Breast cancer care in the Czech Republic

Bohuslav Melichar
The Czech Republic

**Population:** 10,512,208

**Area:** 78,866 km²

**GDP per capita:** $18,337

Breast cancer screening programme initiated in 2002
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googles.com, wikipedia.org, czso.cz

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Organised cancer screening programmes

• Screening for cancer of breast, colorectum and uterine cervix is effective in decreasing mortality of the disease
• These programmes are recommended to all member states by the Council of the European Union (2003/878/EC)
• To guarantee their effectiveness, safety and cost-effectiveness, it is highly recommended to implement the prevention as organized programmes comprising:
  – an explicit policy, with specified age categories, method and interval of screening
  – defined target population
  – a management team responsible for the implementation
  – a health care team for decisions and care
  – a quality assurance structure
    (performance monitoring including collection of all relevant data)
  – a method for identifying cancer occurrence in the target population

IARC Handbooks of Cancer Prevention
Czech National Guidelines

• Bulletin of Ministry of Health
• Recommended standard

Prepared by
• Association of Czech Breast Radiologists
• Expert Committee on Breast Radiology (Czech Radiological Society)
• State Office for Nuclear Safety

approved by Breast Cancer Screening Committee at the Czech Ministry of Health (MH) (incl. representatives of MH, expert medical societies, healthcare payers, nuclear safety)
• outer (incl. physicians, patients) and inner (MH) review process
• signed by minister of health
Screening programme setting

- **target age groups**
  - women between 45 and 69 years of age
  - the programme is open for women over 70 years of age since 2010
  - women are referred to screening examination by their GP or gynaecologist
  - no centralised direct invitation yet

- **screening method and interval**
  - two-view mammography (CC + MLO, recommended double reading)
  - 2-year screening interval

- **further assessment**
  - all screening centres also act as assessment units
  - most of further assessments are performed on the screening visit day
National guidelines

- **management of the screening programme**
  - Breast Cancer Screening Committee at the Czech Ministry of Health
  - cooperating with
    - Association of Czech Breast Radiologists
    - Expert Committee on Breast Radiology (Czech Radiological Society)
    - Institute of Biostatistics and Analyses, Masaryk University
  - nominated regional coordinators, regular visits of centres

- **accreditation of screening centres**
  - Committee, according to

- **requirements for screening units**
  - see below

- **requirements for diagnostic units**
  - equipment, volume, Eur Guidelines

- **conditions for mammography reimbursement**
  - target population, referral by GP/Gyn, second reading, diagnostic

- **screening and diagnostic methods**

- **criteria for good radiography**
Requirements for breast screening units

1. Integration and comprehensiveness of a diagnostic process
   – mammography, USG, needle biopsy, available stereotactic, MR, VACB
2. Rapid performance of screening & pre-operative diagnostic procedures
   – negative within 3 days, assessment within 15 days
3. Education and experience of radiologists and radiographers
   – continuously educated radiologist and radiographer, available physicist
4. Volume of mammography screening examinations
5. Coverage of the population by the network of screening centres
6. Proper technical equipment of the facility
   – according to Eur Guidelines, maximal age of MG 8 years
7. Adherence to radiation protection guidelines
   – according to Czech law
8. Interdisciplinary cooperation and continuity of care
   – connection to comprehensive cancer care, full multidisciplinary approach
9. Long-lasting continuity of screening process in the centre
10. Performance monitoring by means of data audit (performance indicators)
11. Enabling verification of all these requirements
CRITERIA FOR A SCREENING CENTER

- Minimum 5000 women examined yearly
- Minimum of 20 malignant tumors recorded
- Further assessment rate < 25% in first examination, < 15% in subsequent examination
- Recall rate < 6%
- Detection rate of $\geq 5$ per 1000 for first examination, $\geq 2$ per 1000 for subsequent examination
- Proportion of stage 2 and higher $\leq 30$
- Proportion of tumors < 10 mm $\geq 25$
- N0 $\geq 70$
- Invasive procedures during screening < 10%
- Ratio of surgical intervention for benign/malignant tumors < 25%
Screening and diagnostic units connected to a multidisciplinary team that convenes regularly (mostly weekly)

Multidisciplinary team includes radiologist, breast surgeon, pathologist, medical oncologist and radiation oncologist

Decision of treatment strategy before any therapy

National guidelines on breast surgery are being currently created

Medical treatment by medical oncologist

Life-long follow up by medical oncologist
Comprehensive Cancer Care in the Czech Republic

Map of comprehensive cancer centers
• Administration of targeted treatments restricted to comprehensive cancer centers
• Radiotherapy (linear accelarator units) also mostly restricted to comprehensive cancer centers
• It is strived to refer as many patients as possible to Comprehensive cancer centers
• High concentrations of patients represent an opportunity for clinical trials (compensate the limitation of resources for new drugs)
Cancer screening information support

