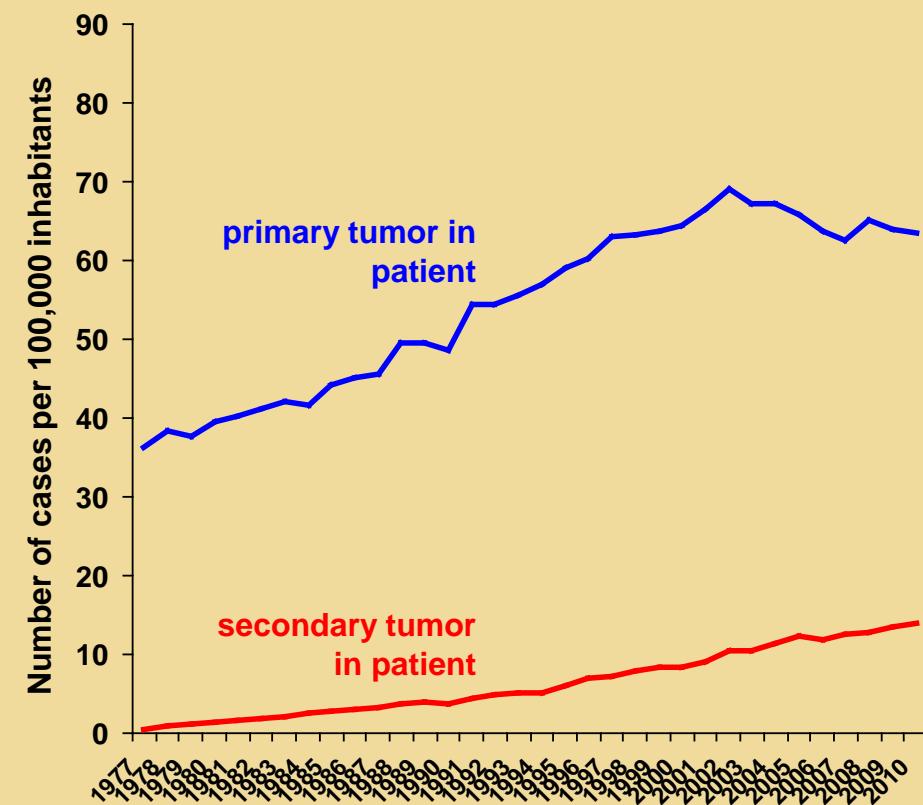
CRC incidence according to rank of tumors in patient





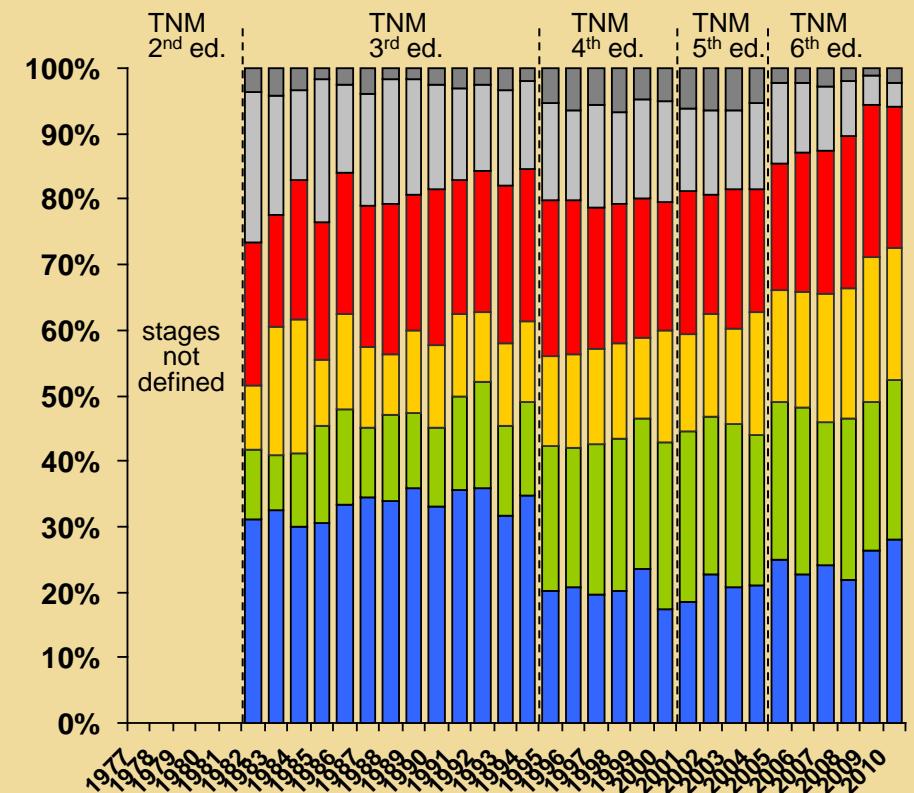
# Epidemiology of colorectal cancer in the Czech Republic

## Trends in CRC incidence



## Trend in disease stages

### CRC as multiple tumor



### Disease stage at diagnosis:

■ 1 ■ 2 ■ 3 ■ 4 ■ unknown - objective reasons ■ unknown - incomplete records



Thank you for  
attention!