Monitoring of Cancer Burden
- epidemiology of cancer in target population
- evaluation of screening programmes impact

Source of data: CZECH NATIONAL CANCER REGISTRY

Performance Monitoring using Cancer Screening Registry
- performance indicators at screening centres
- detection of cancer and precancerous lesions

Source of data: RECOMMENDED HEALTH CARE FACILITIES

Monitoring using Administrative Data
- population-based performance indicators
- monitoring of programmes accessibility by target population

Source of data: HEALTH INSURANCE COMPANIES – NATIONAL REFERENCE CENTRE

Information Support Provider
MASARYK UNIVERSITY, INSTITUTE OF BIOSTATISTICS AND ANALYSES

Comprehensive databases available; however, linkage is not yet possible
On-line portal for cancer epidemiology

http://www.svod.cz
Dedicated software for data collection and analysis

**Client data management/invitation process**

**Examinations/results**

**Data analysis**

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1. **Attendance by women and their retention in the programme**
   - coverage of the target population by screening examination

2. **Indicators of volume**
   - volume of women screened
   - volume of breast cancer cases detected

3. **Performance indicators of the screening process**
   a. **Validity of the screening test (estimates of sensitivity and specificity)**
      - breast cancer detection rate (number of women diagnosed with cancer per 1,000 screened)
      - further assessment rate (proportion of screened women undergoing additional examination)
      - recall rate (proportion of screened women recalled to the screening centre for additional examination)
   b. **Quality of preoperative diagnosis**
      - benign to malignant open biopsy ratio
   c. **Prognostic factors of detected cancer cases (surrogate for mortality reduction)**
      - proportion of advanced cases (TNM stage II+)
      - proportion of invasive cases
      - proportion of invasive cancers that are node-negative
      - proportion of invasive cancers that are 10 or less mm in size
Feedback reporting to screening centres

- accredited centers are provided with results of performance monitoring

**KEY PERFORMANCE INDICATORS**

Position among other centres

Graph of placing

Statistical summary

1. Centrum 1
2. Hodnocené centrum
3. Centrum 2
4. Centrum 4
5. Centrum 5
6. Centrum 6

• accredited centers are provided with results of performance monitoring
• Registry MAGISTR for pathologists
• Registry BREAST for targeted drugs
Invasive breast cancer

Time trends in distribution of breast cancer stages

Stage distribution

Year

0% 20% 40% 60% 80% 100%


Organised breast cancer screening

Stage IV Stage III Unknown Stage II Stage I incomplete records objective reasons*

* DCO, cases diagnosed by autopsy, early deaths, therapy had not been started due to objective reasons etc.

Source of data:
Czech National Cancer Registry

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Time trends in coverage

(age group 45-69, year 2011: 1,762,887)

Coverage by examination (age group 45-69, year 2011: 1,762,887)
Time trends in coverage by age

(age group 45+, target population in 2011: 2,448,671)

Coverage by examination

Age group

Year:
- 2007
- 2008
- 2009
- 2010
- 2011

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Time trends in coverage by regions

(age group 45-69, year 2011: 1,762,887)

Coverage by examination


Region: Vysočina, Jihomoravský, Olomoucký, Hradecký, Jihomoravský, Zlín, Plzeňský, Liberecký, Moravskoslezský, Karlovarský, Sředočeský, Ústecký, Pardubický, Praha

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Coverage by breast cancer screening - districts

Overall coverage: 49.5 % (range in districts 14.8-73.9 %)

Coverage [%]

Women 45-69, Year 2010

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Annual percentage of women examined with diagnostic mammography

Women 45-69, Year 2010

Overall percentage: 7.1% (range in districts 2.1-20.3 %)

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Summary

• Czech national breast screening guidelines implement key elements of European Guidelines
  – physico-technical quality control of mammography equipment
  – standard for radiography
  – quality assurance using key performance indicators
  – system of accreditation
  – rapid screening process
  – staff with proper specialised qualification, undergoing continuous education
  – operation within multidisciplinary team

• Differences from EU Guidelines
  – programme is currently not population-based
  – missing linkage of different registries
  – not yet including guidelines for pathology and surgery
PROBLEMS

Delayed availability of new anticancer agents
Limited and decreasing financial resources
System of payment – budget rather than the money following the patient
Binding guidelines for therapy currently absent, some patients still managed in local centers in suboptimal conditions
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RESEARCH ARTICLE

Breast cancer screening in the Czech Republic: time trends in performance indicators during the first seven years of the organised programme

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